S. Hrg. 110–1038

NUCLEAR TERRORISM—2008

HEARINGS

BEFORE THE

COMMITTEE ON HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

SECOND SESSION

FEBRUARY 13, 2008—THE DEFENSE DEPARTMENT'S HOMELAND SECURITY ROLE: HOW THE MILITARY CAN AND SHOULD CONTRIBUTE

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SEPTEMBER 25, 2008—PREVENTING NUCLEAR TERRORISM: HARD LESSONS LEARNED FROM TROUBLED INVESTMENTS

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THE DEFENSE DEPARTMENT'S HOMELAND SECURITY ROLE: HOW THE MILITARY CAN AND SHOULD CONTRIBUTE

WEDNESDAY, FEBRUARY 13, 2008

U.S. SENATE,
COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 10:03 a.m., in Room SD–342, Dirksen Senate Office Building, Hon. Joseph I. Lieberman, Chairman of the Committee, presiding.

Present: Senators Lieberman, Pryor, and Collins.

OPENING STATEMENT OF CHAIRMAN LIEBERMAN

Chairman LIEBERMAN. Good morning and thank you for being here.

It struck me, Senator Collins, that I do not know whether this is a statement or not, but our sister committee on the House side this morning is hearing testimony from Roger Clemens on another question with probably a lot more media attention. I would like to say, not to diminish my concern about the use of steroids in baseball, but I do think focusing on our National Guard and Reserves, particularly on our homeland security, may be considerably more important in the long run.

Senator COLLINS. I would agree with the Chairman's assessment.

Chairman LIEBERMAN. Thank you. This hearing is actually the first in a series our Committee will hold on the grave and genuine threat that terrorists will get their hands on weapons of mass destruction (WMD), particularly nuclear weapons, and attack our homeland with them. The best response to this threat is, of course, to stop the terrorists from getting and using those weapons of mass destruction, and that is what so much of our intelligence and military forces are focused on. But, unfortunately, we cannot guarantee that our efforts to prevent terrorists from acquiring and using nuclear weapons in America will always succeed.

Consider the following. The National Intelligence Estimate of July 2007 warned that "al-Qaeda will continue to try to acquire and employ chemical, biological, radiological, or nuclear material in attacks and would not hesitate to use them if it develops what it deems is sufficient capability."

Just last weekend, Mohamed El Baradei, the Chief Officer of the International Atomic Energy Agency (IAEA), reinforced that specific threat when he said, "This, to me, is the most danger we are

facing today. Because any country, even if they have nuclear weapons, would continue to have a rational approach." Parenthetically, I am not so sure about that in all countries, but going on with the quote, "They know if they use a nuclear weapon, that as a nation, they will be pulverized. For an extremist group, there is no concept of deterrence. If they have it, they will use it."

El Baradei went on to say that the IAEA handles about 150 cases a year involving trafficking of nuclear material and that some material reported stolen is never recovered. He added, "A lot of the material recovered has never been reported stolen."

It is in that context that we convene today. Today, we are going to hear testimony about the recent report from the Commission on the National Guard and Reserves, which concludes that our government is not adequately prepared to respond to a WMD attack on our homeland.

In its final report released on January 31, 2008, the Commission said: "Because the nation has not adequately resourced its forces designated for response to weapons of mass destruction, it does not have sufficient trained, ready forces available. This is an appalling gap that places the nation and its citizens at greater risk."

I would add that the gap is not only appalling, it is unacceptable.

Today, we are going to hear from the Commission Chairman, our friend and colleague, retired Marine Major General Arnold L. Punaro and two of his fellow commissioners, Retired Air Force Lieutenant General James E. Sherrard III and Retired Army National Guard Major General E. Gordon Stump.

We thank you for coming and we thank you for your service to our country, and especially for your hard work over the last 2 years on the enormous task that you took on.

Your sweeping report, which is the first congressionally mandated reevaluation of the Guard and Reserves since the Korean War, makes 95 recommendations on reforms needed to help the National Guard and Reserves effectively perform their missions both in defense of the homeland and on battlefields overseas.

We, in Congress, obviously still need to carefully assess your 95 recommendations, but I want you to know this morning that I certainly agree with the Commission's overall vision.

As Chairman of this Committee, and as a member of the Senate Armed Services Committee, along with Senator Collins on both, I will work to ensure that our Guard and Reserve members and their families are treated with the respect and gratitude they deserve for their patriotic service, that we ease the burdens of their service as much as possible, and that all the members of the Guard and Reserves and their families get each and every consideration and benefit they have been promised as members of what I would call our modern-day Minutemen, who are ready to serve, ready to leave their homes and families on short notice to defend this Nation.

Today, the Committee will focus on the seven very important, specific, and in some cases somewhat controversial recommendations the Commission made regarding homeland security and the role of the Guard and Reserves, including your recommendation that the Department of Defense (DOD) make its civil support a mission equal in priority to its war-fighting missions, and that gov-

ernors be allowed to command Federal military efforts in their States.

The Commission has recognized that the Guard and Reserves, forward deployed in communities across the Nation, are uniquely suited to homeland missions, and has called for them to play a priority role in disaster response.

That recommendation raises the larger important question about how to rebalance the Guard's capability so that it can be prepared for its domestic response, but maintain its necessary critical role overseas.

Many of the Commission's recommendations are just common sense, like recommendation six: "The Secretary of Defense should ensure that forces identified as rapid responders to domestic catastrophes are manned, trained and equipped to the highest levels of readiness."

Hurricane Katrina showed how important a coordinated military response is to a disaster.

The Department of Defense's commitment of personnel and resources to Hurricane Katrina was large: More than 20 naval vessels, almost 300 helicopters, and 70,000 troops, including 50,000 National Guard troops, deployed to the Gulf Coast in the 10 days following the storm.

But to those stranded on their rooftops, or in the Superdome and Convention Center without adequate supplies or sanitation for days, those resources came too slowly.

The challenges of response to a nuclear, biological, or chemical attack where only the Department of Defense has the medical assets, logistical capability, and sheer manpower needed to respond would, of course, be immense and urgent. The key players—the National Guard Bureau, U.S. Northern Command (USNORTHCOM), the Department of Homeland Security (DHS), other Federal agencies, and States and localities—must be integrated seamlessly in order to be ready to respond effectively.

Are we as ready as we should be? The Commission says no, and I find its answer to be convincing. Of course, together, that gives us a responsibility to fix that.

I look forward to your testimony and I am happy now to call on Senator Collins.

OPENING STATEMENT OF SENATOR COLLINS

Senator COLLINS. Thank you, Mr. Chairman.

The conclusion of the Commission on National Guard and Reserves that there is "an appalling gap" in our Nation's preparedness for chemical, biological, or nuclear terrorism, underscores this Committee's longstanding concern and is a call to action.

According to the Commission, America also remains far from having a practical and effective system for integrating military forces into our all-hazards homeland security plans. Commission members told the Armed Services Committee last week that we have not achieved the level of planning and coordination that we need to deal with such a catastrophe. This lack of preparedness, the Commission stated, "puts the Nation and its citizens at greater risk."

Whether a catastrophe is caused by the indifferent forces of nature or by the calculated malevolence of humans, we must have workable, coordinated, tested plans that integrate capabilities not only across the Federal Government, but also with States and localities to ensure an effective response.

As we saw during our investigation of the response to Hurricane Katrina, a catastrophe can overwhelm response capabilities in a devastated region. Given the numbers, locations, and capabilities of the National Guard and Reserve units throughout the country, they are an obvious and essential part of any large-scale coordinated response.

Our exhaustive investigation into the Hurricane Katrina disaster confirmed the enormous contributions made by Guard, Reserve, and active-duty troops in the wake of that hurricane. But our investigation also revealed serious shortcomings in the systems for controlling and coordinating the work of these troops.

For example, then-head of Northern Command Admiral Timothy Keating testified before us that he had limited situational awareness of Guard units even as he was deploying active-duty units to the Gulf region. Our Hurricane Katrina investigation also found poor coordination between the Department of Defense and the Department of Homeland Security.

Chairman LIEBERMAN. Would you like to take a minute?

Senator COLLINS. Mr. Chairman, since I am losing my voice, I am going to put the rest of my statement in the record, which is probably a relief to you, as well—— [Laughter.]

Since we have a 10:30 a.m. vote.

Chairman LIEBERMAN. Well, that is not substantively a relief to me because I always benefit from your statement, Senator Collins, but I know there is a lot of that going around.

Senator COLLINS. Exactly.

[The remainder of the prepared statement of Senator Collins follows:]

PREPARED STATEMENT OF SENATOR COLLINS (CONTINUED)

It found limited awareness at DHS of the military's capabilities in an emergency. It found a cumbersome process for making mission assignments. It found inadequate military training in the National Response Plan and in the National Incident Management System. I could expand the list, but the point is simply this: The lack of planning between DOD and DHS seriously hindered and delayed the response.

As the Commission's final report to Congress correctly notes, defining the National Guard's role in civil support raises "extremely complex" issues. That is why, in crafting the Post-Katrina Emergency Management Reform Act, this Committee acted to address many coordination concerns. A key reform was assigning a military liaison to every Federal Emergency Management Agency (FEMA) regional office.

This reform has already paid dividends. I saw this first-hand at a FEMA (Region I) exercise last year. Another provision of our reform act helps responses move more quickly, thanks to the use of more than 20 pre-scripted mission assignments that FEMA can issue to the military and other responders. These are great steps forward.

Even if Congress provided by statute that civil support during homeland disasters is a core competency and a primary responsibility of the Department of Defense, however, thorny questions would remain. Defining the appropriate roles and authorities of State governors, especially in multi-State catastrophes, and making the Guard and Reserve a stronger presence in homeland-defense planning at a time when so many units are deployed overseas are among the difficult challenges.

And even when these difficult questions are answered, we face a practical challenge: Our National Guard forces are stretched too thin. General Punaro has said

that last year's 88-percent-unready rating for Guard units has probably worsened because of the "treadmill" of extended and repeated overseas deployments.

Congress needs to do more to promote Guard recruitment, retention, training, equipping, and compensation. We call upon the brave men and women of the National Guard to augment the active-duty forces, as members of a Maine National Guard training team are now doing in Afghanistan. We ask them to support disaster recovery, as Maine Army and Air Guard personnel did after Hurricane Katrina. Congress must ensure that the Guard can perform both missions effectively.

The Department of Defense has expressed concerns that civil support responsibilities could undermine the Guard's combat capability. Yet the engineering, communications, medical, logistical, policing, and other civil-support tasks required after a catastrophic earthquake, fire, or flood involve many of the same skills needed to perform those functions in a war zone. Temporary assignments in civil-support roles could actually enhance a unit's proficiency for supporting combat operations.

Congress must do nothing, however, to undercut the military's capability to deter foreign aggression and to fight if deterrence fails. Defeating armed threats to the Nation will always be the military's first mission. But the breadth of our military's skills and its deployment across the Nation require that America's military is prepared to effectively augment civilian responses when catastrophe strikes in the homeland.

Finally, I would suggest to my colleagues that the "appalling gap" identified by the Commission should be a clarion call for us. Whatever view we take of the specific recommendations of the Commission, we can agree with the point General Punaro made at the Armed Services Committee hearing—we must have *some* plan. This Committee has already taken legislative action to avert a repetition of the days following Hurricane Katrina's landfall, when civilian officials were improvising command and logistics arrangements with the military in the midst of chaos.

I am pleased that FEMA now has military liaisons to help from the outset with the critical tasks of coordination. We must build on this progress by ensuring that the Guard and Reserves are ready to assist civil authorities under clear and workable plans.

I look forward to hearing more of our witnesses' thoughts on these matters.

Chairman LIEBERMAN. We do have a vote at 10:30 this morning, so my hope is that we can at least get through the opening statements before we have to vote and then, of course, we will come back for the questions.

General Punaro, it is great to see you, a long-time friend and public servant, Chief of Staff—is that the actual title you had? I always thought of you as the Chief of Staff of the Senate Armed Services Committee——

General PUNARO. Chief cook and bottle washer.

Chairman LIEBERMAN. Yes. Well, you did some good cooking and bottle washing during the time that Sam Nunn was our Chairman, which was a great time. Anyway, thanks for your service here and we welcome your testimony.

TESTIMONY OF MAJOR GENERAL ARNOLD L. PUNARO, USMCR (RET.),[1] CHAIRMAN, COMMISSION ON THE NATIONAL GUARD AND RESERVES

General PUNARO. Thank you, Mr. Chairman and Senator Collins. Of course, we are privileged to be here this morning to present our final report and I would ask consent that our full statements, as well as an executive summary of our report,[2] be entered into the record and we will just give very short verbal summaries.

Chairman LIEBERMAN. Without objection, so ordered. Thank you.

[1] The joint prepared statement of General Punaro, General Sherrard, and General Stump, with attachments, appears in the Appendix on page 225.

[2] The Executive Summary from the Final Report of the Commission on the National Guard and Reserves appears in the Appendix on page 257.

General PUNARO. I am accompanied this morning by two fellow Commissioners, Lieutenant General Jimmy Sherrard and Major General Gordon Stump. We also have in the audience two of our fellow commissioners, Commissioner Will Ball, our former Secretary of the Navy and a distinguished Senate staffer, and also Don Stockton, a Missouri businessman and a longstanding member of the Air Reserve, giving us moral support and watching our backs.

Our witnesses today, General Sherrard and General Stump, have distinguished careers and unique expertise in the subject matter, and we want to thank you, Mr. Chairman, and thank Senator Collins for the support you gave our Commission in doing the work, but in particular for the strong bipartisan leadership this Committee has shown over the years in improving the Nation's capabilities to protect and defend the Nation, as you indicated, but then as important, to manage and recover in crisis situations.

This Committee and the Senate Armed Services Committee—and there is a Defense Appropriations Subcommittee—have always enjoyed a strong cross-over membership, a feature that in my judgment has resulted in significant enhancements to our overall national security.

As you mentioned, I spent many days as a young staffer sitting back up there as a Governmental Affairs Committee staffer. That was my first assignment for Senator Nunn. Obviously, I did not measure up to the high standards required of a Governmental Affairs Committee staffer, and I was demoted over to the Senate Armed Services Committee.

Chairman LIEBERMAN. That is exactly the way we see it here. [Laughter.]

General PUNARO. Yes. I thought that might be the case, Mr. Chairman.

I also want to mention congratulations on receiving the Minuteman Award tonight from one of our military's most distinguished associations. It is very apropos that the word "Minuteman" is very important, and hearing your opening statement, the Minuteman concept means that our forces here in the United States, particularly our National Guard, have to be at the ready at all times. The award is not called the "We Are Working On It" Award. It is not called, "It Will Take a Year," or "It Will Take a Month," or "It Will Take a Week" Award, it is called the Minuteman Award, and one of the things that we will talk to you about this morning is we need our Guard and Reserve forces here in the homeland to be at the most ready when the Nation is least ready, and so it is a concept we want to spend some time talking about this morning.

I also want to take a few moments to say a few words about the Government Accountability Office (GAO), since you are the Committee of jurisdiction to oversee them. That agency has been a terrific help to our Commission. Its work has been thorough, objective, and professional, and I know all 12 Commissioners thank the GAO and its fine leader, Comptroller General David Walker, for the tremendous job they have done in helping us fulfill our responsibilities. They did a landmark piece of analysis looking at the cost of the Guard and Reserves as compared to the cost of the active forces as well as some analysis for us on equipment and readiness, and

in fact, the GAO has written dozens and dozens of reports in this homeland area in addition to the work they have done for us.

So the 95 recommendations in our final report, they address our initial charter and also engage more deeply with issues we addressed in our March 1 interim report, specifically our concerns with respect to the sustainability of an Operational Reserve, our recommendations to codify and put in statute the Department of Defense's role in the homeland, and then our focus on the inadequacy of the planning and resourcing processes to address threats in the homeland.

The statute directed us that we examine how best the Guard and Reserves could be used for the homeland missions, so that was an actual charter that we had, not one that we took on. I am sure we would have, but it was Congress who asked us to specifically look at that.

We tried to look at the problems that needed to be fixed and put suggested solutions out there. As you have indicated, many of these problems are extremely complex. Some of them have been around since the beginning of the republic. The issue of who is in charge, the Federal Government or the State governors, that question has been around for a long time and people of good character and conscience will disagree with some of the solutions we proposed.

We believe our mandate from Congress was to report what we found and we did that. We understand that additional analysis by DOD, DHS, Congress, and this Committee could lead to alternative remedies. We welcome that. We know our recommendations can be improved on. We are not hung up on our recommendations. We are hung up on fixing the problems.

Fewer than half of our 95 recommendations require legislation. There are a lot of areas in which DOD could make changes right away, and Congress could enact some immediate statutory changes, as well, particularly in this area of homeland defense. I believe the timing and the substance is right for those areas.

I want to emphasize that our recommendations are in no way a critique of officials currently serving in Congress or the Pentagon or their predecessors in previous Administrations. Most of these problems have developed over decades and decades, or, as you pointed out, are a result of these new emerging threats that have just come upon us and we need to respond to.

It is not a report card and the Commission's mandate didn't ask us to catalog how far we have come, and we have come a long way since September 11, 2001, thanks to the work of the Pentagon, this Committee, and others in Congress, but we were asked to take a snapshot of where we are, make a recommendation on where we need to go, and so it will be up to the Congress, DHS, and DOD to make the ultimate determination about that end state and how much of the gap between where we are and where we think we ought to be that you are committed to addressing.

We were thorough and all encompassing in our approach. We had 17 days of public hearings, 115 witnesses, 42 Commission meetings, 850 interviews with public officials and other subject matter experts. We knew that all official wisdom in Washington wasn't the only thing, so we got out of the Beltway. We had site visits, field visits. We met with employers, families, and individual

Guard members. We heard from battalion commanders, company commanders, sergeants, and everybody that could bring wisdom.

And I want to add, Mr. Chairman and Senator Collins, that the 12 members of the Commission brought 288 years of total service in the uniform of our military and an additional 186 years of non-military government service, individuals like our Secretary of the Navy and the White House, and we have many years of private sector experience, as well. So we felt like we had a lot of expertise to bring to bear on the problem. We weren't newcomers in this area. We had a lot of firsthand experience on our Commission in emergency management as well as commanding the military. The three of us have commanded military organizations that have responded to homeland scenarios as well as overseas scenarios.

So I am going to focus very quickly on our conclusion—No. 1 is that we believe there is a compelling case to create what is called an Operational Guard and Reserve. This is profoundly different than the Strategic Reserve of the peak of the Cold War and it is important for people to understand how profound the change that is required.

We all served in the Guard and Reserves when they were strategic. We have served in the Guard and Reserves in an operational capacity. Just because a unit gets called up and deploys in an operation and is engaged operationally overseas doesn't mean that our Guard and Reserves are operational. By operational, we mean that we have to have a change in all the laws, rules, regulations, funding mechanisms, training, recruiting, retention, promotion, to basically ensure that we change the construct for how that Guard and Reserves are viewed on a day-to-day basis, how it is supported, how it is funded, particularly in these areas in the homeland so it can be operational when it is required and so it can be sustainable. It is currently not sustainable in the way we are approaching it right now.

And I do not believe that this is that controversial. The Special Assistant to the Chairman of the Joint Chiefs of Staff, Major General Tommy Dyches, made just such a statement when we started our Commission 2 years ago. We were huge skeptics, the 12 Commissioners, because we knew how profound a change you would have to have to have a true Operational Guard and Reserve. Over the course of the 2 years, we came around to making that our conclusion; we have kind of backed into this. We kind of back-door evolved into it. There has been no public debate. Congress hasn't required it by statute. And so we believe that is a requirement, that Congress, who has the responsibility under the Constitution to give prioritization and direction to the Department of Defense—and this is where the Department says they are, so this shouldn't be something that the Department would push back on.

There are three compelling reasons why we need an Operational Guard and Reserve. First, it is the only fire break we have right now to having to go back to the draft. If it had not been for the 600,000 Guard and Reserve personnel that were mobilized, and most of them sent overseas for Iraq and Afghanistan and other activities, or the 61 million man days they provided in 2006, which is the equivalent of another 168,000 people on full-time active duty—and by the way, that 600,000 doesn't include the 55,000

members of the National Guard that the Guard Bureau self-deployed to Hurricane Katrina—you would have had to go back to the draft if you wanted to maintain the force levels that our combatant commanders required overseas.

That shouldn't surprise anybody because the Gates Commission that recommended going away from the draft in 1970 made that comment. The all-volunteer force was not designed for sustained combat. So that is reason No. 1, to have an Operational Guard and Reserve, so we can maintain that fire break.

Second, is the threats in the homeland. You have pointed them out in your opening statements. Admiral McConnell testified last week. Secretary Chertoff gave a press conference the other day. I mean, the threat is real, it is compelling, and it is not going to go away. Regrettably, and there is a lot being done to preempt and protect, but as the Chairman pointed out, we have to be ready when the balloon goes up. We cannot take a year. We cannot take a month. We cannot take a week.

So the Guard and Reserves have a tremendous operational advantage, economic advantage, and military skills advantage over the active component in doing this mission. They are in the communities. They are hazardous material coordinators. They are experts in these areas. They know the geography. They are close by.

And the third compelling reason is they are much more economical. You can put in the Guard and Reserves the same capability you can put in the active components for 70 percent less than it costs to have it on active duty. If you had to put 600,000 more people on our active duty military, it is a trillion dollars.

So those are the three compelling reasons to have an Operational Reserve, and we are going to shift now and General Stump is going to pick up on our conclusion No. 2, I think it is important. I would like to read the conclusion because we do not believe it is controversial. We believe it is right where we need to be.

The Department of Defense must be fully prepared to protect American lives and property in the homeland. DOD must improve its capabilities and readiness to play a primary role in the response to major catastrophes that incapacitate civilian government over a wide geographic area. This is a responsibility that is equal in priority to its combat responsibilities. As part of DOD, the National Guard and Reserves should play the lead role in supporting the Department of Homeland Security, other Federal agencies, and States in addressing these threats of equal or higher priority. That is our conclusion, followed by a series of recommendations of how to go about that.

We believe that this should be codified in law, the Department of Defense's responsibility to provide support for civil authorities. This is a role that the Department, up until now, historically, has pushed back on and could push back on the future. The fact that we have the most proactive Secretary of Defense that I can recall in my lifetime in Secretary Robert Gates and a very dynamic leader in the Homeland Security Assistant Secretary Paul McHale, they are cracking skulls and pushing the bureaucracy every day. We know this is important.

We know Congress sets the priorities. The Department of Defense doesn't self-set their own strategy and priority. They get it

from the American people through the Congress. We believe this needs to be codified to ensure that we keep moving forward as we build on the progress that has already been made and we close that gap in terms of where we need to go.

So, Mr. Chairman, I appreciate being given the opportunity and General Stump will follow up and talk about the homeland.

Chairman LIEBERMAN. Thanks, General Punaro. A good beginning.

General Stump, do you want to go next?

TESTIMONY OF MAJOR GENERAL E. GORDON STUMP, ANG (RET.),[1] COMMISSIONER, COMMISSION ON THE NATIONAL GUARD AND RESERVES

General STUMP. Yes, sir. I will get right to some of the recommendations and quickly go through those. I know you have got the vote coming up.

We think that the DHS should generate civil support requirements for DOD which should validate them as appropriate. The Commission believes that the Department of Homeland Security is the agency responsible for coordinating preparedness initially to generate requirements for DOD, and DOD will then validate for DHS those requirements it agrees it should take on. This should be a collaborative inter-agency process. If you do not have a requirement, then you as Congress do not know what to fund, and this is an important requirement and this is something that hasn't been done. So we put that in the report and we think that is extremely important.

We talked about the Department of Defense should have codified responsibilities for taking on the civil support authority.

Consistent with their warfighting task, the National Guard and the Reserves should be the lead agency for the homeland security. When something happens, it doesn't matter what we do or anybody does. The first soldier on the ground in any catastrophe is going to be the National Guard. That is just the way it is. The governors have their local people who are responsible. When they run out of those resources, they go to the National Guard, then they go to their State compacts, and from there they go to the Federal Government. So that, we believe, should be codified.

We also believe that the National Guard must continue to have a warfighting mission as well as the Reserves. Without it, as we indicated before, you would have to go back to the draft. So we are not saying that it just should be a homeland defense force. They must also be available for the wartime mission.

The Secretary of Defense should ensure that forces identified as rapid responders to domestic catastrophes are manned, trained, and equipped to the highest levels of readiness, and if I can indulge you for just a second, I will go through a brief description. USNORTHCOM has a Joint Task Force Civil Support (JTF–CS). It is a standing joint task force staffed by 160 persons and commanded by a two-star Army National Guard general in Title 10 status. They plan and integrate DOD support for domestic, chem-

[1] The joint prepared statement of General Punaro, General Sherrard, and General Stump, with attachments, appears in the Appendix on page 225.

ical, biological, radiological, nuclear, and explosive device consequence management. In the event of a domestic attack, the JTF–CS would deploy to the incident site to exercise command and control over the Federal military sources. This particular task force is in being and fully resourced.

The National Guard Weapons of Mass Destruction Civil Support Teams (WMD–CSTs), which you, Congress, have authorized, are 22-member National Guard units operation in Title 32 status. The WMD–CSTs are tasked with identifying agents or substances, assessing the consequence of the event, advising on response measures, and assisting with requests from the State and the Federal Government. Congress has authorized 55 of those and they are up and running, operational, and fully funded, but they are only 22 men and all they do is identify the source.

The Marine Corps has a Chemical-Biological Incident Response Force, a Title 10 unit consisting of several hundred personnel capable of providing capabilities for agent detection and identification, casualty research, search and rescue, personal documentation, emergency medical care, and stabilization of contaminated personnel. Again, just one unit, about 400 people.

The National Guard has stood up what we call the CBRNE Enhanced Response Force Packages (CERFPs), National Guard Force Packages created to assist local, State, and Federal authorities in consequence management and fill the anticipated gap from the 6 to 72 hours from the first response to Federal response to a catastrophic event. The Guard knows that the governor is going to call them and they are going to have to be there. They combine four elements from the National Guard. They have search and extraction, decontamination, medical, and command and control. Seventeen of these units are in existence. They come from existing National Guard force structure. Twelve of these are in assigned FEMA regions. Again, small forces for the 6 to 72-hour time frame when a weapons of mass destruction happens.

Now, the last one identified by USNORTHCOM is the Chemical, Biological, Radiological, Nuclear and High-Yield Explosive (CBRNE) Consequence Management Response Forces (CCMRFs), three Title 10 force packages consisting of several thousand joint personnel from separate units identified and organized to perform the consequence management missions with capabilities including medical, decontamination, communications, logistics, transportation, and public affairs. The National Guard will probably make up most of these operating in Title 10 forces. Two are notional. One has been put on the ground. But these are not funded and trained, and we need to fund and train these to go for the weapons of mass destruction.

And then, of course, the last recommendation, which is probably one of the most controversial and was one that we felt should be put into policy or statute, is allowing the governors under certain circumstances to direct the efforts of Federal military forces within their State responding to an emergency. As Senator Collins indicated, we had an operational control situation with Hurricane Katrina. USNORTHCOM sent forces in when the 50,000 National Guard people were not enough to respond to the incident. Title 10 forces came in and it was good. We had a ship offshore that was

doing the medical end of it. But we also had forces within Louisiana and within Mississippi that were responding and they weren't under the same command and control.

But we believe that the States should work out agreements in advance as part of their planning processes specifying circumstances under which Title 10 forces could be temporarily placed under the direction of the Adjutant General in order to prevent the potential confusion of having two chains of command. It could be done through certified dual-hatted National Guard General Officers. There is a program out there where the Army says, we will dual-hat you. We will send you through a training program so that you can command and control both Title 10 and Title 32 forces. Every State has a General Officer that has done this. During the G–8 Conference in Georgia, it worked out perfectly well. But we have received a lot of push-back, as you can imagine, from USNORTHCOM and from the active Army.

In addition, American forces are placed under the operational control of foreign commanders, and there is a lot that has been studied on this and that was perfectly acceptable. So we, as a Commission, believe that—now, this doesn't mean that the governor is going to oversee the 82nd Airborne during their training before they go deploy. All we are saying is that we need to cut these forces to the commanders for unity of command.

So those are briefly some of our recommendations,.

Chairman LIEBERMAN. Excellent. That is really thought provoking and I appreciate the common-sense way in which you put it forward based on your experience.

Chairman LIEBERMAN. General Sherrard, thanks for being here. We welcome you.

TESTIMONY OF LIEUTENANT GENERAL JAMES E. SHERRARD III, AFR (RET.),[1] COMMISSIONER, COMMISSION ON THE NATIONAL GUARD AND RESERVES

General SHERRARD. Thank you, sir. Thank you very much for the opportunity to address the Committee.

Sir, I would like to, again, trying to be very short and concise for you, to hit some key points as you have looked and heard from our Chairman's discussion. Our Commission had a very broad experience base, I myself having spent many years in the Air Force Reserve, having come to the Reserves from active duty. I have had the chance to operate from the Federal side, the Title 10 side of the Reserve component, of the Reserve forces.

In our deliberations as a Commission, we thought there were some very unique capabilities and opportunities to utilize these forces but found that there are certain constraints that we believe can be rectified to allow those forces to assist the National Guard in the very efforts that Commissioner Stump has already addressed. They will be the first. But we do believe that, as he said, the National Guard and the Reserve forces should be the backbone of that initial response because they live there.

[1] The joint prepared statement of General Punaro, General Sherrard, and General Stump, with attachments, appears in the Appendix on page 225.

And from having commanded two Air Reserve installations, I can tell you firsthand my fire departments had mutual aid agreements and they could respond to support various other fire departments, but I didn't have the authority to just send my people downtown. I won't tell you they didn't go downtown and help. I would never say that because we are going to respond to the needs of the community as best we can, particularly if life is in danger. But we need to have a mechanism where this other group, the Air Force Reserve, the Navy Reserve, Marine Corps, and Army Reserve, who have great capabilities that can be offered to whatever natural or manmade disaster we may be addressing.

We have proposed in one of our recommendations a mobilization authority similar to that that the Coast Guard has under DHS where you will be able to utilize the people for a maximum of 60 days in a 4-month period, or 120 days in a 2-year period, and let them be there with that capability that they possess.

We also talked in our March 1 report as well as in our final report about the structure of USNORTHCOM in terms of more National Guard and Reserve staff and capabilities, people with credentials that can come in there and do that. We also recommended that the commander and/or deputy commander be a National Guard or Reserve officer. Congress has taken some action where it says it should be a National Guardsman. We, as a Commission, believe it still should be considered as both because there are certainly people inside the Reserve forces who may have every credential that you want to either be that commander and/or deputy commander.

Commissioner Stump talked about readiness. Readiness is certainly something key for all of us, and the key part of that that we have recommended in our report is manning the organizations from a full-time support perspective where you can allow them to be fully combat-capable. You cannot man a force at C–3 and then expect them to be C–1, or fund them at a C–3 level and expect them to be fully combat-ready. And that ties in with equipment and training.

And the very last issue that we have in there that we would love to have the chance to address later with you is the issue of as we continue our models in the future for the Army Force Generation (ARFORGEN) of the way the Army is going to do their force generation to continue to do operations worldwide, and the Marine Corps has theirs, we do not believe that going to the old standard mobilization process is the right way to do business. If you have to, absolutely. But we do think there are some new, innovative ideas, a contractual obligation with members of the Reserve forces, the Reserve components, that could, in fact, help fill that bill, and we know that the most important thing of all is to be there and be prepared to do what the American public needs at any given moment of a natural disaster or a manmade disaster, and we do believe incorporating these forces together is the right thing for us to do for the American people, too.

So I look forward to your comments, sir.

Chairman LIEBERMAN. Thanks again very much for very helpful testimony. Thanks for your service.

The vote hasn't gone off at 10:30 as scheduled. This will shock you, General Punaro, I know—— [Laughter.]

Based on your many years here in the Senate, you would be amazed how often something does not happen at the time it is supposed to.

Would you like to proceed with your questioning first, Senator Collins?

Senator COLLINS. Go right ahead, Mr. Chairman.

Chairman LIEBERMAN. OK. We will do 6 minutes and then we will go as far as we can go before the vote goes off.

General Punaro, I wanted to ask you first to answer a few definitional questions. We live with them, but I want everybody to understand what we mean. Talk just a bit about what is the difference between Strategic Guard and Reserve and Operational.

General PUNARO. I will just talk in not Pentagon "bureaucratese" but just from a commander's perspective.

Chairman LIEBERMAN. Right.

General PUNARO. Strategic Guard and Reserve meant that you would go once in a lifetime, once in a generation. If the Soviet Warsaw Pact attacked NATO, we had a commitment to have 10 divisions of active duty forces, on the ground in 10 days, and then over the next 6 to 8 months, the Guard and Reserve would be mobilized, then trained, then equipped, then brought up to full speed and sent forward. So they were kept at a very low state of readiness with few exceptions.

There were some units, obviously, but the bulk of the Guard and Reserves in a strategic posture was kept at—as General Sherrard said, your highest state of readiness is called C–1. C–2 is right below that. You want your units to be at least C–2, hopefully C–1. At C–3 and C–4, you need a lot of additional equipment, training, people, and time to get that unit to actually go into combat, just like the 6 months we take right now to train up active duty units and Guard and Reserve units before they go to Afghanistan and Iraq. They do not just pick up one day and are gone.

So strategic meant that you resourced them at a low level, recognizing that the scenario was such that they would have plenty of time to prepare, train, etc., and go into the fight.

Chairman LIEBERMAN. OK.

General PUNARO. Now, in your promotion systems, your recruiting systems, your equipment readiness posture, everything was maintained at a lower state of readiness. So now you switch and say, we are going to have this Operational Guard and Reserve, meaning much more of the organizations have to be maintained at that highest level of readiness. There are four key measures that tell you if a military unit is ready.

One is personnel. It is the number of people that you have in the unit, that is required because a unit basically takes its standards from its mission. So you tell a unit, a Marine infantry battalion, here are the things you are going to have to do. So that unit is designed and trained to those mission-essential tasks list. So then you rate that unit against that. Personnel is, at least 90 percent. Not only do you have to have the right number, you have to have them trained in the right skills. If you have the people and they are not trained, they are not combat-ready.

Chairman LIEBERMAN. I think I have got it, and that is very helpful. In other words, for a long time in the Cold War we were dealing in a strategic environment where you would have to be ready to go into Europe in the case of a Warsaw Pact invasion, but that was a relatively small percentage of the forces at that highest level. Today, what we are really talking about is the demand for readiness is high. As you all testified to, and I do not know that the American people appreciate this enough, without the Guard and Reserves, we would have to have a draft to meet the security challenges that we are facing today. So the Guard and Reserves make an enormous difference.

Let me ask you one other definitional question, because I want to ask a specific question about it. What does civil support mean?

General PUNARO. I am going to let General Stump take that one because it basically—go ahead, General Stump.

Chairman LIEBERMAN. Go ahead, General. That is good.

General STUMP. Basically, civil support, when you have an incident, probably 60 or 70 percent of the incidents that happen are handled by the mayor, the fire department, and the police department and so forth.

Chairman LIEBERMAN. Right.

General STUMP. But when those resources are expended and there is no other place to go, then we have what we call support to civil authorities.

Chairman LIEBERMAN. Right.

General STUMP. So this is what the National Guard, the governor—as the Adjutant General, I knew if something happened, my phone was going to ring and I was going to have to send the National Guard out there, and that is where we have support to the civil authorities. So basically, it is responding to an incident and helping the civil authorities reconcile that incident——

Chairman LIEBERMAN. Here at home.

General STUMP. Here at home, yes, sir.

Chairman LIEBERMAN. Under the current doctrine for civil support, the Department of Defense relies on capabilities that are programmed for warfighting missions to perform these domestic missions of civil support where necessary. From one perspective, there is a lot of logic to that. Helicopter pilots train for combat and they also perform search and rescue and logistical support missions and so on.

At a hearing last July, Acting Assistant Secretary of Defense Peter Verga told this Committee that it would be a false choice to have parallel sets of capabilities for domestic support and overseas warfighting and that instead we should use the existing capabilities to enable the civilian agencies to respond more effectively. Because I know the Commission came down differently, why does the Commission believe that is the wrong model and why do you recommend that the Department of Defense, as you do quite strongly, develop unique capabilities for this civil support mission at home?

General PUNARO. Mr. Chairman, we went into this in considerable detail, took a lot of testimony on it, and we believe that in our record is compelling evidence that the old adage of if we are ready for the big one, we are ready for the little one—if we are ready for the away game, we are ready for the home game—none of the three

of us and none of our 12 Commissioners buy that. And yes, there are some dual-capable forces, meaning utility helicopters that are good in Afghanistan and Iraq, they are good in Arkansas, Connecticut, and Maine.

Chairman LIEBERMAN. Right.

General PUNARO. And seven-ton trucks. But in the situations we face, what we never had before were the 15 planning scenarios that DHS has articulated of the threats that our Nation needs to meet at home.

DHS has not yet defined the requirements that the various government agencies, including the Department of Defense, need to meet. So I am not sure that we know what all the requirements are. Then DOD would have to take those requirements and validate them.

But here is the bottom line, Mr. Chairman. A member of the 82nd Airborne who has a helmet, a flak jacket, and a bayonet and is the world's finest person at putting a bayonet in the heart of a terrorist, you do not send into a nuclear contaminated environment. That is not the capability you can use. You have to have highly skilled, highly trained forces with all the right equipment.

So the scenarios we face at home now are radically different than the ones we faced 10 years ago when the old adage was if you are ready for the away game, you are ready for the home game. Certainly, you are going to maximize your dual-capable forces. Certainly, a brigade combat team is going to be useful in a homeland scenario at some part in that scenario. They certainly are not very useful in going in immediately into a nuclear, chemical, or biologically-contaminated environment. So I would say that is kind of the bottom line.

General STUMP. I do not think, and what they said was to generate a specific set of parallel forces that are only going to be dedicated to the homeland defense issue. I agree with that, that there can be dual missioning and not all of these forces are going to be deployed at the same time. However, there are some unique requirements and that is what the civil support teams have.

Chairman LIEBERMAN. Right.

General STUMP. Those are not deployable units. There are 55 of those and probably nuclear decontamination and things of this nature should be unique.

Chairman LIEBERMAN. My time is up. Thank you very much. Senator Collins.

Senator COLLINS. Thank you, Mr. Chairman.

General Stump, I want to turn to the recommendation that you have made which is perhaps the most controversial. There are several, actually, that could vie for that top prize, but that is the recommendation that governors be allowed to have operational control of active duty troops temporarily during an emergency.

Now, when we investigated the flawed response to Hurricane Katrina, as I was starting to say in my opening statement, we found enormous problems with lack of coordination, command and control, lack of situational awareness, lack of visibility. We found that DHS had no idea what the military's capabilities were, what was available. We found a very cumbersome process for mission assignments to DOD. We found inadequate military training.

And the legislation that we drafted and which became law addressed many of those coordination problems. For example, we put, in every regional FEMA office, a full-time military liaison and that has made a difference. I saw it in Region 1 during exercises recently, where we had active duty Guard troops, first responders, State emergency managers, and the coordination was far superior to what we have seen.

This raises the question in my mind of whether the answer really needs to be putting the governor in charge, which is extremely controversial and which DOD is adamantly opposed to, or whether a lot of the issues that you have recognized could be solved through better planning and then having exercises together.

I met with Assistant Secretary McHale this week, and he outlined a possible scenario where you would have DOD provide trainers to the States to help come up with coordinated plans because one of the things that we learned is you need coordination across the civil agencies as well as the military.

So how much of this could be solved by simply having better planning, more exercises, as opposed to changing the command structure?

General STUMP. Well, first, I agree 100 percent on better planning and more exercises. We got into the Hurricane Katrina situation because we never had an exercise——

Senator COLLINS. Exactly.

General STUMP [continuing]. That looked at something like that and we had to cobble together something. Now, when you cobble together 50,000 National Guard troops from 50 different States and then bring the active duty in besides all of that, there is going to be some confusion. And so we agree 100 percent that there has to be better coordination and more exercises that involve not only the National Guard, but the Reserves, the State response forces, and USNORTHCOM, and there is some confusion there because when the governor runs out of resources, then they go to USNORTHCOM and in comes the Title 10, and as a military person, generally, you need to have one agency or one person in command or operational control in order to coordinate the activities of all those people who are joining in on that particular exercise.

And it is our opinion that every single incident that happens in the United States is going to start with the governor. That is just plain the way it is. Now, when it gets completely out of control, like a weapon of mass destruction where you would have 100,000 or 200,000 casualties and they would completely be overwhelmed, in the beginning, the governor will be in control. He won't last long, or she, but at that point in time, when they are completely overrun, then obviously the Title 10 forces will come in and they will be in control.

But I still believe for unity of command, there is no reason why you couldn't have these exercises for something minor and incorporate the Reserves and the National Guard under the command and control of that particular State and that particular governor so you have one unity of command.

Now, you can do all the coordinating and so forth, and that is what the active duty comes back and says, we will coordinate what is going on and so forth, but you still have the principle of one per-

son command and control, and I think that we still believe that there is nothing wrong with it, in just these limited circumstances, and especially with the Reserve components, where if we get these other changes made that we will be able to bring the truck unit from the State and the Marines that have high-wheel trucks into these situations under the command and control.

I really do not think it is a huge problem. These dual-hatted people have commanded Title 10 forces in Iraq and Afghanistan. They have been leaders and controlled National Guard troops from other States. For this limited amount of time—and the number of active duty forces in Hurricane Katrina was—the time they were there was really limited and not nearly as long as what the National Guard forces were. So we still think that you need a unity of command.

Senator COLLINS. Thank you.

Chairman LIEBERMAN. Thanks very much, Senator Collins. Senator Pryor, good morning and welcome. Thanks for being here.

OPENING STATEMENT OF SENATOR PRYOR

Senator PRYOR. Good morning and thank you both for doing this. I want to thank the Commission members here for spending your time and efforts and expertise pulling this report together.

Let me start, if I can, with you, General Punaro. A few moments ago, you said that DHS has not defined the requirements that they needed to define for DOD to understand what to do in a time of a domestic emergency. Could you elaborate on that? What kind of requirements are you talking about there?

General PUNARO. Senator, under the legislation that created DHS and under legislation Congress passed last year out of this Committee and the Senate Armed Services Committee, DHS is required to look at these 15 all-hazard scenarios they have for Federal, State, and local response, and let us work on some of the catastrophic scenarios. They need to look and say, OK, our view is—and this would all be done in a cooperative way, working with DOD, working with the Guard, working with USNORTHCOM in developing the requirements—the Centers for Disease Control are going to have this piece. FEMA has this piece. But here is what we think the Department of Defense needs to bring to the Nation's response in this particular scenario and this is what we think the requirements are.

DOD cannot come up with their own requirements. They are not the lead Federal agency, DHS is. Then DOD would take those—they probably would have worked with them in a cooperative way in advance—and they would validate whether or not they agree with them and say, yes, this is a valid requirement for the Department of Defense to do.

In the Department of Defense, as great an outfit as it is, if you do not have a valid requirement, it never gets into the planning, programming, and budgeting system, which is the best in the world. The fiscal year Defense Plan, the Five Year, or the Future Year Defense Plan, you do not get it in there unless Congress adds it if it is not a valid requirement.

Senator PRYOR. Right.

General PUNARO. So if DHS never generates the requirement, then DOD can never validate it. And so I would say to you there are two huge gaps right now. One of them is in the inbox of the Department of Homeland Security and that is generating the requirements. The other one is the contingency planning that Senator Collins alluded to.

All three of us commanded units that were in the war plans or contingency plans to defend the Korean Peninsula—it has got a name. I won't use it here today. It has a number. We all know what it is. You say the number, and bang, you know immediately. The Fourth Marine Division that I commanded, I knew for the defense of the Korean Peninsula every single unit that had to go, what piece of equipment they had to have, when they needed to be at their station of initial assignment, and those things are worked on in exercises year after year after year. And these are contingency plans like this.

They have a command and control annex, Senator Collins, and you work out, OK, the governor is going to be in charge for this part, and then when it gets to this part, the Federal Government takes over. So it has a command and control annex, and we three, as well as other Commissioners, we know contingency plans when we see them and we do not have the kind of contingency plans we need for the catastrophic weapons of mass destruction.

So with DHS and USNORTHCOM, that is where the Bunsen burner needs to be lit in terms of moving this ball.

Senator PRYOR. Let me interrupt right there. Do you know why DHS has not initiated this, why they have not put out the requirements that they are supposed to?

General PUNARO. I think that one would be kind of psychologically evaluating DHS, so probably above our pay grade. I mean, we certainly do not see the sense of urgency that we feel you would have, particularly when you hear what Admiral McConnell and Secretary Chertoff have talked about the real and pressing threat is. General Blum testified before this Committee not 6 months ago in answer to a question from Senator Lieberman about our readiness for a catastrophe. He says, "No, our current situation places the Nation at great risk."

So how do you translate that into a large government organization? How do you get the nuclear reactor to send the message to the propeller to get that thing moving at warp speed? You are the Committee of oversight. You probably have a better ability to do that.

Senator PRYOR. So there is no good reason that you are aware of on why this hasn't been done by DHS. Is there any justification for it not being done that you all are aware of?

General PUNARO. I certainly do not understand. First of all, let me say again in fairness, there has been a lot of progress, not just in DOD, not just in USNORTHCOM, but at DHS. They have the 15 all-hazard planning scenarios. They have a new National Response Plan. They have a lot of other documents. So, I mean, it is not like they haven't been beavering away at this. But the problem is you either have a requirement or you do not and we do not have them. If you do not have a requirement, DOD cannot validate it.

If DOD doesn't validate it, it is not going to get funded. If it doesn't get funded, the Nation is not going to have the capability.

Senator PRYOR. So let me just make sure I understand what you are saying, because I do not want to put words in your mouth. Are you telling the Committee today that if there were a major terrorist attack on U.S. soil today, we would not have clearly-defined roles between DOD and DHS?

General PUNARO. Well, what we said in our report, Senator, was we do not have sufficiently trained and ready personnel to respond in a satisfactory fashion and we found that to be an appalling gap. But in terms of trying to sort out, between DOD and DHS and everybody, we weren't looking at a fault-finding or a finger-pointing situation. We were giving an assessment. And by the way, U.S. Northern Command ran a major exercise last spring called Ardent Sentry which looked at our abilities to respond to a natural disaster and also a nuclear disaster, and the after-action reports, I am sure, would be available to this Committee, and I think those after-action reports would be pretty consistent with what we say in our report.

Senator PRYOR. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thank you very much, Senator Pryor. I guess we have a little more time.

Let me go back to the conversation we had about developing civil support capabilities and I wanted to ask you the other end of it, which is what is your assessment of the effect that your proposed approach would have on the capability for the warfighting forces to perform their missions.

General PUNARO. Mr. Chairman, we do not believe beefing up the capability of the Department of Defense to respond to the civil support missions, particularly if they are given a higher priority—and Secretary Gates has said that they have a higher priority and these civil support things need to be funded—we do not see it as a take-away. We see it as an addition.

For example, the capabilities that we need in the National Guard for the high-end catastrophic response, particularly on WMD, these need to be funded and these need to be put in the budget. They would be highly-specialized forces. They would be targeted at this mission. It wouldn't be a take-away from the overseas combatant mission. So a lot of it is dual-capable. A lot of it is if you get the Guard unit up to its higher state of equipping and manning, that unit is not only more capable for here at home, but it is also more capable for its overseas mission.

Chairman LIEBERMAN. So you would say that it would actually improve the warfighting capability of our forces?

General PUNARO. Absolutely, Mr. Chairman, because if you make the Guard and Reserves—we said we need to move away from the old categories of the way we look at the Reserves—the Ready Reserve, Selective Reserve, and Stand-By Reserve—and create two new categories, an Operational Reserve and a Strategic Reserve. Those units then that DOD put in the Operational Reserve, based on their mission and their requirements, would be funded at these higher levels of readiness. They would be more ready for the overseas missions. They would be just as ready for the homeland duties.

The key change is, and one this Committee has pointed out, the home mission requires every bit as high a state of readiness of our forces as we have in the Ready Battalion of the 82nd Airborne that is on that strip down at Fort Bragg ready to go anywhere in the world on a 24/7 notice. You need that capability in our Guard and Reserve to respond to these compelling threats that we now face at home. It is not a take-away, it is an addition.

General STUMP. And sir, the Senate allocated $1.2 billion, I believe, in 2005 for dual-use equipment——

Chairman LIEBERMAN. That is right.

General STUMP [continuing]. In the National Guard that was very beneficial to not only the home mission, but the overseas mission. In many instances, the National Guard only sees the equipment when they hit the ground in Iraq and this is not a good situation. It is much harder to do post-mobilization training if you do not have the equipment to train on before you go over there. But because of the equipment shortages we have, many times, the National Guard soldiers going to post-mobilization training are seeing the equipment for the first time and this equipment could be used as dual-use equipment.

Chairman LIEBERMAN. Good point. General Sherrard, let me ask you a different question, which is to talk a bit about the Commission's recommendation that a majority of the positions at the Northern Command be filled by Guard and Reserve personnel, and speak, if you would, about how the Commission members believe that would improve the Northern Command's ability to coordinate among the many players responding to a domestic catastrophe, which is, of course, now part of its relatively recent new authority.

General SHERRARD. Yes, sir. We do believe that is important because of their experience and their knowledge of what the capabilities those particular organizations can bring. Part of that would certainly help improve the identification somewhere in the Combat Readiness Reporting Status System of what capabilities the unit can present. But it drives back to the question that was raised earlier. You have to know what the requirements are for what capabilities you can provide so it all becomes a complete package that you would have there.

The real key to success, we believe, is understanding what they have, understanding what capabilities exist maybe within two blocks of where the incident is, and those are things that are absolutely essential if we are going to be able to respond properly. And we do believe that the men and women that are in the National Guard and Reserves today live that each and every day. They are there and they know the capabilities that they have. They know how to respond and they have that working relationship, and if you can transfer that to the headquarters level, it only makes it a better organization for everyone to understand what the capabilities that these people can bring.

General PUNARO. Mr. Chairman, could I add briefly——

Chairman LIEBERMAN. Sure, please.

General PUNARO. This really goes back to this concept of the traditional view by the Department and by our government, not just the Department of Defense, if you are ready for the away game, you are ready for the home game. Well, the home game in the peak

of the Cold War was strategic nuclear deterrence. We didn't face the kind of threats we face today.

Chairman LIEBERMAN. Right.

General PUNARO. USNORTHCOM is the home combat and command. It is not the away combat and command. They make a distinction between homeland security, homeland defense, and civil support. We are talking about civil support. It has traditionally been a low priority for the Department of Defense because it is not homeland defense.

Chairman LIEBERMAN. Right.

General PUNARO. Secretary Gates is changing that. But when you have people who grew up in the away game scenario and who do not have the training and experience to deal with these many more difficult homeland civil support scenarios, it is not that they are not terrific people and terrific commanders. The people at USNORTHCOM work every day to improve this Nation's defense, no question about it.

They do not know what they do not know, and again, in our military, we put people in for specialized skills. Everybody knows what a dynamic leader Lieutenant General Blum is, the head of the National Guard. He is a warrior. He has fought overseas in combat. He has done civil support. No one in their right mind would put General Blum in charge of a nuclear carrier battle group. He doesn't know the first thing about it, and he would admit it.

So USNORTHCOM is a specialized command. There are unified commands and specified commands. It really is more of a specified command. It has a very targeted mission. That mission, first responding in complex situations, is every bit as complicated as responding overseas. We haven't culturally come to that point yet in the Department of Defense in Northern Command. So you need to put military officers that have grown up in the civil support arena, that know this and have experience, you need more of them at the Northern Command and you need them in the leadership positions.

The component commands for Northern Command could be headed by Guard and Reserve personnel. So it is really, over time, you have just got to shift the experience base and the capacity of these individuals to basically deal with this civil support mission.

Chairman LIEBERMAN. That is great. Thank you. Very provocative thoughts. It is very important that we push the envelope here because of the changed threat environment that we are living in here at home.

Senator Collins, the vote just went off, but we have some time, so please go forward.

Senator COLLINS. Thank you. General Punaro, are we facing a practical challenge if we were to implement your recommendations, and that is that our National Guard forces are already stretched too thin because of the repeated and extended deployments overseas? Is it really practical to expect the National Guard and the active duty military to treat civil support as an equal priority to homeland defense and the warfighting capabilities? Would that not require a far bigger Guard than we now have?

General PUNARO. You raise a superb point and one that the Department of Defense worries about a lot, and none of us want to see the Department of Defense become the temporary manpower

agency for every problem, every ill the Nation has. Far from it. We do not suggest that. We focus in on the catastrophic where we know only the Department of Defense—and everybody knows it, they never like to admit it—has the capacity, the skills, the training, and the ability to respond in those areas.

For a lot of the 15 planning scenarios, the Guard units are perfectly capable of responding today. Now, they need to be brought back up to speed from their deployments and everything, but for most of them that they are going to respond to, we have the right numbers and the right ability.

But we do not have the forces we need for the catastrophic. So you are going to have to add that in. It is not just a question of resting up the folks we have and giving them a little more time to refit and reset. It is a question of basically building the capacity once we know what the requirements are from DHS, once DOD validates them, and DOD is, frankly, anticipating those requirements. To give DOD some credit here, they are not waiting on DHS. They probably lost their patience a little bit. They are saying, we have got to build this capacity. It is not funded yet.

So I would say that if you in this Committee and the Armed Services Committee proscribe this very carefully in the statute as we recommend, I think you will avoid the concern that DOD would be rushing to the sound of every fire bell, which is certainly not what we suggest.

The second thing is the Reserves. For example, when the Amtrak train went off a trestle in Mobile, Alabama, the first responders were the Third Force Reconnaissance Company of the U.S. Marine Corps and the Fourth Marine Division Reservists because they happened to be the closest to the scene. They had scuba gear. They were trained to operate in that kind of environment. That is the kind of thing we are talking about where governors ought to have the ability to use them and we ought to be able to mobilize them for the limited natural disasters because they are close by.

So there is plenty of capacity in our military today to respond to everything but the catastrophic, so we are focused on the catastrophic and building the capability we need there.

General STUMP. Just to add one point to that——

Senator COLLINS. Yes.

General STUMP. But we need the equipment and we need the full-time manning. We are at 61 percent now, and if we are going to continue to be the dual-use National Guard that the American public expects of us, we are going to have to equip them with the equipment and provide the full-time manning and the resources available to do that.

Senator COLLINS. Very good point. Just very quickly because we do need to go vote, General Stump, I want to follow up on your description of what the current capabilities are. As I understand it, these civil support teams, which are 22-member teams, really are reconnaissance teams. They go out. They do sampling. But they are not really response, is that correct?

General STUMP. That is correct. There are only 22 full-time people there, and all they do is go out and they can tell you what sort of a chemical release was there, and they also have a tremendous amount of communication equipment. So they are very good for

being a communication node. But they do not have any of the other requirements, other than just identifying what there are. So no, they have a very limited capability.

Senator COLLINS. That is what my understanding is, as well. They are very valuable, but they are not really a response team in the larger sense. But Northern Command has said that over the next year, specific active duty Guard and Reserve units will be trained, equipped, and assigned to a three-tiered response force and that will total about 4,000 troops. Have you looked at that capability, and if so, what do you think of it?

General STUMP. That is a good capability, but they also said they need three of them. Two of them are notional and one of them, they are putting together now. I think that is a great step going forward. As I indicated, the CERFPs that the National Guard has, which are only battalion-sized, 17 of which are in existence, would only cover that first 72 hours of the response. You need something bigger after that and these forces that you just identified are the ones that would be the follow-on. However, there is only one that has been identified and beginning to be resourced now, and even Northern Command indicates we probably should have at least three of them.

Senator COLLINS. Thank you. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thanks, Senator Collins.

Gentlemen, we are going to recess. If you have the time, I will come back as soon as possible and we will do a few more questions. But it has been very beneficial so far.

General PUNARO. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thanks.

Senator COLLINS. Thank you.

Chairman LIEBERMAN. The Committee will stand in recess.

[Recess.]

Chairman LIEBERMAN. Well, thanks very much for your patience. I just have a few more questions.

The Committee, as you know, does a great deal of work on homeland security preparedness. One framework for preparedness entails the following construct: Planning to identify what tasks must be performed, who will perform them, and what capabilities and resources will be required to perform them. Then obviously ascertaining what capabilities you have, determining the gaps in what you need, and then resourcing to fill those gaps and exercising to make sure we continually get better. So this is an ongoing process, in some sense one which is never complete. We are always trying to improve.

General Punaro, am I right in saying that your report finds gaps, some significant, in all phases of this process? Could you comment a bit in detail and give your assessment of how we can reasonably see to it that those who are operational tackle all these tasks with the urgency that is necessary given the current threat environment?

General PUNARO. Mr. Chairman, I think you have summed it up very nicely. As I understand the preparedness cycle, at least looking at it from a military mind, basically, the first thing you do is plan. We have suggested in our report that there could be significant improvements in the planning phase in all of the activities

that are involved, not just Federal—State, local, DHS, DOD, USNORTHCOM, and the domestic agencies. So the planning cycle of preparedness could use a lot of improvements.

Once you do the planning, and part of the planning would be identifying the requirements, then you organize, train, and equip. Certainly, we have suggested that we need better organizations and maybe better bureaucratic organization as well as better organizations or units that are going to respond to the various contingencies. For example, on the catastrophic scale that General Stump alluded to, the DOD is identified. Those need to be funded and brought into existence.

And obviously you need to train, as Senator Collins said. The No. 1 thing in the military and in all these areas is train, train, train, train, train, and you learn a lot when you train, and then obviously you equip, as well. Then you exercise. So that is the next part, and you are getting to see. In fact, I think USNORTHCOM should get tremendous credit for this exercise they put together, Ardent Sentry——

Chairman LIEBERMAN. Right.

General PUNARO [continuing]. Which was a multi-State, very complicated exercise that included both the low end and the high end, and I can tell you they learned a lot, and that is why you do these exercises. They are not designed to be finger-pointing exercises. They are designed to learn, and we need to get the whole government involved in the kind of exercises that our Department of Defense and the U.S. Northern Command is leading, and you evaluate and improve. And, of course, we probably aren't doing enough evaluating and improving, at least at the pace that we see.

So I would say, Mr. Chairman, each one of those phases could be improved. We have come a long way. The thing that worries us or bothers us, or I do not know if those are the right adjectives—I would say in my personal view, the thing that surprises me is the lack of a sense of urgency in some part of those outfits that need to be involved in the preparedness cycle, and I certainly do not consider that to be in the Department of Defense. They have a sense of urgency about these missions, particularly since Secretary Gates has arrived. So that would be my quick summary.

Chairman LIEBERMAN. Yes, I hear you, and that is obviously a real concern because we know and they know that the threat continues to be very clear and present, so the response needs to be urgent.

I wonder if either one of the Generals wishes to add anything.

General SHERRARD. If I might, I would like to just add to that because I agree completely with everything Chairman Punaro just mentioned, but I would tell you it is absolutely essential for the members of a unit to know what their requirements to train to are——

Chairman LIEBERMAN. Right.

General SHERRARD [continuing]. And when you identify those, then they have a standard and that standard needs to be reported, also, so that everyone knows it. We do this, particularly General Stump and I both being blue-suiters from the past, it is not uncommon for us to have organizations that we call them dual-task or dual-DOC, Design Operational Capabilities (DOC), where you have

two different missions. It does not impair your ability to do the other one at all, and I would see that any type of mission that you are trying to do in support of our homeland missions here, it only enhances other warfighting capability, because frankly, they are both warfighting in the end and that is what we have to make certain.

But you have to define it and then everyone knows the standard that they must be exercising and training to meet so that it is not a pick-up game if and when you are called to come do something. You know exactly the capabilities you are qualified to do and what equipment you have to have with you, or have identified what your shortfalls are and it being in the budgeting process and the procurement side so that you can get the things that are necessary for you to do your job.

Chairman LIEBERMAN. Thank you.

General STUMP. I agree, and it all gets back to requirements again. If you do not know what the requirements are, you cannot train to them and then you are not going to be ready for them. In Michigan, for instance, we had a contingency plan in case there was a riot in Detroit, and we had task forces set up, we had command and control, we had where you were going to go and so forth, and so at least we had a plan that was out there. And when you do not have the defined requirements—we have the 15 scenarios that are out there, but they have not come to the National Guard in large response other than the one Ardent Sentry exercise to determine what those requirements are going to be. So if we do not know what the requirements are, we cannot train to them.

Chairman LIEBERMAN. Let me go on, in a way, back to a question we asked about the Northern Command but a little broader, which is about coordination of the different elements of our government in this. The Adjutant General of Maine was here last year, and what he said was—"it sounds like it could have been a Casey Stengel, which is that getting good players is easy. Getting the players to play as a good team is the hard part. And then he said we have got great players." Obviously, that was the end of the quote, suggesting that we do not have the kind of teamwork we need now.

In your observations, in your work on the Commission over the last couple of years, what is your judgment about the ability of the players to work together as a team, to understand what each is doing, or should do, and then how to work together when a disaster or attack occurs?

General PUNARO. Well, I would say there would be two parts. One would be the "before it happens" part, and unfortunately, we have a lot of the traditional "been there forever." It doesn't matter who is running the government, the kind of bureaucratic approach or the organizational and institutional approaches to issues, particularly when you are looking for the kind of dramatic change that has to occur to meet these new threats here in the homeland, our government bureaucracies are resistant to change and they look for ways to say no rather than ways to say yes, and that has hampered a lot of the coordination and planning that has to occur.

Now, you can have people at the top that are saying, do it, and they have a hard time sometimes translating their nuclear energy

into the system to get the changes to occur. Let us say you have an incident. I think we find, particularly in our Department of Defense, they certainly go to the sounds of the gun. They are going to bring whatever they have as quickly as they can whether there was good prior planning, coordination, contingency plans, and I think the rest of the government—you all are a better judge of FEMA and the domestic side than we are, but it is our experience in catastrophes small and large, our Nation responds and our government responds well.

The problem is that we know what the requirements are in a strategic sense for these catastrophic situations. We know where we are today and we know we have a long way to go. Just saying everybody is going to show up and do the very level best they can is not good enough.

Chairman LIEBERMAN. Correct.

General PUNARO. And so we have to fix that and we have to have ways, and I think some of our recommendations—codifying in statute—it is Congress that directs the Department of Defense and gives the Department its funding and its priorities. Codifying that civil support is an equal priority will help those in the Department of Defense at the top—Secretary Gates, Assistant Secretary McHale, Admiral Mullen—who are trying to turn those institutions in the right direction.

You are the oversight Committee for DHS and you have made a lot of changes, lessons learned after Hurricane Katrina. Lighting the Bunsen burner under DHS is something that really needs to happen, particularly in the high-end scenarios because Secretary Chertoff's concern, as he has expressed publicly, does not appear to us to be translated into the day-to-day workings of the institutions that he is responsible for on an urgent enough basis.

Chairman LIEBERMAN. Well, that is a really important and unsettling conclusion, I must say. Somebody I talked to about your report who admires what you did, raised with me the question of is it clear who is in charge in these cases? I guess it goes back to Casey Stengel, which is that he knew he was the manager. At the time, Steinbrenner didn't own the Yankees, so he knew that he was in charge.

But this is somebody who has been in the military service and said—this is about planning, but I will ask you it make it more generally—he said, well, if I was raising the question about who was in charge of the planning and operation if there was a crisis in Korea or the Taiwan Straits, it would be pretty clear who I would go to at the Pentagon. It would be very clear. It is not clear if there was a WMD attack on an American city who would be in charge of the planning and operational response.

General PUNARO. Mr. Chairman, everybody is in charge and nobody is in charge.

Chairman LIEBERMAN. Yes, that is what we worry about.

General PUNARO. They all want to profess they are in charge.

Chairman LIEBERMAN. Right.

General PUNARO. But then if you sat right down, and that is why we say—our recommendation on the governors really is one in the planning process. You work all this stuff out in advance. If Congress directed the creation of a National Governors Council to ad-

vise the Secretary of Defense and the Department of Homeland Security on these civil support matters, we would expect the National Governors Association (NGA) would pick governors that have the lead for that Association. They have governors that are leads for the Guard and Reserve. They have governors that lead for the homeland.

This is why it is so important. In other words, they could all sit down and work this out. It has been a nagging problem for our Republic for hundreds of years, and we had a margin for error in years past. You had some slack time in the kind of threats we faced in the homeland. We do not have that margin for error anymore, as you pointed out so compellingly about what the terrorists want to do in this country. There is no margin for error.

They need to all sit down together, work on it, and say, OK, let us say it is the planning scenario, the big one that DHS has described. Let us all agree that we know if that happens—because we know what the consequence is going to be. They have spelled it out in the documents. Let us agree that in that particular scenario, here is the command and control. Here is the way we are going to do it. Let us get agreement in advance and then design the plans and test the plans and operate the plans in that fashion.

You can also say for the 95 percent of the activities in the country that fall in the civil support, where the Guard operates in State status and sometimes in Title 32 status, the governor is perfectly capable and had been in charge of that for a hundred years. We need to now give them the ability to pick up some of the Federal-level Reserve capabilities that we have, the Nation pays for, in those more limited scenarios.

So I think our view is that there is no reason men and women of goodwill facing the kind of threats we face cannot put this historic reluctance to basically solve this problem behind them, sit down as adults, and work it out in advance. The Nation requires it. If we do not do it, no matter how much money we throw at the problem, we are not going to be as prepared as we need to be.

Chairman LIEBERMAN. I agree. General Sherrard, do you want to add something?

General SHERRARD. Just one quick comment, sir, related to that, and it ties right in with it. In our warfighting missions and training for all that, the key words that we always talk about, are that we train the way we are going to fight so that there is never any doubt about what you are going to be responsible for doing and then who will, in fact, be directing that.

There is a tremendous amount of capability out there that is available if we can just have the direction or the protocols laid out as to who is going to do what. The men and women are responding. They responded on September 11, 2001, put on uniforms and showed up to do things in New York City——

Chairman LIEBERMAN. Right.

General SHERRARD [continuing]. But we had no authority. We had no orders. We had nothing. But there is a way to go do that well in advance of what the exercise would be, and as Chairman Punaro said, those can be laid out, but it is critical that the way you are going to fight better be the way you train so that it doesn't change and suddenly you say, oh, this is a different program. There

should only be one program and that is to make sure we are successful.

Chairman LIEBERMAN. That is a good point. The discussion that we have had, a lot of it has been about an increasing role for the Department of Defense personnel in homeland defense, homeland security, or responding to attacks. In most cases, I think the understanding is that the DOD personnel would be acting in support of the Department of Homeland Security. I wonder if there are cases that are so extreme, catastrophic—and during our investigation of Katrina we began to distinguish, and I think you have to, between a natural disaster, which is no fun, and a catastrophic event, as Hurricane Katrina was or as obviously a nuclear detonation in an American city would be. Those are the kinds of occasions when our planning ought to contemplate whether the Department of Defense, because of its immense resources, actually would be the lead agency at least for some period of time?

General PUNARO. Well, I think, Mr. Chairman, as you put it correctly, we should contemplate, we should plan, we should think about it. Let us take scenario No. 1—the high-end catastrophic event. The Department of Defense will bring the preponderance of the force to basically mitigate and deal with the recovery efforts. It will require the medical community, it will require the Centers for Disease Control, it will require FEMA, it will require all elements of the Federal Government, but the bulk of the capability is going to come from the Department of Defense because the devastation is so great that you have no communications, you have no water, you have mass casualties, you have mass problems, and so is that a scenario where, for whatever period of time would be appropriate—I mean, first of all, common sense tells you that, as General Stump says, the governor is going to be in charge initially, but he is going to realize very quickly that it is above his pay grade, as good as our governors are, and so it is going to be federalized pretty quickly.

Once it is federalized, do you want to have the person who has the preponderance of the force in charge or do you want to have the designated lead Federal agency, DHS or FEMA, who under the statute is in charge, but they didn't bring the preponderance of the force. Our military training tells us typically the person that brings the preponderance of the force usually is the one that has the command and control. I think, and again, why cannot this be worked out in advance?

I believe our governors are responsible under our laws for the health and welfare of the people in their State. They are going to want to do everything they can to protect that health and welfare. They know that in these catastrophic situations, it is going to overwhelm their ability to be able to do what they are supposed to do and they are going to want the Federal help and the Federal help is going to come as quickly as we can make it available.

This is the thing that puzzled us, why in the world the whole thing continues to be an institutional argument as opposed to sitting people of good character down and saying, let us walk through these catastrophic situations and let us sort out these age-old problems. The taxpayer pays. They do not care whether it is active duty, Guard or Reserve, Centers for Disease Control, or FEMA.

They are paying all the bills. Our Nation owes them an obligation to give them the very best coordinated response possible.

Chairman LIEBERMAN. Sure. All they want is to be protected——

General PUNARO. That is correct.

Chairman LIEBERMAN [continuing]. And have the government respond to it. No, I couldn't agree with you more. We saw this in our investigation of Hurricane Katrina. It is regrettable that we still haven't seen that kind of working through by different elements of the Federal Government because it is critically important. I admire you.

Senator Collins and I, on the way over for the vote, we were saying that we really appreciate the report and the work you have done because, to put it mildly, it is not conventional thinking. You took on some of the status quo—I gather you found that in your appearance before the Armed Services Committee—but you know you are making us think, and particularly the question about the governor having authority for at least some period of time over Title 10 troops is one of those third rails here, and yet you are forcing us to consider this argument, is not unity of command in a crisis, catastrophic perhaps, more important than essentially organizational pride or turf? And the other thing you have done, and it is very important to force us to think about this, is that there have been a lot of cases where Title 10 personnel have been under the command of non-Title 10 and even non-American commanding officers when it served the larger purpose, obviously.

I unfortunately have to go on, unless you want to make some closing comments.

General PUNARO. Mr. Chairman, I would like to pick up on that because I think you are really onto something here and this—we didn't go this far in the Commission report, but as I hear you thinking out loud, the first thing I would say is, as you know from your long service on both of these committees, the government institutions usually are not in favor of fairly significant change.

Chairman LIEBERMAN. Right.

General PUNARO. When Congress passed the Goldwater-Nichols Act in 1986, there was not one sitting political official or military official who supported those changes. They opposed them all. But if the Department of Defense knew that they were going to own the big-end catastrophic event, if they knew that—now I am not saying for one second they would roger up to that or say that, but if they knew and if the President and the Congress decided that they were going to own that problem, I guarantee you would see the kind of urgency, attention, coordination, planning, training, and equipping that would have us prepared to deal with those situations because that is the way they are.

Chairman LIEBERMAN. That is true.

General PUNARO. But let us face it. No other outfit of government is like that.

Chairman LIEBERMAN. No. The more I watch our military, it is unique in its responsiveness and, of course, also in its resilience, as we are seeing now in Iraq and Afghanistan.

I thank the three of you for your service and for the testimony. We are going to spend some time on this alongside our investigation about the threat of nuclear terrorism and response prepared-

ness. I think Senator Collins and I are interested in doing some appropriate legislating here. So the danger for the three of you is that you will be asked again to testify before us, but certainly to help us as we go forward to make sure it comes out the right way.

You have each served your country for a long period of time. I think this is some very significant service you have given and I appreciate it greatly.

We will keep the record open for 15 days and there may be some other Members of the Committee that want to submit questions to you for the record and maybe that you want to add some statements yourselves.

But I cannot thank you enough, and with that, I will adjourn the hearing.

General PUNARO. Thank you, Mr. Chairman.

Chairman LIEBERMAN. The hearing is adjourned.

[Whereupon, at 11:59 a.m., the Committee was adjourned.]

NUCLEAR TERRORISM: ASSESSING THE THREAT TO THE HOMELAND

WEDNESDAY, APRIL 2, 2008

U.S. SENATE,
COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 11:35 a.m., in Room SD–342, Dirksen Senate Office Building, Hon. Joseph I. Lieberman, Chairman of the Committee, presiding.

Present: Senators Lieberman, Akaka, Carper, Tester, Collins, and Warner.

OPENING STATEMENT OF CHAIRMAN LIEBERMAN

Chairman LIEBERMAN. Good morning and thanks to all of you for being here. Apologies for the condition of my throat. I am in what I am pleased to say appears to be the final stages of a head cold.

This is the second in a series of hearings this Committee is holding to examine the threat of a nuclear terrorist attack on our homeland and to ask what the Federal Government is doing to prevent such an attack and how well prepared it is to respond to the catastrophic results of such an attack. In this post-September 11, 2001, world, it is our duty as elected officials to think about the previously unimaginable, to ask the previously unthinkable questions, and then to push for unprecedented answers and preventive action.

Our first hearing in this series focused on the important role of the Defense Department and specifically the National Guard and Reserves in the event of a nuclear terrorist attack. My conclusion from that hearing was that our government is not adequately prepared today to do everything that will need to be done if, God forbid, a nuclear terrorist attack on America ever occurs.

This morning in this public hearing, we are going to look at the threat of nuclear terrorism itself, that is to evaluate the nature and seriousness of the threat as defined by the intent and capability of terrorists to acquire the necessary materials and carry out an attack on America using nuclear weapons.

This afternoon, our Committee will reconvene in a closed session to hear classified testimony on this subject.

Al-Qaida and other terrorist groups have obviously made no secret of their desire to destroy us and our way of life. We are going to hear this morning that al-Qaida has also demonstrated a clear intent to develop and use nuclear weapons to achieve its violent jihadist goals. We know, for instance, that al-Qaida has tried to recruit people with nuclear expertise and al-Qaida has tried to obtain

specialized nuclear materials. This is daunting and jarring information, but it is our responsibility to bring it forth and then to do something about it.

On our first panel, we are going to hear from Charles Allen, Under Secretary for Intelligence and Analysis and the Chief Intelligence Officer at the Department of Homeland Security (DHS), and Rolf Mowatt-Larssen, Director of the Office of Intelligence and Counterintelligence for the Department of Energy (DOE). Mr. Allen and Mr. Mowatt-Larssen are two of the most respected intelligence experts in our government and they will discuss their assessment of the current threat and its likely evolution in the coming years. May I say for our Committee, and many more, that our country is fortunate to have people of your caliber serving us and focused on this issue.

Our purpose today is not to encourage unrealistic fears, but rather to confront the fearful realities that we face in the world today so that we together can deal with them in defense of our country, our people, and our way of life.

Senator Collins.

OPENING STATEMENT OF SENATOR COLLINS

Senator COLLINS. Thank you, Mr. Chairman. The consequences of a nuclear attack on one of our major cities are nearly unimaginable. If a 10-kiloton nuclear device were detonated at noon in Manhattan's Times Square, half-a-million lives would be instantly extinguished. All buildings within a half-mile radius would be destroyed. The economic and psychological impacts would also be devastating.

Yet the threat of terrorists acquiring and using such a weapon is very real. Given their goal of causing as much death and destruction as possible, al-Qaida and other terrorist groups continue to seek to acquire and use weapons of mass destruction (WMD). To be sure, our terrorist enemies have many other weapons more readily at their disposal. Improvised explosive weapons, the terrorists' weapon of choice, have killed thousands and continue to threaten our troops and civilians around the world. Chemical weapons, such as sarin gas, have been directed against targets such as the Tokyo subway system. Dirty bombs using readily available radiological waste could also have serious consequences over a far more limited area than a nuclear blast.

Still, the concentrated force of a nuclear explosion, the radioactive contamination of the target and surrounding areas, and the psychological and economic impact of such an attack places nuclear terrorism in a category all its own. That is why we are holding this hearing to examine closely the scope and nature of this threat.

More than 30 years ago, the Federal Office of Technology Assessment concluded that: "A small group of people, none of whom have ever had access to the classified literature, could possibly design and build a crude nuclear explosive device." That is, with a machine shop and less than 100 pounds of enriched uranium, terrorists conceivably could assemble an atomic bomb that could deliver about two-thirds the explosive force of the bomb that devastated Hiroshima in 1945.

Of course, even determined and resourceful terrorists face significant challenges in obtaining the material to be used to construct a bomb, in assembling the device, in transporting it, and in successfully detonating it. Terrorists could avoid some of these difficulties by procuring an existing weapon, which is why nonproliferation and nuclear security efforts are so important. Moreover, our Nation has taken many actions to decrease their chances of success even further. For example, we have installed radiation detection monitors in the Nation's 22 largest seaports.

The probability may be low that terrorists could successfully stage a nuclear attack. Indeed, their current plans likely include much less technologically difficult options. But a nuclear attack would fulfill al-Qaida's goal of a spectacular attack, and it is a possibility that we cannot ignore. As one of our witnesses has written, "Nuclear terrorism remains a real and urgent danger."

Our efforts must include robust intelligence initiatives to identify those groups like al-Qaida that may be planning such attacks and to disrupt their operations before they can succeed. Close interagency cooperation and information sharing with our allies can help to counter this threat.

We must also plan as effective a response as possible to such a devastating attack. The National Response framework provides the foundation on which DHS, the Federal Emergency Management Agency (FEMA), Department of Defense, and other critical agencies coordinate their resources to deal with the catastrophic consequences of a nuclear attack. But we know already that they would confront overwhelmed or obliterated local response capabilities, mass casualties, evacuations, and demands for food and shelter. This Committee therefore continues to assess the adequacy of preparation and response capabilities.

Today's witnesses will help us take the measure of the threat. That judgment, in turn, can guide our thinking on the adequacy of the intelligence, diplomatic, technical, and other measures that we use to secure nuclear weapons, prevent theft and black market sales, detect radioactive shipments, penetrate terrorist networks, discourage nuclear proliferation, and otherwise counter this threat.

Today's hearing, as well as those to follow, will help us ensure that our policy options are grounded in the best information and analysis that we can muster. I commend the Chairman for convening this hearing, and I join him in welcoming our distinguished witnesses.

Chairman LIEBERMAN. Thanks very much, Senator Collins. I thank Senator Akaka and Senator Carper for being here.

Mr. Allen, we invite your testimony now.

TESTIMONY OF CHARLES E. ALLEN,[1] UNDER SECRETARY FOR INTELLIGENCE AND ANALYSIS AND CHIEF INTELLIGENCE OFFICER, U.S. DEPARTMENT OF HOMELAND SECURITY

Mr. ALLEN. Chairman Lieberman, Ranking Member Collins, and Members of the Committee, thank you for calling this hearing today and focusing on something of extreme importance, and that is nuclear terrorism.

[1] The prepared statement of Mr. Allen appears in the Appendix on page 379.

One of the gravest concerns that I have is the entry of a nuclear device or materials into the United States. The Secretary and all elements of the Department of Homeland Security, I can assure you, take this threat very seriously. My office assesses global threat in the homeland context in order to provide tailored, timely, and actionable intelligence in support of the Department's prevention, protection, and response operations.

As a member of the intelligence community, the Department of Homeland Security has an important role to play in nuclear terrorism issues, but we do not do it alone. Our colleagues who focus on foreign nuclear intelligence, especially the Department of Energy's Office of Intelligence and Counterintelligence, provide us with the basis to conduct homeland-specific assessments of nuclear terrorism matters, and it is a great pleasure to be here with my old and good friend, Mr. Mowatt-Larssen.

Before discussing the specifics of how DHS views the nuclear threat, I want to distinguish that when we assess threats to the homeland, we integrate intelligence-based threat information with knowledge of our vulnerability to attack, as Senator Collins pointed out. Vulnerabilities are weaknesses in our systems, if exploited by our adversaries could cause potentially grave adverse effects to our country. Threats, on the other hand, are posed by adversaries who have both the intent to exploit our vulnerabilities and to cause us harm.

Terrorists have been telling us for years that they are seeking to attack the United States and our allies with weapons of mass destruction, including nuclear weapons, as Senator Lieberman pointed out. A high priority concern for my office is the potential for a nuclear device or nuclear material to enter U.S. ports or cross U.S. borders. As the Chief Intelligence Officer of DHS, my job is to analyze and produce intelligence to inform operations that prevent nuclear material and devices from reaching our borders, to protect against the potential that they do, and respond swiftly and effectively in the event a terrorist nuclear device reaches our homeland.

Currently, I do not believe that any terrorist organization has a nuclear device. However, that assessment could change if terrorist groups are able to acquire nuclear materials and skilled personnel. The primary obstacle to the development of a nuclear device by a terrorist is the acquisition of a sufficient quantity of weapons-usable nuclear material. Additional obstacles include recruiting properly trained experts, designing and assembling a nuclear device, and transporting that device to the intended target in the United States without detection.

If a terrorist group were to obtain sufficient quality of nuclear material, the challenges of executing a successful attack, although complex, are not insurmountable. Thus, actions taken to secure nuclear materials and combat smuggling of weapons-usable nuclear materials globally is the most critical action needed to prevent nuclear material and terrorist nuclear devices from reaching our homeland.

My office also analyzes global threat information, such as trends in nuclear material smuggling, in order to enhance border security and domestic security operations. We provide technical and threat information to help borders and immigration security personnel

identify and interdict nuclear materials and persons with the capability or intent to cause us harm.

Given the technical nature of nuclear devices and broad customer base, DHS intelligence is providing baseline information to our State, local, Tribal, and private sector partners on how a field officer might identify components of a nuclear device and differentiate radiological from nuclear devices, training on the potential effects of a nuclear device, and ensuring that our partners understand the range of impacts from a specific device.

Although our first priority is to prevent a nuclear device from reaching our shores, we also work to ensure that Federal, State, local, and Tribal partners are ready to detect a nuclear device or materials that may arrive in the United States and reduce the likelihood that they enter the country. Our primary nuclear-related protection effort is to support the Domestic Nuclear Detection Office (DNDO) and its operation. DNDO, in partnership with the Department of Energy and other agencies, is responsible for the development of the global nuclear detection architecture and integrating U.S. Government efforts on technical nuclear forensics, two activities that require tailored intelligence support.

My office works with our intelligence community colleagues to provide intelligence and form risk-based assessments about materials, people, capabilities, and tactics to help the DNDO and others make sound operational, policy, and planning decisions. We also educate and inform State, local, and Tribal decisionmakers about the threat and provide technical reach-back to those entities to help them understand and respond to threats.

Although we strive to prevent and protect against radiological and nuclear threats, we must also be prepared to respond quickly and effectively if a terrorist group does acquire or use a nuclear device. A terrorist-designed nuclear device is likely to be less complex and have less impact than nuclear stockpile weapons of the United States, Russia, and other nations, but this is not to say that such a device should be considered any less of a weapons of mass destruction.

A terrorist attack that results in a nuclear detonation in the United States or anywhere else in the world, regardless of yield, will change the course of history. A nuclear attack may produce thousands of casualties, cause massive economic and infrastructure damage, invoke social disruption, and possibly render critical areas uninhabitable, at least in the near term. When considering nuclear threats, we must recognize that although the likelihood that a terrorist group could successfully execute an attack on the homeland may be very small, the consequences, regardless of the magnitude of the attack, will be extremely grave.

My office supports Federal preparedness and response by ensuring planning documents and exercises are based on an appropriate understanding of the nuclear terrorist threat. Finally, after an attack, we provide intelligence, technical forensics, and DHS operational information to attribute radiological or nuclear attacks.

In sum, the Department of Homeland Security's intelligence enterprise works closely with their intelligence community colleagues to provide Federal, State, local, and Tribal partners with the infor-

mation they need to prevent, protect against, and prepare for the nuclear threat that we face today in the United States.

Thank you for your support of homeland security intelligence. I look forward to your questions.

Chairman LIEBERMAN. Thanks, Mr. Allen, for that excellent opening statement.

Mr. Mowatt-Larssen, please proceed.

TESTIMONY OF ROLF MOWATT-LARSSEN,[1] DIRECTOR, OFFICE OF INTELLIGENCE AND COUNTERINTELLIGENCE, U.S. DEPARTMENT OF ENERGY

Mr. MOWATT-LARSSEN. Chairman Lieberman, Ranking Member Collins, and distinguished Members of the Committee, thank you for the invitation to appear before you on this subject of critical importance, the threat of nuclear terrorism.

Mr. Chairman, before I introduce my statement before the Committee, please allow me to set my testimony in an overall context of how I view this problem.

Although much of this testimony is focused on the current threat posed by al-Qaida and its associates, I believe this is a strategic problem that is a permanent fixture of the age in which we live. We will need far-sighted, long-term solutions. We must enlist the best minds in and out of government, at home and abroad, from people of all persuasions, if we are to effectively exclude the possibility of the world living through a nuclear attack.

And I believe in order to be successful, we must out-think our enemy. This will require decisive, aggressive, proactive, and creative action. I thank the Committee for stimulating this kind of discussion, not just in the intelligence community, but more broadly so that we can get a greater basis of understanding for the kind of solutions that are going to be required.

With that introduction, please allow me to introduce this statement. The 20th Century was defined by nuclear races between states, but it is my view that the 21st Century will be defined first by the desire and then by the ability of non-states to procure or develop crude nuclear weapons. In the early years of the 21st Century, we are likely to be tested in our ability to prevent the first non-state efforts to develop and detonate a nuclear weapon.

Prior to the attacks of Septemer 11, 2001, we had only very limited information on al-Qaida's long-term strategic plan and it was not clear at that time that al-Qaida had serious nuclear ambitions. The threat of non-state use of a nuclear weapon was viewed largely by the intelligence community in the context of the nongovernmental organization Umma Tameer-e-Nau, which was run by two nuclear scientists, and where it could have intersected with al-Qaida or the now-dismantled nuclear network built by A.Q. Khan.

The intelligence community prior to September 11, 2001, remained concerned about the security of former Soviet nuclear weapons and nuclear materials, but there was no coherent look at the idea of terrorist use of weapons of mass destruction. Many people in the intelligence community believed that it was too hard for terrorists to develop a nuclear bomb. There was an assumption

[1] The prepared statement of Mr. Mowatt-Larssen appears in the Appendix on page 385.

with the intelligence community that nuclear material was too hard to obtain, and even if they had the material, nuclear weapons are too sophisticated to be built without an industrial complex supporting the effort.

We should not, however, assume that the technology of a nuclear weapon is beyond the grasp of a terrorist group. There are several differences between a state nuclear weapon program and one that a terrorist group might pursue. A state would want a regular supply of uranium or plutonium that it controls. A state would want a reliable weapon that would detonate only when and where the state chooses. A terrorist group does not need this kind of surety and consistency that a state desires. A terrorist group needs only to produce a nuclear yield once to change history.

Our post-September 11, 2001, successes against the Taliban in Afghanistan yielded volumes of information that completely changed our view of al-Qaida's nuclear program. We learned that al-Qaida wants a weapon to use, not to sustain and build a stockpile, as most states would. The nuclear threats that surfaced in June 2002 and continued through the fall of 2003 demonstrated that al-Qaida's desire for a nuclear capability may have survived their removal from the Afghanistan safe haven.

Today, al-Qaida's nuclear intent remains clear. Al-Qaida obtained a fatwa in May 2003 that approved the use of weapons of mass destruction. Al-Qaida spokesman Suleyman abu Ghayth declared that it is al-Qaida's right to kill four million Americans in retaliation for Muslim deaths that al-Qaida blames on the United States. Osama bin Laden said in 1998 that it was an Islamic duty to acquire weapons of mass destruction.

In 2006, bin Laden reiterated his statement that al-Qaida will return to the United States. Al-Qaida has a track record of returning to finish a job they started. They failed at the World Trade Center in 1993. They came back in 2001. They canceled plans for chemical attacks in the United States in 2003. We do not yet know when and where they intend to strike us next, but our past experience strongly suggests they are seeking an attack that will be more spectacular than September 11, 2001.

To delve a little into how they may be thinking about the nuclear option, at any given moment, al-Qaida probably has attack plans in development. September 11, 2001, was planned when the *U.S.S. Cole* was attacked in Yemen and when our embassies in Dar es Salaam, Tanzania, and Nairobi, Kenya, were attacked in Africa. An al-Qaida nuclear attack would be in the planning stages at the same time as several other plots, and only al-Qaida's most senior leadership will know which plot will be approved.

In keeping with al-Qaida's normal management structures, such as the role of Khalid Sheikh Mohammed in the September 11, 2001, attacks, there is probably a single individual in charge, overseeing the effort to obtain materials and expertise. Some experts may have joined al-Qaida years ago, long before the world began paying adequate attention to the proliferation of the kinds of technologies that could yield a terrorist nuclear weapon.

The September 11, 2001, plot was operationally very straightforward. It had a very small footprint, was highly compartmented. Al-Qaida's nuclear effort would be just as compartmented and prob-

ably would not require the involvement of more than the small number of operatives who carried out September 11, 2001.

A prototypical al-Qaida nuclear attack would have the following components: Approval and oversight from al-Qaida's most senior leadership with possible assistance from other groups; a planner responsible for organizing the material, expertise, and fabrication of a device; an operational support facilitator responsible for arranging travel, money, documents, food, and other necessities for the cell; assets in the United States or within range of other Western targets to case locations for an attack and to help move the attack team into place; and finally, the attack team itself.

The task for the intelligence community is not easy. We must find something that is tactical in size but strategic in impact. We must find a plot with its networks that cut across traditional lines of counterproliferation and counterterrorism. We must stop something from happening that we have never seen happen before.

Beyond the basics I have outlined here, we do not know what a terrorist plot might look like. There is, however, a choke point in the terrorist effort to develop a nuclear capability. It is impossible to build a nuclear weapon without fissile material. A state has the time and resources to build a large infrastructure required to make nuclear material. A terrorist group needs only to steal or buy it. We see incidences every month of seizures, and although many of these incidents do not involve weapons-grade materials, this occurrence means that we collectively have not done enough to suppress traffic and secure the security of material worldwide.

Along with other members of the U.S. intelligence community, the Department of Energy Office of Intelligence and Counterintelligence recognizes the urgency of this threat. Terrorist acquisition of a nuclear device would be, again, an unprecedented event. To this end, let me outline a few of the things that we are doing in the Department of Energy.

On August 28, 2006, the national-level Nuclear Materials Information Program was established via Presidential Directive. This program is an interagency effort managed by the Department of Energy in close coordination with the Departments of State, Defense, Homeland Security, Justice, the Nuclear Regulatory Commission, and all agencies under the Director of National Intelligence. The specifics of this program are classified, but the goal is to consolidate all-source information pertaining to nuclear materials worldwide and their security status. This will help us understand the gaps in our current knowledge and ensure the information is made available to all Federal departments and agencies.

DOE's work to combat the threat of nuclear terrorism is not limited to intelligence. Several offices within the National Nuclear Security Administration are dedicated to understanding the improvised nuclear device threat; to securing nuclear materials and eliminating excess stockpiles; to deterring, detecting, and interdicting illicit trafficking of nuclear materials; and should the unimaginable action, to ensure that we stand ready to disarm a nuclear device, manage the consequences of the event, and to conduct forensic analysis to identify all those responsible.

The National Nuclear Security Administration's Office of Defense Nuclear Nonproliferation, Material Protection Control and Account-

ing (MPC&A) program, works to upgrade security at nuclear sites, particularly those in Russia and other states of the former Soviet Union. In line with our view that preventing terrorist access to material is the most effective way of preventing nuclear terrorism, we continue to give very high priority to those efforts to bolster security. Throughout its 15-year history, the MPC&A program has worked with Russian and other former Soviet Union counterparts to secure nuclear material through upgrades to physical protection. In addition to work at 50 nuclear material sites in Russia, DOE has helped upgrade security at all Russian Navy sites and all Strategic Rocket Forces nuclear sites, and they have begun upgrading nine nuclear weapons sites in the 12th Main Directorate.

In 2004, the Nuclear Security Administration began the Global Threat Reduction Initiative to accelerate efforts to address the dangers posted by nuclear and radiological materials at civilian sites worldwide through conversion of research reactors from highly enriched uranium to low enriched fuel, removal of excess nuclear and radiological materials, and protection of at-risk nuclear and radiological materials from theft.

Our Second Line of Defense (SLD) program installs radiation detection equipment at fixed borders at land, sea, airports, and equips major shipment ports with detection equipment. SLD and Megaports are also training border guards and Customs officials to use this equipment.

These efforts in their totality build a necessary solid foundation of strong policies and best practices to prevent nuclear proliferation. We are also working with foreign governments to strengthen standards for physical protection, to strengthen export control, and to strengthen safeguards on nuclear material worldwide.

In closing, we must get nuclear materials off the black market and take every possible step to stop global trafficking in these materials. It must be a global effort incorporating police, intelligence services, militaries, government agencies and ministries, and dedicated citizens across the world. In addition, we need broad information sharing across every front, between government and private sector, among foreign partners, including those who were previously our adversaries. Al-Qaida thinks and plans dynamically and they rarely follow straightforward linear paths to their targets. We need to be just as flexible and dynamic in our response.

Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thank you very much. The cumulative effect of the testimony of the two of you is, to put it mildly, sobering. The two of you are not prone to rhetorical excesses, but I think you have set out a series of realistic statements that call on us to both evaluate and react.

We will do 6-minute rounds and I will begin now, but Mr. Allen, I just want to come back and try to summarize——

Senator WARNER. Mr. Chairman, could I make a parliamentary inquiry?

Chairman LIEBERMAN. Yes, sir.

OPENING STATEMENT OF SENATOR WARNER

Senator WARNER. I have known Mr. Allen for many years. I tried to follow your statement. It tracked the written one provided to the

Committee, but I wonder if we could have a copy of his abbreviated statement because it seems to me there were some very poignant comments that I might not be able to find——

Chairman LIEBERMAN. Yes, that is an excellent idea. If you have it, I will ask one of our staff to come down and get a copy.

Senator WARNER. I thank the Chairman.

Mr. ALLEN. We have a copy and we will provide it to the Senator.

Chairman LIEBERMAN. We will get it right to you.

Senator WARNER. Thank you.

Chairman LIEBERMAN. It could be one of your better selling statements, Mr. Allen.

Let me just try to put in order what we have been told. Mr. Allen, you indicated on the encouraging side that you do not believe any terrorist group now has a nuclear device, is that right?

Mr. ALLEN. I do not think we have sufficient evidence to make a firm decision, but that is my personal judgment. At the same time, as my friend, Mr. Mowatt-Larssen has indicated, there has been a long-term effort, particularly by al-Qaida, to develop an improvised nuclear device. I think that is a long-term aspiration. We can talk obviously in more detail in a classified session, but when I started working this back in—we saw bin Laden's statement back in February 1998, and of course I have here the statement by this ultra extremist cleric back in 2003, the one that I think that Mr. Mowatt-Larssen referred to. It is pretty clear their intent——

Chairman LIEBERMAN. Yes.

Mr. ALLEN [continuing]. And capability is something that we can talk in a classified session.

Chairman LIEBERMAN. I think that summarizes it well, and I believe that coincides with Mr. Mowatt-Larssen's testimony, which is that we do not have evidence that there is a terrorist group with a nuclear device or nuclear capability now. But is it true that neither of you have any doubt that al-Qaida and perhaps other terrorist groups are attempting to gain nuclear capability?

Mr. ALLEN. Mr. Chairman, I have no doubt that al-Qaida would like to obtain nuclear capability. I think the evidence and their statements that they have made over many years publicly indicate this, and I think that based on the National Intelligence Director's views and others that have been issued, if you recall, the estimate that was issued in July of last year, on al-Qaida's terrorist threat to the homeland, said that al-Qaida would like to have weapons of mass destruction and if it acquired them, it would use them.

Chairman LIEBERMAN. Right.

Mr. ALLEN. That is an unclassified key judgment, sir.

Chairman LIEBERMAN. Yes, sir. And there is no reason not to believe the public statements that they are making about this intention?

Mr. ALLEN. I take seriously many of their comments. Some of them are rhetorical——

Chairman LIEBERMAN. Right.

Mr. ALLEN [continuing]. But in this case, I take it very seriously.

Chairman LIEBERMAN. Let me ask you, Mr. Mowatt-Larssen, to just talk for a moment about the significance of the fatwa issued by the Saudi cleric Nasir al-Albani in 2003 that both you and Mr. Allen have referred to.

Mr. MOWATT-LARSSEN. Yes, Mr. Chairman. First, I believe its significance is that when al-Qaida comes to a point in its thought process that it feels a need for a fatwa or a religious justification for an action, it has in our experience meant that they are well along the way of considering that action and need a justification to the Muslim world to use, in this case, weapons of mass destruction. We see that groundwork having been very clearly laid before September 11, 2001, which represented an escalation of their war with the United States by bringing their war to our shores.

Similarly, they have done this in the past when they needed a fatwa or justification to attack Saudi interests in Saudi Arabia. They needed a religious ruling on that, and WMD falls in that same category.

So it would be a grave error to underestimate the significance in May 2003, at a time when we were at a heightened threat, both at Saudi Arabia and at home, that this fatwa was issued by a radical Saudi cleric who subsequently retracted his fatwa on Saudi television but, in fact, represents a very clear and compelling statement by al-Qaida that it regards this as a weapon that it seriously is considering using.

Chairman LIEBERMAN. Right. I thank you for that.

Did you want to add something to that, Mr. Allen?

Mr. ALLEN. No, sir. I think Mr. Mowatt-Larssen speaks very eloquently on this threat.

Chairman LIEBERMAN. Thank you. I want to go to the security of nuclear materials question, and just to put it in a realistic context, in the second panel, we are going to hear testimony from Matthew Bunn that includes a detailed description of the incident that is public and has been reported in the press that occurred last November. Four individuals brazenly attempted and in part succeeded, in infiltrating a nuclear facility in South Africa, bypassing security systems, and ultimately gaining access to the emergency control room.

What can you tell us you know about that event and more broadly what it says about the security of nuclear materials globally? You both have been very clear about the fact that if there is a choke point here, it clearly is not choking al-Qaida and the other terrorist groups off from gaining the necessary nuclear materials with which they would make a device.

Mr. MOWATT-LARSSEN. Yes, Mr. Chairman. In the South Africa case, this is an ongoing investigation, if you will, ongoing work. That and related incidents that we have where we are concerned about possible breaches, I think are best left to the next session——

Chairman LIEBERMAN. OK.

Mr. MOWATT-LARSSEN [continuing]. But in a more general sense, we have concerns about the availability of material. There are publicly reported instances where actual weapons-usable material over the last several years has turned up missing. The intelligence community is dealing with our foreign partners on many of those right now. So we are not talking about a theoretical threat presented from insider access to facilities and/or theft of material.

In this case, we simply must go out and find it before it finds us in terms of getting to a terrorist group, and that is one of our

biggest challenges in the intelligence community, being proactive, where we are out locating, finding, and taking possession of any material that may be on the loose, knowing as we are sitting here today that we are, in fact, dealing with confirmed instances that relate to possibly missing nuclear materials.

Chairman LIEBERMAN. My time is up, but I want to just ask a quick question and ask for a quick answer. Is there an established framework of international cooperation in the pursuit of protecting nuclear materials? In other words, are we getting help from allies and others in the world?

Mr. MOWATT-LARSSEN. We are in various programs. I would say comprehensively, there is work yet to be done——

Chairman LIEBERMAN. Right.

Mr. MOWATT-LARSSEN [continuing]. At the intelligence level and others.

Chairman LIEBERMAN. We will come back to that. Thank you. Senator Collins.

Senator COLLINS. Thank you. Mr. Mowatt-Larssen, I am going to follow up on the questions that the Chairman just asked you. Obviously, keeping nuclear weapons or material from being stolen is a very important tool for preventing nuclear terrorism. Our next witness, Mr. Bunn, also wrote in an analysis last fall that the myriad routes across the world's scantily-protected borders makes nuclear smuggling almost impossible to stop.

Let me ask you two questions which flow from the conversation you have had with the Chairman as well as Mr. Bunn's column. First, does the U.S. Government have a comprehensive list assessing which facilities around the world pose the most serious risks of nuclear theft?

Mr. MOWATT-LARSSEN. Senator Collins, yes, we have a program called the Nuclear Materials Information Program. It was created in August 2006. It is in development. It is not at that comprehensive level yet to give you the assurance that we have this problem in hand. By no means am I suggesting that. We do have a plan. We are working the plan. We have prioritized this program to focus on countries and facilities that we regard in the intelligence community to be of the highest risk. So we have, in fact, identified the high-risk sites. We have identified what type of material is there. We have an ongoing assessment—it is being updated every day—on the status at the highest priority level.

It is a work in progress. It is going to take a number of years to complete. But I would say we have a plan, but I would not disagree with Mr. Bunn's assertion that we have a long way to go to feel good about smuggling of nuclear material.

Senator COLLINS. Second, in general terms, where are the sites that pose the highest risk of nuclear theft today? I am trying to get a sense of whether the risks are more concentrated in a country like Pakistan or nuclear weapons in Russia, or whether the problem is domestic as well, perhaps college campuses that have nuclear reactors for research purposes and may not have them as secure. Give us your assessment of where, in general, the sites posing the most concern are located.

Mr. MOWATT-LARSSEN. Well, clearly, we know that every state with nuclear material takes the security of material utmost seri-

ously, including the governments of Pakistan, Russia, the United States, and other countries. That said, obviously our biggest concern are states that potentially are less stable or where there is a greater interest by terrorists to acquire the material, and of course, we prioritize and pay the most attention to those countries.

In our scope of how we look at nuclear materials globally, we include the United States in that category. We do not exclude the possibility that the problem could happen at home, whether it is the expertise or material.

But yes, we have a very clear prioritization. I would be happy to get into more details on the progress we are making in the next session.

Senator COLLINS. Thank you. Mr. Allen, the well-documented proliferation activities of the former Pakistani chief nuclear scientist A.Q. Khan have highlighted the increased threat of nuclear terrorism. To what extent is the intelligence community concerned about the past activities of A.Q. Khan or other similarly knowledgeable scientists who might be willing to collaborate with terrorist organizations?

Mr. ALLEN. That is a great question, Senator, and having someone who followed A.Q. Khan as my friend, Mr. Mowatt-Larssen, did over a period of years, we believe that there are still some issues yet to be resolved with the A.Q. Khan network. Fortunately, that network was severely disrupted and most of the people are no longer able to conduct that kind of activity. It was really becoming sort of the one-stop shopping for the provision of nuclear designs and centrifuges, as it has been well publicized.

At times, and we might talk a little about it, there are scientists around the world who may hold radical views, the insider threat, who might take materials or other kinds of hard, very complex equipment like centrifuges. I think, again, we have to have a regimen that is not only here in the United States, which we do have, but worldwide to prevent these kinds of scientists who really become the rogue scientists. And A.Q. Khan became an extraordinary rogue scientist who reached around the world globally, not only in the Middle East but in East Asia, as you are well aware. The A.Q. Khan situation, I think, is something we want to stop in the future, and it has got to take great cooperation with all civilized countries.

Senator COLLINS. Thank you.

Chairman LIEBERMAN. Thanks, Senator Collins. Senator Akaka, and then we will go to Senator Tester.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. Thank you very much, Mr. Chairman. I want to tell you that it is a pleasure to see such a distinguished group of witnesses here today appearing before this Committee and I want you to know that I applaud your efforts to bring more attention to our policies and programs and especially trying to help the public to understand what we are trying to do here. This is a good step in that direction.

I ask you to include my full statement in the record.

[The prepared statement of Senator Akaka follows:]

PREPARED STATEMENT OF SENATOR DANIEL K. AKAKA

Thank you, Mr. Chairman. It is a pleasure to see such distinguished witnesses appearing before the Committee today, and I share your interest and concern on this issue. I applaud your efforts to bring more attention to our policies and programs aimed at deterring nuclear terrorism.

I have long been concerned with the threat of nuclear terrorism. In 2001, as the Chairman of the International Security Subcommittee, one issue that I focused on, and held several hearings on, was the protection of radioactive sources that could be used in so-called dirty bombs. A 2003 Government Accountability Office (GAO) report that I requested, titled "Federal and State Action Needed to Improve Security of Sealed Radioactive Sources" (GAO–03–804), disclosed that the United States did not reliably keep track of or account for radioactive sources. According to the report, a quarter to half a million of Greater-than-Class C (GTCC) radiological sources are estimated to exist in the United States and approximately 24,000 new sources are annually added. These sources, in use throughout the United States and often not well secured, have the potential to become the base material for a radiological dispersal device (RDD), the formal name for a dirty bomb. As a result of the hearings and GAO report, Senator Bingaman and I introduced The Low Level Radioactive Waste Act to promote the safe and secure disposal of low-level radioactive waste. I am pleased to say that some of our proposals were included in the 2005 Energy Policy Act.

Internationally, the problem of securing both low level radioactive sources and highly enriched uranium is compounded by its growing availability. The International Atomic Energy Agency's (IAEA) Illicit Trafficking Database (ITDB) reported 252 incidents of theft or loss of nuclear and other radioactive materials in 2006, accounting for 20 percent of the reported incidents since the database was created in 1995. It is difficult to say if the problem is growing or if improved reporting is making it more noticeable. In any case, the numbers represent a significant problem and one which, as our witnesses today observe, has caught the attention of terrorists.

I am convinced there are two lines of defense against possible nuclear terrorism threats. First, we must continue to secure radiological sources, even low-level ones, within our own country. After all, why should a terrorist go to the trouble of bringing radioactive material in when he can find it here? But the second front is the most difficult and, in the long-term, provides the greatest threat. This is the risk of unsecured nuclear and radiological sources abroad.

Our witnesses today cite a number of initiatives to improve security of foreign sources of nuclear radioactive material, including the Department of Energy's Material Protection, Control, and Accounting (MPC&A) program and the Global Threat Reduction Initiative (GTRI). Now is the time, I believe, to take a fresh look at how we can enhance the capabilities of our current domestic programs and international efforts to secure, monitor, and control nuclear material.

We are on the verge of a major expansion in the number of nuclear power plants. By 2030, there may be as much as a 60 percent increase in the number of operating nuclear reactors. In addition to answering the demand for more energy, nuclear technology will find greater use throughout the world in food safety and medical applications. This will also create a much larger nuclear waste issue. For instance, the volume of spent reactor fuel is expected to double between now and 2020.

The growing use of nuclear applications and nuclear power production increases the risk that radiological sources or nuclear weapons end up in the hands of terrorists. To contain this danger, we need to examine ways that agencies, such as the IAEA, can be strengthened to meet the proliferation concerns generated by increased use of nuclear material. Two areas offer immediate opportunities to improve nuclear security but only if the IAEA's budget is expanded to meet this larger role: increasing nuclear and radiological accountability and expanding verification activities.

Accounting for and tracking nuclear and radiological materials is the cornerstone for greater security. One possibility is to create a comprehensive international database of nuclear and radiological sources. The IAEA could require that new materials be put on this list as they are created, and tracked as they are transported to their end user, and finally moved into safe disposal. Although this program would be voluntary, would require considerable additional funding, and would be challenging to implement, it would set the international community on a path to greater security that will become even more crucial in the future.

To prevent the theft, loss, or diversion of highly radioactive material, a more robust verification regime is required. To match the projected increase of nuclear reactors, the IAEA will need more inspectors armed with uniform inspection standards

and with better technical tools. For example, the IAEA has negotiated comprehensive safeguards agreements (CSA) and additional protocols (AP) designed to ensure that nuclear programs are used only for peaceful purposes. However, thirty states party to the Nuclear Non-Proliferation Treaty have not implemented CSAs and approximately 100 states have not adopted the APs. This points to the difficulty in monitoring potential nuclear diversions. But even where the IAEA does have access agreements, it will need advanced technical tools to keep up with the increasing sophistication of nuclear design and efforts to hide secret nuclear weapons programs.

A critical barrier to making these reforms is the IAEA's zero real growth budget. An unintended consequence of this United Nations-wide budget requirement is the prevention of critical investment in the IAEA's human capital, infrastructure, and equipment. The United States needs to take the lead in addressing these issues if we are going to be successful in preventing what we all believe is the inevitable consequence of not confronting in a comprehensive strategy the domestic and international threat of nuclear terrorism.

I would again like to thank the Chairman for arranging this hearing and helping the public understand the threat posed by nuclear terrorism.

Chairman LIEBERMAN. Without objection.

Senator AKAKA. Mr. Larssen, if you do not mind, I have a series of questions here for you and especially want to hear your assessment on Dr. Matthew Bunn's written testimony. He will be appearing here, but I just want to hear about his mention that, and I am quoting from him, "India has rejected offers of nuclear security cooperation." Do you agree with this assessment?

Mr. MOWATT-LARSSEN. First, I would like to say that I have great respect for Dr. Bunn. I have had interactions with him and his colleagues and I believe that kind of cooperation between government and nongovernment agencies is essential, particularly in sharing our views and the expertise outside the government.

I think the problem of India in this regard as the intelligence community would look at it—of course, we pay attention to policy—is to expand this from what could be a very simplistic discussion of a problem in the former Soviet Union and Pakistan to ensure that every country, whether it be India, the United States, or another country, could be potentially part of this small network of countries where terrorists can obtain material or expertise, so the decisions that states make in a world where there is an increased dependence on nuclear power and proliferation of nuclear weapons all will exacerbate in the future the ability of a terrorist group at some point in time to reach that threshold where they may have a mushroom cloud. So my comment would be that certainly India is in the sphere of concern, as any country that has nuclear power and nuclear weapons.

Senator AKAKA. My follow-up to that is if it needs to be done, how can we encourage India's cooperation?

Mr. MOWATT-LARSSEN. Sir, I will leave that to the policymakers in terms of specifics—but I know that it is an area of interest in the intelligence world. Of course, we try to support the policymakers with the information they might need to make the right decisions. So I wouldn't presume to get into that.

Senator AKAKA. Mr. Larssen, in Dr. Bunn's testimony, he states, "The promising nuclear security dialogue with China does not yet appear to have led to major improvements in security there." Do you agree with that, and if so, why haven't there been any major improvements in Chinese nuclear security?

Mr. MOWATT-LARSSEN. Well, I wouldn't want to sit here and assess China or any specific country other than to say China is

among the countries with whom we have intensified our dialogue. At the intelligence level we can deal with the potential implications of the security challenges in that country as well as our other allies in this. I do believe that our Chinese counterparts do take this problem very seriously and take security of nuclear material very seriously.

Senator AKAKA. Mr. Larssen, Dr. Bunn argues that, "U.S. programs largely ignore caches of highly enriched uranium in wealthy developed countries, though some of these, too, are dangerously insecure." Do you agree that our nonproliferation programs have failed to address nuclear security in wealthy developed countries?

Mr. MOWATT-LARSSEN. I wouldn't go that far. To the extent my opinion is germane, I would say that we share a concern that all nuclear material must be secured, not just looking at weapons-type material. But the important scope that we need to take to this is to ensure that, over time, all nuclear material is secured at the highest possible level.

Senator AKAKA. As you know, Mr. Larssen, the International Atomic Energy Agency (IAEA) in Vienna plays a strong role in monitoring nuclear developments. In your opinion, what should the IAEA's priorities be in confronting the threat of nuclear terrorism?

Mr. MOWATT-LARSSEN. To be honest, Senator, I haven't thought about IAEA's responsibilities in this context. I am well aware of the work they are doing in countries like Iran and elsewhere where this is, in fact, an extended aspect of the problem to the degree that we are also concerned about the nexus between states and groups, but I wouldn't want to provide a critique of the IAEA.

Senator AKAKA. Mr. Allen, today's *Washington Post* has an article about state and local fusion centers which receive information on terrorists. Nuclear intelligence tends to be highly sensitive and compartmentalized. How are you ensuring that state and local centers will be able to receive such sensitive information, if necessary?

Mr. ALLEN. Senator, our responsibility there is to work with State and local government, the fusion centers, to ensure that they understand the threat. We are not there to provide them with sensitive details dealing with the design, but we are there to help them understand the level of the threat, to understand how to identify a threat, because our state and local fusion centers consist of a lot of first responders who may be able at the very local level to detect something where a person or group of people who are trying to put together a device—it could even be radiological materials, they need not be things that are part of an improvised nuclear device.

So it is educational. We do training. We give them a basic training and we also provide them with assessments which they can use to understand the level of the threat and what they should look for, how they should look for devices or the assembly of such kinds of equipment. So it is a very rich educational effort we have with State and local governments, and we do clear them up to the level of "secret" in order to provide them with the information that they need, and we do it on a very regular basis.

Senator AKAKA. Thank you very much, Mr. Allen, and thank you, Mr. Larssen. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thank you, Senator Akaka. Senator Tester.

OPENING STATEMENT OF SENATOR TESTER

Senator TESTER. Yes, thank you, Mr. Chairman, and Ranking Member Collins, for holding this hearing. Thank you gentlemen for being here.

I would agree with the Chairman, the testimony today is a bit sobering. I am here for many reasons, but one of the main reasons I am here is because of security with our borders, in particular the Northern border. As you folks know, Montana has a long border with Canada, more than 500 miles, and while Montana may not be at the top of the list of candidates for a terrorist strike, a major nuclear attack, anywhere in this country would, as Mr. Allen said, change the course of history.

My major concern and what I would like to ask the witnesses about is the ability of terrorists to transport a nuclear device or amounts of nuclear material across the border. We have heard the testimony from Charles Allen, and Mr. Allen, I have to say, as in our first meeting, I am very impressed with you. You know your stuff and I appreciate you being on board. I think you are a real asset to this country.

I understand that DHS has delayed the deployment of nuclear detection equipment into the field because it is not working as well as advertised. This is a $1.2 billion program that is not delivering the kind of protection that has been testified to that we so desperately need. I am just wondering where that is in process.

Mr. ALLEN. Senator Tester, it is good to see you. A lot of detection equipment, I think, as Senator Collins indicated, has been deployed out to various ports and to various large cities, what we call the Urban Assistance Cities. I would have to defer that certainly to Mr. Oxford, who runs the Domestic Nuclear Detection Office, and let him respond to that. Obviously, as you develop more advanced equipment, sometimes you have technical problems, but I would defer on that since I do the intelligence and I do not do the development and production of devices.

Senator TESTER. That would be fine. Thank you. Their oversight to these programs, hopefully it is there and hopefully we can get this up and running, if not now, very soon, particularly because reports in the Canadian press have reported that 75 pieces of radiological material have been missing in the last several years.

Mr. Larssen, do you know if that is weapons-grade stuff?

Mr. MOWATT-LARSSEN. Senator Tester, of the seizures that are reported in the press, you will find various figures. IAEA holds some. Other organizations do. All those figures of seizures that have been publicly reported do include some instances where weapons-grade material was part of that, so the answer is yes.

Senator TESTER. I think, Mr. Allen, you know about this, when we talked some months ago, we talked about security on the border. I just want to let you know that I do not think things improved very much in my neck of the woods as far as the security there. I look forward to working with you to make that come to reality because quite honestly, from a dollars spent standpoint, it is

a minimal amount of money to get that border secured and I am particularly concerned about it.

Mr. Mowatt-Larssen, how is our relationship with the Canadians? Are they stepping up to the plate? Are you getting what you need from them? Do they have the same level of concern about terrorist threats there that we have and are they working with us? Are they providing the resources?

Mr. MOWATT-LARSSEN. Senator Tester, I would say the easy answer to that is yes, they do take it extremely seriously, and in our own interaction as well as more broadly in the intelligence community by the agencies that conduct liaison more regularly with our Canadian counterparts, I do not think there is any question that they understand this problem and take the issue very seriously, particularly securing the borders.

Senator TESTER. So you would put Canada on that list that Senator Collins mentioned of countries that you are concerned about as far as access to nuclear material?

Mr. MOWATT-LARSSEN. I would always put on the list any location where you have long borders and you can smuggle material across borders, whether that be the Southern border or Northern border. We have a big problem in terms of trying to secure those borders, particularly if sophisticated smuggling networks get involved in trying to smuggle these materials. So I think we understand that it is an immense challenge and we have to do work on that.

Senator TESTER. OK. Mr. Allen.

Mr. ALLEN. Senator, we have developed a very excellent relationship, and you are right. We have a lot of work to do jointly with our Canadian partners on the borders. That was something I was looking at yesterday, and we certainly can come back and talk to you in a classified arena.

Senator TESTER. I would love to.

Mr. ALLEN. We work very closely with the Canadian Border Services agency and other intelligence agencies. I met last week with a group of Canadians where we talked about some joint assessment projects.

Senator TESTER. Good.

Mr. MOWATT-LARSSEN. Senator, just to follow up, the response specifically to that question, though, that specific instance of missing material, we do not believe that they were weapons-usable.

Senator TESTER. OK. They were not weapons—none of the 75?

Mr. MOWATT-LARSSEN. We do not believe.

Senator TESTER. OK. All right. The last question, and Mr. Allen, you might want to answer it. If it applies to you, Mr. Mowatt-Larssen, you can answer. It deals with our partners in the communities, our Tribal governments, our county sheriffs, whether it is on the Northern border with Montana or Maine or whether it is on the Southern border with Arizona or New Mexico. Are we taking the steps necessary to be able to get their help when you talk about potential transport of nuclear material, specifically nuclear material, into this country?

Mr. ALLEN. Well, we have talked about this at the State level and with the fusion centers and with local law enforcement. We have a lot of work to do there. Our relationships are only deep-

ening. I spoke 2 weeks ago at the National Fusion Center Conference in San Francisco, where we really committed ourselves to further information sharing. I meet frequently with law enforcement officers throughout the country. But we have much to do in this arena, and I will be very candid there.

Senator TESTER. And then you may not even want to answer this question in that case, for any number of reasons, but are you confident that they are a player in this at this point in time, or are they insignificant as far as border security goes?

Mr. ALLEN. They are an extraordinary player, whether it is the Northern border or the Southern border, whether it is Texas, Arizona, or California. The local officials, first responders, sheriffs, police departments are extraordinarily helpful and the relationship is rich.

We held a conference last year with fusion centers and local law enforcement out in Lawrence Livermore National Laboratory at a classified level, and we had a weapons of mass destruction conference that Dr. McCarthy, who is on my staff, helped chair that session. Sir, our relationships are deepening. We have been at this 2 years, and we need to be at it more years.

Senator TESTER. You have some more work to do. Finally, and this is not a question, it is just a comment. I would like to get together with you, Mr. Allen, and discuss that Northern border issue, classified if need be, because I have an incredible amount of concern about it.

Mr. ALLEN. Yes, sir.

Senator TESTER. I personally do not live that far from it.

Mr. ALLEN. Yes, sir. I will follow up, Senator.

Chairman LIEBERMAN. Thanks very much, Senator Tester. If there is interest in the Committee, we will just do a short second round with these two witnesses because we have a second panel.

Mr. Allen, from your experience and expertise in intelligence have documented the reality of the nuclear terrorist threat for us this morning. I wanted to ask you, what are the one or two most significant things that Congress can do to not only help you, but the agencies that you work with, to prevent an attack from occurring?

Mr. ALLEN. I believe first and foremost, your continuing support, which Congress has been, I think, very much engaged as securing these materials overseas—at CIA, we worked with Mr. Mowatt-Larssen and others on this issue to secure materials. The programs that you all have supported very generously is not the only answer, because it is a multi-layered effort to prevent fissile material or a weapon coming into the country, but to me, that is one of the good things you can do. And, of course, the continuing support you give to the intelligence community and to my intelligence activities, I am very grateful for that.

This is going to be a long-term, and I think Mr. Mowatt-Larssen captured it very well in his opening statement where he put that strategic chapeau over the entire effort. We are into this for decades to come and we have got to work at it in great collaboration and with great transparency with the Congress.

Chairman LIEBERMAN. Thank you. Good answer. Mr. Mowatt-Larssen.

Mr. MOWATT-LARSSEN. Senator Lieberman, I think Mr. Allen captured my thoughts eloquently. I would just add that it is really about the material, as he said, and making sure that we deny material access through the net effect of everything we are doing. And second, focusing on the people who smuggle the material and work with other governments to criminalize that activity. Currently, the crime is not proportional to the consequences if people traffic in this material and it gets in terrorists' hands. I think we have a lot of work to do internationally to raise the stakes for the people who are involved in nuclear terrorism.

Chairman LIEBERMAN. Interesting. Are our laws sufficient to that task here in the United States, to create punishment for the kind of crimes you are talking about?

Mr. ALLEN. I believe our laws are sufficient.

Chairman LIEBERMAN. Yes.

Mr. ALLEN. We just now need to work very hard at ferreting out any efforts to bring into this country or develop within the country because we know how dangerous even a radiological bomb could be and the consequences here.

Chairman LIEBERMAN. Right. Again, it is outside of your direct purview, but am I correct that both of your Departments are involved in reaching out to other nations' governments, particularly countries that may have nuclear materials in an attempt to secure their presence?

Mr. MOWATT-LARSSEN. Yes, Mr. Chairman. In the Department of Energy, it is a broad intersection of the policy programs, primarily in the National Nuclear Security Agency, which I outlined some of the highlights.

Chairman LIEBERMAN. Right.

Mr. MOWATT-LARSSEN. On the intelligence level, we work with our intelligence community counterparts. We try to come at our foreign partners around the world on the intelligence level as one. We do a pretty good job of that, bringing 16 agencies to, for example, the key countries with really a single-minded purpose, which is sharing information more broadly than we have traditionally, even with some of our old adversaries, because this is a common threat.

Chairman LIEBERMAN. Sure.

Mr. ALLEN. And, of course, the Department of Homeland Security has the Secure Freight Initiative. Worldwide, it has the Container Security Initiative. There is just an enormous amount of effort internationally that the Secretary and his leadership conducts day to day, week to week, with our foreign partners to try to control dangerous materials.

Chairman LIEBERMAN. Yes, absolutely. I remember not so long ago Secretary Chertoff was before us testifying at that table and one of the Members asked him a trite question, but it does get to a sense of priorities and concerns. What keeps you up at night, of all the range of threats that this country faces post-September 11, 2001? He quickly said, the detonation by a terrorist group of a nuclear device in an American city. So that, I think, reflects the priority that the Department gives it and also the reality of the threat.

Mr. ALLEN. I agree with the Secretary. I worried about that long before I ever met the Secretary.

Chairman LIEBERMAN. Yes. Senator Collins.

Senator COLLINS. Thank you, Mr. Chairman. I just have two more questions that I would like to ask our witnesses today.

Mr. Allen, starting again where the Chairman left off, I would like to get a better sense of how the analysis of the threat that you do and other intelligence agencies do influence the investment decisions of the Domestic Nuclear Detection Office. In other words, there is obviously communication that you give on the threat, on intelligence, but I am unclear how this threat information and advice actually influences the investment decisions of DNDO. Could you talk to us about that?

Mr. ALLEN. Well, I think it is not only our assessment, but as you know, there are some very powerful analytic capabilities within other agencies, like the Central Intelligence Agency and the National Counterterrorism Center, and I believe in the classified session you will have Mr. Leiter there. But the combination of this, and as we look out strategically at what this country will face, has a profound effect on the decisionmaking not only of the Secretary, but of the Director and his staff of the DNDO as far as looking at more advanced systems to avoid false positives, to make sure our equipment can really detect materials. We face some very serious challenges in shielded materials and there is technology being looked at to try to defeat those who would shield materials as they are brought into the country. So I think we have a direct influence, but we do it in partnership, particularly with the Department of Energy.

Senator COLLINS. Mr. Mowatt-Larssen, in your statement, you discussed how the 20th Century was defined by a nuclear arms race between states and that the 21st Century will be defined first by the desire and then by the ability of non-states to procure developed crude nuclear weapons. Now, in the Cold War scenario, the ability to attribute an attack to a state actor was fairly straightforward and thus that served as a powerful deterrent from one nation attacking another with nuclear weapons. But that appears to no longer be the case, given the complex nature of the threat posed by terrorist groups. To what extent does the ability to attribute the nuclear material that would be used by a terrorist group in constructing a weapon serve as a deterrent to a state that might provide the material?

Mr. MOWATT-LARSSEN. Senator Collins, I think that is an excellent question. Certainly, one of the most complex problems we have is to define the attribution issue, preferably before the event, in terms of whether it happens in the context of intelligence information or interdiction or information that a group has obtained this kind of material or we get a sample from, say, an agent or these kinds of things.

In the event of an attribution, we are working to do the basics right now to ensure we pull all these things together so we can find what we know, and I can address this in more depth in the next session.

I would also add that we shouldn't, in my view, give up on the notion of deterrence applied to this problem. It is going to be different than "mutually assured destruction," perhaps, but one aspect of it is the weapon. A weapon of mass destruction in the hands

of a terrorist group will only be useful if the group believes it can fulfill its aims with those weapons. I believe we have a chance to deter, whether it is al-Qaida, or even change in the longer term to the extent that it is unpalatable for any faith, any country, or any individual in the world to believe that a nuclear weapon can solve our problems.

So we often talk about the nuclear weapons in the hands of a terrorist as being undeterrable. If they have it, they will use it. I would just suggest here that we need to think really hard and do a lot more work in devising a strategic doctrine that will govern how we respond, whether it is in the attribution context or the deterrence.

Senator COLLINS. Thank you. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thank you, Senator Collins. Those were two characteristically good questions.

Thank you both, and we look forward to seeing you this afternoon at the closed session.

We will now call the second panel, the frequently mentioned Dr. Matthew Bunn, a Senior Research Associate for the Project on Managing the Atom at the Belfer Center for Science and International Affairs at Harvard University's Kennedy School of Government. Dr. Bunn is the author of the "Securing the Bomb" series, a yearly treatise on the supply side of special nuclear materials.

Joining Dr. Bunn is Gary Ackerman, apparently not our colleague from the House of Representatives. We know that because he is not wearing a flower in his lapel. He is Research Director for the National Consortium for the Study of Terrorism and Responses to Terrorism at the University of Maryland. Mr. Ackerman is currently working on a project exploring the decisionmaking processes of terrorist organizations.

We thank you both for being here, and Dr. Bunn, we would ask you to go first.

TESTIMONY OF MATTHEW BUNN, PH.D.,[1] SENIOR RESEARCH ASSOCIATE, BELFER CENTER FOR SCIENCE AND INTERNATIONAL AFFAIRS, JOHN F. KENNEDY SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY

Dr. BUNN. Thank you very much, Mr. Chairman, Ranking Member Collins, everyone. It is a pleasure to be here to talk about what I, like our previous panel, believe is a very real danger to the United States today.

My message is simple. This is a real danger. But on the other hand, there are specific steps we can take that I think can greatly reduce the risk to the United States.

On the night of November 8, 2007, two teams attacked the nuclear facility at Pelindaba in South Africa, where there are hundreds of kilograms of highly enriched uranium (HEU), bomb-grade highly enriched uranium. While one of the teams was chased off by the security forces, the other team penetrated the site without setting off alarms, proceeded to the emergency control center, shot a man named Anton Gerber there in the chest. He then raised the first alarm and they spent a total of 45 minutes inside the secure

[1] The prepared statement of Dr. Bunn appears in the Appendix on page 390.

perimeter before retracing their steps and going back out through the hole they had cut in the fence and disappearing into the forest.

While we do not know that they were after the HEU at that site, this nonetheless is, I think, a clear reminder that inadequately-secured nuclear material is not just a Russia problem, it is a global problem. We urgently need a global effort to ensure that all of these stockpiles are secured against the kinds of threats that terrorists and criminals have shown they can pose.

Now, we have heard already that the answer to the question, do terrorists want nuclear weapons, is yes. Al-Qaida has repeatedly attempted to get nuclear weapons material and nuclear expertise. We have heard already that it is plausible that terrorists could make a crude nuclear bomb if they got the nuclear material, as Senator Collins noted. An Office of Terrorism Analysis (OTA) study summarizing numbers of government studies pointed out that it might take only a small group of people who had never had access to classified information before, in machine shop-type facilities.

I believe that the answer to, could terrorists plausibly get the material, is unfortunately also yes. This kind of material exists in dozens of countries, in hundreds of buildings. The total amount of material in the world is enough to make approximately 200,000 nuclear bombs. The security for it ranges from excellent to appalling.

Based on the unclassified information available, I think the three areas of highest risk in my view are Russia, Pakistan, and the highly enriched uranium-fueled research reactors around the world.

In Russia and the former Soviet Union, security has improved dramatically, I would say, from the dark days of the early to mid-1990s. I do not think there is any facility in Russia anymore where one person could simply stuff nuclear material in his pocket and walk off, as occurred in the 1990s. But Russia has the world's largest stockpiles scattered in the world's largest number of buildings and bunkers, security that in my judgment has improved from poor to medium but still has quite significant weaknesses, and very substantial threats that these security systems must cope with, including insider conspiracies at a wide range of different types of facilities in Russia, not necessarily nuclear facilities but a pattern of insider theft conspiracies, and also large outsider attacks, such as at Beslan.

As just one example of the insider threat, in 2006, President Putin fired a Ministry of Internal Affairs (MVD) general by the name of Sergey Shlyapuzhnikov, who was one of those charged with law and order in the closed nuclear cities, for helping to organize smuggling in and out of the closed nuclear cities.

Pakistan has a small nuclear stockpile, believed to be heavily guarded, but it faces even larger threats, from insiders with a demonstrated willingness to sell practically anything to practically anyone and also large outsider attacks.

Highly enriched uranium-fueled research reactors: There are about 130 of these in dozens of countries around the world still using highly enriched uranium as their fuel. Most of them have very minor security in place. Many of them have only modest stockpiles of material and many of them have material that would re-

quire some chemical processing to be used in a bomb, but nonetheless I believe they pose a very substantial risk.

If they got the material and they managed to make it into a bomb, could they somehow deliver it to Washington, New York, or another major city somewhere around the world? Here also I think, in my view, the answer is yes. The length of our border, the diversity of the means of transport, the huge scale of the legitimate traffic across our borders, and the ease of shielding the radiation from these materials, which might be very small—the amount, even for a very inefficient, crude gun-type bomb, you are talking about a six-pack of nuclear material, and that is something, unfortunately, that is easy to hide.

And then we have heard just how horrifying it would be if the bomb did, in fact, go off in one of our cities. This is something that would change America and the world forever. In particular, one has to recall that the moment after a nuclear bomb goes off, someone, either the perpetrator or another terrorist group, is going to call up and say, "I have got five more and they are already hidden in U.S. cities and I am going to start setting them off unless you do X, Y, and Z." And with one bomb having just gone off, they will have substantial credibility, and the prospect for panic, uncontrolled mass evacuation of our cities, economic chaos and disruption is, I think, very great.

Fortunately, there is a good deal of good news, as well. I guess Mr. Ackerman will talk about that some more—there is no convincing evidence yet that any terrorist group has gotten the nuclear materials to make a bomb or the expertise to make a nuclear bomb. Making a nuclear bomb, even if you got the material, would be, I think, the most technically challenging thing that any terrorist group has ever succeeded in doing, and the obstacles may be daunting enough to lead many terrorists, even determined ones, to focus on other things.

A key additional piece of good news is the successes that our programs to improve nuclear security around the world are having. We have an alphabet soup of programs related to nuclear terrorism now in place, from Cooperative Threat Reduction to the Global Initiative to Prevent Nuclear Terrorism, and these are making real contributions. There is no doubt in my mind that the risk of nuclear terrorism today is much lower than it would have been had these programs never existed. But all that good news comes with the caveat, "as far as we know."

Taking that all into account, what is the probability of nuclear terrorism? The short answer is, nobody knows. Former Secretary of Defense William Perry is one of those who thinks it is more than 50 percent over the next 10 years. Even if that is wildly wrong, even if it is only 1 percent over the next 10 years, given the consequences, that is enough to justify very focused action.

So what can we do to reduce that risk? In my view, these facts lead to the conclusion that we have to do everything within our power to ensure that all caches of nuclear weapons and nuclear materials needed to make them everywhere are secure and accounted for to standards sufficient to protect them against the threats terrorists and thieves have shown they can pose, in ways that will work, and ways that will last.

So all caches means we need to go beyond just Russia. We need to have our nuclear security programs cover the world. We need to eliminate the gaps in existing programs. For example, the Global Threat Reduction Initiative is only planning to return to the United States a small fraction of the U.S.-origin highly enriched uranium that exists in other countries.

We need to work with other countries on drastically reducing the number of places where these materials exist, so that we can achieve more security at lower cost. In particular, I think we should not be encouraging other countries to pursue reprocessing of plutonium, which will expand the number of places, and I think, unfortunately, our current approaches to the Global Nuclear Energy Partnership have that effect.

Although we have to go beyond Russia, we do need a strong nuclear security partnership with Russia, including establishing joint U.S.-Russian teams that would help other states around the world upgrade security, and I think we need to keep in mind the need for such a partnership with Russia as we consider other actions that affect Russian interests.

Finally, we need to establish global nuclear security effective standards because nuclear security is only as strong as its weakest link. U.N. Security Council Resolution 1540 already requires every state to provide appropriate effective security for their stockpiles. If we can define what that means, what the essential elements are, and help states put those in place, we will be getting somewhere.

We need to work with Russia and with other countries around the world to make sure that they put the incentives, the resources, and the organizations in place so that the security we put in place now will be sustained over the long haul after our assistance phases out and that we can get rid of guards patrolling without ammunition in their guns and staff propping open security doors for convenience.

There is also a great deal that we need to do that goes beyond nuclear security, including some of the things that were discussed in the first panel, in terms of stopping nuclear smuggling and stopping the other elements of a terrorist nuclear plot.

Now, there are steps we can take within the United States. I won't go into them in great detail, but we need to remember that if we want to lead the world to convince them to secure their stockpiles and convert their research reactors to use fuels that cannot be used in a bomb, we need to do the same ourselves. We need to be moving more quickly to convert our own research reactors. We need to change the security rules for those reactors while they still have highly enriched uranium so that they have effective security in place. We need to provide incentives to shift away from the use of highly enriched uranium for medical isotope production. We need to close the gap that allows facilities regulated by the Nuclear Regulatory Commission that have bomb-grade material to protect against much lower threats than facilities with identical material at the Department of Energy.

I think we need a strengthened nuclear forensics effort on the attribution front. We need additional funding and more of it that gets out to the labs. Some of the labs working on pre-detonation foren-

sics have actually had to lay off staff recently because of funding constraints.

I believe we need a modified approach to cargo scanning of the large containers that focuses not on ensuring that every single container gets scanned, but that every single container has a good chance of getting scanned and that you have high-quality scanning and that you have a mechanism in place to take action when you have a detection. We need to also focus on going beyond the official ports of entry, which as Mr. Mowatt-Larssen mentioned is a gigantic challenge.

We do need to work on the preparedness for an attack, which will be addressed in subsequent hearings. None of this is going to be easy. We need to put in place someone in the White House with the ear of the President who has the full-time responsibility for leading the efforts to prevent nuclear terrorism and keeping that on the front burner at the White House every day. There is not such a person today. President Bush has not appointed anyone to the position that Congress created last year, the WMD Coordinator. We need to lay the groundwork so that the next President will appoint such a person that can hit the ground running. Congress also ought to get around to establishing the WMD Commission that was established in that legislation.

So in short, there are a wide range of things that we need to do. We need to build the sense of urgency with our partners around the world, but with a sensible strategy with adequate resources and with sustained high-level leadership, I think we can reduce this risk dramatically during the course of the next presidential term.

Thank you. Sorry for going over my time.

Chairman LIEBERMAN. No, thank you. Very interesting, very helpful testimony.

Mr. Ackerman, thanks for being here.

TESTIMONY OF GARY A. ACKERMAN,[1] NATIONAL CONSORTIUM FOR THE STUDY OF TERRORISM AND RESPONSES TO TERRORISM, UNIVERSITY OF MARYLAND

Mr. ACKERMAN. Chairman Lieberman and Ranking Member Collins, thank you very much for inviting me to speak today on the threat of nuclear terrorism. While it may not currently constitute the most likely threat to U.S. security from non-state actors, the prospects of terrorists detonating a nuclear device on American soil sometime within the next quarter century is real and growing.

As many of the fellow witnesses have mentioned, such an attack on the homeland would represent a game-changing event far exceeding the impact of September 11, 2001, on the Nation. Besides the obvious physical devastation and catastrophic loss of life, a successful act of nuclear terrorism would represent the apogee of individual destructive capacity and, in a sense, the consumerization of the ultimate military power.

Therefore, we cannot afford to wait for the first nuclear terrorist attack to occur before we act against the threat, and I commend the Committee for being proactive in this regard.

[1] The prepared statement of Mr. Ackerman appears in the Appendix on page 405.

While there are many dimensions of the problem, today I will focus on the threat of terrorists detonating a fission or fusion explosive on American soil, and particularly on the so-called demand side of the threat, which includes the identities, motives, and capabilities of potential perpetrators. Also, in the interest of discouraging entrenched patterns of thinking, during the course of my remarks, I will refer to several "Black Swan Events," a term used to describe those events which, although highly improbable, would have the effect of completely upsetting existing trends and expectations.

I have discussed general issues of motivation and intent more fully in my written testimony and here I will only reiterate two key points. First, that we should not assume that the desire to inflict mass casualties is necessarily the sole or even predominant motive for resorting to a nuclear option. Second, terrorists might have a far lower bar for success in the nuclear realm than would a state, with even a partial fizzle being almost as good as a full detonation.

At present, the universe of non-state actors seeking to acquire and use nuclear weapons appears to be confined to violent jihadists, a movement exemplified by the al-Qaida network, and one that is growing in size and scope and spawning a host of radical offshoots and followers. In a survey I recently conducted, almost three-quarters of the experts polled ranked Sunni jihadists as the most likely of 13 types of actors, including states, to successfully perpetrate a catastrophic WMD attack within the next 10 years.

Jihadists have, since the mid-1990s, made at least 10 statements advocating the possession or use of nuclear weapons, and there have been at least a dozen reports of jihadist attempts to acquire nuclear weapons, fissile material, or associated technical knowledge. While only a handful of these have been confirmed, when taken together with the strategic and religious justifications and the production of online technical manuals, there is evidence of a prolonged and enduring interest in nuclear weapons by jihadists.

In the longer term, the jihadists may be joined by other groups of extremists, including radical domestic groups. The real Black Swan in this regard would be the appearance of an as yet unidentified unorthodox religious cult with apocalyptic tendencies. While our intelligence capabilities have undoubtedly improved since the 1990s, when we were not even aware of the Japanese Aum Shinrikyo cult, the trouble is that it remains incredibly difficult to detect the one or two true threats amongst the literally thousands of obscure religious groups operating worldwide today.

A second Black Swan is that a terrorist group who would not otherwise pursue nuclear weapons may be propelled to consider the nuclear option more seriously if the opportunity arose for easy acquisition of weapons or materials, for instance, following governmental collapse in a nuclear weapons state.

Nuclear weapons will not, in my opinion, be the first choice or perhaps even the 20th choice of most terrorists, and even for the few who do proceed down this path, many technical, supply-side, and even strategic hurdles persist, making it easier and more cost effective for most of these terrorists to resort to alternative means. Yet both the terrorists themselves and the political, social, and,

perhaps most importantly, technological landscape are continually reshaping into novel and unexpected forms. I will, therefore, offer a few thoughts on how the threat of nuclear terrorism is evolving and how it might respond to global dynamics.

The first concern is the terrorists' learning curve. While knowledge of the precise specifications and tricks of the trade involved in nuclear weapons production can and should continue to be kept secret, the diffusion of broader knowledge and skill sets relevant to nuclear weapons, such as metallurgy, explosives engineering, and precision machining, is inevitable, especially in light of increasing radicalization at home and the global reach of the information revolution. This means that more of the terrorists of tomorrow are likely to be a lot more technically proficient than those of today, allowing for the accumulation, even if through trial and error, of nuclear knowledge and skills amongst radicals.

As an initial indicator of this trend, a recent analysis of online jihadist documents that deal explicitly with nuclear weapons has revealed that while their knowledge is still below par, there have been significant advances in the understanding of nuclear issues within the general jihadist community in only a few short years.

Second, even if jihadist planners feel constrained at present by the potentially alienating effects the use of nuclear weapons might have on the less radical members of the Ummah, there are signs that any existing constraints are lessening. The progression of jihadist statements in the past several years reflects the erosion of existing Islamic norms against mass killing on the scale associated with nuclear weapons. The upper limits on allowable casualties proclaimed by jihadists also seem to be on the rise, from a 2002 statement claiming the right to kill four million Americans up to a figure of 10 million in a 2003 fatwa.

The most prominent Black Swan related to the evolution of nuclear terrorism would be technological. While I am currently unaware of any viable technology which would allow even the most sophisticated terrorists to enrich their own uranium without detection, there is always the slim possibility that a technological breakthrough sometime in the next decade or two might make indigenous enrichment feasible. If so, this could change many groups' calculations with respect to the efficacy of nuclear weapons. Studies of the diffusion of innovations show us that overall changes in terrorist behavior with respect to weapon selection could then be both sudden and permanent.

I will now offer some recommendations for effective public policy responses to counter the demand side of the threat.

The first line of defense, on the demand side is to identify our adversaries and detect their intentions to use nuclear weapons long before their plans can have any chance of success. Efforts throughout the government have been initiated to perform this task, but these often receive far less attention and resources than the latest technologies for detecting radioactive materials. A dedicated program of net assessment using standardized threat analysis methodologies to detect those groups and individuals of greatest concern would enable us to avoid the nasty surprise of a homegrown Aum Shinrikyo. As an example of what even preliminary research into this area can reveal, recent work by me and my colleagues has

found that the more highly networked a terrorist group is, the more likely they are to pursue chemical, biological, radiological, or nuclear weapons.

While we may not be able to deter the terrorists themselves by the threat of retribution, the one saving grace is that terrorists, at least at the moment, cannot produce their own fissile material. This means that those pursuing a nuclear weapon capability must almost always rely on the assistance of others, whether these are government leaders, insiders at a nuclear facility, or illicit traffickers. It is these potential facilitators of nuclear terrorism, people who are not yet completely committed to the terrorist cause, whose actions we can deter. The most obvious way to do this is to credibly demonstrate that their participation in any part of the nuclear chain will be identified and that retribution will be swift and certain, and I unfortunately cannot say this has been the case so far.

However, this approach is not the only side of the equation to which we must pay attention. Our policies can influence the calculations of potential facilitators, especially those who have an existing ideological affinity for terrorists. For instance, we might seek to avoid or reorient those actions which would galvanize large numbers of Muslim scientists into feeling that they are obligated to take a more active role in the jihad. Also, while bolstering international nonproliferation norms and taboos against the use of nuclear weapons may have little direct impact on the behavior of the terrorists themselves, these might go a long way towards encouraging others, including criminals, states, and scientists, to refrain from making it easier for terrorists to acquire nuclear weapons.

The threat of nuclear terrorism also means that we must unfortunately reacquaint ourselves with the Cold War notion, as Senator Lieberman mentioned, of thinking about the unthinkable. This means moving beyond the current focus on questions of whether terrorists will succeed in acquiring a nuclear weapons capability. For example, if jihadists do eventually succeed in acquiring nuclear weapons, what then? They would face many of the same command and control dilemmas as a state would and their choices could have vital implications for our policy response.

So, for example, if we were to find out that al-Qaida has a nuclear weapon, should we launch a preemptive strike to decapitate its leadership in the federally-administered tribal areas of Pakistan, or would this make things worse and ensure that the weapon is detonated? The answer might differ depending on exactly which group of jihadists obtains a weapon, but the point is that we should consider and analyze such issues and our options far in advance of the President receiving the news that terrorists have the bomb and we find ourselves in the midst of a crisis.

In closing, since much of the risk of nuclear terrorism rests on supply side factors that I have not dealt with today but have been covered by Dr. Bunn and the other witnesses, I will not offer any numerical estimate of the overall threat, but I will state my belief that, at least among certain of the more fanatic subsets of our terrorist adversaries, the motivation to use nuclear weapons against the United States certainly exists and shows no signs of diminishing within the coming decades. It can therefore be expected that, barring some dramatic change in either radical ideologies or the

amount of fissile material worldwide, we will see additional attempts by terrorists to acquire and perhaps even use nuclear weapons on American soil.

I would like to thank the Committee once again for giving me the opportunity to share some of my thoughts with you today, and I am happy to make myself available to discuss any of these matters further.

Chairman LIEBERMAN. Thank you very much for very interesting testimony.

Let me pick up on something you said, Mr. Ackerman. This is of interest to this Committee because we have done a series of hearings on Islamist radicalization within this country and the tactics that are being used and how can we try to break through to prevent an act of terrorism. You suggested at one point the possibility, if I heard you correctly, of outreach to scientists within the Islamic world to deter them, if you will, from getting involved in this kind of WMD activity. Did I hear you right, and if so, just develop it a little bit more for the Committee.

Mr. ACKERMAN. I think that deterrence in this regard could be both a carrot and a stick. The stick obviously is to have unequivocal declarative policies that we will have swift and certain retribution against anybody that does get involved in nuclear terrorism in any way, shape, or form.

But on the other hand, the carrot of this would not be so much that we are offering something, but that there are many people who are sympathetic toward the extremist viewpoint who have not taken it upon themselves to necessarily become active in the jihad, because within the radical Islamic theology, for instance, an offensive jihad does not create an individual duty to participate. You can just sympathize. But once you think that there is a defensive jihad, that you are protecting Islam, then you are obligated as an individual to take part.

So for a scientist that may have some sympathies, an example are those two Pakistani scientists that we have heard about that went to bin Laden, similar scientists might have these sympathies but are not willing to risk their careers and their freedom, etc., at the moment to act on it. However, certain acts that we take, for instance, if we invade a Muslim country, could push them to the point where they are now saying, I have no other choice based on my beliefs but to use my skills and knowledge and access, and if they are a nuclear scientist, they could then assist the jihadists.

Chairman LIEBERMAN. We have talked a lot this morning about one of the choke points here being to stop the terrorist groups from getting nuclear materials. Let us assume for a moment that a terrorist group does obtain nuclear materials. What is the level of expertise that they require to then convert those materials into even what we would consider a primitive nuclear device? In testimony earlier, as I believe Mr. Allen said, I thought convincingly, if a nuclear device is set off by a terrorist group, regardless of whether it is considered primitive or sophisticated, it will alter history.

So my question is, and I am getting to the point of whether there is another choke point you are suggesting, how much expertise do these groups need once they get the material to make a weapon?

Dr. BUNN. This would be one of the most challenging, probably the most technically challenging kinds of attacks for a terrorist to pull off. They are going to need someone who can understand processing and casting uranium, machining uranium. They are going to need someone, if they are making a gun-type bomb, who understands ballistics of the cannon that essentially fires a shell of highly enriched uranium into a container of highly enriched uranium. The bomb that obliterated Hiroshima, for example, was essentially a cannon that fired a shell of highly enriched uranium into rings of highly enriched uranium.

It is not something that is trivial to do. Unfortunately, a wide range of government studies have concluded that it is plausible once they had the nuclear material. As Mr. Mowatt-Larssen pointed out, it is very different making a crude, unsafe, unreliable nuclear bomb than it is making a safe, reliable series of nuclear bombs that a state might want to have in its arsenal. And even for that more challenging objective, for most nuclear weapons programs, 90 percent or more of the total effort is devoted to making the nuclear material. So once you have the nuclear material, you are over the hardest part.

But you are absolutely right that there are additional things that we should look at. We should look at trying to stop the recruiting and trying to stop the financing. This is going to be one of the more expensive terrorist operations. I think this will have as many indicators and potential things we might be able to see through intelligence as any terrorist plot because it will be a large and complex terrorist plot. Unfortunately, we cannot necessarily assume that it will be large and complex enough that we will see it in time, but I think there are quite a number of chances that we might be able to.

Chairman LIEBERMAN. Is the general assumption, Mr. Ackerman, in the field of experts in this subject that if a terrorist group obtained nuclear materials, it would not have a particular problem in also bringing in the expertise necessary to assemble that material into a weapon?

Mr. ACKERMAN. This is a very interesting question, Senator. It really depends on the terrorist group themselves. Many terrorist groups just simply do not have the logistical, financial, and other capabilities, even if you gave them 20 kilograms of enriched uranium, to create a bomb. However, the more technically proficient of our terrorist enemies, and I am looking particularly at the core element of al-Qaida, they have vast networks of expertise that they can tap into and they do not necessarily need a weapons scientist. The famous experiment from Lawrence Livermore National Laboratory showed that even graduate students with some degree of physics knowledge but no weapons knowledge could come up with a decent design for a bomb. Yes, it would be difficult. They may not have a complete chance of success, but I do think that they could assemble the capabilities to actually fashion a working nuclear weapon.

Dr. BUNN. One of the things that I think is worth considering for Congress here is that I think this changes a little bit how you think about how we should target our scientist redirection programs, because it may not be that the only threat is the guy who

could be the Oppenheimer of a third world weapon program. You may also be worried about the technician who really knows how to machine uranium. You may also be worried about the technician or the guard who knows how the security system works and would be capable of leaving the alarm off at night so that somebody could come in the back door.

And that is a totally different set of people than we have ever really thought about trying to engage in countries like Russia and Pakistan and so on before in terms of these scientist redirection programs. So it is something worth pondering, at least, whether we are focused where we need to be.

Chairman LIEBERMAN. Thank you. Very helpful. Senator Collins.

Senator COLLINS. Thank you, Mr. Chairman.

Dr. Bunn, let me begin by thanking you for your comments on the effectiveness of the 100 percent scanning of cargo containers. I believe that Congress made a real mistake in going in that direction last year. I thought the risk-based, layered security approach of the SAFE Port Act was far more effective and a better targeting of resources. So I very much appreciate your comments on that.

I asked our previous witness about some comments that you made in your very good report of last September about whether the U.S. Government is compiling a comprehensive, prioritized, risk-based list of troubling sites across the globe, and the witnesses have indicated that work has begun on that. Could you give us your assessment to the extent that you are aware of what they are doing, of how far along we are in what seems to be a very important process to guide our work?

Dr. BUNN. Well, let me begin my answer to that by saying my clearances haven't been active for some time, so that constrains greatly the detail of my knowledge of what Mr. Mowatt-Larssen and his colleagues are doing.

But within that constraint, I am very enthusiastic about what they are doing. I have been calling for creating—it is probably not a single database, it is probably a complex of knowledge, but something that would have everything we know about the quantity and quality of nuclear material and nuclear weapons at different places around the world, everything we know about how secure those facilities are, and then also everything we know about the threats that those facilities face because you could easily imagine that a security system that was perfectly adequate in Canada wouldn't be adequate in Pakistan because the mujahideen can bring a lot more force to bear in Pakistan than they can in Canada.

It is my understanding that they are putting that together right now, that they are doing it in a prioritized way so that a lot of the things that you would guess offhand would be the highest-risk sites are already deeply analyzed in their Nuclear Materials Information Program. So my hat is off to them. My Clinton-era colleagues do not like to hear it, but it is actually true now that the Bush Administration has done greatly more than we managed to get done in the Clinton years on a variety of these programs to secure nuclear material and now to collect intelligence on it and so on. I think we have to give credit where credit is due.

Senator COLLINS. Thank you.

Dr. BUNN. I think there is a lot more yet to be done.

Senator COLLINS. Right. Exactly. Mr. Ackerman, I was intrigued by your notion of the Black Swans because it brought to mind another memorable phrase and that is the "failure of imagination," which the 9/11 Commission pointed to as one of the problems with anticipating the attacks on our country in 2001, and your Black Swans are trying to help us think of unlikely but still possible events that could happen.

Now, one of the factors that would help facilitate nuclear terrorism that you identified is the advancement of technology that will inevitably make nuclear devices easier to design and build. What efforts can you undertake to counter advances in technology? That seems like a very difficult one. You obviously cannot stop science. You cannot stop the progression of technology. What suggestions do you have for mitigating that trend?

Mr. ACKERMAN. That is an excellent question, Senator. In terms of the dangers posed by technology, it is not just the technologies themselves, but it is also how the adversaries will react to those technologies. Will they adopt them? Will they even be aware of them? Because we could create a very dangerous technology, but if nobody is aware of it, it is no threat.

There are no technologies, and I can talk on this point in more detail but I would rather not do it in a public session, on exactly which technologies, but there are no technologies that are currently mature enough to enable this. But there are candidate technologies that may one day be mature enough. I think that some of those technologies can be controlled. They do not have any other applications but enriching nuclear material.

Other potential technologies might come from a completely different sector or from the health sector or from the industrial sector. It might just be one of those things where somebody says, oh, there is a way. Nobody ever thought of doing this before. We can now do it. Once the genie is out of the bottle, once the first paper is written on this or once it arrives on the Internet, I think there is very little we can do.

But what I do think we need to do is to look at that particular day and at least come up with contingencies because on that day, the securing of other fissile materials becomes a lot less central to the problem. It then becomes one part of a much larger problem. So I think that what we need to do is think creatively about how we deal with that. But there are no easy answers.

Senator COLLINS. And there may be countertechnologies that are also advancing that give us more means to detect, deter, prevent such an attack also. Dr. Bunn.

Dr. BUNN. I would argue that some of the near-term things in terms of the spread that Dr. Ackerman was talking about of more people having precision machining capabilities, more people having explosive engineering capabilities, is to some extent inevitable. But to the extent that our broader counterterrorism efforts succeed, especially in winning hearts and minds among technical experts who know a lot about explosives or know a lot about machining or things like that, then we can still, I think, hold the line or even reduce the ability of terrorist groups to get access to the people who know how to do the precision machining and the people who know how to do the explosives.

So I think there is an inevitable dispersion of that kind of knowledge, but it is not inevitable that it disperses into the hands of the most dangerous adversaries. At least, we can affect the rate at which that happens, I think.

Senator COLLINS. Thank you. Excellent testimony. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thanks very much, Senator Collins.

Dr. Bunn, I believe you mentioned, quite correctly with justification, that the WMD coordinator at the White House authorized by law has not been filled, nor has Congress acted on a WMD Commission, similarly. And you mentioned in your testimony the alphabet soup of various Federal agencies we have involved in this problem in one way or another. Do you have any thoughts about what ways in which we might better organize our effort to deter a nuclear terrorist attack on our homeland?

Dr. BUNN. Well, I have long felt that it is very important to have someone in the White House with at least access to the President when they need it, maybe a Deputy National Security Advisor, who is full-time on this problem because right now there is literally nobody in the U.S. Government who has full-time responsibility for leading all of the different disparate efforts of our effort to prevent nuclear terrorism. There is, in a certain sense, nobody in charge.

There are very capable people in charge of certain parts of the problem. We have heard from some of them today. But there is nobody in charge of the overall problem, and that means that a lot of gaps between one program or another, a lot of overlaps, a lot of opportunities that aren't within the boundary of a particular program and its way of thinking get missed. And it also leads to situations where an issue really needs to be esclated to the presidential levels, for the President to call up one of his counterparts and say, look, you have to do this, where that call does not get made. Often it does not happen.

Just as one example, we built this, what some people call the plutonium palace, a fissile material storage facility at Mayak in Russia. It was completed in late 2003, and there wasn't a gram of plutonium that was put into it until July 2006. It is almost 3 years later, and that is 3 years that were happening after September 11, 2001, after the Russians had acknowledged that terrorist teams were casing their nuclear weapon storage facilities. I am reasonably confident that neither President Bush nor President Putin actually knew that was true during that time.

Chairman LIEBERMAN. Why did that happen?

Dr. BUNN. There were a variety of small bureaucratic disputes between the United States and Russia, but also bureaucratic bungling on the Russian side, yes.

Chairman LIEBERMAN. Yes.

Dr. BUNN. To this day, it remains true that we haven't managed to agree on the transparency measures that the United States was supposed to have for the material that would be placed in that facility. The combination of current U.S. policy and current Russian policy, even if the transparency measures get agreed, will lead to that facility always being three-quarters empty because of—I can go into the details of that, if you would like——

Chairman LIEBERMAN. That is OK.

Dr. BUNN. But also, the Russians were not getting around to processing the material into the form that they were willing to have transparency measures to be applied so that they could put it into the facility, and not getting around to putting in place a security force that would make the facility secure.

Chairman LIEBERMAN. That is helpful. So really, filling that position in the White House——

Dr. BUNN. I think is key.

Chairman LIEBERMAN [continuing]. Either before this Administration ends or beginning in the next one, it is critical.

Dr. BUNN. Not only filling the position, but making sure it focuses, because frankly, I will be candid, one of the concerns I had with the way it was written in the legislation is it is supposed to cover all weapons of mass destruction proliferation and weapons of mass destruction terrorism, and issues like Iran and North Korea, they are going to force themselves to the front pages every day. I believe they are already getting high enough level attention that—I have problems with our policies on those, but it is not lack of high-level attention that is the problem on those. And so I think it really needs to focus on the things that aren't getting enough high-level attention, including, in my view, nuclear terrorism.

Chairman LIEBERMAN. Thank you.

Senator Collins, do you have other questions?

Senator COLLINS. No, thank you.

Chairman LIEBERMAN. I want to thank both of you for your written and oral testimony. It has been a productive, if sobering, morning. Senator Collins talked about the failure of imagination that the 9/11 Commission pointed to prior to September 11, 2001. Part of making sure that we find a strong space both between the extreme of overreacting and overimagining the worst and failing to imagine what is not only possible but is happening now is for us to hold public hearings like this in which we are dealing with difficult subjects. It is sometimes difficult to hear and contemplate the reality. It is also difficult in the sense that we want to do this in a way that doesn't in any way compromise classified material or security. But I believe we have done that this morning. I thank the four witnesses very much.

We are going to continue this series of public hearings on this subject, but more immediately, we will reconvene the Committee this afternoon in closed session to continue this work.

I am going to leave the record of the hearing open for 15 days in case Members of the Committee have additional written questions they want to ask the witnesses or if the witnesses want to submit additional testimony for the record. Until then, thank you very much for the significant contribution you have made this morning.

The hearing is adjourned.

[Whereupon, at 1 p.m., the Committee was adjourned.]

NUCLEAR TERRORISM: CONFRONTING THE CHALLENGES OF THE DAY AFTER

TUESDAY, APRIL 15, 2008

U.S. SENATE,
COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 10 a.m., in Room SD–342, Dirksen Senate Office Building, Hon. Joseph I. Lieberman, Chairman of the Committee, presiding.

Present: Senators Lieberman, Carper, Pryor, Collins, and Warner.

OPENING STATEMENT OF CHAIRMAN LIEBERMAN

Chairman LIEBERMAN. The Committee will come to order.

Good morning and welcome to our hearing. This is the third in the series of hearings this Committee is holding to examine the threat of the nuclear terrorist attack on America's homeland, what the Federal Government is doing to prevent such an attack and how prepared our government is to respond to the challenges our Nation would face if efforts to prevent such a nuclear terrorist attack should fail.

At our last hearing, we asked the basic question of how serious the threat of nuclear terrorism is, and top intelligence officials of our government answered that it is serious, that terrorist groups have demonstrated a clear intent to develop and use nuclear weapons to achieve their extremist goals.

These top terrorism officials also said that they were convinced that if terrorists acquire enough of the special nuclear materials they have sought and are seeking, they were capable of building at least a crude nuclear device.

So against the backdrop of what the best information we could gather says is the reality of the threat of nuclear terrorism inside America, today we are going to look at the consequences of a nuclear attack and the challenges that our Nation would face in the days and weeks thereafter.

While our primary national goal, of course, must be the prevention of such an attack, we must also prepare for the possibility that a determined terrorist will succeed despite our best efforts.

An adequate response to such a catastrophe will require marshaling the full resources of our country, including all levels of government, the private sector and, indeed, individual Americans.

The detonation of a nuclear weapon in a major city would obviously have a devastating effect. According to the Department of

Homeland Security's National Planning Scenario, although we cannot know the exact yield, of course, from a nuclear weapon acquired by terrorists, a detonation would kill an enormous number of people from the cumulative effects of the initial blast, the ensuing fires, and the spread of lethal radiation.

Millions of people could be displaced for extended periods of time, especially if panic caused by the blast leads to an exodus of people from nearby areas not otherwise affected.

The economic damage from such an attack could be as much as a trillion dollars, according to a study by the RAND Corporation.

The challenges our country would face in the days after a nuclear attack are massive and unprecedented. Essential response resources would be severely damaged or perhaps destroyed. Our country's medical system would have to handle a sudden surge in casualties unlike anything it has previously experienced. And the Nation's government and private sector could face great difficulties meeting the basic needs of many Americans.

Coordination among Federal, State, and local government entities would be vital. But those governments themselves could be compromised and the communications infrastructures that they oversee and operate could be badly damaged. First responders, trying to address the damage and help the injured, would risk radiation exposure themselves.

Maintaining law and order would, of course, be a necessary prerequisite to providing emergency care and much else involved in a response. Logistical challenges would be huge. Effective communication with the public could save lives and lessen the panic but, of course, only if it was done in a way that was credible and reached affected communities.

The scenarios we are discussing today are very hard for us to contemplate, and so emotionally traumatic and unsettling that it is tempting to want to push them aside. However, now is the time to have this difficult conversation, to ask the tough questions, then to get answers as best we can and, of course, to take preparatory and preventive action.

The actions that are taken now, I think, can save many thousands of lives in the event of this nuclear catastrophe and will, in many other ways, reduce the damage to our country from such an attack. This is why we hold this hearing and why we are so grateful to the distinguished and experienced and thoughtful panel of expert witnesses who are before us today.

Senator Collins.

OPENING STATEMENT OF SENATOR COLLINS

Senator COLLINS. Thank you, Mr. Chairman.

Let me begin by commending you for undertaking this very challenging series of hearings. This is an extraordinarily important issue. I often think that Congress sometimes focuses too much on minor issues. Certainly the threat of nuclear terrorism is a compelling and urgent challenge for our country and I commend you for your leadership on this.

The Committee's previous hearings have made clear that preventing such an attack must, indeed, be an urgent and compelling priority for our country. It is also clear that we must consider the

response that would be necessary in the terrible setting of death and devastation that our Nation would confront if such an attack were to succeed. As the report from the Harvard-Stanford Preventive Defense Project makes clear, the day after a terrorist nuclear attack is "a grim prospect to contemplate, but policymakers have no choice."

A 10-kiloton device, a plausible yield for a bomb constructed by terrorists, could be smuggled into a seaport as cargo, flown over a city in a private plane, or driven into a city in a truck.

Now, we hope that the improvements we have made in port security and other areas would make that difficult to carry out but we cannot exclude the possibility of such a successful enterprise.

When detonated, this bomb could instantly kill many thousands and destroy buildings within a half-mile radius. In the aftermath, we would confront overwhelmed and obliterated local response capabilities, mass casualties, evacuations, and demands for food and shelter. Great numbers of people would be in urgent need of medical attention and decontamination. The economic and psychological impacts would also be devastating.

In some respects, planning and response for a terrorist nuclear attack would resemble that of any catastrophic disaster. In other respects, however, including the intensity of shock in the target area, the initial pulse of radiation, and the subsequent fallout, a nuclear attack would have its own special horrors that demand specific preparations.

These preparations ought to include well-thought-out measures to deal with non-physical damage. A nuclear attack in a major American city would be an unprecedented event with profound emotional and psychological ramifications. Our preparations must include plans for providing steady flows of accurate information and for addressing the psychological as well as tremendous physical injury.

No region of the country is immune to this threat. An attack would undoubtedly require a regional and Federal response to supplement overwhelmed State and local capabilities. These are powerful reasons to ensure that responders across the country are supported at high levels of preparedness and that we maintain the all-hazards focus of the National Response Framework.

Just as the Hurricane Katrina disaster drew in first responders from around the country, including people from my own State of Maine, far from the disaster site, a nuclear strike in any American city would require resources from well beyond the immediate area.

These resources would clearly include military units. As my colleagues will recall, however, in January the National Commission on the National Guard and Reserves warned that because this Nation has not adequately resourced its forces designated for response to weapons of mass destruction, there is "an appalling gap" in readiness.

Now, the commander of the Northern Command takes issue with that as do some other experts but the fact is that we still have a long ways to go to in resourcing and designating units that would be ready to come to the rescue.

We must also carefully consider the political and economic consequences of such an attack. Without careful and diligent con-

tinuity-of-government planning, critical services and the rule of law, at least in the affected areas, would be severely diminished. Our commercial and financial sectors must also plan to mitigate the initial losses and to provide for timely resumption of the economy.

To be sure, no level of readiness will prevent the horrendous toll of death, injury, property damage, economic disruption, and political upheaval that would inevitably follow a nuclear attack. But proper planning can ease the suffering and mitigate the losses.

And while it is understandable that our first priority has to be the physical impact, I am also eager to hear from our witnesses today what we should be doing to address the psychological, the governmental, the rule of law, and the economic consequences as well.

Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thank you, Senator Collins, for that very thoughtful statement.

I appreciate again the witnesses that are here. We have a distinguished panel including Dr. Ash Carter of Harvard, Co-Director of the Preventive Defense Project, and, of course, previously an executive at our own Department of Defense.

Dr. Cham Dallas, Director of the University of Georgia, Institute for Health Management and Mass Destruction Defense.

Dr. Roger Molander, Senior Research Scientist at the RAND Corporation.

And John Gibb, Director of the New York State Emergency Management Office.

These witnesses have looked at the serious subject that we are contemplating this morning from various different perspectives and published important pieces of work in response, and we are delighted that you are here today. We welcome you.

Dr. Carter, it would be an honor to start with you.

STATEMENT OF HON. ASHTON B. CARTER,[1] CO-DIRECTOR, PREVENTIVE DEFENSE PROJECT, JOHN F. KENNEDY SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY

Dr. CARTER. Thank you, Mr. Chairman. Thank you, and thank you, Senator Collins, for inviting me to testify before you today on the findings of the Harvard-Stanford Preventive Defense Project's so-called Day After Project which explored and analyzed actions that would need to be taken by the government in the 24 hours after a nuclear detonation in a U.S. city.

I really applaud you for giving coverage in this Committee to this terrible prospect. I also regret that you have to. But no one can calculate the probability that a nuclear weapon will go off sometime in an American city but it is reasonable to surmise that probability has increased in the last few years, increased because North Korea has gone nuclear. Iran looks like it might follow. Seventeen years after the end of the Cold War, Russia's stockpile of materials and bombs is still not completely secured. Pakistan, which has already

[1] The prepared statement of Dr. Carter with attachments appears in the Appendix on page 417.

shown itself to be a vendor with the wherewithal to export nuclear weapons technology, is unstable.

And we are all expecting that enrichment and reprocessing which are the underlying technologies to make highly enriched uranium and plutonium will spread worldwide with the spread of nuclear power, which is one of the palliative or preventive steps necessary to prevent climate change.

So for all of these reasons you can forecast that this probability, dire as it is and incalculable as it is, is probably increasing. And at the same time in the last 5 years global terrorism has obviously been on the rise.

So you put these two things together, more material to be stolen or sold and more people intent upon mass destruction, and you have a greater probability of nuclear terrorism.

In 2005, former Senator Sam Nunn, framed the need for Washington to do better at changing this math of greater and greater probability with a provocative question. "On the day after a nuclear weapon goes off in an American city," he asked, "what would we wish we had done to prevent it?"

But in view of the increased risk in recent years, I and my collaborators, and they are former Secretary of Defense William Perry and former Lawrence Livermore National Laboratory Director Michael May, decided we needed to ask a follow-on question to Sam Nunn's question, namely, "What should we actually do on the Day After?" Not what we wish we had done. What would we actually do? What steps can and should our government take now to be prepared for this awful contingency?

And accordingly, we convened a workshop in Washington of leading government and non-government experts to consider this question under the auspices of the Preventive Defense Project, and my testimony summarizes the report of this workshop, which was authored by myself, Mr. May, and Mr. Perry. The workshop itself was off-the-record, and none of its participants, a very distinguished group who are listed at the end of my written testimony, is responsible for its content. The work was sponsored by the generosity of several foundations and received no government funds.

But I also want to mention that I just recently wrapped up a review which I co-chaired with Ambassador Robert Joseph for the Department of Defense of the programs of the Defense Threat Reduction Agency, which has important responsibilities for this circumstance, including critical technical capabilities. That report will be available shortly after it undergoes security review.

Nothing I can tell you, Senators, from our report would make the Day After anything less than the worst day we have had in the Republic. No greater failure of our government's duty to national security could occur than to let this catastrophic event befall our people. Yet it also turns out that much could be done to save lives, to reduce the cost to the country as a whole, and ensure that our Nation, and civilization more broadly, endures. After all, the underlying dynamic would remain a few terrorists acting against the rest of us.

I would like to summarize our findings about what could be done in five headings.

But first I just want to make a "zeroth" point, and I know you have covered this before in your hearing but I just cannot pass it over. A consideration of the realities of the Day After makes it such that your strongest recommendation or my strongest recommendation to a President who finds himself or herself in this position is: "If I were in your shoes, I would not be in your shoes."

Terrorism probably cannot ever be entirely eradicated because it has its sources in the aberrant motivations of small groups of people or even individuals. But nuclear terrorism can be eradicated. The reason for this is a fortunate blessing of nature. Making a nuclear bomb requires highly enriched uranium (HEU) or plutonium, and neither of these metals occurs in nature. They have to be manmade.

Nature's second gift is to make it comparatively difficult to make either one. Enrichment and reprocessing are beyond the capabilities of even the most sophisticated terrorist group. Such a group must obtain HEU or plutonium from the comparatively few governments—you can almost count them with two hands—that have taken the time and treasure to accomplish enrichment or reprocessing. If these governments safeguard their materials, there can be no nuclear terrorism.

But after that, the laws of nature grow unkind. It is not beyond the ken of a competent terrorist group to make a bomb once it gets the material, especially if it is uranium. It is very difficult to detect these metals in transit, since neither is highly radioactive. And no vaccine can protect against the blast and radiation from a detonation. There is, therefore, no more important national security imperative than to prevent "loose nukes" at the source.

And since Mr. Perry, Mr. May, and I spent many years and much effort as have the two of you, Senators, at prevention, I just needed to say that.

But let me move on to our five principal findings. They refer to the circumstance of a 10-kiloton weapon detonated at ground level or in a building in a major American city.

This is the same yield range as the Hiroshima and Nagasaki weapons and would represent a successful design effort by the perpetrators. North Korea, it appears, did not do as well in its underground test in 2007.

The effects, however, would be very different from the World War II bombings since the Hiroshima and Nagasaki bombs were detonated high in the air over Japan and resulted in far less fallout.

Our first finding might seem obvious, but it is still not fully reflected in government planning. The scale of this disaster would quickly overwhelm even the most prepared city and State governments. To avoid repeating the Hurricane Katrina fiasco on a much larger scale, Washington should not pretend that in the instance of nuclear terrorism its role can be solely to support State and local responders. And State and local governments, even though their actions to save lives and prevent panic in the first hours would be essential, must abandon the pretense that they could remain in charge and in control.

The Federal Government, led by the Department of Homeland Security, should have plans that foresee it stepping in quickly, taking full responsibility, and devoting all of its resources.

Related to this finding is that the assets of the Department of Defense (DOD) will be required in the Federal response, including for law enforcement. Now, as a DOD person myself, it was understandable to me that in the early days after September 11, 2001, DOD showed reticence to involve itself in the homeland security response. It had, after all, conflicts in Afghanistan and looming in Iraq on its hands and it feared a raid on the defense budget for homeland security. But that period has passed, and DOD should re-engage on the homeland security front.

I am encouraged by some signs I see that Secretary Gates is doing just that.

Our second set of findings has to do with the immediate effects of the detonation, and much more will be said about this and from a position of much greater expertise by the witness who follows so I will truncate what I say. The gist of it is this.

Within a circle about two miles in diameter, the length of the Mall, the devastation from the blast would be near total. Then just downwind of that circle, in a cigar-shaped area a few miles long, fallout would be severe enough to submit people who lived there to lethal doses of radiation even if they took modest precautions.

If these people knew who they were, and on a clear day they could tell by looking in the sky who they were, they would have to evacuate quickly to avoid lethal exposure.

But elsewhere in the city, where most of the inhabitants would, in fact, be working or sleeping, people would have more choices that emergency planners would need to manage. People upwind would not need to take any action. Downwind, but outside of the "hot" cigar, the best move for many people would be not to move at all but to seek moderate shelter somewhere where either mass shields them or distance attenuates the radiation reaching them.

The worst thing for people to do in much of the downwind area would be to take to the highways at the same time, allowing the dust to settle on them when they were unsheltered and stuck in traffic, and by the way, impeding the emergency response.

Now, this is an important technical fact. The radiation dose rate would drop off roughly in proportion to the passage of time so that after 3 days one could take three times as long to evacuate. Sheltering for this period of time would not be difficult and should not be compared to the Dr. Strangelove mineshaft-type civil defense shelters of the 1950s.

Managing the optimal mix of evacuation and sheltering would be the responsibility of the government which would need to quickly predict the path of the plume, advise citizens, close some roads, and so on.

Our third set of findings deals with the long-term effects of the detonation, which are dominated by the problem of radiation. Radiation is unique to nuclear terrorism and uniquely frightening to most people. People far enough downwind that the radiation did not present an immediate danger could leave their homes or stay in their homes, leave for a while and come back, come back briefly to recover a pet or valuables, or never live in the area again. Their choices would be determined by the dose of radiation they would be willing to absorb.

The doses far downwind, less than 50 rems total dose, would not make people die or even get sick. Instead, these so-called low to moderate doses would only raise their statistical chance of getting cancer later in life and dying from it—raising that chance from 20 percent, which is the chance we all have on average of dying of cancer. You have got to go somehow, and a fifth of the time it is by cancer. That probability could rise from 20 percent to something higher: 21 percent, 22 percent, up to 30 percent at the maximum survivable exposure.

For the great majority of people downwind, the chance would be small enough, let us say 20.1 percent, that they would not notice it themselves but the public health authorities would notice, years later, a greater cancer death rate in this population.

A critical matter related to low- and moderate-dose exposure which is the major issue for most of the people in the city affected has to do with the choices for first responders and troops sent to the stricken city. Few of those first responders would choose to have their chance of dying of cancer rise from 20 percent to 30 percent. But in the case of smaller probabilities, a first responder might be willing to go into the radiation zone for a short time.

Protocols already exist that provide for higher permitted doses for workers in nuclear industries than for the public at large. These choices can ultimately only be made by individuals, but the protocols they follow must give them the best chance to know which areas are hotter than others and how long they can stay in the zone to accomplish their duties.

Once a first responder has absorbed the permitted dose, he or she could no longer serve in the zone. All this obviously has huge implications for the competence of the response, for how it is planned, and for how many personnel must be rotated in and out of the zone.

Our fourth finding is perhaps the most important of all. It is the unpleasant fact that the first detonation probably will not be the last or at least it will not feel that way. Let me explain.

If terrorists manage to find enough material for a bomb, or to steal or buy a bomb, who is to say they did not get two, or three, or four from the same source? There is no technical or operational reason why nuclear terrorism should come one-at-a-time.

What is absolutely clear is that terrorists will claim to have more after they detonate the first one. After all, their intent is to sow terror. Public officials will, therefore, have to behave as though there are more. The public surely will. Said differently, nuclear terrorism will not seem like an incident, but instead like a syndrome or campaign of terror. So people in other cities than the one struck will want to evacuate or at least move their children out of the cities, as the British did in World War II.

To prevent a second, third, and fourth detonation, the U.S. Government, by now itself relocated out of Washington, will be desperately trying to find the terrorists and trace the source of the bombs. We know that the investigation must and surely will, aided by such things as radiochemical forensics, ultimately lead to a government somewhere, Pakistan, North Korea, Russia, or any one of a dozen or so governments that operate hundreds of facilities where bombs or fissile material are stored, since, as I said before,

the terrorists surely did not make the HEU or plutonium but instead stole, bought, or otherwise obtained it from a government facility somewhere.

It has become something of a fad to say that the United States will retaliate against any government found to be the source of a bomb detonated on the United States. And, of course, it would be a reasonable thing to consider if the government involved was in any way witting in the plot. But on the Day After, our national interest will take us in another direction—one of cooperation, not threats—since we will desperately need the help of those governments to track down the remaining bombs and put the campaign of nuclear terrorism to an end.

Our fifth and last set of findings has to do with the effects of the outbreak of nuclear terrorism on our society and government. Both of you have mentioned this very important topic.

I believe that the U.S. Government itself, in a form recognizable to the citizenry as constitutional, would survive even if the first bomb struck Washington. On my first job in the Pentagon working for Secretary of Defense Caspar Weinberger, I had some involvement with the continuity of government effort to deal with the far more daunting task of what we called "surviving the national command authority" under a rain of 3,000 equivalent megatons of Soviet missile warheads.

Then again in the Clinton Administration after the Cold War ended, I saw this effort adapted to contingencies like nuclear terrorism. I am not current on these efforts, but I would be very surprised, especially after September 11, 2001, if they were not robust and well thought-out.

A bigger issue is survival of governance itself, of the people's sense of well-being and safety, that their institutions were competent to respond to the emergency and protect them, that important things had been thought through in advance, that they were given good advice about how to act on the Day After, and ultimately, that they could raise their children in big urban settlements. This is another reason, besides saving lives and property on the Day After, for us to think now about our response.

It is also important that we anticipate now our natural impulse on the Day After to over-react. We should resolve now that any extraordinary measures taken on the Day After have a sunset clause and that they undergo a total review periodically to see if they continue to strike the right balance between responding to nuclear terrorism and other objectives that constitute the good life in civil society.

This is also an appropriate note on which to close. The more competent and capable our government is on the Day After, and the more quickly and surely it can bring the campaign of nuclear terror to an end and make sure its recurrence is much less likely than it is now, and the less it is prone to panic and over-reaction, the less this awful event needs to lead to a change in our way of life. That is why it is important for the Congress and this Committee to address the Day After.

Thank you for having me.

Chairman LIEBERMAN. Thank you, Dr. Carter. You and your colleagues have done a great service by forcing yourselves to think through these matters and it is very helpful to us.

Incidently, the Committee at its next hearing will invite people in the Federal Government who have responsibility for the Day After to come in and talk to us about what they are doing, and also we are going to ask them about some of the suggestions that you make today.

Dr. Dallas, thanks for being here and we welcome your testimony now.

STATEMENT OF CHAM DALLAS, PH.D.,[1] DIRECTOR, INSTITUTE FOR HEALTH MANAGEMENT AND MASS DESTRUCTION DEFENSE, UNIVERSITY OF GEORGIA

Mr. DALLAS. Thank you, Mr. Chairman for inviting us and for bringing this important topic out in the open.

After hundreds of lectures I have given on this, I have actually seen a decrease in interest, if anything, and I really appreciate your bringing it to the fore.

Chairman LIEBERMAN. Why do you think the interest is decreasing?

Mr. DALLAS. I think it is just a diminution since September 11, 2001.

Chairman LIEBERMAN. Yes.

Mr. DALLAS. I have given lecturers to literally thousands of medical personnel, and they are starting to drift back to other interests.

Chairman LIEBERMAN. Although, would you say that the threat is probably greater today than it was on September 11, 2001?

Mr. DALLAS. I definitely conclude that the threat is greater and is increasing steadily with each passing year just with the march of technology.

Chairman LIEBERMAN. Please proceed.

Mr. DALLAS. In that vein, the threat, posed by the use of weapons of mass destruction, including nuclear weapons, within the United States has grown significantly in recent years and will continue to grow, focuses attention on the medical and public health disaster capabilities of the Nation in a large scale crisis.

The expected initial use of nuclear weapons will be with relatively smaller devices, from a 1 to 10-kiloton explosive yield comparable to 1,000 to 10,000 tons of TNT, with New York and Washington, DC, as the most likely targets.

The simulation of the detonation of either a 1-kiloton or a 10-kiloton nuclear device near the White House is presented on these posters over here on your right, in order to demonstrate the relative impacts of health outcomes and recommendations made for emergency response to this threat.[2]

There are many limitations on the resources needed for mass casualty management, such as access to sufficient hospital beds, including specialized beds for burn victims, respiration and sup-

[1] The prepared statement of Dr. Dallas appears in the Appendix on page 429.
[2] The posters referenced by Dr. Dallas appear in the Appendix on page 443.

portive therapy, pharmaceutical intervention, and mass decontamination.

Among the consequences of this outcome would be the probable loss of command and control, mass casualties that will now have to be treated in an unorganized response in hospitals on the periphery of the disaster, as well as the other expected chaotic outcomes from inadequate administration in a crisis.

Vigorous, creative, and accelerated training and coordination among the Federal agencies tasked for weapons of mass destruction (WMD) response, military resources, academic institutions, and local responders will be critical for a large scale WMD response.

I would like you to turn your attention to the posters we prepared. We prepared these particular simulations specifically for this hearing. That is what we do in the institute.

You will notice from a 10-kiloton device, detonated near the White House, and we used the detonation point as the closest location one can drive a vehicle up to the corner of 17th and Pennsylvania.

It could be expected that there would be at least 150,000 serious injuries, 100,000 fatalities on a typical day, like say, today. That is without the things like the Pope's visit going on where you have even more people in town.

Depending on the resources made available at the time, it is likely that there will be an attempt to evacuate as many as 500,000 people from the area, though the efficacy of such an attempt is dubious.

At least 100,000 people would need decontamination by current standards. Though once again, it is dubious that adequate decontamination would be feasible in a timely fashion.

By comparison in a more densely populated urban area like, let us say, New York and Chicago, the casualties would be four to eight times higher because of the density of the population and other factors. So four times higher in Chicago and eight times higher in New York.

Chairman LIEBERMAN. Again these are consequences from a 10-kiloton device.

Mr. DALLAS. Which is a relatively small device.

Chairman LIEBERMAN. That is the point I wanted to make. It is relatively small comparable to those that were deployed on Japan.

Mr. DALLAS. Yes, they are slightly smaller than the ones we used on Hiroshima and Nagasaki.

Chairman LIEBERMAN. Right.

Mr. DALLAS. I was asked to do these particular simulations and the 10-kiloton device is what I did.

It is likely this is the first device that we will see. These are the devices that, for instance, Pakistan has done. They have done these sizes and slightly larger. It is kind of a first generation device.

And the blast and thermal injuries, using this density comparison, will probably be a little bit less. They would be probably two to four times higher in New York and Chicago.

In this picture here, you can see the blast zone in a circular area around the detonation point and you can see the extreme blast zone in the middle and the mass fire zone in the middle.

Chairman LIEBERMAN. Give us some guidance as to the colors on the poster.

Mr. DALLAS. Yes, sir. You will notice the dark blue. You will notice the two salient geographic pictures here are a circle around the detonation point on the White House and then the conical plume which exudes like a comet tail which now, as you can see, covers where we are sitting now at the Capitol and the Senate Dirksen building. The circle in the middle involves the blast zone.

Chairman LIEBERMAN. That is the green circle?

Mr. DALLAS. Yes, sir. The green circle and then you will see the dark blue in the middle is the mass fire zone where, due to the intense radiant heat, most of the buildings in that central area will be expected to spontaneously incinerate causing a mass fire phenomenon.

You can get mass fire phenomenon without nuclear weapons as we did with the fire bombs in Yokohama and Dresden during World War II. They are very devastating, but the same principle is also in play here with a nuclear weapon detonation where you have this mass fire zone in the dark blue area you see in the middle and then the blast zone which exudes out further.

Now you can see going out to the Washington Monument, including the first line of buildings around the White House.

Then there is the conical-shaped plume which goes out, and you can see the dark purple is the 90 percent death area, the death plume area, where you can expect, if people do not remove themselves from the area, that 90 percent would die.

And you can see the colors as the rainbow exudes out from the center there would be 80, 70, 60, 50, and decreasing with the diminishing of the particles there.

Now, one of the important issues here is that with proper communication people can flee from the plume area. There is a latent period where people can get out. For instance, in this exact plume area, if there is a detonation now down at the White House and we knew the direction of the wind, you could actually run perpendicular to the plume and escape, although if you are in the yellow circle—you notice the yellow circle exuding out beyond. It goes far beyond the green. That is the blast zone for glass.

The buildings, the glass shattered in them. It creates a great number of injuries. Optomologists will be in great demand here. That will be one of the physician groups that we will have the least of and will be needing the most of.

If you would remove the 10-kiloton device simulation chart, you will see and notice now the chart of a 1-kiloton device detonation in the exact same location, and you can see that the mass fire zone, of course, is much smaller. The blast zone for blast and trauma injuries is also smaller and then you still have a large area for glass detonation.

It is hard to imagine what this would look like. You get some of this in tornadoes and hurricanes, but it would be a sea of broken glass all around this area here.

The plume is probably the area that you can see here that is much smaller. You can see it is not one tenth of the area. You still get significant bang for your buck with a 1-kiloton device, but you can see the plume is much narrower, but, as you can see the wind

direction on this particular day, it still encompasses the Senate building.

So with one weapon you would eliminate the pinnacle of the executive, legislative and judicial branches of government all with one device.

Finally, if you will show us the third simulation. Oh, by the way, on the bottom there, this is Dr. William Bell, holding the simulations. Dr. Bell is in our group. He has extensive experience throughout the world in actual mass casualty events.

And you will notice the inset at the bottom, we are only on the short scale here in the immediate foreground, you will see that the plume actually goes out for many a miles in a narrow shape, depending on the direction of the wind at the time. You can see that the 90 percent fatality death plume and 50 percent fatality death plume will go out for many miles into the countryside.

And finally, on this third simulation, there is a lot more detail in these where you can see the windows in the buildings because we are up closer now with a higher resolution. You can see in the top figure is the thermal profile where you have the first, second, and third degree burn zones.

First degree burns would be where you have the minor burns. Second degree burns, of course, are where blistering occurs, and third degree burns are where there is disruption of the skin entirely.

We would be putting a great deal of our medical care to be centered in those second and third degree burn zones, really limiting the area where we would have to concentrate our efforts.

If I could go on to recommendations. There is little doubt that the nuclear weapon event will exceed the emergency response system capacity that we are going to have. There is no doubt about this.

So what do we do about it? We would then go out and find the large number of professional groups that have extensive health care experience that are not typically employed in emergency medicine but have extensive training already. We can give them some limited focus training. We are working with the American Medical Association on this now.

Pharmacists, dentists, veterinarians, for instance, take many of the same core health care courses as do the physicians and nurses. So with a certain level of additional training, these ancillary health care workers could be incorporated in the response.

I will tell you that we looked at the numbers on this, and even if we get all the pharmacists, dentists, veterinarians, veterinarian technicians, and these other people, we still will only have a fraction of the medical care personnel that we will need for dealing with even one of these smaller nuclear weapons.

The media training is going to provide considerable opportunities to reach a large number of potential health care and security providers for recruitment into high consequence medical support.

Indeed, we will need a marketing approach to approach potential populations for recruits. I am talking about regular citizens.

In this situation that you are looking at now on this simulation, there are a lot of people who will be on their own in the first 24

hours. There will not be anyone there to help them, and we can recruit these individuals.

In this city there is a very significant, minority population that is outside the downtown zone, and these individuals can be approached, and we have talked to Howard University, for instance, about this and recruited individuals to respond and to help themselves essentially in this crisis that is coming.

Among the issues related, are mass casualty medical care in the event of a major catastrophe for the thousands of internally displaced persons who are displaced from their homes for a lengthy period of time. These people are going to need to be sheltered, fed, given potable water, non-food items, and basic health care.

Security will have to be provided in adequate numbers to protect them from theft and from assaults, which we are seeing in camps around the world, both of which reach alarming rates during crisis situations.

We will also need to pre-position stockpiles of narcotics for use in mass burn care. I can tell you, if you want to ask me the question what keeps me up at night worrying, it is the mass burn care because it is the one area that we are the least prepared for. We are use to the typical hospital in a large city, which has one or two open burn beds on any day and that is it, and we are going to have thousands of burn victims.

And so we are going to pre-position narcotics. It is a difficult thing to do because people want to steal them, but we can put them in police stations, military depots and have them forward positioned like the medical care people are doing in Iraq right now.

The medical response in Iraq is actually quite amazing and it is because of forward positioning of personnel and material. We would need to do that also because we can guess where these narcotics will be needed.

We will need to rapidly mobilize medical resources in using air evacuation capability. We can pre-position and look for places where we can land C–130 transport planes, long straight sections of runway we can make out of roads, and that way we can get rapid ingress and egress—ingress, of course, of medical care personnel that will assemble very quickly and then egress of the patients. Without that, we will not be able to reach them.

Finally, the conversion of military vessels to civilian emergency response: Historically, emergency response and relief efforts for disasters in coastal zones have consisted primarily of the mobilization of land based operations and assets, supplemented by available Navy and Coast Guard vessels.

The unusually heavy 2004 and 2005 hurricane seasons exposed enormous weaknesses in this current land-based coastal disaster response operation.

So one solution to this would be to convert military vessels, slated for removal from military service, to a new role as civilian emergency response vessels dedicated to responding to large-scale disasters in the coastal zones.

In order to maintain cost effectiveness, these platforms could be privately built and operated while being deployed and supervised at the Federal level so as not to adversely affect current disaster planning and operational preparedness. This could be integrated

with a train-based system as well so you could reach in past the coastal region.

This could provide a modern maritime emergency response platform capable of responding and providing disaster response and recovery to a coastal area of more than 15,000 square miles. These ships could address a number of problems inherent in the areas of mass casualty response including providing improvements in response capability and care of casualties, consumables, provision distribution, field distribution, transportation safety and overall site command and control.

Thank you.

Chairman LIEBERMAN. Thank you, Dr. Dallas. You raised a lot of questions which we look forward to asking you.

Dr. Molander, thanks for being here and we welcome your testimony now about your work at the RAND Corporation.

STATEMENT OF ROGER C. MOLANDER, PH.D.,[1] SENIOR RESEARCH SCIENTIST, RAND CORPORATION

Mr. MOLANDER. Thank you, Mr. Chairman and Senator Collins, for the opportunity to address the Committee. It is a very important subject as you know.

Much of what I will have to say today will focus on three topics: First, certain characteristics of nuclear terrorist attacks that warrant special emphasis, and we have already heard some of that; second, the potential for major private sector contribution in meeting needs both inside and outside the impacted area; and third, the broader economic implications of such an attack for the region and the country as a whole.

My remarks will draw on several RAND studies on the subject that are noted in my written testimony, including in particular a RAND research effort supported by the DHS that several years ago addressed the impact of a nuclear terrorism attack on the Port of Long Beach, California, a particularly unusual target.

The effort that we undertook featured what we call a strategic planning exercise which involved senior representatives from the government and from private sector emergency response organizations and a wide range of critical infrastructures.

A later version of the exercise was also conducted with congressional leaders and another version with representatives of the insurance industry.

I want to emphasize that we did not select this particular scenario target as the most likely of a terrorist attack but rather as an attack, such as against New York or Washington, that would have what we call a profound strategic impact on the United States, not just because of the immediate impact but also because of the cascading effects, some of which you have heard about.

Just to clarify the challenge in this kind of attack, the Ports of Long Beach and Los Angeles, side by side, handle roughly 70 percent of the total container traffic coming into the West Coast.

In the exercise scenario we used, like those you have heard, a Hiroshima-sized 10-kiloton bomb is exploded in a shipping container on a pier at the Port of Long Beach. The area of immediately

[1] The prepared statement of Dr. Molander appears in the Appendix on page 446.

Hiroshima-like damage would be several kilometers in diameter, as you have heard, but unlike the situation in Hiroshima and Nagasaki which, as Dr. Carter mentioned where the weapons were exploded some 1,000 feet above the ground, the mushroom cloud that in this case would rise to a height of roughly 20,000 feet in about 10 minutes would be highly radioactive, having pulled up a large amount of radioactivity from the ground.

The path of the fallout will depend upon prevailing winds at 20,000 feet and would be highly uncertain and not immediately well known.

The eventual area of serious contamination, you have seen some of the tracks there, could be roughly 200 square miles, roughly half the area inside the Washington beltway.

As you can envision in the situation like this, people would quickly see or learn about the attack and begin to spontaneously evacuate from a major portion of the L.A. basin. I do not think we can expect people to wait around for clarification on where the plume might be going.

There will be, in fact, initially much misinformation and confusion about both the effects of the detonation, its size and the location, and the consequences of the fallout. People will make individual decisions about what to do.

Gridlock will almost certainly ensue on almost all freeways and exits from L.A. as gas stations are quickly exhausted and cars on the freeways run short on gas.

In a matter of hours at various points in some rough ring around the L.A. basin, probably as many as several million people will have largely come to a stop, no longer moving except maybe for a few people trying to move on foot.

A major recovery problem will quickly emerge that is unique to this attack because of the resultant fallout contamination of most of the petroleum refineries in the L.A. basin that serves southern and central California, Nevada and Arizona.

And here is the important point. No pipelines flow from other parts of the United States into this region. As a consequence, the situation there, with these refineries shut down, will produce an acute gasoline shortage for the entire region, including Nevada and Arizona, a major impact on response and recovery activities, and a government response that will likely produce immediate restrictions on gasoline distribution nationwide and probably rationing.

In this context, with the concern about the risk of weapons at other ports that are already within the United States, this is a major problem. The President can be expected to close all ports, all airports as well, for an indefinite period and order the immediate inspection of all rail and truck traffic carrying containers that are already in the United States and have left U.S. ports. Those containers, as you know, will move all the way to the East Coast, some of them.

Let me give you an overview of the most severe challenges that emerged in the comments of these expert participants that took part in these exercises about what would prevail in this situation.

First, in terms of assistance to the affected areas, the logistics problems will be huge. That is quite self-evident and the Federal and State assets would be over-matched.

Only the private sector, in possession of extraordinary logistics capability, will be able to really have a major impact on the demands here in the affected area. They will be crucially concerned with effective coordination with government authorities both at the State and local level as to how these private sector assets would be used.

As noted, effective medical care will present an immediate challenge in part because of the fallout and the occurrence of contaminated people in various areas and in addition, as mentioned, burn victims would be a very serious problem and cannot be moved very quickly, and radiation victims must have surgery urgently to avoid infection.

Only the private sector and its medical capabilities has the assets to respond to these demands. Hospitals have just-in-time inventories like everybody else and would run out of supplies quickly, putting a premium on the gasoline problem and private sector transport assets for moving medical supplies into the region.

Credentialing medical care personnel from outside the area and establishing ad hoc medical facilities may also face problems in particular in terms of liability protection as we are concerned about this in parts of these facilities.

In terms of infrastructure impacts an early assessment of damage to the critical infrastructures, like electricity, telecommunications and water, would be urgently needed. Fortunately, it would appear that most of the damage to sectors like telecommunications and electricity would be restricted to the immediate region around the port which would not be soon re-occupied, with few cascading effects in those areas, at least, to other parts of the electricity and telecommunications grid in the L.A. region.

But in terms of the transportation sector, companies would be looking for information from the government on when ports will reopen and the location of staging areas where shipping containers would have to be sent to be inspected. But also the government would also want to know from business what transportation capacity exists, of what character and where it is.

A global coordination effort would clearly be needed to redirect U.S. container traffic which is now sitting off of all U.S. ports to other less capable ports and to establish delivery priorities for key goods.

All of these challenges highlight the need for effective government and private sector communications in the immediate post-attack period and preparations for that kind of challenge.

The refinery shutdowns in Los Angeles and the temporary halt of all crude imports through ports will create a major fuel crisis, I mentioned, with the serious implications for both distribution networks and for markets. The evacuation from Hurricane Rita emphasized this kind of problem with gasoline.

Finally, and of major concern, there will be the need to allocate critical relief resources that are largely in the hands of the private sector, food, water, ice, and temporary shelter. This will require an extraordinary amount of guidance and coordination from the Federal and State governments about priorities—we had a window on that with Hurricane Katrina—and a potential waiver, and I em-

phasize this, of antitrust regulations and other rules to enable emergency contracting authorities to do more effective planning.

In terms of long term economic implications, this is all very highly speculative as you can well imagine. But in addition to keeping the global shipping supply chain operating, financial decisionmakers would face a difficult challenge in restoring orderly economic relationships.

While the business community would certainly want ports to reopen as soon as possible, harsh realities would face the financial community and might prove a barrier. In particular, the attack could deliver a crippling blow to segments of the insurance companies. You saw the experience the insurance companies had with Hurricane Katrina.

Insurance against nuclear attack would be in short supply or highly limited without major government guarantees. The attack would also threaten the financial industry at large as many loans and mortgages in southern California in the fallout zone or nearby would face possible default without government assistance.

Although these economic outcomes are difficult to predict, these hypothetical consequences suggest important vulnerabilities that need to be addressed in advance.

In conclusion, let me say that if there is any good news in this assessment, it is the possibility that the United States can, in principle, improve preparedness for such a major incident by drawing on available private sector capabilities provided, and I emphasize this, that mechanisms are in place to do so effectively and legal and regulatory barriers that might otherwise prevent it are identified and removed.

In particular, it seems clear that to deal with the prospect of such an attack, industry would need some sort of prior conditional relief from existing antitrust regulations to more effectively plan for and contribute to a coordinated relief effort. Certainly something like the pre-negotiated voluntary agreements that are established under the Defense Production Act is one example.

Obviously, as I mentioned, a key factor is the establishment, in advance, of effective communications links between the government and the private sector; and here I would emphasize, from long experience with exercises, testing of these links in the joint government-private sector plans in realistic emergency response environments.

Clearly, detailed analysis of these kinds of demands, which I congratulate you on looking into with individuals and government agencies responsible for this, will be crucial in setting priorities and establishing realistic performance expectations both for government and the private sector.

Thank you for this opportunity. I look forward to your questions.

Chairman LIEBERMAN. Thanks, Dr. Molander. I want to repeat again what I said with our first two witnesses. This is chilling stuff, but it is actually comforting, if I may use that uncomfortable term here, to know that you and your colleagues have been thinking about this possibility of a nuclear attack within the United States and thinking pro-actively about what we want to be ready to do the Day After.

So I thank you.

Mr. Gibb is the Director of the New York State Emergency Management Office. So he obviously deals in a hands-on way with emergency management, and from that perspective we welcome your testimony now on this subject.

STATEMENT OF JOHN R. GIBB,[1] DIRECTOR, NEW YORK STATE EMERGENCY MANAGEMENT OFFICE

Mr. GIBB. Thank you, Chairman Lieberman and Senator Collins, for again hosting this discussion.

A nuclear detonation would be an absolute catastrophic and overwhelming event and would require immediate large scale Federal response and I think it is our challenge as emergency planners at the State and local level to ensure that all the resources that we would need to bring to bear for this type of incident could be tied together as efficiently as possible.

The Incident Command System (ICS) component of the National Incident Management System (NIMS) has given the response community the platform that we need to build these large response organizations to respond to an event of this scope.

In New York State, we have used the Incident Command System as the State Disaster Management System since 1996 and it is a mandate that Governor Patterson has continued for our State agencies.

New York City's use of the Citywide Incident Management System, we believe, is another best practice for having in place a scalable, unified command system that will give response organizations the best chance to integrate local, State, regional, and national resources that would be required to respond to a nuclear incident of this type. The basic tenets of incident command are chain of command, unity of command, unity of effort, and unity of results. Having an efficient span of control will be key to organizing and conducting a response to this incident.

And I would look at this incident as one big problem and then a thousand other incidents in the surrounding area that would have to be dealt with.

In New York, now we are shifting our focus from the mass training of the response community or in the incident command system to building additional command and control support teams that can be deployed to incident sites, and I think that Federal NIMS implementation and guidance should recognize the need to have additional deployable assets from State and local government that could respond to a region in need.

I am sure you are familiar with the Emergency Management Assistance Compact (EMAC), which is the vehicle by which States share resources. EMAC has had a great project over the past year to identify missions and deployable assets that States can ask for and States can be organized to respond with.

Local, State and national operations centers, I think, all recognize the absolute necessity to have a common operational picture or processes and communications in place so that everyone that is involved in response can see the incident and its implications in an accurate and similar way.

[1] The prepared statement of Mr. Gibb appears in the Appendix on page 455.

In an event of this type, as has been stated, life saving decisions will need to be based on accurate assessments of radiation levels and downwind projections. There is a detonation. How quickly will we know it was a nuclear device?

I do not think we have in our State cadre the expertise to look at a damaged area and to know right away that it was a 20-kiloton highly enriched uranium detonation or 10-kiloton or 1-kiloton.

Many members of our response community now have radiation detection equipment as part of their toolbox for local responses so we will quickly know there was radioactive materials involved but its extent, I think, will be a challenge to get a handle on.

A big challenge for us in the early hours would be how do we organize a response to gather this radiological data, analyze it, and be able to translate that into credible information for the responders and for the public.

New York State, and I think a lot of States, would have to build on the capabilities for responding to incidents at nuclear power plants. And our State health department has expertise, again, in analyzing radiological data and converting that into protective action decisions for the general public.

We are also fortunate to host a National Guard Civil Support Team. We would like to have a second one in New York State to be dedicated to New York City and we hope that approval can be gained from the Senate.

As I said, post-September 11, 2001, investments in homeland security funding, at least in our State, have added additional radiological detection equipment to our arsenal in some parts of the State, but to take the data that would be coming into emergency operation centers, collecting and analyzing would be our challenge.

Commitment to and use of common national assessment models would help alleviate this problem. Next spring, we are hosting an exercise with the Federal Radiological Monitoring Assessment Center (FRMAC) to test our ability to be able to integrate State and Federal and local assessment efforts for a radiological incident.

As was noted, a key to this response would be to be able to provide credible information to the community. I want to give you an example of how just trying to solve one problem in this catastrophic area is a huge load.

In New York State, we have developed New York Alert, which is a web-based, all hazards alert notification system. It is state-of-the-art. It allows a local official or State official to notify the public using e-mail, activating the emergency alert system, sending text messages to cell phones, blast faxes, posting to a website, any potential means that people can be notified, those gateways have been included in New York Alert.

It is currently the alert notification platform for 55 of our State university campuses and all 25 of the City University of New York campuses. We have 1.2 million subscriber records already built into New York Alert.

But it has taken a substantial commitment of State funds to build and maintain that capability, and this year, Governor Patterson, even in a lean budget year, is committing in excess of $5 million to be able to maintain this kind of critical capability to be able to provide emergency information to the public.

I think it would be important looking nationally to help build on, again, these alert notification best practices and make sure that we can make investments using a host of Federal funds that might be available.

We will also really be challenged by the exposures of our emergency workers, and I think one of the lessons of September 11, 2001, was that we have an absolute responsibility to protect our emergency workers to the extent possible.

I agree with Dr. Carter that right now, many of the guidance we use to protect our emergency workers in terms of the exposures they can receive are set very low.

In New York State right now for a nuclear power plant response, we would limit the exposure of an emergency worker to probably 5 rems as opposed to an event of this type where we might need to be in a position of authorizing exposures in excess of 100 rems to be able to marshal the resources we need to respond to the event, and although those exposures would be voluntary, putting in place new policy guidance, I think, would be important to helping States to plan for that.

I just want to re-emphasize the need for continued planning and discussion and investment in the subject area. The Urban Area Security Initiative, which you have been very supportive of, I think is the right vehicle, the regional transportation security working groups, a great vehicle to continue these planning efforts.

Commissioner Joe Bruno, from the New York City Office of Emergency Management, is leading a great regional effort this year to implement the Regional Catastrophic Planning Grant that is new this year, addressing between eight and a dozen really critical regional issues associated with different functions involved in a regional response.

And I would also encourage in your next hearing that the Federal Government assets that are involved in this planning that their work needs to be transparent and done in conjunction with State and local planners if we are going to have any chance to respond successfully to this event.

I would also agree that the stockpiles that we have in place—including the strategic national stockpile, the pre-position equipment program, and the FEMA distribution hubs—need to be looked at in terms of how this scenario will play out, and those stockpiles should be re-examined to see what critical ingredients we are missing.

So once again, I want to thank you very much for the opportunity to be here today.

Chairman LIEBERMAN. Thanks, Mr. Gibb, for what you are doing and for some of the thoughts and suggestions that you had.

In scheduling the hearing and calling it Nuclear Terrorism: Confronting the Challenges of the Day After, the premise is that there will be a Day After, and even if I may reference the area of fiction, the discussion today says it is not really fiction.

I remember watching the episode of "24" with Jack Bauer when the terrorists were attempting to set up the nuclear weapons and then the weapon actually went off, and they could not stop them. I was stunned. I could not believe that had actually happened.

And then my second reaction was, I was surprised anyway that although there was terrible devastation, the country went on, and I think that is an important reality and one that we are speaking to here today, which is how can we be prepared to make sure that if this ever happens that the country will go on as strong as possible with minimal damage, as little damage as possible.

So I thought I would ask each of you to cite and describe, if you want, what is the most important thing you think the Federal Government can do to be prepared to respond to the Day After, and if one of your predecessors picks your first choice, give me your second choice.

Dr. Carter.

Dr. CARTER. Well, I am going to take the overwhelming first choice which is that the Federal Government really has to step up to the inevitable fact that this situation will overwhelm the State and local first responders.

You can argue about hurricanes, you can argue about other circumstances or even in case of radiological weapons that is a smaller kind of thing, but a nuclear weapon is uniquely destructive.

Anybody looking around will know it was a nuclear weapon that went off. Nothing does what these things do, and it will *ipso facto* implicate the full Federal response and it just should be a reflex. This is not analogous to a lot of other emergencies. It is an order of magnitude greater. So that is the single thing I would say, and if I may just get a second one in.

I do not want to lose sight of something that I said earlier which is, that it is not going to feel like only one. It is going to feel like there are more.

So on the Day After it is not all about the city struck. Everybody is going to feel that they are next and they are going to be wondering what they do, too.

Chairman LIEBERMAN. Right. And what you are saying is that also has to be part of the Federal responsibility?

Dr. CARTER. Yes. What will we do here if a weapon goes off in New York? What will they do in New York if one goes off here because they are certainly going to feel that it is them next?

Chairman LIEBERMAN. Just a quick follow up, do you accept, and I guess you actually said this in your opening testimony, that the Department of Homeland Security should be the lead agency?

Dr. CARTER. Yes. It is the lead agency for planning, thinking this thing through. It is not the lead agency for executing. The State and local governments are critical on the first day. So it is not that the Federal Government ought to take away their sense of responsibility or the critical duties they would have. It would be supplementing and ultimately overcoming those capabilities on the subsequent days.

Within the Federal Government, it is the Department of Defense that has most of the assets. So DHS can do the planning and so forth, but when it comes to rotating 100,000 people in and out of this zone where everybody can only stay for a day or two before they have gotten their permitted dose and that is the end of their service, you need hundreds of thousands of people, and you are only going to get them from the Department of Defense.

Chairman LIEBERMAN. I agree. Incidentally, we had testimony earlier from the Commander of the Northern Command, which now has responsibility for homeland security through the Department of Defense, and for this big task they are not where they want to be, but they are a lot more ready than they certainly were before September 11, 2001.

And as you know, they are standing up three units over the next year and a half for 4,000 troops each with the unique responsibility to be prepared to move into an area hit by a weapon of mass destruction to handle the response.

Dr. Dallas.

Mr. DALLAS. I appreciate you bringing up the "24" episode. My family is a rabid fan of that show. And I had the same reaction you did. What it brought to my mind, and since you mentioned it, was the amazing power of the media. That is not necessarily, of course, a Federal response, but there could be some encouragement there for some mass training or conditioning of the public. The misconceptions of the public about radiation are incredible, the amount of misconceptions people really have about what it really does.

Chairman LIEBERMAN. You mean the public may think it is going to be worse than it really would be for most people?

Mr. DALLAS. Well, that is correct. My big fear is that—we have these simulations that we put up here and we showed the very limited areas. You will notice that the 10-kiloton device, there are large areas outside of the immediate area that are unaffected.

Chairman LIEBERMAN. In Washington?

Mr. DALLAS. In Washington, DC.

Chairman LIEBERMAN. In this city, right.

Mr. DALLAS. And would occur also in New York, if we get these smaller weapons to begin with.

Chairman LIEBERMAN. What I mean is, this does not devastate the whole city?

Mr. DALLAS. That is right.

Chairman LIEBERMAN. And in fact, there are whole areas of the District that are not affected even by a blast around the White House?

Mr. DALLAS. That is correct. You can see in the insets from the other simulations that even though it is a very devastated area, it is a narrow area and people have in their minds—and we know this from academic treatises that have looked into this—the severe psychosis almost that will be involved in the population. I am afraid the four of us here will not be in front of a lot of national news outlets. They will have other individuals that will give simulations, quite frankly that will be inaccurate, showing a much wider distribution of a low level exposure which will not cause any health effects.

Like Mr. Gibb was just saying about raising that level from 5 to 100 rems or whatever it is, I am afraid that they are going to be on the media outlets distributions showing 2 and 3 rems exposure around the country and people are actually thinking that is dangerous when it is not. So that is one area that would be on some kind of plan that is not going to scare people more but will bring that level—I mean, it is amazing the misconceptions people have birth defects, for instance.

I spent 10 years at Chernobyl, in and out of there, and found out how not to do an emergency response. The Soviet city made every mistake possible. But we learned a lot from them. For instance, there were no birth defects at all. Yet if you ask 99 out of 100 Americans, they were convinced that there were birth defects.

Chairman LIEBERMAN. Let me move on. So, therefore, I take it your priority there would be in a sense within the priority that Dr. Carter talked about, which is to be prepared either before or certainly right afterward, to get the truth out about the limited impact, though serious devastation, of a blast.

Mr. DALLAS. Yes, sir. I would have to say medically, I already mentioned before, burn care is a nightmare here and we are completely unprepared.

Chairman LIEBERMAN. That is something that you would want. That would be a priority for the country to try to get better prepared because there is a limited number of places where burn victims really can be handled anywhere in the country.

Mr. DALLAS. That is correct. Ninety-five percent of the burn victims will not receive medical care and most of those will die, where we are right now.

Chairman LIEBERMAN. I am over my time. But let me see if I can ask the other two witnesses for a quick response.

Mr. Molander.

Mr. MOLANDER. Sure. About getting good information out, I would say, good luck and I think a lot of people will make their own judgments about it. There would be a terrible uncertainty. You do not know if it is a 1-, 10-, or 30-kiloton device that just went off.

Chairman LIEBERMAN. Right.

Mr. MOLANDER. To answer your question, I would say your opportunity is to look at what the Congress can do, not what the Executive Branch should be doing.

A couple of years after the first exercise that I described, we tried to do another exercise under DHS aegis to bring together again critical infrastructure owners and operators to look at some of this cooperation with the government, with the private sector.

It stalled out, mostly because by this time the general counsels of the oil and gas companies advised their leaders who had come to a previous exercise that maybe they just should not do it before they get caught in an antitrust assertion.

I think there is a real problem here with the cooperation that is going to be necessary to do the kind of planning that is going to marshal the real strength of this country which is in the private sector. No matter how many troops or National Guards or whatever you provide radiation training for, the kind of challenge that we face can only be, if you will, met with an extraordinary contribution from the private sector, and that is going to take planning.

Chairman LIEBERMAN. That is a great suggestion. We have actually done that in some limited areas to try to exempt entities from antitrust prosecution when they are cooperating, when we are asking them to cooperate for the public good.

Mr. Gibb.

Mr. GIBB. Stockpiling of critical supplies and equipment. The key to protecting emergency workers is through having the dosimetry available to each responding person.

Right now, I probably have 13,000 high range dosimeters in our facility in Albany, New York. They are from the Cold War. They are 50 or 60 years old. They work, but the reliability is an issue.

Medical supplies, pharmaceuticals that would be key to treating patients with radiological related injuries, we are not going to be able to generate, I think, very quickly; and if existing Federal stockpiles could be augmented to have better capability, that would help everybody across the board.

Chairman LIEBERMAN. Excellent. Thank you. Senator Collins.

Senator COLLINS. Thank you.

Dr. Dallas, your testimony makes clear that hospitals in the immediate vicinity of an attack would be completely overwhelmed and unable to cope and may well be obliterated themselves.

And indeed, in a smaller way we saw evidence of this when we investigated the failed response to Hurricane Katrina where very quickly only three hospitals were not incapacitated in the New Orleans area and the State only had two trauma centers, one of which was rendered inoperable by the rising flood water.

So that raises real questions to me about the abilities of hospitals in the wider region to ramp up to respond to this kind of attack.

When I was in Jerusalem a couple of years ago, I toured Hadassah Hospital there and I was so impressed with their planning and capabilities to deal with decontamination, for example, or to care for victims of a mass attack. They had procedures for totally converting their children's ward into a decontamination ward.

Does any American hospital, to your knowledge, have that degree of planning and capabilities that I saw in Israel?

Mr. DALLAS. The simple answer to that would be no. We worked together with the Israeli Defense Force and the hospitals in Israel. As a matter of fact, we worked closely with the American Medical Association giving training to health care personnel throughout the Nation, and right now we are using the Israeli model for trauma and explosive events because they have the most experience in dealing with attacks on civilian populations and we do not. We do not have that kind of experience.

We are good at train wrecks and car wrecks, but the answer is, we did a study on examining American cities, and unfortunately our hospitals are all concentrated in downtown areas. The pattern we followed over time is that hospitals that were already downtown, they just keep getting larger and larger.

And so in any conceivable nuclear attack, we looked at 20 different cities, six of them are published in the open scientific literature. In even relatively small nuclear devices, we lose about half of our hospital beds and probably half of our best trauma medical care personnel in most of these attacks if they focus on downtown areas which we are anticipating. So it is a real problem for us.

But even the surviving hospitals, if you look at the ratio of potential victims and patients to health care personnel, it is staggering, if they can even get to the hospital.

You mentioned the Hurricane Katrina response. We have looked at those hospitals; and when you ask those 12 hospitals that went

down and were no longer able to respond, what was the one item, if you gave them 20 things that they would want to do if you threw money at them—it is security.

Nine out of 12 of those hospitals when given a choice of 20 to 25 different items, whether it is more physicians, more doctors, better health care plan, they say it is security. Security went down. In nine out of 12 of these hospitals, they closed because of security. They want people with guns basically is what they are talking about. So security is a major issue for these hospitals which is a gaping vacuum in response that we have right now.

Israel is a really excellent example for us to follow. We have not significantly done that. We have come a long way since September 11, 2001, particularly with physicians and nurses, paramedics and, of course, the first responders who have really come forward from then, but the actual hospitals themselves are rather weak.

My organization has tested dozens and dozens of hospitals and we have got a long way to go. That is a major weak point.

Senator COLLINS. I think it is as well. I was struck by the high level of preparedness at this hospital in Jerusalem versus even our best hospitals here in terms of being able to ramp up and respond.

I do think this is an area where we have a lot to learn and I am hopeful that an office that has been duly created as a result of legislation that the Chairman and I authored within the Department of Homeland Security is going to allow us to learn more from Israel's experience and share more ideas with a country that unfortunately has more experience in responding to terrorism than virtually anywhere.

Dr. Carter, you raised an excellent point that after the first blast, the threat of a second blast could terrorize the Nation and hamper the response. Even if the terrorists did not really have a second bomb ready to be detonated, the fear would be that they did and we would have to act as if they did. That has consequences for our deployment of first responders, emergency managers, health care personnel.

If Washington has been the subject of a blast and yet there is a threat from terrorists that they are going to blow up New York and L.A. next, how do decisionmakers decide how to allocate resources?

Obviously, we would start the international effort that you mentioned in your testimony to try to track down the perpetrators and avert a subsequent attack. But there is a very real immediate challenge of where to hold back possible resources because you may, in fact, have to cope with a second or third attack.

Dr. CARTER. It is an excellent question and there is no easy answer to it because there are only so many resources to go around.

What we tried to think through a little bit in our Day After report—and I think DHS really needs to do more on this—is how the other cities can prepare themselves and take action to minimize their vulnerability while the emergency is being resolved.

I mean at some point we will police up all these loose weapons and resolve the situation. During that period, other cities will feel that they are next and they need to posture themselves so that they are less consumptive of resources than the first which got hit with no warning.

So the only thing I can say is that the subsequent draw on this pool of emergency responders should be less than the other cities if we have a thoughtful protocol for every city to respond to the now very real possibility that they are next.

Senator COLLINS. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thank you, Senator Collins. We will do one more round of questions. I want to pick up with a quick follow-up to you, Dr. Dallas.

I was interested when you said the No. 1 concern from hospitals in this case was for security. I take it what they are thinking about is being overwhelmed by the people coming to the hospital demanding treatment.

Mr. DALLAS. Yes. Well, in the case of Hurricane Katrina, the "worried well," we called them, crowded into the hospitals, and they formed a barrier where the real sick people could not get in.

Chairman LIEBERMAN. In other words, they are worried, but they are really OK?

Mr. DALLAS. Yes, they are fine. We have a term that is kind of merged. Like bio-terrorism is a term they merged. Recently worried well is a new term that we have.

In the case of Hurricane Katrina, though, it was also the criminal element that broke into the hospitals and, of course, the first place they go for is the pharmacy and they rush the pharmacy. They clear out the narcotics and there was no one to stop them.

The average age of a hospital security guard in the United States is 68 and those individuals are not armed. It is one of those huge gaps that we have, that we do not have security for hospitals because thankfully we are a society that has not required it for the most part.

But going into these mass casualty situations that will not be the case as evidenced by Hurricane Katrina.

Chairman LIEBERMAN. Right. Mr. Gibb, from your operational perspective, do you want to add anything to what more we might be doing, should be doing to prepare law enforcement authorities, agencies including obviously State and locals for unique responsibilities in case of this kind of catastrophe?

Mr. GIBB. In New York, we have been fortunate to have the Securing the Cities Program and funding. Prior to that we had a pilot program working with DHS that allowed us, in the New York metro area, to purchase additional radiological detection equipment and train law enforcement officers in basics of radiation.

While that is a prevention related program, it helped us to build a capacity and capabilities that could be used after a detonation, and also for the scenario that you just mentioned where if we were looking for second devices or other devices, it is absolutely critical that the law enforcement community understand and be equipped to be able to, as best as possible, search for and find the next weapon.

So I guess I would argue that that program is absolutely necessary to equip our Nation's security forces and allow them to be able to undertake this task.

Chairman LIEBERMAN. Thanks for that answer. That was helpful.

Dr. Molander, I was impressed in your testimony about the importance you placed on preparatory coordination with the private sector. I wanted to ask you to go into that a little bit more. I mean, it was an interesting suggestion. Actually I think it was maybe Dr. Dallas who made it. I guess in regard to this quasi private sector that we ought to be thinking about how to prepare ancillary health care workers who are not traditionally emergency medical workers to be prepared to be emergency medical workers in the case of a nuclear terrorist incident. But that is more quasi public.

Talk a little bit in more detail about what you think the Federal Government can best do to begin to engage the private sector in being ready help us to respond on the Day After.

Mr. MOLANDER. I am aware of efforts that are underway at the Department of Homeland Security to do just that.

Chairman LIEBERMAN. Good.

Mr. MOLANDER. You might say that unfortunately DHS and the private sector was denied the opportunity to test some of these emerging capabilities in the absence of a hurricane season the last two seasons was good news and bad news.

It is quite clear, as we have come to see, that there is a limited area that would be affected by one of these devices. Of course, the whole country would be concerned about the second bomb and things of that character. But the ability to move some of America's vast private sector assets, medical care is just one of them, into the region and to anticipate just where you might deploy these assets is essential.

Chairman LIEBERMAN. And give us a couple of examples.

Mr. MOLANDER. For example, you will have a large area that is evacuated and a major portion of that area could be re-occupied fairly quickly except it would probably be a matter of security problems in terms of having people come back and not knowing which sections of, say, the L.A. basin could be really re-occupied.

In order to be able to slowly re-occupy and maybe open some gas stations, you would like to have a coordinated effort where Mobil opens a gas station over there, Wal-Mart opens their store over there, Exxon opens that gas station over there, and K-Mart or Target opens a facility over there that could provide food and other means which would allow re-occupation of these areas that were initially evacuated. I think these are the kind of things that the private sector could contribute to.

Also, regarding the kind of things I mentioned about transportation. It is very hard to know. The United States has such a large number of choice targets, if you will. But the kind of attack that I described could also take place against Houston or another place where there is a large amount of petroleum refineries nearby and negate the ability to bring in and to have the fuel to really mount the massive relief effort that you would like.

In order to be prepared for that, the transportation sector in this country would really need to have an amazing amount of cooperation and collaboration with the Federal Government in advance. It is really a planning problem.

Chairman LIEBERMAN. In advance to be ready?

Mr. MOLANDER. If you do not have it done in advance, then you get an example like Hurricane Katrina.

Chairman LIEBERMAN. Dr. Carter, in the work that you and your group have done, did you draw any lessons about the preparatory relations or work that should be done with the private sector?

Dr. CARTER. Not nearly in the depth that Mr. Molander has done.

One aspect that we looked at which he mentions also was the insurance industry which is a terribly important one and how the issues of long term radiation are handled by the insurance industry is going to be a very significant thing in the long run, to repeat what Mr. Molander already said.

There is going to be a vast area wherein people will, if they resettle there, be exposed to larger doses of radiation than they would have had if no bomb gone off. We are all exposed to a little low level radiation every day.

And essentially there is going to be a market in exposure, and if you are a physicist like me and Dr. Dallas, well, we will probably be willing to live in places where other people will not. We will trade up, in real estate terms, under these circumstances, and people who are more risk averse, more frightened, or less well informed will not, and that is a very odd thing to think about, but it is such an unusual circumstance because the effect is so long lasting.

This effect will last for many years, possibly a decade or so, and people will be making individual choices on the basis of their individual understanding and knowledge, and their individual willingness to accept risks.

And over time that is going to be the private investment and insurance overlay and over time that is going to be a public policy overlay.

Inevitably, there will have to be public policy made that makes this more fair and equitable among people who are making different assessments of their risk.

Chairman LIEBERMAN. Thanks. I have one more question but I going to yield to Senator Collins.

Senator COLLINS. Go ahead.

Chairman LIEBERMAN. Here is my question because you have all focused on the fact that one of the most important elements in the Day After will be communications. For the moment, I am not talking about communication among emergency responders but communication to the public obviously in the area affected.

For instance, it would be important for people in the case of a 10-kiloton weapon being exploded near the White House, for people in outlying areas of Washington to know they do not have to rush to the highways.

Nationally you would want to, in the midst of this devastating event, nonetheless, assure people that the country was surviving and we are going on.

The first instinct of a lot of people, of course, will be to turn on the television or the radio if you are in your car. I wonder whether, maybe this is already happening, whether it is important for the Federal Government to call in people from the various networks, cable, broadcast and talk about a scenario, how they would handle because maybe you wondered whether people like you who have had experience with this will be the ones they will look to for ex-

pert advice. Maybe they should know. They need to know that there are people like you out there so in this awful event that they will call on you. I wonder if you have a response.

Dr. Carter.

Dr. CARTER. We gave some thought to that. It is probably not reasonable to have the aspiration to train the general public on the effects of radiation. But it is not that complicated a subject. It is reasonable for important public officials to have some basic understanding. It is reasonable for there to be some designated individuals in each location who have been given that training and who can speak authoritatively.

Most news outlets today have somebody who specializes in homeland security and terrorism, and it is reasonable that those reporters will have or can have understanding.

And since there are going to be the channels, it is going to be through public officials, emergency responders, and the press speaking that a lot of the ignorance and fear that surrounds radiation can be at least softened if not dispelled.

Chairman LIEBERMAN. Obviously this can be done without compromising any networks' freedom of speech. You want to call them to be ready for what they will want to do, which is to honestly serve the public and avoid panic.

Mr. GIBB. Senator, I think one of the challenges would be that we would have very conflicting messages for the public which unsettles people.

Chairman LIEBERMAN. Right.

Mr. GIBB. Under current Federal guidance that we use for radiological emergencies, the levels of exposure that we tell the public they should be willing to accept are very low.

We would risk relocating a population to avoid a 1 rem exposure to radiation. We would permanently relocate a population to avoid a 2 rem exposure, based on current guidance. That is sort of a basis of our plans.

Then in the aftermath of this event we will be shifting the message to say, and we could expose everybody in this room to 50 rems of radiation, 50 rems of exposure right now. We could go to the nearest medical center. We could be tested for days and they are not going to detect any changes as Dr. Carter noted, but getting that message to the public and where it goes against guidance that we have developed as a Nation, that is a big challenge.

Chairman LIEBERMAN. Thank you. I really over deferred to Senator Collins' courtesy. Senator Collins.

Senator COLLINS. Thank you. I could not help but think as we are talking about the public's understanding and as we hear all of our witnesses predict that most members of the public would immediately begin fleeing when, in fact, sheltering in place for many of them is the better option, that we have actually gone backwards in the public's understanding of what to do in the event of a nuclear attack.

Perhaps it is because I grew up in northern Maine next to an air base that had B–52s and everyone knew nuclear weapons were there. I remember in the 1950s and early 1960s being instructed in school as to what to do.

Now, granted the duck and cover approach was not going to be of much use, but I recall going home and being upset with my father that we did not have a bomb shelter in the basement of our house, fully equipped and stocked with water and supplies, as many families did back then. Many families knew ironically in the 1950s that the answer was not to get into your car and start driving but rather to try to shelter and to be prepared to survive for a while on your own.

Now, obviously if you are in the immediate blast area that all becomes academic, but it is interesting because I think the public, in many ways, is less prepared today than we were at the height of the Cold War.

And at the height of the Cold War we were dealing with predictable, relatively speaking, state actors. We were not dealing with the threat of terrorist groups having access to nuclear devices.

So I just mentioned that because I think there is a lot that we need to do to get the public more involved. We tend to focus on the emergency managers, the first responders, etc., but we need also to educate the public.

I do want to turn, Mr. Gibb, to the issue of the health risk for first responders; and as Dr. Carter had said, once first responders have reached a certain dose, they could no longer serve in the zone.

As the State emergency manager, how prepared do you think that first responders are to operate in a post-nuclear attack scenario?

Mr. GIBB. It is training that we used to do a lot of that we do not focus a lot of effort on now in terms of preparing local emergency workers in the basics of radiation, having the dosimetry available immediately to them so that they can perform their task in an environment where there is either existing radiation or contamination. It exists best, I think, in those areas around our commercial nuclear power plants where there is very involved planning and certainly every hazardous material response team as part of their toolbox has the ability to deal with radiation incidents. Post-September 11, 2001, we built out and distributed 170 WMD response trailers throughout our State.

But even in those trailers where we try to look at the broad range of hazards, we probably had two Geiger counters and maybe 15 electronic dosimeters. So we have a better stockpile. It would take a while to put them in place.

I think the danger to first responders is that in the early hours, most of the responders to the incident, we would have no way of gauging what exposures they are receiving or what exposures they received until they either became ill or we were able to do sort of a back calculations post-event that we could make estimates.

So I think the answer to your question is not very well prepared to respond in this kind of environment.

Senator COLLINS. Thank you. Dr. Molander, let me just ask you a very quick question because I totally agree with you about the need to involve the private sector.

In the wake of Hurricane Katrina we saw that it was the private sector companies that were best prepared and responded to the challenge much better than government at all levels was able to do so.

When this Committee wrote the SAFE Port Act in 2006, we asked DHS to establish protocols for restarting our ports in the event of an attack. Senator Lieberman and I have been somewhat critical of the Department for not involving the private sector more in the development of those protocols.

I know you did the exercise involving a possible attack on Long Beach. What is your assessment of the Department's involvement of the private sector in responding to an attack on our ports?

Mr. MOLANDER. I know the effort has been made. I can tell you that I am not up to date. I would not want to attempt to give you a real evaluation, but I know that, as I mentioned earlier, that the government and the private sector face a mutual problem in the extent to which they can do prior planning because, I think, to be really effective, it would involve, if this is the correct term, but some kind of collusion between, say, companies in the same business in order to allocate and distribute the response challenge in an effective manner.

In terms of particular ports, I know that obviously with the port authorities, probably a lot can be done between the government and the port authorities. But I think still, if there is an attack of this kind on a port, it is going to close the port indefinitely.

I think, as I mentioned, the capacity and the plans for moving whatever shipping was supposed to go into that port whether it is Galveston, Long Beach, L.A., or wherever, to another place, will be a major challenge, not just because of the fear that you do not want to open any other ports until you have some more assurance that there might not be a second bomb, but also the reality that there could be a second bomb and the fact that lots of ports, for example, the Ports of Los Angeles and Long Beach have deep water capability that very few other ports in the United States have. So there are real limits to what you can do in terms of shifting deliveries between ports.

I think DHS is well aware of the problem, I think, but I am not sure just how far along they are in achieving the kind of goals that you set out for them.

Senator COLLINS. Thank you.

Chairman LIEBERMAN. Thanks very much, Senator Collins.

Senator Carper and Senator Warner, thanks for being here. We were obviously thinking the normally unthinkable, but I think everyone agrees it is important to do that. So thanks for entering the discussion.

Senator Carper and then we will go to Senator Warner.

OPENING STATEMENT OF SENATOR CARPER

Senator CARPER. Thank you, Mr. Chairman.

To our witnesses, welcome. This is one of several hearings. Like most of my colleagues, we have a number of hearings to attend and I apologize for not being here when you made your presentations, and if you addressed these, I would just ask your indulgence.

The first question is basic. There is a device that explodes and it sends radioactive material——

Chairman LIEBERMAN. Senator Carper, forgive me for doing this.

Senator CARPER. That question has already been asked?

Chairman LIEBERMAN. No. I would never monitor.

Senator Warner has to leave urgently, but there is one question he would like to ask.

Senator CARPER. Go right ahead.

Chairman LIEBERMAN. Knowing you, I knew I could interrupt.

Senator CARPER. I am happy to yield.

OPENING STATEMENT OF SENATOR WARNER

Senator WARNER. I have had the privilege of working many years with Ash Carter and welcome you back to familiar grounds.

I do hope that you, in your work, will take into consideration implementation of the role of the National Guard and the U.S. military in these incidents. It should be a part of the study here in the Committee, I say to our distinguished Chairman and Ranking Member.

I am working to make sure that they are able to do things. How should they be accessed and when? That is for a later date and I thank you the distinguished Senator.

Chairman LIEBERMAN. Thank you, Senator Warner. Thank you, Senator Carper.

Senator CARPER. You are quite welcome.

Back to my question. A device has exploded and there is a plume that goes in the air. How do we notify folks who might live in the direction in which the plume is headed so that they might take the appropriate precautions? Dr. Carter.

Dr. CARTER. It is an excellent question and it is a capability that is entirely within our power to provide within minutes in every municipality where this occurs.

We have not quite done that yet, but the capability exists. It has been developed at the national laboratories. It is not rocket science. It is weather, and for the same reason that they can open and close runways and vector airplanes in and out and so forth, weather is so well known in a real time basis that you can decide where that plume is going. Is it going north, south, east, or west? Is it going to be a wide plume or long narrow plume, depending on whether the winds are variable and so forth.

There is no reason why that information cannot be made available to emergency responders within minutes. And that is one of a long list of things that it ought to be our aspiration to be able to do. We are not quite there yet but there is no reason why we cannot do it.

Mr. DALLAS. Senator Carper, I might point you to the simulations we have here on the poster board which show that. We were able to do it for this demonstration for Washington, and Dr. Carter is right. There are a lot of people that can do this and there are systems too. You could even inform parts of the public as reverse September 11, 2001, telephoning system where you could actually target certain people and tell them to flee and target others and tell them to stay, and this is certainly within our capabilities if we were to put more effort into it.

Senator CARPER. How do you practice something like that?

Mr. DALLAS. There is a danger in scaring the public with that sort of thing.

Senator CARPER. I understand.

Mr. DALLAS. But we are doing hospital exercises all the time now where we have patients that look pretty bad showing up at the emergency room and that seems to have gone fairly well. We can expand those exercises and make them larger. We can do that.

Senator CARPER. It is going back to the days of Orson Welles. I recall it is possible to scare people pretty badly and this is certainly one that we could have an unintended consequence.

But how do we actually get the word out to people? A Reverse 911? That seems to make sense. Are there any others that come to mind? Mr. Gibb.

Mr. GIBB. Senator, in New York, we have developed our own system. It is called New York Alert. I talked about this earlier. But it allows either a local official or a State official to create one message and to activate the emergency alert system. It sends a message to folks' cell phones in the form of a text message. It sends out e-mails automatically, and actually calls people's homes or their cell phones and gives them the recorded message. It is pretty robust. We can send out 80,000 e-mails simultaneously. We have the state-of-the-art ability to issue text messages, limited by the infrastructure that is in place. But from a technology standpoint, it is very doable with big recurring costs.

Senator CARPER. That is reassuring.

What advice would you have for people, if there ever is such an incident, who might have the misfortune of living in an area where a plume is heading? What advice would you have for them?

Mr. MOLANDER. You would want to have some idea about the magnitude of the radiation coming in your direction. And it has been mentioned, there will be some capability to project the direction of the plume.

How fast that happens, we are really not sure. It is also possible, of course, that you are going to be racing against the media which would be instantly on top of this. CNN will have an expert on this faster, I think, than you can go through a government process.

Senator CARPER. Maybe one of you.

Mr. MOLANDER. Maybe somebody that is in Georgia.

There is also a real concern about conflicting views about what to do and that will really confuse people. The possibility exists that you will not know for sure just what the winds are at 20,000 feet because that is really determinative about what will happen.

There was an exercise here a couple of years ago called Top Off in which I believe the mayor of Seattle was facing a decision about what kind of message to put out on a dirty bomb situation. And he was first presented with one description of the plume, and after some passage of time, a more sophisticated description of where the plume was going to go and, of course, it was not a nice long ellipse. It instead had some texture to it, and he stopped the exercise because he did not know which one of these should be the communication.

So I think we are going to have a real problem with uncertainty. And as I mentioned earlier, there is going to be real uncertainty early on about the size of the weapon and characteristics which will also affect what to do.

So you better get a lot of information whether you want to shelter in place or not for awhile would probably be the first thing. So

maybe for a little while I shelter in place. But I want to get information fast and probably get out of there. People err on the side of safety I am sure.

Senator CARPER. Dr. Carter.

Dr. CARTER. I would just like to add to that. It is an excellent answer. I think we ought to be clear. I do not know whether people will do this or not and whether they will be told to do the right thing. As to what the right thing is, I want to put it very crudely, and I hope my co-panelists will not disagree with this.

But there are roughly three areas here. There is that hot wisp downwind, and people there have to get out because if they stay there, they are going to get too much radiation.

Then there is the larger cigar, which is also downwind. For many people in that area the best thing to do would be to stay home for a few days, not months like the kind of shelter you wanted your father to build during the Cold War. This is a whole different thing. Just for a few days until the dose rates subside. And then outside of that cigar, people do not have to go anywhere at all.

If you could get everybody to know where they are, are they in zone one, two or three, and you could get them to do the right thing you could save an awful lot of anguish and lives.

But that is the right thing. That is the right mental picture for our public officials to have, and there is no reason why they cannot have that and communicate that.

Getting people to do the optimal thing is another matter.

I wanted to add one other thing. You mentioned communication, which is also kind of a technical fact. But when a nuclear weapon is exploded at altitude, it creates something called an electromagnetic pulse, which is in all of the movies, and it causes widespread outages of electronics.

This is a ground burst and there is a very limited region of electromagnetic pulse. I only say that because after this bomb goes off you will turn on the radio and there will be a lot of radio stations on the air and you can listen to WTOP. This is not that old 1950s circumstance that Senator Collins was mentioning where you turned on the radio and there was a little beep and it said this is an emergency message.

All the media will be on. You can turn your television on, your television will be on. You can turn your radio on. So there will be an abundance of opportunity for public officials to get the right message across, and so there is no technical reason why people cannot get information that they need.

Mr. GIBB. Could I just add something?

Senator CARPER. A closing word. Go ahead, Mr. Gibb.

Mr. GIBB. The plume projection is not the end all. That gives decisionmakers early information, if they know what the source term was, about where the plume probably is. But you have to go out and find it. You have to go out and determine using radiological instrumentation where the radiation is and where it is not and factor that back in to make sure your protective actions are good enough.

You have to confirm that the places that you are sending people to, there is no radiation there. So that the plume projections we absolutely rely on in the first instance. But marshaling the Federal,

State and local resources to go out and do the on-the-ground assessments to know where the radiation is.

Senator CARPER. Thanks to each of you. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thanks very much to this panel. I feel it is my obligation as Chairman to certify for the record that during the 1950s Senator Collins was a very little girl.

Senator COLLINS. That is true.

Chairman LIEBERMAN. Probably very good too.

Your testimony was excellent. I cannot thank this panel enough. This was very informed, methodical and it was not intended to panic anybody but just deal with the realities. You made a lot of very good suggestions in your written testimony which you presented to us this morning. So I cannot thank you enough.

Your reward for this extraordinary testimony will be that we will be back in touch with you to ask you to help us shape the response legislatively and perhaps to help shape the response of the Executive Branch as well.

We are going to leave the record of the hearing open for 15 days. If any of the Members want to submit questions to you in writing or if you want to add anything to your testimony in writing.

In the meantime I thank you again, very much, for what you contributed.

Senator Collins, do you want to say anything?

Senator COLLINS. No, thank you. Excellent hearing.

Chairman LIEBERMAN. Thank you.

The hearing is adjourned.

[Whereupon, at 12:02 p.m., the Committee was adjourned.]

NUCLEAR TERRORISM: PROVIDING MEDICAL CARE AND MEETING BASIC NEEDS IN THE AFTERMATH

THURSDAY, MAY 15, 2008

U.S. SENATE,
COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 10:01 a.m., in Room SD–342, Dirksen Senate Office Building, Hon. Joseph I. Lieberman, Chairman of the Committee, presiding.

Present: Senators Lieberman and Collins.

OPENING STATEMENT OF CHAIRMAN LIEBERMAN

Chairman LIEBERMAN. Good morning. This is the fourth in a series of hearings in which we are exploring our country's capacity to react to a terrorist detonation of a nuclear weapon in an American city.

Some may think that it is effectively impossible that terrorists could acquire such a devastating weapon, but our previous hearings have shown that terrorists desire to acquire nuclear weapons—that desire is clear and their capacity to do so is real.

At our last hearing, we learned that a 10-kiloton nuclear weapon blast in a major American city would have a devastating effect on life and property, but we also learned something that at least for me was counterintuitive, which was that much of the city would probably survive. The effect on the area of direct impact would be horrific. Thousands and thousands would be killed. But we also learned that outside that area of direct impact in a major American city, thousands and thousands more can be saved if we are prepared to respond quickly and effectively.

Helping survivors in and around the blast area will require a planned, prepared, and coordinated response by all levels of government. The Federal Government will have to bring all of its capabilities to the area that has been attacked quickly because local government will inevitably be overwhelmed. As our witnesses will make clear today, we do not presently have either enough coordinated planning or enough assets in place to respond adequately to a terrorist nuclear attack. In other words, we are not ready to save the thousands of American lives we know can be saved in the dreadful event of a nuclear terrorist attack on an American city.

For example, we know that among the survivors will be many burn victims, but on any given day we also know that there are

only 200 open burn beds across our entire Nation. We know that our medical surge capacity is grossly insufficient, but we have no plan for dealing with these kinds of casualties, certainly not in these kinds of numbers. That has to change.

The sad truth is that many of our most valuable resources across the Nation will go unused in a nuclear catastrophe because of a lack of prior planning and coordination. We must decide before an attack how we can bring the entire Nation's resources to bear as quickly as possible, including some that are the focus of our hearing this morning, such as medical care, mobile care facilities, and pharmaceutical supplies. We need to find innovative ways to treat people in alternative settings until they can be safely transferred to traditional hospital settings. We must integrate and utilize medical volunteers, but first, of course, we have got to undertake a frank assessment of what our medical surge capability is across the private, civilian, and military sectors of our country.

We know that we will need to feed and shelter a large number of people who are not injured but who have been forced from their homes. This morning, the American Red Cross, the largest provider of shelter and feeding in disasters, will tell us that it has been forced to cut its national staff by 40 percent because of shrinking resources available to it, and that leaves not just the Red Cross, but America even less prepared to deal with a disaster or catastrophe of the kind we are discussing than we were just a short time ago. We need to make sure that the Red Cross and other national and community-based organizations are included in planning efforts, and I think based on Mr. Becker's testimony, we need to begin to ask ourselves whether the Federal Government should be giving direct Federal financial assistance to the Red Cross, because it is obviously carrying out a public function.

We need to ask tough questions as to how we are going to decontaminate a large number of people so they do not make other displaced citizens sick. We have got to integrate the logistical and supply capabilities of our Federal and private partners with the volunteer organizations that are actually supplying the beds, the bread, and the emotional comfort.

And then we have to acknowledge that the single most effective way to save lives immediately after a nuclear explosion may be through effective communications. You need to have systems in place to advise people in and around the area of the radioactive plume whether they should stay put or evacuate. This determination must be made almost immediately and must be disseminated without delay through media networks that will reach the whole public in terms that everyone can understand. We cannot wait, and we certainly cannot rely on canned, untested messages when the stakes are so high.

Finally, we must acknowledge that the government cannot do it all. We have got to convince the American people to be prepared, to accept the fact that they are responsible in some measure for their own family's preparedness in all the ways that we have discussed. These preparations, of course, will be useful not just in case of a terrorist nuclear attack, but also a chemical or biological attack, or a natural disaster that forces people to shelter in place until help arrives.

The bottom line is that we know now that the possibility of a terrorist attack using nuclear weapons within the United States of America, while it is hard to absorb, is definitely a real possibility. So we must begin asking the tough questions and then making the right preparations because the Day After will be too late.

That is why we hold these hearings. That is why we are grateful to have the experts who are with us as witnesses today, and why when these hearings are over we look forward to presenting recommendations both to our colleagues in Congress and to the Executive Branch of government, and indeed even to the private sector, to see how we can best work together to prepare for these dreadful possibilities.

Senator Collins.

OPENING STATEMENT OF SENATOR COLLINS

Senator COLLINS. Thank you, Mr. Chairman. This Committee's earlier hearings explored the frightening possibility that terrorists could detonate a nuclear bomb in an American city. With a nuclear device small enough to be transported in a truck, terrorists could inflict thousands of casualties and cause terrible destruction.

As I indicated at our last hearing, our top priority must be to improve the diplomatic, intelligence, and law enforcement efforts that limit nuclear proliferation, safeguard weapons-grade nuclear material, and thwart terrorist plots. If detection and interception fail, however, we simply must be ready for the aftermath.

Half a century ago, Cold War duck-and-cover drills and signs marking subways as shelters were widely seen as futile gestures given the nuclear missiles that would fly in an all-out U.S.-Soviet war. But a terrorist attack on a large American city would likely be a different scenario. A ground-level detonation of a 10-kiloton device equivalent to 10,000 tons of TNT, and small by the morbid standards of these weapons, would destroy nearly everything within a half-mile radius. But as the Chairman indicated, we have learned that large portions of the target city would still be standing and would contain hundreds of thousands of survivors.

Today, then, we examine the urgent question of what would have to be done quickly and effectively to aid those survivors. We know that great numbers of people would need decontamination, medical care, food, shelter, and social services. Most would need guidance on sheltering in place versus evacuation. First responders and medical personnel would need to know where to deploy.

Effective planning and training for a large-scale and well-coordinated mass care response are vital. This effort requires coordination among the Department of Homeland Security (DHS), the Department of Health and Human Services (HHS), the Department of Defense (DOD), State and local emergency managers, first responders, and key players in the private sector.

This Committee heard compelling testimony on the need for response planning last October when Dr. Tara O'Toole of the Center for Biodiversity in Pittsburgh testified on our lack of readiness to respond to a bioterrorism attack. Well, many of the challenges are very similar. Dr. O'Toole cautioned us that we simply were not ready to respond. She also told us that a nuclear or biological attack, including the fear of subsequent attacks, are the only two

kinds of assaults that could really destabilize the United States of America.

Responding to that threat will require more than deploying first responders and materials. In the chaotic and terrifying aftermath of a nuclear blast, providing timely, accurate, and actionable information would literally be a matter of life and death. People would need to know what has happened, where to find help, whether their immediate circumstances dictate evacuation or sheltering in place, and what to do next to protect themselves and their families.

How important would it be to communicate accurate, trusted information? For people gripped by an overwhelming urge to flee, it could be critical, and most people would be gripped by an overwhelming urge to flee. The Department of Homeland Security has calculated that people who would try to flee Washington in the first 24 hours after a terrorist nuclear attack could expose themselves to seven times the radiation of those who shelter for just 3 days in their basements before leaving. I would wage that very few people in this city know that critical fact.

The real life importance of effective crisis communication was also illustrated in the Three-Mile Island nuclear reactor core incident in Pennsylvania in 1979. Dartmouth College physicist John Kemeny headed a presidential commission to investigate the response. The Kemeny Commission report found confusion and weakness among information sources and a lack of understanding among many reporters that resulted in the public being poorly served. A commission task force noted problems including delayed or incorrect information, conflicting official statements, overly technical statements, and a lack of coordination. These problems aggravated public confusion, fear, and emotional stress, consequences that obviously would have been far more serious if the Three-Mile Island incident had caused any casualties.

A terrorist nuclear attack would give us the worst of both worlds, mass casualties and the response problems surpassing those of Hurricane Katrina plus the dangerous invisible threat of nuclear radiation. Clearly, our response plans for mass care, food, shelter, and accurate communication must be in place. They cannot succeed without a carefully planned system for giving people clear and accurate information.

Mr. Chairman, thank you for your leadership on this important subject and I look forward to hearing our witnesses.

Chairman LIEBERMAN. Thanks very much, Senator Collins, for that excellent opening statement.

We are pleased to have such a good group of witnesses before us and we will begin with Dr. Irwin Redlener, who returns. He is a recidivist at this Committee.

Dr. REDLENER. Exactly.

Chairman LIEBERMAN. He is Director of the Center for Disaster Preparedness and a Professor at Columbia University in New York. Dr. Redlener, thank you.

TESTIMONY OF IRWIN REDLENER, M.D.,[1] DIRECTOR, NATIONAL CENTER FOR DISASTER PREPAREDNESS, MAILMAN SCHOOL OF PUBLIC HEALTH, COLUMBIA UNIVERSITY

Dr. REDLENER. Thanks, Senator Lieberman and Senator Collins. Senator, among the most concerning realities of our Nation's disaster planning agenda in general has been the apparent failure to grasp or develop adequate plans to mitigate and respond to a terrorist attack using a nuclear weapon. At this point in time, I am sorry to say that few, if any, major U.S. urban centers have taken on the admittedly daunting challenge of planning for a meaningful public health response to a nuclear detonation, even if they have actively and effectively planned for other types of natural or terror-related disasters.

This Committee has previously heard testimony addressing the consequences of nuclear terrorism, so I will focus on, first, understanding the impediments that inhibit rational response planning for the nuclear threat, the notion of survivability, and finally, what the Congress might be able to do to alleviate some of these barriers.

One important reason that we have neglected nuclear terrorism is the persistence of three long-held misconceptions or myths regarding nuclear threats in the age of terrorism. It is not just a matter of capacity, it is a matter of mindset.

First of all, there is the myth of extreme improbability. This issue was introduced in previous hearings here, but I will tell you that I commonly hear emergency planners say something on the order of, nuclear terrorism is highly improbable and we want to focus on those disasters that are more likely to occur. But unfortunately, like other terror threats, there is simply no reliable means of determining probability with respect to when or if a terrorist might detonate a nuclear weapon in a location seen to be high value. So it is virtually impossible to objectively compare relative risks of nuclear terrorism for New York or Washington or Los Angeles versus other large-scale disasters.

The second is the myth of planning futility. Unique among potential disaster scenarios, radiological events, particularly nuclear explosions, are shrouded in a special level of dread that is deeply rooted in images developed, and understandably so, during the Cold War, as you mentioned. From 1945 through the 1980s, vast arsenals of mega-ton-level nuclear weapons were amassed by the Soviet Union and its allies on one side and the United States and its allies on the other, and at its peak, more than 60,000 nuclear warheads were in the combined arsenals, and an attack or a perceived attack by one side would trigger a counterattack by the other and thousands of high-yield nuclear weapons would indeed have obliterated the two major antagonists and many other countries, as well.

So it is this vision of the nuclear armageddon that has been sustained well beyond the end of the Cold War to the point where it has actually permeated and deeply seated itself in the public consciousness. In fact, this perspective has actually impaired the vision of planners as well as citizens, many of whom have adopted

[1] The prepared statement of Dr. Redlener appears in the Appendix on page 463.

a sense of fatalism and hopelessness rather than take the rational steps necessary to ensure maximum survival in the event of nuclear terrorism.

The counterpoint, however, is that while all-out nuclear war with the Soviets truly would not have been survivable in any meaningful way, nuclear terrorism, as both of you have pointed out, on the other hand, that would deploy a single relatively low-yield smuggled or crudely constructed bomb, while fatal for many citizens, to be sure, would be survivable by many more people if we plan appropriately.

The third myth, which is most important, I think, for this Committee, is the myth of Federal rescue, or put another way, that the cavalry is not on its way. First, it is clear that the public at large harbors entirely unreasonable expectations regarding the rapidity and efficiency of disaster response systems in general. A study conducted last year by our own National Center in New York showed that more than one in three Americans believe that in the event of a catastrophic disaster, help would arrive within one hour, and in fact, something like two-thirds of Americans think that help would arrive in the first few hours no matter what the catastrophe was. These beliefs persist in spite of information from the Federal Emergency Management Agency (FEMA), Red Cross, and many other organizations that help may not be on the scene for more than a day under many scenarios, and in some cases, the public is asked to be able to survive and self-care for 72 hours or more.

But it is not just the citizens who have these beliefs. Unrealistic expectations may also be seen among professional disaster planners. In fact, there is a widely-held belief that Federal teams will somehow be immediately available to assist local efforts in managing and maybe overseeing the consequences of nuclear terrorism. And certainly while it is true that Federal response teams from a wide range of agencies, including the Departments of Defense and Energy, do exist, many operate in the capacity of law enforcement or counterterrorism and military response. But relatively few assets can be expected to provide timely, very large-scale medical triage, major hospital care, and so forth.

The National Guard's Weapons of Mass Destruction (WMD) Civilian Support Teams, for instance, are available for rapid assessment and technical advice, but not to add appreciably to the actual medical response capacity. And on the civilian side, the National Medical Response Team, consisting of 60 highly trained medical and technical specialists, is available and trained to enter hot zones for decontamination of affected patients, but they would be a drop in a very large bucket.

That said, in last month's testimony before this Committee, John Gibb of New York State's Emergency Management Office said there is no ready system in place or planned that will result in victims from this type of event receiving pre-hospital or definitive care in any reasonable time frame. New York, like all other States, has on some level realized that substantial response capacity to nuclear terrorism is simply not available within their own borders and their only hope is to count on Federal resources.

Unfortunately, in my judgment, there is something akin to utter confusion out there with respect to the role of the Federal Govern-

ment around planning for and response to a nuclear detonation. There is little understanding, for instance, of how and when Federal resources, DOD and civilian-based, are deployed and under what legal authorities. In addition, there remains substantial confusion about operational capacity in terms of personnel, expertise, medical countermeasures, and so forth. We have every reason to believe that even if the total Federal capacity was coordinated, it would be insufficient to meet the needs of potentially hundreds of thousands of nuclear survivors with trauma, burns, and radiation injuries.

I would like to say a word or two about this notion of survival that both of you touched on, and it is really a very straightforward concept that should be guiding our preparedness efforts. As was made abundantly clear from the testimonies heard in previous panels, the detonation of a 10-kiloton nuclear weapon during a work day in downtown Washington, DC, or New York would immediately kill 100,000 to several hundred thousand people. But really, in scenarios like this, within a radius of a half-a-mile from ground zero, it is truly a lethal zone and there is no survival possible. From a half a mile to two miles, we are still seeing extraordinary fatalities and life-threatening injuries. And then beyond eight to 10 miles, we have a relatively safe zone in terms of prompt injuries and fatalities. It is that gray zone, almost like a nuclear gray zone, between two miles and eight miles where the survival of hundreds of thousands of people will be directly affected by the degree of planning and citizen awareness that we have put in place.

The planned strategies for optimal survival, and you have touched on a couple of them, have to do with an informed emergency response system, including among Federal agencies and voluntary organizations, an appropriately stocked shelter system, and other ideas and strategies that I won't detail.

But I want to conclude with a couple of remarks about planning for nuclear terrorism from the Federal perspective. While the prevention of catastrophic terrorism through sophisticated intelligence gathering, counterterrorism measures, and detection is the ideal solution, this will never be foolproof no matter what steps are taken. In the meantime, Congress should strongly consider expanding funding and support for four key measures.

First of all, we need to enhance our understanding of the barriers to nuclear preparedness planning. As I said in the beginning, this is not just about resources and capacity. It is about changing a mindset that will actually allow planners to do what they need to do.

Second, we need a lot more support for research on the critical workforce needs and resiliency of populations in order to make sure that our plans are based on provable, objective criteria that would actually work under the scenarios that we are talking about.

Third, we need to provide States and at-risk urban areas with greatly enhanced stockpiling and distribution capacity for medical countermeasures as well as a contingency system needed to assure availability of emergency care for injured survivors. There is just no way that the vast majority, or any, really, of our major urban areas can handle this on their own.

And finally, we need to substantially bolster the capacity and clarify the authority of the Federal Government to deploy massive resources in the event of a nuclear terror attack anywhere in the Nation, and I think we have compounded the problem by allowing this confusion and legal questions to persist while we are trying to understand how we would best and most effectively deploy Federal resources to help the cities and States, which obviously would not be able to handle such an event on their own.

Thank you.

Chairman LIEBERMAN. Thanks, Dr. Redlener. That was an excellent beginning.

Our next witness is Dr. Ira Helfand, who is the Co-Founder and Past President of Physicians for Social Responsibility. Thanks for being here.

TESTIMONY OF IRA HELFAND, M.D.,[1] CO-FOUNDER AND PAST PRESIDENT, PHYSICIANS FOR SOCIAL RESPONSIBILITY

Dr. HELFAND. Thank you, Chairman Lieberman and Senator Collins, for allowing me to share my concerns this morning about the lack of preparation for nuclear terrorism and also to share with you some suggestions I have for improving our preparedness.

The threat has been clear to us for some time and I think the thing that is most perplexing is why we have not acted more aggressively at the Federal level. Even before September 11, early in 2001, the Department of Energy task force warned that the most urgent national security threat to the United States today is the danger that weapons of mass destruction or weapons-usable material in Russia could be stolen and sold to terrorists or hostile nations and used against American troops abroad or citizens at home. That was more than 7 years ago and we still, at this point, do not have a plan in place.

I have a number of specific recommendations that I would like to make, but if I could, I would like to just very briefly go over a scenario that I am going to be working from. In October of 2001, shortly after September 11, 2001, the British Medical Journal asked me and several of my colleagues at Physicians for Social Responsiblity (PSR) to prepare a description of the medical effects of a nuclear terrorist attack. The conclusions are similar to those which both of you have alluded to and which Dr. Redlener has referred to, as well. Just to be precise, because the recommendations that I am going to offer flow from the scenario, we assume that a terrorist attack involved the shipment of a nuclear device about Hiroshima-size to the Port of New York and that this device was detonated in the harbor before the ship actually docked. This is not, I need to emphasize, a worst-case scenario because much of the blast effect in this attack is dissipated over the Hudson River.

But nonetheless, the blast in our model would kill 52,000 people directly from heat and mechanical injury. An additional 238,000 people would be exposed to radiation emanating directly from the explosion. Of these, 44,000 would suffer radiation sickness and 10,000 would receive lethal doses of radiation from which they

[1] The prepared statement of Dr. Helfand with attachments appears in the Appendix on page 469.

could not recover. These acute casualties would occur no matter what we had done to prepare for a terrorist attack. But there would be several thousand people with burns and mechanical injuries who could survive if we had done our planning well and there would also be tens of thousands of people with radiation sickness who are in that category.

In addition, another 1.5 million people would be exposed to radioactive fallout from the explosion, not the direct radiation coming out of the bomb itself but the fallout that this ground-level blast would generate. A million-and-a-half people would be exposed to this fallout across Manhattan, Queens, and Long Island. As many as 200,000 people in this group would die if they were not safely evacuated or sheltered. But if they were protected, they could survive, and that is the crux of the issue.

As catastrophic as this attack had been, and this is a point which you both made, a terrorist attack would not necessarily be fatal to everyone. Many people could be saved if we had done our planning properly.

There are two broad goals that we need to take into account in doing our preparation. One is to minimize casualties and the other is to care for those who do get injured despite our efforts to protect them.

With regard to minimizing casualties, the most important task in terms of the number of lives saved is to protect people from avoidable radiation exposure. In most situations, that would involve getting people to shelter, as Senator Collins has talked about, getting them to go into the basement or the first story of the building that they are in and stay there for 72 to 96 hours. But in some cases, depending on local conditions and particularly on the local weather conditions, it might be better to try to evacuate these people. And so the first thing we need to do is to have in place a clearly designated central coordinating authority to make that decision, to determine do we shelter or do we evacuate.

Second, we need to establish clear criteria to guide this authority in making that decision. This is not going to be a good time for improvising. We have to have a clear set of guidelines for under what circumstances you would adopt which course of action.

Third, there needs to be a clear chain of command to carry out that decision once it is made. We believe that authority needs to be Federal and needs to be vested in the Secretary of Homeland Security or his or her designee. We also need to have in place the resources to manage an evacuation or to support a population sheltering in their basements for several days. Most of these people will not have stockpiles of food or water. It will be necessary for adequately protected personnel to deliver these materials on a massive scale. In the New York model that was published in the *British Medical Journal,* we would be talking of several million people who would need this kind of support.

We also need to have in place the means of effectively communicating to people in order to evacuate or in order to shelter in place, and we need to do enough prior education, as Senator Collins suggested, so that people ordered to shelter in place will know that this is a wise thing to do and won't just jump in their car and try to drive away as fast as they can.

With regard to caring for the people who are injured despite our best efforts, we have to understand that there will be tens of thousands in that category and we need to provide both the personnel, the facilities, and the medical supplies to take care of them.

With regard to personnel, we need to develop an adequate National Disaster Medical System. Currently, the Health and Human Services Department maintains some 50 Disaster Medical Assistance Teams (DMATs) of doctors, nurses, and other health professionals. The concept is right, but the existing system must be greatly expanded to be able to deal with a disaster on the scale of a terrorist attack.

Even if we were able to successfully protect most people from radiation exposure, in the scenario that we have developed, there would be 44,000 cases of radiation sickness caused by the radiation coming directly from the explosion and several thousand people with crush injuries and burn injuries, about 50,000 patients in all. A Level One DMAT is supposed to be able to care for 250 patients, and that implies that we would need to have as many as 200 DMATs available and on stand-by at all times. At the current time, there are 50 and only a small fraction are actually on stand-by at any given moment.

In addition, we need to establish a mechanism for quickly mobilizing existing military medical teams and for rapidly integrating volunteer health professionals. In the case of Hurricane Katrina, many traveled to New Orleans and couldn't be used because the mechanisms weren't in place to absorb them.

With regard to facilities, it is critically important that hospitals not be the site of triage and first care. I work in an emergency room (ER). My ER, like most ERs, is packed all the time. An influx of frantic, wounded people from a nuclear explosion would just shut the place down. We would be able to do nothing. Rather, instead of bringing people to the ERs, we need to set up a system of Disaster Medical Care Centers at community sites that are easily accessible by ambulances, by patients, and by care providers. Things like convention centers and sports facilities are possible candidates for this role. Again, using the *British Medical Journal* scenario, we would need to have these facilities able to care for approximately 50,000 people.

We would recommend that centers of this sort be established in high-risk urban areas, such as New York and Washington. Planning for these centers would need to take into account the fact that the centers might well be destroyed in the blast or that they might lie in areas that are heavily contaminated with radiation, and so we probably need to have several different centers in a major metropolitan area.

And in addition, we would need to establish mobile field hospitals to be used in case the Disaster Medical Care Centers were taken out in the initial attack, or if terrorists chose to attack a less-likely target that we hadn't planned for—Oklahoma City or Portland or Hartford, someplace where a Disaster Medical Care Center might not have been built. These mobile field hospitals would obviously be dual-use and they would be quite valuable to use in civilian natural disasters like hurricanes or an earthquake in California, as well.

Finally, with regard to supplies, DMATs, we have to understand, have enough equipment to take care of their patients for 72 hours, and this is clearly not enough. Patients with radiation sickness, with burns, require enormous amounts of medical equipment—intravenous fluids, pain medication, blood products, and so on. We need to have adequate stockpiles of these materials available because the DMATs' supplies will be quickly exhausted. And again, we need to have supplies on hand to deal with tens of thousands of people, understanding that many of these people are going to require intensive care for weeks, if not months.

Also, we will need to preposition radiation protection monitoring equipment for people to use in dealing with the situation that they are going to be facing.

If we believe that the nuclear threat is real and if we are truly committed to doing what is needed, these are some of the specific steps which I believe we need to put in place. They are going to involve a lot of work, but they are not rocket science. They do, however, need to be implemented. To that end, PSR would recommend that the Homeland Security Department establish a working group that is charged with implementing these measures in a short and specified time frame, probably no more than 6 months.

In closing, if I could, I would like to make two final points. First, even with the very best of planning, a nuclear terrorist attack would clearly be a catastrophe which is without precedent in our national history and with consequences we can barely imagine. While we must plan on how to deal with the aftermath, it is even more important that we focus on prevention. Specifically, we must take steps to limit the availability of nuclear weapons and fissile material by upgrading the security at all sites where these materials are stored. We have been working on this problem for more than a decade and we have made some substantial progress, but we need to get the job finished.

Second, as important as is the threat of nuclear terrorism, I think we have to understand that this is not the greatest nuclear threat that we face. Nuclear weapons states still possess more than 20,000 nuclear weapons. Several thousand of those in the U.S. and Russian arsenals are on hair-trigger alert. They can be fired in 15 minutes. A study that PSR prepared just a few years ago showed that if only 300 of those warheads hit American cities, they would kill 100 million people in the first 30 minutes and our Nation would effectively cease to exist.

I think that it is urgently in the security interest of the United States to eliminate all of these nuclear weapons, and to that end, the United States must lead all nuclear weapon states in meeting our legal obligations under Article 6 of the Nuclear Non-Proliferation Treaty to set a time table for reducing and ultimately eliminating these weapons.

Thanks very much again for the opportunity to speak with you this morning. I would be happy to answer any questions you might have.

Chairman LIEBERMAN. Thanks, Dr. Helfand. That was very helpful, particularly the specificity of your recommendations about what might be done now, including beginning with a working group at DHS.

Joseph Becker is the Senior Vice President for Preparedness and Response at the American Red Cross and we welcome your testimony now.

TESTIMONY OF JOSEPH C. BECKER,[1] SENIOR VICE PRESIDENT, DISASTER SERVICES, AMERICAN RED CROSS

Mr. BECKER. Thank you, Mr. Chairman and Senator Collins. I lead the American Red Cross Disaster Relief, and I appreciate the opportunity to share in this conversation today on such an important issue. My comments are from the perspective of a non-governmental organization (NGO), and my focus will be on the issue of mass care in the early days of an event.

In addition to what the speakers before me have contributed, I would add more observations about our country's readiness to respond. While delivering medical assistance will be the greatest challenge following an attack, delivering mass care for the well will have its own tremendous challenges.

I would like to be very clear up front. The Nation is not ready to respond to an attack involving a nuclear device. We have the supplies and resources to provide mass care spread across this country, and those services include feeding, sheltering, distributing supplies, emergency first aid, mental health, and reuniting families. We have the supplies that an event like this would require, but there are unique consequences that a nuclear event would present that would make a response incredibly difficult and I hope today's hearing will enhance our collective efforts in finding solutions for these challenges.

It is important to distinguish between our ability to deliver mass care on the scale needed and our ability to deliver mass care in the environment of a nuclear terrorist incident. When you look at the example that we have been using with 300,000 displaced, 100,000 requiring shelters, a million meals a day required to feed the people, and unknown numbers that need basic supplies, a planning presumption that may or may not be accurate is that these people will evacuate over a wide area and need care across quite a few States. Can we feed and shelter and care for that number of people in this scenario? Yes, we have the national capabilities that exceed those requirements, but as you indicated, Mr. Chairman, the ability to move those effectively into the affected area and coordinate that response is not in place.

If this were a natural disaster, like a hurricane, where we had advance notice and could plan our response and move people and resources ahead, we could ensure a swift response on this scale. But a nuclear scenario is going to be very different. In a no-notice terrorist incident, it is going to take too long to scale the response.

Two key variables are going to determine how well we do. The first is what buildings survive and if they are usable for shelters. The availability of large auditoriums, arenas, or other mega-shelters will largely dictate the success of the sheltering operation. Whether the needed shelter buildings survive the blast and are safe to use is doubtful. And for those who flee, what capacities are

[1] The prepared statement of Mr. Becker with an attachment appears in the Appendix on page 511.

in the other cities and States that they go to? That will dictate how long it takes to get the shelter and feeding to scale in a no-notice event.

Second, if the facilities are available, will the volunteers that are needed show up? Mass care is delivered by volunteers, not paid responders, and we have no experience, we have no data that will tell us if they are willing to put themselves potentially in harm's way and serve. In many cases, paid first responders have served in uncertain environments. We do not know about volunteers.

And here is where it gets harder. Assume we have enough big buildings or that we can move people to where they are. Assume that nearby supplies survive the blast and that we can bring more in quickly, and those are big assumptions, and assume that volunteers step forward to immediately care for those in need. Even if the people in the buildings and the supplies survive and we can use them quickly, there are other limiting factors that are going to present huge challenges. Very quickly, there are five more issues in a nuclear event that we are not ready to deal with as a country.

The most worrisome aspect of the response, and you indicated it, is public information. The national capacity to deliver timely and appropriate public messages in a nuclear scenario is not in place. We have repeatedly demonstrated in drills and exercises an inability to quickly decide on and deliver the right message and have it be a consistent message to the public. Should I shelter in place? Should I go? What should I do? It takes too long to produce public information from Federal sources and local authorities are each on their own in the earliest hours to give appropriate direction to citizens. The obvious result will be conflicting information and public confusion during an event.

Second is citizen preparedness. We have not made a large and effective investment in telling American citizens ahead of time what to do in such an event. We need to make it easy for Americans to know and have available in advance what steps to take in a nuclear event. The information has been developed. Great pieces exist. But the average family has no understanding and will rely on just-in-time information, which we agree is going to be confusing, at best.

A third very critical limiting factor is decontamination. Decontamination capabilities vary widely from city to city, and you will remember that a basic premise in any community plan is that the shelter should not allow its citizens in until they have passed through decontamination. If the decontamination doesn't happen in a short period of time, which is likely to be the case, you will have large numbers of people standing outside of a shelter desperate to get out from under what is falling from the sky. Law enforcement is going to have little option but to let them in, perhaps compromising the integrity of the shelters. Shelters will become the focal point of public anxiousness and anger during an event. And it is also very plausible that people with particular needs, people with disabilities, and people with no transportation are not going to get the right care.

The fourth issue for mass care in a nuclear terrorism event is going to be the duration. As we saw in Hurricane Katrina, when large numbers of people are cared for in shelters and there are no

empty motels and no vacant housing, short-term shelters become long-term housing and that is not an appropriate way to care for citizens for months and months and months after a disaster. We need a national housing strategy and it needs to have a menu of approved options that we can move quickly to after a disaster. Absent a housing strategy, a large public building with a cot and a blanket and a caring volunteer is going to be my home for way too long.

My final observation is that we tend to treat building readiness for a scenario like this as a one-time event. One-time purchases of supplies and equipment are needed, but this is an ongoing expense. Mass care is delivered by volunteers. For catastrophic mass care delivery, a state of readiness requires a large number of volunteers to be trained and ready to respond. Volunteers are not free.

In addition to those five observations, I come with three appeals. The first has to do with worker protection. As I said, mass care is delivered by volunteers and the country needs to protect these people who step forward to serve the public good. These are health care volunteers, mass care workers, and others who suffer long-term medical consequences. We need to agree in advance that the government will step in and protect workers from the health risks that they may face in a pandemic environment or a chemical or biological event or other catastrophic disasters. This is not just a Red Cross issue. This is a sector issue and all the volunteers that step forward need to be protected. If we want them to show up, we have to provide this.

Second, we need to consider organizational protections for the NGO sector. I will use the Red Cross as an example. In a chemical or biological event, we will be asked to put volunteers in potentially dangerous circumstances and the people who they are serving. This could result in future claims against nonprofit organizations and we need protection from those claims so that we can supply the needed volunteers and catastrophic response.

Third, the Red Cross recognizes the importance of government funding for NGOs to build the capacity to respond to large-scale events, and I appreciate your comments to that effect, Mr. Chairman. Our work is made possible by public donations, and the public is very generous in funding our large-scale responses. But asking donors to pay for warehouses, call centers, IT systems, and the like, that is another matter, and it is unrealistic to expect public donations on the scale required to keep the state of readiness that is needed. We do need government help with this.

To offer some insight into the amount of money it would take, in December 2004, the Red Cross prepared a report for DHS entitled, "Mass Care Implementation Requirements For the Catastrophic Incident Supplement." This report addressed the needs of responding to catastrophic disasters, what it would take to feed and shelter 300,000 people for a 90-day period across 30 metro areas. The total cost in 2004 was estimated at approximately $180 million just for the first 5 years.

Now, the Red Cross has invested considerably in its readiness in the last years, but preparing for this type of event remains extraordinarily complex and increasingly expensive. While significant investments have been made in government since September 11,

2001, such government investments do not build the needed mass care capability of the country. I would ask, please, to put that mass care cost analysis from 2004 in the record, if I could.[1]

Chairman LIEBERMAN. Without objection. Thank you.

Mr. BECKER. Last, Mr. Chairman, the Red Cross is obligated under the National Response Framework (NRF) to have staff in FEMA regional offices as well as people to support Federal agencies with which we partner in time of disaster. The costs to coordinate with State and Federal Government would be about $7 million annually, and while these positions bring value to the community's response, they were not sustainable under our current budget, as you indicated earlier. We respectfully request that Congress authorize and appropriate funding to cover these critical positions, as well. A state of readiness requires mass care coordination between the Red Cross and the Federal Government and this has a price.

Mr. Chairman, Senator Collins, thank you so much for the opportunity to share thoughts on this important topic, and I look forward to your questions. Thank you.

Chairman LIEBERMAN. Thanks, Mr. Becker. Again, very specifically helpful testimony.

Our final witness on the panel is John Ullyot, a Senior Vice President at Hill and Knowlton who will discuss crisis communications. He is thoroughly prepared to do this since he previously worked for Senator Warner, no stranger to crises——

Mr. ULLYOT. Absolutely.

Chairman LIEBERMAN [continuing]. As Director of Communications for the Senate Armed Services Committee. It is good to see you, and thank you for your testimony.

TESTIMONY OF JOHN ULLYOT,[2] SENIOR VICE PRESIDENT, MEDIA RELATIONS AND ISSUES MANAGEMENT, HILL AND KNOWLTON, INC.

Mr. ULLYOT. Thank you, Mr. Chairman, Senator Collins, and Members of the Committee. I am pleased to testify in front of you today on behalf of Hill and Knowlton as this panel examines the issue of nuclear terrorism and providing a strategy for clear communications that will save as many lives as possible in the aftermath of such an event.

As the Committee has already received a copy of my formal testimony, I will devote my time before you today to summarizing the main points, and I will be happy to address the Committee's questions after that.

This Committee has taken a real leadership role in ensuring that our Nation is as prepared as possible for nuclear terrorism and other large-scale emergencies. Likewise, the Administration with the Department of Homeland Security in the lead has made solid efforts aimed at improving the means of communication in the event of a terrorist attack.

My testimony today aims at delivering our perspective of best practices of emergency response and communications planning and a discussion of the forces that will affect our government's ability

[1] The Red Cross report submitted by Mr. Becker appears in the Appendix on page 517.

[2] The prepared statement of Mr. Ullyot with an attachment appears in the Appendix on page 543.

to communicate effectively with all Americans, both in advance of an attack as part of a public education program, as well as in the event an attack occurs. We recognize in many respects our views are aligned with work that the Federal Government as well as many State and local governments, already have underway.

It is important to note that our firm was not asked by this Committee to evaluate the current state of communications preparedness of the Federal Government but rather to give our best collective thinking as an agency with global expertise in crisis communications of how we would advise the government and this Committee on communications planning for an event of this magnitude.

As a preface to my testimony this morning, I believe it is instructive for us to examine the events of the past 2 weeks, namely the natural disasters that struck Burma and China. While the death and destruction in these instances were not due to acts of terrorism, they carry important communications lessons.

In Burma, where a military regime tightly controls information, the rest of the world struggled to learn the extent of the impact of the cyclone. Contrast that with the devastating earthquake that struck China earlier this week, where the broad access to wireless and digital communications, including cell phone, cameras, and streaming video, meant that vast amounts of information flowed across China and around the world.

We believe these efforts offer a cautionary tale for those of us involved in communications planning. The fact of the matter is that because of such new technology, we need to be prepared for an overabundance of information, information that moves faster than any government agency, first responder, or traditional news organization can move. If such technology and information is managed properly, the result can save lives. If not, the outcome can be confusion, chaos, and panic.

In today's world, such technology cannot be controlled short of shutting down or disabling networks. Therefore, we need to test our plans and systems to ensure that they are designed for such a scenario in order to break through the clutter and noise. In short, accurate and timely information can prove as vital as shelter, medical care, and food supplies in times of disaster.

In preparation for this hearing, our firm commissioned a nationwide survey to provide a benchmark of current awareness of issues relating to the scenario of the detonation of a lower-yield nuclear device in a major American city. An expanded version of the results is included in my formal testimony, but I would like to highlight three key findings of our research.

First, almost half of all Americans believe they are not equipped today with sufficient information from the government about what they should do in the event of an attack.

Second, the closer people are to an actual attack, the more likely they are to look to and rely on information from local emergency management authorities as opposed to Federal responders, authorities, leaders, and spokespeople.

And third, of all the types of information provided in the aftermath of an attack, people surveyed placed a premium on messages that are accurate, giving the full facts no matter how negative, and then far down the line, information that is timely, and then com-

paratively fewer are interested in more abstract, general information, such as how the Nation will respond to the attack. So accuracy, no matter how negative, is what people say they are interested in in such a scenario.

With all of this in mind, then, the question is what should the government focus on in the area of improving communications to save as many lives as possible. In my formal testimony, I devote a significant amount of time to discussing the following nine areas. For the purpose of my remarks to you this morning, however, I only have time to delve into a few of these, but the nine areas that I discussed in the formal testimony are as follows: The role of interagency coordination; pre-event message development; stakeholder identification; spokesperson identification and preparation; involving media and digital organizations; the importance of public-private partnerships; the importance of education and awareness efforts, which has been touched on by other panelists here; the criticality of the period immediately after an event in communications; and then training and lessons learned. So I will just discuss a few of those before concluding.

First, on the role of interagency coordination, by establishing the DHS, this Committee and the Congress has long recognized the importance of the interagency approach in establishing clear lines of responsibility and coordination in disaster preparedness and response. The interagency approach remains just as critical in the area of communications planning for disasters, including in an act of or for an act of nuclear terrorism.

Although we have not conducted enough analysis to make a specific recommendation to the Committee in this area, the Committee could consider as part of a subsequent review such issues as the adequacy of funding for communications planning at the interagency level, the optimum structure in the interagency for organizing that planning, and the sufficiency of emergency communications integration across all levels of government.

Next, on spokesperson identification and preparation, as noted earlier, our research indicates that the closer people are to a nuclear terrorist attack, the more likely they will look to local authorities as the most trusted spokespeople and for the primary sources for trusted information on how to respond. What this suggests is a need for a planning approach that recognizes the literally hundreds or even thousands of possible local spokesmen across all 50 States. If we are to ensure an adequate standard of communications across all of these levels and geographic areas, then a plan will need to be put in place to identify these possible spokesmen, even down to the precinct level, down to the local community level, together with a means of engagement, standardized training, and information sharing.

Next, on involving media and digital organizations, historically, news media organizations have been a vital conduit of emergency response information, but as we saw this week, the rapid expansion of digital and wireless communications, cellphone cameras, wireless communications means that information can be sent around the world as it happens, bypassing government resources and spokesmen as well as the traditional news media. This speaks to the likelihood of an overwhelming demand for immediate information, par-

ticularly those directly affected, following a major incident that will tax even the most robust systems.

This is not to suggest, however, that we are disregarding the influence of the traditional media. As we saw on September 11, 2001, in the event of a national emergency, people will tune in first to the broadcast media for immediate information and will return to it on a regular basis for updates. In fact, in times of national emergency, television networks have become the modern day version of the old town green where people gather to collect information and to share experiences. You will forgive my New England reference. But for these reasons——

Chairman LIEBERMAN. We thought it was very clever of you.

Mr. ULLYOT. Thank you, Mr. Chairman. For these reasons, it is important our communications plans recognize the need to have a means of providing sufficient content and spokesmen for these networks so as to ensure a stream of accurate and contextual information.

Equally important, we must recognize the new world order in which digital communications, such as cellphone cameras, blogs, streaming video, etc., are increasingly becoming primary sources of information.

And a note on the importance of education and awareness efforts. As I noted earlier, and other panelists did as well, our survey shows that almost half of our population believes it does not have adequate information to deal with a scenario such as a nuclear terrorist attack. For this reason, the task of public education is second to none in importance, but it is also the most challenging. How do we connect with a population that is already suffering from information overload generally? Seven years after September 11, 2001, with the public becoming numb to the ongoing warnings about the terror threat, how do we connect with Americans without alarming them? And how do we break through the barriers of cynicism and mistrust in the wake of Hurricane Katrina?

I would be wrong if I told you that we have the answers to these questions today, but we would encourage Federal, State, and local authorities to sustain, if not to expand, the public education and awareness initiatives.

Last, on the criticality of the period immediately after an event, as we saw during the initial hours and days following September 11, 2001, and Hurricane Katrina, the volume of uncertainty and misinformation in the event of a nuclear terrorist attack may likely far outweigh the amount of accurate, credible, and balanced information. At the same time, this is the period of a national crisis when the public's appetite for information is the most acute.

One of the lessons from Hurricane Katrina is the need for wholly aligned coordination and communication among Federal, State, and local authorities. While politics is an inevitable force that will impact public perceptions of government response, I think we can all agree that the collapse of coordinated communications fed the cynicism and lack of trust in the response in Hurricane Katrina amongst the public and the news media. In short, the cacophony of Hurricane Katrina must be replaced with a symphony of communications in which all instruments work together.

Mr. Chairman, Senator Collins, and Members of the Committee, it has been a privilege to be able to outline our thinking for you as this Committee considers how governments and first responders at all levels can communicate most effectively to save lives in the event of a nuclear attack. We believe this Committee and the Department of Homeland Security have accomplished a great deal in terms of preparing our Nation for such an event. The opportunity now is to build on this progress by ensuring that the communications planning recognizes the powerful technological and societal forces that have fundamentally changed the manner in which the public receives and shares information and by identifying those remaining barriers to effective communications.

Thank you very much and I look forward to your questions.

Chairman LIEBERMAN. Thank you very much, Mr. Ullyot. Thanks also to Hill and Knowlton for the resources you expended to do that survey. That is very helpful, and if you do not mind, we will share it, of course, with the Department of Homeland Security and other relevant agencies.

Mr. ULLYOT. Sure.

Chairman LIEBERMAN. Let us do 8-minute rounds of questions, since it is only Senator Collins and I this morning.

Dr. Redlener, let me begin with you. I appreciate your three myths that you outlined at the beginning, the extreme improbability of the event, a myth, the futility of planning, which is a myth, and also the myth that the Federal Government would come rapidly to the rescue because even though we are beginning to work at it, it is going to be difficult to do that quickly. But I wanted to ask you whether you agree or do not that it is nonetheless the Federal Government that has to stimulate, require, and support planning at the State and local levels so that they will be ready to come to the rescue.

Dr. REDLENER. Well, I agree very strongly with that. We have an odd situation now with respect to disaster planning. A nuclear terrorist attack, for example, is in my mind a national problem——

Chairman LIEBERMAN. Right.

Dr. REDLENER [continuing]. Requiring really significant Federal oversight and Federal intervention, both in the planning phase and the response phase, because as we said, local jurisdictions cannot handle this at all. But we have created a system where there is a minimum of Federal guidance and a maximum of local discretion to the point that I got a call less than 2 months ago from one of the senior officials in New York City's Office of Emergency Management asking if I would come down and care to discuss with them—they were beginning to think about what they would do in the event of a nuclear detonation.

Now, many years after September 11, 2001, I think it should not be up to Los Angeles or Washington, DC, or Chicago or New York as to whether or not there will be planning and effective planning for nuclear terrorism. If the Federal Government as part of national security feels that those are target-potential cities, I think it is the Federal Government's responsibility to figure out a way to override what is otherwise local discretion. So we are using a model that works for designing a school system, which is here is some Federal support, but do what you need to do in Indiana. That

model doesn't work when it comes to providing significant preparedness and protection for the American population around things like terrorism or major disasters.

Chairman LIEBERMAN. Are there any governmental or private entities in major metropolitan areas that are involved in or beginning to plan for the response to a nuclear terrorist attack?

Dr. REDLENER. There are some discussions in some cities and——

Chairman LIEBERMAN. Which are they?

Dr. REDLENER. Well, New York, for one. Los Angeles is another one that I am aware of, and I think Washington, DC. But they are at a very primitive state in most of these places because they are dealing with unbelievable inadequacies of capacity, and really, if you couple that with the myths that I was talking about, you get people left to their own devices who would really rather talk about how to evacuate from a coastal storm rather than deal with a nuclear terrorist attack.

Chairman LIEBERMAN. Yes. I will tell you of a confirmation hearing we held yesterday. I do not mean to highlight and focus on the gentleman, who is an excellent administrator, Paul Schneider. At his confirmation hearing yesterday for Deputy Secretary of DHS, he is really excellent, I asked him this question about nuclear preparedness, "Are we prepared for a nuclear terrorist attack?" He kept coming back to tell the Committee about how prepared we were for a hurricane. Now, part of that is that they have not gotten to it really, and part of it, I think, is that there is a hesitancy to do that.

Do you agree that in the current organization of the Federal Government, the Department of Homeland Security is the place where this responsibility should be centered administratively?

Dr. REDLENER. Let me put it this way—in the United States, we have a tremendous challenge of figuring out responsibilities when it comes to public health response——

Chairman LIEBERMAN. Right.

Dr. REDLENER [continuing]. Between HHS and DHS.

Chairman LIEBERMAN. Yes.

Dr. REDLENER. That requires kind of a higher level of leadership to say, you have been talking between the two agencies. You have been talking for a couple of years now about this, and there are things that keep shifting back and forth. The DMATs that Dr. Helfand was talking about, one time they were under DHS, now they are under HHS, and it is just too confusing. I think we need to tighten that up and have some oversight that says—in a certain way, it does not really matter to me so much as long as one is taking full responsibility——

Chairman LIEBERMAN. Yes.

Dr. REDLENER [continuing]. And there is a difference of roles between the two, but DHS could be doing a lot more.

Chairman LIEBERMAN. Yes. I realized after I asked the question I was getting you into that ongoing controversy. What I really meant is not that everything will be done by the Department of Homeland Security, but that it will be the overall coordinating agency.

Dr. REDLENER. Yes.

Chairman LIEBERMAN. For instance, it is clear that the Department of Defense will have a lot of responsibilities in response to a nuclear attack. But still, DHS would have that homeland response.

Does everyone agree that DHS should be the central coordinating agency?

Dr. HELFAND. Is that not what they were set up for?

Chairman LIEBERMAN. Yes, exactly. Good answer.

Second, and Dr. Helfand, I was going to ask you this question of how do we organize, how do we prepare for a medical surge capacity to deal with a catastrophe of this scope? In other words, with all that has been said, how do we prepare on this scale because when we are talking about potentially tens of thousands of people being sick—forget for a moment the complicating factor of the need to prevent the spread of radioactive contamination to others—we just do not have the hospital space. We do not have the professional help. I mentioned the statistic about the startling shortage of available burn units around the country, let alone in a particular area that may be hit. So how do we begin to prepare a contingency plan for a disaster of this scope medically?

Dr. HELFAND. Well, I think it is going to be extremely difficult, but the pieces are those that I suggested, I think, in my testimony. We need to provide first for the personnel, and the DMAT model, I think, is a fine one to use.

Chairman LIEBERMAN. Yes.

Dr. HELFAND. We just need to expand it.

Chairman LIEBERMAN. We need more of them.

Dr. HELFAND. We need more of them, and we need to have more of them on stand-by at any one time.

Probably the most difficult piece is going to be the facility piece because as you have just correctly suggested, hospitals are already stuffed. They cannot take care of the patients they have now and there is no surge capacity. There is probably a negative surge capacity. We do not have enough space at the moment for the patients that we have now.

I think that the only real solution to that is going to be this combination of disaster medical centers and field hospitals, and it is going to be sort of expensive, but it is not going to be that expensive compared to other things that we have spent money on in the name of protecting ourselves from terrorism.

Chairman LIEBERMAN. You mean expensive in terms of having the stand-by capability?

Dr. HELFAND. That is right.

Chairman LIEBERMAN. And part of it, I take it, is simply requiring or incentivizing local areas to think about this and designate facilities or sites that need to be available, and then to the extent that they are capable, stocking them with supplies that would be available.

Dr. HELFAND. Yes. I mean, again, I am a doctor, not a government official——

Chairman LIEBERMAN. Yes. That is why you are making so much sense. [Laughter.]

Dr. HELFAND [continuing]. But I think really this is not something that cities are going to do very well on their own, and I think this probably, as Dr. Redlener just suggested, is going to have to

be a Federal mandate and it is going to have to take Federal funding. I cannot imagine a city facing the kinds of constraints that most cities face now, spending a lot of money on buying ventilators and medical supplies to sit in a warehouse in a sports stadium against this potential availability——

Chairman LIEBERMAN. For a potentiality that most people do not want to believe is real.

Dr. REDLENER. That is right. So I think probably the Federal Government is going to have to step in, mandate it, and fund it.

Chairman LIEBERMAN. My time is up on this round. Senator Collins.

Senator COLLINS. Thank you. Let me pick up where the Chairman left off, Dr. Helfand. In talking about the challenge of assembling the teams of medical personnel, you outlined very well your vision of having field hospitals that would be in stadiums, perhaps, since hospitals do not have that kind of surge capabilities. As you said, however, we only have 50 DMATs in the country right now. Do we need to broaden our concept of medical personnel beyond the typical members of DMATs? And by this, I mean looking at people with medical training who are not necessarily physicians and nurses but might be able to assist in providing care.

I was struck in the aftermath of the failed response to Hurricane Katrina by conversations that I had with home health care nurses who said that had they been tapped, they could have been enormously helpful in identifying individuals who were disabled and homebound. They know where they are because they serve them everyday. But no one tapped into their knowledge. No one helped reach out to home health nurses, who are not traditionally members of DMATs. Even those who have training in the care of animals, like veterinarians, not traditional members, but when we are talking about taking care of people in this gray area where we may have to provide care to 100,000 individuals who are sick, their training might well be helpful.

What do you think of expanding our reach to medical personnel that are not traditionally involved in DMATs?

Dr. HELFAND. Well, I think that we want to mobilize any resources that we can in this endeavor, but I have a couple of qualifying comments on that. One is that a lot of these people that we are going to be using them to take care of are going to be very sick and they are going to need really skilled, trained doctors and nurses and other health professionals to do that job.

The flip side of that is that the 50 DMATs have about, I think, 50 to 60 members each. That is only 3,000 people. We have a very large pool of doctors and nurses relative to that. I think that there is a lot of room to increase the DMATs, drawing on traditional highly trained health professionals. There is not a lot that goes on to try to attract people to joining these. I mean, you have to look for the DMAT system. There is not a very active recruiting effort. So I think that we might be able to recruit substantial numbers of very highly qualified and highly trained people to them if we trained more aggressively. But then beyond that, looking to other types of professionals and people in the community, certainly we should mobilize whatever resources we can.

Senator COLLINS. Dr. Redlener.

Dr. REDLENER. Well, a couple of other points just to amplify what Dr. Helfand was just saying. First of all, the DMATs are not actually trained to do radiation contaminated injury care for people, and it is really only these specialized National Medical Response Teams that are, and there are even fewer of those than the DMAT teams. The problem is that if you take large numbers of people, even physicians not to mention alternate care providers, they may not have and they probably will not have even a little bit of training in terms of how to deal with, say, radiation contaminated wounds. It is a very complicated, specialized skill that we do not have.

But the bigger issue is, and we have done some studies on this, the ability and willingness of health professionals to work in an area of contamination, whether it is working in a hospital where there has been pandemic patients or patients with radiation contamination. We do not know much about that, but I will tell you this, that when we did some studies, and there need to be a lot more of these, we found that under certain scenarios, no more than 30 to 35 percent of health personnel would actually show up or stay at work because they were concerned about their own safety, concerned about their families, and so forth.

So if a hospital thinks it is prepared and dependent upon, say, 85 percent of people showing up for work, they will be rudely surprised in an actual event finding that only a third of the people are showing up. So there are strategies to mitigate that, but we need a lot more work to figure out what actually would happen in those kind of events.

Senator COLLINS. And that actually brings me to the communications part of this, which is so, so critical. Mr. Ullyot, your survey is fascinating because I would have thought that most people would trust national figures or the President coming on television rather than the local emergency manager, and I think that is very valuable information for us to have.

It is also evident from all of your testimony that the communications strategy is so important. I have participated in two FEMA exercises that were regional exercises. One was in the Chairman's home State, and in that exercise, there was a lot of emphasis on communication. In fact, there were even people playing CNN reporters who were putting a lot of pressure on the local and State elected officials to provide information right now, that kind of pressure that would be there in an actual emergency.

By contrast, the second exercise that I attended, which was in Rhode Island and Massachusetts, to my knowledge did not have a communications aspect as part of the drill, or at least not that I observed. Should that not always be part of the exercises? Should there not be a communications aspect whenever we are doing training exercises?

Mr. ULLYOT. Absolutely, Senator Collins, whenever it is a coordinated response. I mean, I think there is an argument for having just the medical aspect or other aspects tested individually to just get them ready for a larger training exercise, but whenever there is a large coordinated exercise that tests multiple agencies or multiple responders in the local, State, and Federal groups, it is our view that it is absolutely essential to involve communications plan-

ning, and we go into that very broadly in our written statement, and we touched on it earlier today.

I think it is important when you go back to the earlier point about trusting the local communities, usually in big exercises such as TOPOFF and the other major exercises that are done at the Federal level, they do make sure to involve State and local principals in order to test their communications ability, but it is important to do that with really local and even community leaders, driving down to really the precinct level, because our polling and other research shows that is who people will look to most in times of emergency, mayors and others.

Senator COLLINS. Thank you.

Chairman LIEBERMAN. Thanks very much, really important points. We are going to do a second round of 6 minutes each. Unfortunately, we have a vote going off soon, so we will see if we can get a round for each of us in.

Well, let me ask a general question before I get back to communications. As we hear this, we are dealing with a situation where we are all accepting that a nuclear attack on an American city by a terrorist group is a real possibility. Second, that there will be a horrific loss of life. But third, if we are prepared, we can save a lot of lives, a multiple of how many tragically will be lost.

So as I listen, and we talk about preparedness, one of the key immediate decisions will be to advise the people outside the immediate area of impact, the so-called gray zone, whether they should evacuate or stay in place. So let me ask you, I presume that there is not an organized way in which most American cities are prepared to make that decision now, is that correct?

Dr. HELFAND. Correct.

Dr. REDLENER. Correct.

Chairman LIEBERMAN. Yes. And in the normal course, exactly the officials that the people in the local areas will most trust will not be able to make the decision even though they are the real authority figures, like the chief of police or the fire chief. How do we want to prepare major metropolitan areas to make that decision in a timely fashion? Who has the expertise to do it? Dr. Redlener.

Dr. REDLENER. As it turns out, with this as in many other large-scale disasters, citizens are actually the first responders, and informing and forewarning citizens about this, as uncomfortable as it is—I have my own kids who are living now and working in New York City. There are things that I want them to know and I want all citizens to know about——

Chairman LIEBERMAN. Since three of my four children are living in New York City, also, what do you want them to know?

Dr. REDLENER. We should talk. [Laughter.]

I mean there are issues about, for example, attempting not to stare into the fireball. We are going to have to revert to the old duck-and-cover if you are anywhere near the explosion. You have 15 to 20 minutes to get out of the way after the blast before the really acute high-level radiation kills you, and some people, if they know which direction to go in and there is a way of knowing which direction to go in, can actually get themselves out of some degree of harm's way.

So there is a series of things. The issue of 24 hours, trying to escape after that 15 or 20 minutes for the next 24 hours is probably lethal in many circumstances. We would rather have you stay and shelter in place and so forth. You want to be above the ninth or tenth floor because radiation settles and so forth.

Chairman LIEBERMAN. Well, those are all very important and those will be subjects of communication to the public, but if this happened in a major American city, what information would the officials need in order to make the judgment about whether people should stay where they are or evacuate? Dr. Helfand.

Dr. HELFAND. Well, I think in most cases, they are going to want to shelter because of the experience that we have, that people who try to evacuate are more likely to get a heavier radiation exposure. There are certain environmental and weather conditions that might make it that certain people would want to evacuate. If you knew the wind was going to be blowing from the west reliably for the next 3 days, then people to the west of the explosion ought to get out of the area because they are not going to be getting fallout right then.

Chairman LIEBERMAN. Of course, they are going to need somebody to tell them that the wind is going to be blowing from the west.

Dr. HELFAND. Exactly, and I personally do not have a lot of confidence that officials at a city level are going to be able to do this. They may need to be the messengers.

Chairman LIEBERMAN. Right.

Dr. HELFAND. But I think the decision is going to have to be made by somebody who is set up in a command center. This is an attack. This is like a nuclear war.

Chairman LIEBERMAN. War.

Dr. HELFAND. We have to respond to this in that way. There needs to be a command center set up. Somebody gets the weather forecast real time from the National Weather Service and says, look, the wind is going to blow in New York absolutely from the west for the next 36 hours. People in New Jersey should get out of there and people in Queens and Manhattan should go into their basements. And they send that to the chief of police or the mayor who gets on the radio. And that obviously has to be set up in advance so that the mayor knows that he is going to be getting this information and be supplied with this decision that he can then communicate.

Chairman LIEBERMAN. Mr. Ullyot, you were going to say something, and then we will——

Mr. ULLYOT. Yes, Mr. Chairman, I have a really quick communications point. To that end, let us say you are recommending to some of the community, let us say downwind, to shelter in place and others who are farther to take a different course of action, such as evacuating. We have in the written testimony how the mental noise really takes over when there is a situation of high emotion, and you cannot imagine a situation of higher emotion than a nuclear terrorist attack, you would say.

A lot of the processes that are in place are for Reverse 911 calls, or Emergency Broadcast System, and these types of direct communications from the local authorities straight out to the community.

It was used in the California wildfires. It is used at universities. It is used in many situations to good effect.

In this type of a situation, those types of messages that would go out over that type of system, provided it were there, would be very complicated for people to take on board because you would be saying, everybody west of the Potomac, do one action. Everybody east of the Potomac, or north, take this following action. And somebody could hear the first message, hang up the phone, and do exactly the opposite because of all that mental noise. So you are trying to send sort of mixed and very complicated messages, which are life-saving messages, and you are assuming that people will take them on board, and that is just not going to happen, according to research.

Chairman LIEBERMAN. Mr. Becker.

Mr. BECKER. And I would add to that, once the blast happens, that quarterback, that county emergency manager who is in that operations center is not going to have the information he or she needs to make that decision. So it is going to be very crude at that point. You are going to be describing geographies that are going to be wrong. They are going to be wrong.

Chairman LIEBERMAN. You need to start doing that quickly.

Mr. BECKER. They do, and they are not going to have the information they need to make the decisions at first. Is it a blast or is it a nuclear event?

Chairman LIEBERMAN. Yes.

Mr. BECKER. As that evolves over time, we have lost the time to save those lives. We have lost the time to protect those people the way it sequences.

Chairman LIEBERMAN. Thanks. My time is up. Senator Collins.

Senator COLLINS. Mr. Becker, the Red Cross has had a lot of financial difficulties lately that have led to staff cutbacks. What is your current capability to respond if there were an attack of the type that we have been discussing today?

Mr. BECKER. We have made significant cuts. We are in bad economic times like a lot of other organizations. What we have not cut is what we do for people in disaster. When you look at the metrics, what we are capable of, we have supplies on hand to shelter 500,000 people and sustain that for a 6-day period of time. We have prepackaged meals on hand to serve those 500,000 people for the first 6 days.

We have the capabilities, but I would suggest in this event those are spread across the country. When we have made our recent budget cuts, we did not touch what we do for people in disaster, but we have cut the growth in capacity in local communities. It does not help that of those 500,000 cots and blankets, some of them are in Reno and some of them are in Hattiesburg when the event is in Washington, DC.

What is local is what matters most, and what we have been investing in is local capacity in our chapters and that is the need going forward. You can have a scalable national system, but things that arrive 2 days later are too late, and what we have been trying to build is our local capacity in our high risk parts of the country, and that is where we have ceased making the investments with the budget constraints that you are talking about.

Senator COLLINS. Then wouldn't that hamper your ability to respond to this kind of attack? It sounds like you have, nationwide, the same capabilities, but if you have had to cut back on your investments in local capabilities, all disasters are local in the first 24 hours.

Mr. BECKER. It would hamper us in a no-notice event like this. For example, a hurricane, you know it is coming. We have 2 to 3 days to move people in. But on a no-notice terrorist incident, that is what I was saying in my testimony, it is going to take us longer to scale up than we want because none of these communities have in them what is needed. And even if they have the buildings and even if things are usable, we still have to supplement that, and we are presuming we can move things into these communities at a time when the roads are clogged and airports are clogged. It is going to be very problematic. We have a national system, but local capacity is what matters in an incident like this.

Senator COLLINS. I will say that I am very sympathetic to your request for Federal funding for the Red Cross personnel that are in the FEMA regional offices. When the Chairman and I wrote the reforms of FEMA in the wake of Hurricane Katrina, we put a lot of emphasis on the regional offices and having DOD personnel stationed there, having Red Cross staff stationed there because that is how you are going to get the improved response, that kind of coordinated response. So I just wanted to let you know that I am very sympathetic to that request.

Mr. BECKER. Thank you for your support.

Senator COLLINS. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thank you, Senator Collins. I want to ask a final question before we go over to the Senate. Mr. Ullyot, I used to hear tests on the radio of the Emergency Broadcast System. What is the status of that? Of course, there was never any real content to it, so part of what we need to do in preparation is to educate and prepare pretty much every broadcast network and local TV and radio station as to what to do if, God forbid, this happens.

Mr. ULLYOT. Yes, Mr. Chairman. We talked in our testimony about the importance of involving the Federal Government with the national broadcast cable channels, the broadcast networks, the radio networks, etc.

To your question about the Emergency Broadcast System, there are a lot of people who are communications experts on the infrastructure side who are a lot better at this, but my understanding is that the Emergency Broadcast System is still in place. It is a legacy system. But it has never been used to communicate a message, even though it has been set up since, I believe, the 1950s, but even on September 11, 2001, there was no need because, once again, people were turning to the broadcast networks——

Chairman LIEBERMAN. Right.

Mr. ULLYOT [continuing]. And there was no need to implement. But that is still up, and I think the technologies that we talked about a little bit earlier about Reverse 911 calls, etc., those are very encouraging in terms of breaking through the clutter that you are going to get. But the question is really how will you involve the local leaders and when do you pull the trigger in terms of specific

messages that, as Dr. Helfand said, could be advised in this type of a situation.

Chairman LIEBERMAN. Well, thank you. You have been excellent witnesses. I cannot remember another hearing where I not only felt that the witnesses educated the Committee well, but also had as many specific and constructive suggestions that we can include in our recommendations when we get to that stage. So I really appreciate your presence, but also the effort that you put into it and the experience that you brought to the table.

We are going to leave the record of this hearing open for 15 days in case you want to add anything to the record or Senator Collins or I or any of the other Members of the Committee would like to submit questions to you in writing.

Senator Collins, do you want to add anything?

Senator COLLINS. No, thank you. Great hearing.

Chairman LIEBERMAN. Thank you. With that, the hearing is adjourned.

[Whereupon, at 11:27 a.m., the Committee was adjourned.]

NUCLEAR TERRORISM: PROVIDING MEDICAL CARE AND MEETING BASIC NEEDS IN THE AFTERMATH—THE FEDERAL RESPONSE

THURSDAY, JUNE 26, 2008

U.S. SENATE,
COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 10:04 a.m., in Room SD–342, Dirksen Senate Office Building, Hon. Joseph I. Lieberman, Chairman of the Committee, presiding.

Present: Senators Lieberman and Collins.

OPENING STATEMENT OF CHAIRMAN LIEBERMAN

Chairman LIEBERMAN. Good morning, and welcome to this hearing. Thanks very much for being here.

This is the fifth in a series of hearings this Committee has held to examine a question that it is natural to want to turn away from, but we really cannot. And that is, what is the state of our Nation's preparedness to mount an effective response to a terrorist detonation of a nuclear weapon in a major American city?

While working to prevent such an attack is and, of course, will continue to be our top priority, we know that the risk is real, and we cannot act as if we can fully eliminate that risk. A nuclear attack on our homeland would be sudden and swift. It would be devastating and deadly. Failure to develop and test a comprehensive plan for dealing with the aftermath would only magnify its impact.

In this hearing, "Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath," we will examine some very specific public health and public safety challenges we know we will face, and ask what our state of preparedness to respond is at this time.

After a terrorist nuclear attack, local and State emergency responders would clearly be the first on the scene and, therefore, should adequately plan for the important medical and mass care responsibilities that they would need to fulfill in the first days after such an attack. In that regard, we are very pleased to have with us to testify this morning Chief James Schwartz, the Fire Chief of Arlington County, Virginia, which has to be considered a high-risk target area because it is adjacent to the District of Columbia and is the home of the Pentagon.

However, because no one State, county, or municipality has the capabilities to respond fully to the catastrophic consequences of a

nuclear attack in the United States, a rapid, coordinated response by the Federal Government will be critically necessary across the full range of medical and mass care missions.

To better understand how prepared the Federal Government is to assume that role and what we can do together to make sure we are better prepared, we are very pleased to hear testimony today from Administrator David Paulison of the Federal Emergency Management Agency (FEMA), which is responsible for the overall governmental response and is also the lead agency for mass sheltering and feeding of displaced populations; the Assistant Secretary for Preparedness and Response, Rear Admiral Craig Vanderhagen from the Department of Health and Human Services (HHS), which has the lead role in providing medical care and addressing public health consequences; and Assistant Secretary of Defense for Homeland Defense, Paul McHale. The Department of Defense (DOD) is charged with a variety of supporting and some lead roles in their responsibility for support of civilian authorities in these circumstances.

So this is an important hearing. We look forward to your testimony and then asking some questions.

Senator Collins.

OPENING STATEMENT OF SENATOR COLLINS

Senator COLLINS. Thank you. Mr. Chairman, thank you for holding this hearing and for continuing the Committee's important work on nuclear terrorism. I notice, as I look at the press tables today, that they are not jammed with people, and yet if we failed to do this kind of work, the consequences are so enormous. So I salute you for tackling a very difficult, a very consequential issue and focusing the Committee's work on nuclear terrorism.

Discussions of nuclear terrorism tend to overlook an important point. As Dr. Michael Robbins, a professor of radiation oncology at the Wake Forest University School of Medicine, has cautioned, the vast majority of general practitioners, emergency responders, and even many radiologists have little understanding of the health consequences of a radiological or nuclear event.

As this Committee considers the challenges of responding to a terrorist nuclear attack on an American city, his caution reminds us of the vast scale of these challenges; that is, not only the general public but also the medical community is ill-prepared to face the terrible consequences of such an attack.

Our earlier hearings on this subject, not to mention the latest news stories on the activities of the Pakistani nuclear secrets seller, A.Q. Khan, have left little room for doubt that technical and delivery options for such an attack are within the reach of terrorists. Previous witnesses have given us chilling testimony on the scale and nature of response challenges to a terrorist nuclear attack. They would include not only mass casualties and immense strain on local response capabilities, but also specific radiation-related challenges such as mass triage and burn care, decontamination, fallout plume modeling, and shelter or evacuation decisions.

One of the key recommendations that emerged from our prior hearings is the need for surge capacity for medical care for tens of thousands of injured people. Options for providing that surge ca-

pacity include field hospitals for triaging patients, as well as prepositioning medications, supplies, and equipment at large public facilities, such as convention centers or stadiums.

If such a disastrous attack should occur, a well-planned, vigorous, and coordinated, effective response by Federal agencies will be critical to augmenting the local and State preparedness effort, as well as the nonprofit partners and the private sector organizations that would be involved.

Besides having access to resources throughout the country, the Federal Government can provide situational awareness and coordination that are critical to an effective response. Today's hearing gives us an opportunity to hear firsthand how the key Federal agencies and departments are planning and preparing responses to a possible terrorist nuclear attack. I, too, like the Chairman, am particularly pleased that the panel includes Fire Chief James Schwartz of Arlington, Virginia. His experiences in tactical command of the response to the September 11, 2001, attack on the Pentagon and his department's training for possible nuclear incidents will be very valuable to this Committee's deliberations.

Arlington is, of course, part of the National Capital Region and participates in extensive regional planning with Washington, DC, Maryland, and the rest of Virginia. Nonetheless, it was Arlington firefighters who were first on the scene at the Pentagon on September 11, 2001. And today, their plans assume no direct Federal support for the first 24 to 72 hours after a catastrophe. This standard of preparation is commendable and should serve as a model for first responders in parts of the country where Federal assets are less concentrated.

One of my concerns is that there is a misperception among many State and local responders that if there is a nuclear attack, somehow Federal resources and Federal first responders in the military will immediately be on the scene. But, in fact, regardless of the kind of disaster, it is always the State and local first responders who are first on the scene, and it always will be that way.

I am very pleased with the improvements that we are making. I want to commend FEMA's Administrator, Chief Paulison, for effectively implementing many of the reforms that the Chairman and I authored as a result of our investigation into the failed and flawed response to Hurricane Katrina.

I am going to put the rest of my statement in the record because I am eager to hear our witnesses. But thank you, Mr. Chairman, for calling this important hearing.

Chairman LIEBERMAN. Thanks to you, Senator Collins, for your statement. Thank you for being, as always, a great co-leader in this effort. I was just thinking yesterday, somebody in the media asked me to document some of the things I had accomplished as Chairman of this Committee. And I started by mentioning something that I was quite proud of. And they said, "But Senator Collins was Chairman when that happened." I said, "You know, the difference blurs."

Senator COLLINS. It is all one effort.

Chairman LIEBERMAN. So thank you. We are glad to have the panel here, and we look forward to your testimony. Chief Paulison, why don't you begin.

TESTIMONY OF HON. R. DAVID PAULISON,[1] ADMINISTRATOR, FEDERAL EMERGENCY MANAGEMENT AGENCY, U.S. DEPARTMENT OF HOMELAND SECURITY

Mr. PAULISON. Good morning, Chairman Lieberman and Ranking Member Collins. I, too, want to thank you for holding this series of hearings. These are important for our country, for its protection. And the fact that you have taken on this very challenging type of subject is commendable, and I appreciate it very much.

A terrorist attack involving an improvised nuclear device (IND), like the one described in our National Planning Scenario 1 involving a 10-kiloton device, would present a scale and complexity of concentrated destruction that would demand unprecedented cooperation at all levels of government, our nonprofits in the private sector, as Senator Collins pointed out. These scenarios represent the greatest danger facing the United States and do have the highest priority in coordinated Federal planning, its training, its exercises, and grant investments.

The State and local governments have received $23 billion in preparedness grants to build all-hazard capabilities. In the past 4 years alone, fully $350 million in Department of Homeland Security grant programs have been invested in projects related to radiological and nuclear preparedness as well as decontamination, which we know is going to be a major issue for us. We have trained more than 33,000 students in related courses, conducted numerous exercises, and in 2010, we will conduct a national exercise preparing for such a device, an IND device over 10-kiloton measures.

Our national emergency response system customarily operates on two basic principles: On request services and load redistribution. The affected jurisdictions typically request specific assistance to address urgent needs that exceed their capacity. Mutual aid agreements and Federal assistance provide the means of procedures to redistribute the demand across our Nation's robust but highly decentralized emergency response system. While this has been effective, the detonation of an IND would decimate local response and that coordination.

We have been hard at work ensuring that our preparedness and response is scaled to these scenarios. FEMA has new authorities that you have given us as new resources and the National Incident Management System and National Response Framework exemplify how we have recalibrated our plans, our policies, and procedures to those ends.

While existing plans are in place today, we are developing an Integrated Planning System in close coordination with our State and local partners. This system will establish a process to develop Federal plans and to ensure their integration with State and local plans. And since I submitted my written testimony, we have just finished the National Response Framework Incident Annexes, including the updates to the Catastrophic Incident Annex, Nuclear/Radiological Incident Annex, and also the Mass Evacuation Annex. These plans outline specific response to a nuclear attack.

Under these plans, FEMA will immediately push pre-designated resources to a Federal Mobilization Center or staging area near the

[1] The prepared statement of Mr. Paulison appears in the Appendix on page 590.

incident area and begin key action that I detail in my submitted testimony. Upon arrival, these resources will be redeployed to the incident area and integrated into the response operations when requested and approved by—and in collaboration with—appropriate State or local incident command authorities, if, in fact, they are intact.

FEMA's primary responsibility is to work with the affected States to identify the needs and to task, through our Mission Assignments, the appropriate Federal agency to fulfill these needs. And as you are well aware, we have expanded the use of our Pre-Scripted Mission Assignments. In 2006, FEMA had only 44 Pre-Scripted Mission Assignments with two Federal agencies. Today, we have 244 in coordination with 31 different Federal departments and agencies.

A key mission identified in the National Response Framework is the evaluation, the coordination, and delivery of mass care and emergency assistance through FEMA, our Federal, State, and local partners, our non-governmental agencies, the private sector, and our contract support. Known as Emergency Support Function 6 (ESF–6), this process provides basic life-sustaining assistance to individuals, households, and household pets that have been affected by disaster. Containment is crucial to avoiding spreading the contaminant to the unaffected population and to ensure safe participation of relief agency staff.

The Department of Defense, the Department of Justice, and the Department of Health and Human Services are the ones that will be responsible for determining if or when individuals and families can or will be evacuated from areas impacted by nuclear attack. And I have provided greater detail in my written testimony on how ESF–6 really works.

In conclusion, let me assure you that FEMA does have a sense of urgency and a determined resolve to build on the knowledge derived from previous disaster events and also from the Federal- and State-level exercises that we have been holding over the last several years. Today, our operations and programs reflect the lessons learned from the past and are based on a collaborative approach to disaster response and recovery. And I need to emphasize that. One of my favorite quotes is from Harry Truman, who said, "It is amazing how much you can accomplish when you do not care who gets the credit."

FEMA and the Department of Homeland Security continue to work with our State and local governments, as well as our Federal partners who are sitting at this table, and our non-governmental organizations and voluntary agencies to improve our capabilities and work proactively to protect the American people.

Again, I want to thank you for the opportunity today, and I am pleased to answer any questions you might have. Thank you.

Chairman LIEBERMAN. Thanks, Chief. That is a good beginning. I want to just take from what you said that you view this as the greatest danger to the United States.

Mr. PAULISON. Yes, sir, I do. It is one of those issues that is a low probability but has a tremendously high impact.

Chairman LIEBERMAN. Right.

Mr. PAULISON. And we have to prepare for it, and that is what we are doing.

Chairman LIEBERMAN. That is what has motivated Senator Collins and me to do this series of hearings. I remember once—I think it was last year—we asked Secretary Chertoff the perennial question about what keeps you up at night in terms of your responsibilities, and he said a terrorist nuclear detonation or a radiological dirty bomb within the United States.

The second point, which I did not mention in my opening statement but has come out in earlier hearing testimony, is the counterintuitive fact that a lot of lives can be saved in an area that is quite close to the point of detonation if there is an adequate and immediate response ready. In other words, even if, God forbid, a bomb went off in the center of Washington, DC, hundreds of thousands of lives could be saved within the city limits if we move quickly enough in a lot of different areas.

So that is my own introduction, Admiral Vanderwagen, with thanks for your willingness to continue your service to our country at HHS.

TESTIMONY OF HON. W. CRAIG VANDERWAGEN,[1] ASSISTANT SECRETARY FOR PREPAREDNESS AND RESPONSE, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Admiral VANDERWAGEN. It is a blessing, sir. I appreciate the opportunity.

I want to say, first and foremost, that we work very closely under the direction and guidance of Chief Paulison and his group; that is, we have the responsibility under law for Emergency Support Function 8, which is the public health and medical response to a disaster or emergency. But that has to work under the coordination and direction of FEMA and DHS. And I think the relationships have improved tremendously, just to echo something that I think Chief Paulison mentioned.

Our responsibility in Health and Human Services under the Pandemic and All Hazards Preparedness Act really gives us an enterprise-wide responsibility with regard to this and to other hazardous events that we can deal with. And what do I mean by that? What I mean is we have the responsibility to understand the research pipeline and those good research ideas for countermeasures that we can use in events to treat people, to prevent illness where we can and to take those good ideas through advanced development so that we have safe and effective products that we can use in events to treat people appropriately. Then we have to think about where we store those and how we get them rapidly to sites, and then last, we need to think about the delivery platforms; that is, what are the capabilities that exist in communities, in States, and in the Federal environment to assure that we have a national delivery platform that will meet the challenge of a given event?

In the case of an IND, this is indeed one of the most catastrophic events that we could endure. There are other events that will challenge us in much the same way that have broader geographic impact and have a temporal time course that is long, involved, and

[1] The prepared statement of Admiral Vanderwagen appears in the Appendix on page 603.

challenging, like a pandemic. There are other biological events that could be of this order of magnitude. A spray of anthrax over Long Island could lead to 300,000 deaths in 5 days if we do not intervene properly.

So there are catastrophic events, and then there are catastrophic events. An IND would kill, indeed, tens of thousands of individuals just with blast, burn, and traumatic effects, not to mention radiation. That is a significant challenge, and in that environment our strategic goals are the following: Compassionate and appropriate care for the families of those who have died; appropriate care for as many people as we can provide for those who have been directly injured by the blast, the radiation, and by the burn effects of such an event; to deal with that portion of the population that may have radiation exposure but is not sure what their illness may look like; and, last, to deal with the mental health and spiritual impacts of such an event on the population that is affected, one could say the Nation at large.

In order to accomplish that, we have developed playbooks that start with a set of assumptions about what we would be dealing with, a 10-kiloton device at the intersection of 14th and Constitution as an example, and what are the specific actions that would be required, the missions that need to be met in a tactical environment to meet the needs of those strategic objectives. The challenge here is operationally linking those tactical means in a meaningful way to achieve those strategic goals.

Medical surge is not a uniform event. We have learned much from Tel Aviv and other experiences in Israel. We have learned from Madrid. We have learned from London that improvised explosive devices (IEDs) have a surge requirement associated with them. No one has dealt with something of this scope, however, so we really do not have a ton of guidance on how to approach this kind of mass surge event.

There have been many improvements over the last 5 years. The Congress has provided support to the States in the form of the Hospital Preparedness Grant Program and the Public Health Emergency Preparedness grants for medical and public health response. I just want to tell you that if we look back at 2002, there was a very limited infrastructure for integrated mass care. Now we have 87 percent of all U.S. hospitals participating in the program that would bring about mass care.

In 2002, there was no known identified surge bed capacity. Through the National Disaster Medical Service (NDMS) system, we can provide 30,000 beds, but under the Hospital Preparedness Program we have over 200,000 beds identified for surge capability around the country.

As far as decontamination goes, two-thirds of the hospitals in 2002 reported they really did not have any ability to decontaminate people effectively. By 2006, nationwide, hospitals had the collective capability to decontaminate over 400,000 people within 3 hours. Of course, this does not account for transportation and related issues to get people to decontamination sites.

So there have been many steps forward to bring about progress. The issue of medical personnel's knowledge is an important and critical one to us as well. So not only with our HHS colleagues but

with the national treatment group in this area, we have published numerous articles now in the medical literature that run from very specialized journals like *Blood,* which is targeted to hematologists and oncologists, to the *American Journal of Disaster Medicine to Prehospital Emergency Care* that describe for them what they should be looking for and what the critical decision points would be for them in providing care.

In addition to that, we have developed an online, just-in-time training package called the Radiological Event Medical Management Program that describes in great detail how clinicians in an emergency room or in a family practice can approach the issue of doing the appropriate clinical assessment and diagnosis of their patient and what the treatment options and locations will be.

So we have moved forward significantly in the last 5 years. There are now extensive burn bed networks and expansion for surge capacity. I was just in New Jersey last week, and St. Barnabas Medical Center, for instance, has developed an alliance with burn centers up and down the East Coast for definitive care and patient transport in a surge environment. In addition to that, all the Level 1 and Level 2 trauma facilities in New Jersey have agreed to and identified means to act as surge capacity for uniquely demanding trauma and burn-related patients.

So we have made significant progress forward. The big book sitting here is not all preparation for this hearing. But, in fact, two-thirds of it are the playbooks that we have for dealing with radiation dispersal devices and for improvised nuclear devices. In the post-Hurricane Katrina world, with the passage of the Pandemic and All Hazards Preparedness Act and the strengthening and the improvement of the Department of Homeland Security and FEMA, we have come a long way but gaps persist. There are gaps in the research base. If one thinks about the amount of research that is invested in cardiac disease, in diabetes, in infectious disease, the amount invested in research in this area is extremely small. That means we have less of a pipeline for product development so that we can have the appropriate medications to treat people. However, we have issued a request for proposals for new medications for treating people who have acute radiation syndrome. We had almost a score of offerers, and we will probably award contracts for development of these products to probably about half of those offerers.

We think there is real movement forward in the arena of development of medications. There are gaps yet to be filled in the delivery platform capability. Clearly, we need to do more training. Clearly, communities need to take on the very difficult challenges of how they will address high-demand requirements against low-availability assets. Those community discussions need to occur before events occur so that there are clear pathways forward in how they will use very low-availability assets to meet an overwhelming demand because I am not convinced that there is enough money in the system to buy all the beds we would like to have, to buy all the expertise that we would like to have. Therefore, people will have to do a lot of cross-coverage, interdisciplinary work, and they will have to make difficult decisions about high-demand and low-availability assets.

Having said that, great progress has been made. There is a path forward for meeting many of these gaps. Some of that is technology catch-up. Some of that is appropriate funding levels for that advanced development. But I am very optimistic—I have been all around the country in the last 4 months from Buffalo to Miami to Honolulu to Seattle—because people are taking this very seriously and putting the work in to try and deal with how they will operationally use their tactical means to achieve those strategic objectives.

I thank you for the opportunity to be with you today.

Chairman LIEBERMAN. Thanks very much, Admiral. I appreciate the progress report, and obviously we will have questions about what to do next.

Secretary McHale, welcome back.

TESTIMONY OF HON. PAUL MCHALE,[1] ASSISTANT SECRETARY OF DEFENSE FOR HOMELAND DEFENSE AND AMERICAS' SECURITY AFFAIRS, U.S. DEPARTMENT OF DEFENSE

Mr. MCHALE. Good to be back, sir. Chairman Lieberman and Senator Collins, thank you for the opportunity to address you today on the Department of Defense's capabilities and substantial progress in preparing for a terrorist nuclear attack on an American city. Mr. Chairman, I previously submitted my formal testimony for the record, and in the interest of moving to questions as quickly as possible, I will simply summarize my statement at this point.

Chairman LIEBERMAN. Thanks. Let me say for the record that the statements you have been good enough to prepare will be printed in full in our Committee record.

Mr. MCHALE. Thank you, sir.

The greatest threat in today's security environment is the nexus between transnational terrorism and chemical, biological, radiological, nuclear, and high-yield explosive weapons proliferation, particularly the proliferation of nuclear weapons. As noted in our Department's Strategy for Homeland Defense and Civil Support, which was published in June 2005, "Terrorists will seek to employ asymmetric means to penetrate our defenses and exploit the openness of our society to their advantage. By attacking our citizens, our economic institutions, our physical infrastructure, and our social fabric, they seek to destroy American democracy. We dare not underestimate the devastation that terrorists seek to bring to Americans at home."

As noted by Senator Lieberman earlier, our preeminent national security goal is to prevent a terrorist nuclear attack. In support of this objective, DOD assists civil authorities to detect, identify, neutralize, dismantle, and dispose of nuclear threats before they can reach our borders and, if they have penetrated our borders, before they can be employed against our Nation. Still, as you correctly noted 2 months ago, Mr. Chairman, "we must also prepare for the possibility that a determined terrorist will succeed despite our best efforts."

It is that chilling reality that brings us together this morning. Should the terrorists succeed, we will face a challenge of appalling

[1] The prepared statement of Mr. McHale appears in the Appendix on page 615.

and unprecedented magnitude involving thousands of casualties, more than 1 million evacuees, and contamination of up to 3,000 square miles. We—Federal, State, and local governments, non-governmental organizations like the Red Cross, and the private sector—must be prepared to respond quickly and effectively to save the thousands of lives placed at risk in the wake of a nuclear attack. DOD's chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) response capabilities are the best funded, best equipped, and best trained in the world. During the past 7 years, DOD has developed unprecedented CBRNE response capabilities and has trained to employ these capabilities in rapid support of civil authorities to help save lives.

Within the Federal Government, the Department of Homeland Security has the primary responsibility to coordinate the national effort to prepare for, prevent, protect against, respond to, and recover from terrorist CBRNE attacks. If terrorists were to attack an American city with a nuclear weapon, the Department of Defense, at the direction of the President or the Secretary of Defense, as appropriate and consistent with the law and the imperative to maintain our Department's warfighting readiness, will provide critical nuclear consequence management support to civil authorities as part of the comprehensive national response to a nuclear incident.

Within DOD, several entities would play a key role in the response to a terrorist nuclear attack on an American city. For example, as Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs, I am responsible, by law, for coordinating DOD assistance to Federal, State, and local officials responding to threats involving CBRNE weapons or related materials or technologies, including assistance in identifying, neutralizing, dismantling, and disposing of CBRNE weapons and related materials.

Two combatant commands are responsible for actually employing Federal military forces to provide defense support to civil authorities, including responses to domestic terrorist nuclear attacks. The Commander of the U.S. Northern Command (USNORTHCOM) is responsible for supporting civil responses to terrorist nuclear attacks in the lower 48 States and in Alaska, Puerto Rico, and the U.S. Virgin Islands. The Commander of U.S. Pacific Command (USPACOM) is responsible for Hawaii, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and insular territories throughout the Pacific Ocean.

The Chief of the National Guard Bureau is responsible for facilitating State coordination and employment of non-federalized National Guard units and personnel in support of Emergency Management Assistance Compacts.

As stated in the 2005 Strategy for Homeland Defense and Civil Support, DOD "will be prepared to provide forces and capabilities in support of domestic CBRNE consequence management, with an emphasis on preparing for multiple, simultaneous mass casualty incidents." The Defense Department has developed significant capabilities to contribute to the response to a terrorist nuclear attack on an American city. I have provided a detailed description of these capabilities in my written statement, but I would like to highlight

three specific capabilities that have been developed or enhanced since September 11, 2001.

National Guard Weapons of Mass Destruction (WMD) Civil Support Teams (CSTs) are teams of 22 highly skilled, full-time members of the Army and Air National Guard who are federally resourced, trained, and certified, and operate under the command and control of a State governor. The WMD–CSTs support civil authorities at a CBRNE incident site by identifying CBRNE agents or substances, assessing current and projected consequences, advising on-site authorities on effective response measures, and assisting with appropriate requests for State and Federal support. They are, in effect, reconnaissance forces. These 22 men and women proceed to the site of the event—in this case, a nuclear attack—and utilizing the training and the very sophisticated capabilities that have been provided to them, they conduct an assessment so that they can better inform follow-on forces as to the nature of the contaminant and its persistent character.

When our Nation was attacked on September 11, 2001, there were only nine CSTs. Today, we have a WMD–CST in each State and territory, including two in California, for a total of 55 CSTs. Currently, 53 of these CSTs have been certified by the Secretary of Defense. The remaining two teams, in Guam and the Virgin Islands, are expected to be certified late this year.

The second capability I would like to emphasize is the National Guard CBRNE Enhanced Response Force Packages—CERFPs—which were established after September 11, 2001, and are task-organized units of 200 to 400 personnel with combat support and service support mission essential tasks that, in conjunction with the CSTs, assist local, State, and Federal authorities in CBRNE consequence management: Casualty search and extraction, medical triage, casualty decontamination, and emergency medical treatment. The CERFPs, which operate on State Active Duty status, on duty under Title 32, or in extraordinary circumstances, under Title 10, are designed to fill the 6- to 72-hour gap in capabilities between the first local and State response and the Federal response following a CBRNE incident. There are currently 17 CERFPs, of which 16 are trained and ready to respond to CBRNE incidents in the 10 FEMA regions. The Virginia CERFP just completed training and is undergoing its evaluation today.

The third capability involves the CBRNE Consequence Management Response Forces (CCMRFs), which includes elements of the U.S. Marine Corps Chemical-Biological Incident Response Force as well as all the Military Departments' CBRNE response capabilities, and this is a force of 4,000 to 6,000 personnel that can be quickly tailored to provide a coordinated Federal military response to a specific CBRNE incident. The CCMRFs are Title 10, U.S. Code, joint forces capable of responding to a wide range of CBRNE attacks against the American people with a widerange of services, including radiological assessment, decontamination, and security of a contaminated site; medical triage, treatment, and care; and transportation and logistical support.

DOD recognizes that terrorists often strike multiple simultaneous targets; therefore, DOD is identifying and sourcing three CCMRFs to improve our Nation's CBRNE response capability. The

first CCMRF is to be fielded this October. I want to emphasize at this point, when considered and combined, the CSTs, CERFPs, and CCMRFs will provide more than 20,000 specifically trained military personnel whose primary mission will be domestic catastrophic response. This is a fundamental change in military culture and capability.

Mr. Chairman, in your invitation you asked what could be done to prepare our country to respond to an act of nuclear terrorism and to mitigate its consequences more effectively. My answer is "realistic and detailed operational planning." As you stated, Mr. Chairman, last month, "Helping survivors in and around the blast area will require a planned, prepared, and coordinated response by all levels of government."

In accordance with Annex I of Homeland Security Presidential Directive 8, the Federal Government is developing plans for responding to the 15 National Planning Scenarios. However, that will only give us a Federal response. We must achieve an integrated, synchronized response that gives us a truly national response to a future catastrophic incident. To pursue this end, DOD has partnered with DHS to develop the Task Force for Emergency Readiness (TFER) concept. The TFER is under the direct leadership of the governor and the State emergency management structure. It would operate under the authority and supervision of the Adjutant General and other emergency managers of the State. It would be a focal point for coordinated planning to produce State plans tailored to the unique strengths and vulnerabilities of each individual State and to facilitate the integration and synchronization of local, State, regional, Federal, and private sector incident planning. Each State's TFER will provide a scalable flexible planning capability, tailored to fit its unique needs for a catastrophic response and suited to its unique jurisdictional requirements.

Mr. Chairman, my time has expired. I would emphasize the importance of achieving that integrated planning, not simply at the Federal level but down to the State and local level. I would emphasize that with the CSTs, the CERFPs, and the CCMRFs, we will have 20,000 military personnel prepared for the primary mission of domestic catastrophic response. These are capabilities that did not exist on September 11, 2001. With a recognition of that improvement, nonetheless, the daunting requirements associated with a catastrophic response to a nuclear event leaves zero room for complacency, no matter how good we are, no matter how much better we have become, we must get better than we are today. We are not yet adequately prepared. With the initiation of some of the concepts that I and others have described, progress can be achieved, and with your help, we look forward to it.

Chairman LIEBERMAN. Thanks very much, Secretary McHale. That was very well said. I totally agree.

Chief Schwartz, thanks for being here. You are unique on the panel, and you represent a very unique part of the country, so we appreciate your perspective.

TESTIMONY OF JAMES H. SCHWARTZ,[1] FIRE CHIEF OF ARLINGTON COUNTY, VIRGINIA

Mr. SCHWARTZ. Thank you, Mr. Chairman, Senator Collins. Thank you both for the opportunity to be here today and be a part of this discussion. I am here representing a slightly different perspective, that of local government, as we try to integrate our efforts with our partners to my right.

I also today represent the nearly 13,000 members of the International Association of Fire Chiefs (IAFC) who, of course, are on the front lines protecting their communities every day—communities both large and small.

While we have been fortunate to not experience the kind of event we are discussing today, obviously, as has been made clear by the previous comments, preparedness and building our response capabilities is of paramount importance, and we hope that we will see this hearing as a useful step in identifying remaining gaps in our preparedness and response capabilities. The fire service does recommend that capabilities continue to develop within an all-hazards framework, however, so that we can maximize these very limited resources.

I have been asked to discuss the operational response at the local level to a scenario involving a response to an explosive yield of 10-kilotons or less. As many of us know, the initial blast, the ensuing fires, structural collapse, as well as the spread of radiation would entail significant casualties, but we would, as has been said, be left with many survivors. Those survivors, however, would suffer from severe burns and trauma and would be in need of enormous amounts of critical care as well as radiological decontamination. We also have a very key responsibility to communicate with the rest of our population as to what threats remain to them, especially as it relates to evacuation.

I also want to touch for a few moments on the aspects of preparedness because, obviously, preparedness and response go hand in hand. While fire departments need to gear up for, as has been mentioned, these low-probability but high-consequence events, one of the things that local responders need is a real understanding of the probability of these kinds of threats. We make risk management decisions every day, and those risk management decisions help us to allocate very scarce resources. And how we train for this and other possibilities, really is driven by how we understand the possibility of the threat.

In Arlington County, the Metropolitan Medical Response System (MMRS) has facilitated close coordination between fire, law enforcement, public health, hospitals, and the medical community, and also across those professional boundaries as well as bridging boundaries that sometimes occur between jurisdictions and between different levels of government, the State and Federal entities.

Federal assistance through the Urban Area Security Initiative (UASI) grant program has enabled Arlington County and its partners in the National Capital Region to purchase equipment, enhance training and communications infrastructure, and develop a

[1] The prepared statement of Mr. Schwartz appears in the Appendix on page 638.

better system to respond to a nuclear incident. It is important to train our first responders and exercise the response system to test our planning, training, and equipment. We recently conducted a very small-scale tabletop exercise in the National Capital Region around just such a scenario as we are talking about today and identified once again enormous gaps that still need to be filled. However, we do recognize that preparedness is an ongoing process and that America's first responders have a lot to do, in partnership with the Federal Government, to better prepare our Nation for this kind of threat.

In many ways, the response to a nuclear incident would resemble the kind of response to any other large-scale disaster or catastrophe. It is important to understand that the response to most incidents—whether they are wrought by man or by nature—is strikingly similar. This is the underlying premise behind the all-hazards perspective. Whether we are responding to a hurricane, a chemical spill, or a nuclear explosion, the fire service will rely on the same scalable response framework, which includes the Incident Command System and the National Incident Management System. While first responders employ the same all-hazards incident management system to all disasters—in fact, all responses every single day—the unprecedented and catastrophic scale of a nuclear incident would present considerable challenges.

The real cornerstone of an emergency event such as we are discussing today is that local government is charged with leading the response, in partnership with our State and Federal colleagues. But the initial response to a nuclear or radiological explosion is likely to resemble that of a conventional hazardous materials response. It may not, in fact, be immediately clear to many responders exactly what it is that they are dealing with. It should be noted that while responders in Arlington County are fortunate to have radiation detection equipment—purchased through some of the Federal grant programs—many first responders around the country do not have such radiation detection equipment and do not have some of the same capabilities that we have put together here in the National Capital Region.

In Arlington and other jurisdictions in the National Capital Region, our CBRNE response will be managed much like a hazardous materials incident with the mass casualty implications that have been described so far. In all of these situations, a huge challenge will be minimizing the potential for panic and minimizing additional exposure to folks in our community, and then, of course, providing prudent medical treatment to those casualties.

Our response to a CBRNE incident includes the combined and integrated capabilities that have really grown out of our MMRS collaborative processes in Arlington. And I should note that we have, again, through UASI dollars, pushed out the framework of MMRS to the entire Northern Virginia area so that the communities of Fairfax, Alexandria, Loudon, and Prince William have all gone through the same developmental process that we have done in Arlington under the Federal program and have achieved some of the same capabilities that we have been fortunate enough to integrate in Arlington County.

Our response includes specific protocols for responding to explosive devices, including those that involve radiological agents. In fact, we have created a regional protocol for dealing with radiological incidents that has been accepted by all the response agencies in the National Capital Region and has enabled us to really build on our procedures down to the detailed level of how we will detect the presence of radiological elements, how we will monitor the exposure of responders, and how we will deal with the replenishment of those forces based on the kind of response that we are engaged in.

We also have the benefit here in the National Capital Region of having a highly specialized team, the National Medical Response Team in the National Capital Region, which is made up, again, of local responders, but it is a team that has Federal funding and support for just these kinds of events.

We, in Arlington and, in fact, in the entire National Capital Region are very fortunate to have a very robust mutual aid system. This is going to be important because mutual aid, as has been stated before, is going to be a vital resource in these kinds of responses. No local jurisdiction, even the largest cities, are going to be able to deal with this kind of an incident by themselves.

We have a very robust mutual aid system in Northern Virginia. It is actually an automatic aid system where we share resources every single day, and we have, through those relationships that have existed for over 30 years, really built a system that relies on mutual trust and shared learning so that we are all looking at the same circumstances. And, of course, we have among the best voice interoperability, best voice communication systems in the Nation among our first responder agencies in the National Capital Region.

As we talk about the response and we look at the magnitude of this kind of incident, obviously beyond our regional partners in mutual aid, we will be calling on additional assistance, calling the State, accessing statewide mutual aid, and, of course, the State will in all likelihood be calling the Federal Government asking for additional resources there. We may employ the Emergency Management Assistance Compact (EMAC) to get additional resources, and without a doubt, in an instance like this, we would see a Stafford Act declaration for disaster.

We would also look to the Federal Government to provide, as Secretary McHale discussed, the Civil Support Teams as an initial part of a response, as well as the CERFPs and the Consequence Management Response Teams that are currently being built.

One of the areas that we really look for the Federal Government to provide is technical assistance. While we have very robust capabilities to detect radiation in a scenario like this, we have meager capabilities to do plume modeling. I am very fortunate in Arlington to be partnered with the Pentagon Force Protection Agency out of the Pentagon, and so I get very robust capabilities in terms of plume modeling and an ability to see what the downstream effects will be from the kind of radiation fallout that we would see in an event like this. Many other communities do not have such sophisticated capabilities, and we would be looking for the Radiological Assessment Program Teams to be coming from the Department of En-

ergy as well as DOD assets to help us in assessing those downstream impacts of the radiological fallout.

Again, communication is going to be extremely important, and I know the Committee is interested in how we are going to communicate with the public. I will touch on that just briefly. All of the jurisdictions in the National Capital Region with grant dollars have acquired capabilities to communicate with our communities. First among those is text messaging systems. In Arlington, a system that is called Arlington Alert enables us to contact subscribers. My testimony actually refers to 16,000. I was informed this morning that in Arlington County alone we have 25,000 subscribers to our text message alerting system so that we can send rapid text messages to those subscribers.

In this kind of event, most of those initial messages, which literally would be put out within the first couple of minutes of an incident like this, would probably be directing people to shelter in place until we could get more formal plans to direct them to other areas of safety.

We also have the ability to use our telephone system, Reverse 911, to actually encircle a specific area within our communities and target their telephones to give them a message and give them more specific information about the information that we want them to know about.

And Arlington, like some other communities in the Nation, has also established their own AM radio station so that we can specifically communicate with citizens of Arlington. We are acutely aware that in a community like Arlington, as urbanized as we are, we are still likely to get lost in the larger media market of the National Capital Region, and citizens in our community want to hear specifically from their leaders as to what actions they can be taking.

I do note that I am out of time. All of my written comments have been submitted to the Committee. So though I am over my time, I would like to go over a couple of recommendations that we see as vitally important, and perhaps it will help with the discussion as we go on.

Chairman LIEBERMAN. Go right ahead.

Mr. SCHWARTZ. Thank you.

In terms of sharing meaningful information regarding threats, as I stated before, the Department of Homeland Security and the broader intelligence community must strive toward meaningful information sharing and collaboration so that those at the local level understand exactly what the threats are, and we will be able to make distinctions about the varying levels of risk posed by each of these threats.

We encourage greater cooperation and engagement between the Federal Government and non-Federal stakeholders. The Department of Homeland Security has improved immensely its attempts to reach out to State and local officials and responders. However, the Federal Government must devote greater focus to achieving a truly collaborative approach to addressing vital preparedness and response issues. And, again, I point to the framework established by MMRS. It is a fantastic framework to get just that kind of information and collaborative sharing.

In addition to that, to facilitate cooperative engagement, the Department of Homeland Security and other agencies should consider hosting symposia that can really be focused on shared learning. Do regional symposia and bring together responders from all levels of government, and let us have a meaningful discussion not from a top-down perspective, but a meaningful discussion about the threats and what capabilities exist to respond to those threats.

And I would also ask the Committee to review the latest white paper of the National Homeland Security Consortium of which the IAFC is a member. That paper addresses how to manage these threats in the 21st Century. We think it is a very valuable approach.

We need to develop best practices for enhancing medical surge capacity and responding to mass casualty events. This is a problem that is extremely vexing for all of us dealing with the issue of surge capacity and the number of medical casualties in an incident like this. Can we put together perhaps some groups of experts to develop some templates, some guidance that could be handed off to local and State government so that they could better prepare for these kinds of incidents?

And then looking at Federal predictive modeling capabilities, especially around plume modeling, how can we share that information with critical decisionmakers on the ground during an incident?

Last, I want to commend DOD for their efforts, as I mentioned before, around the Defense Consequence Management Response Teams. Several of us on the interagency board got a briefing by USNORTHCOM on this a couple of weeks ago. We are extremely encouraged and think that this is exactly the direction that the Department of Defense should be headed in, in support of civil authorities. We applaud their efforts and we look forward to more information sharing on those efforts.

And with that, Mr. Chairman, I look forward to your questions. Thank you very much again for the opportunity today.

Chairman LIEBERMAN. Thanks, Chief. And I must say that I am impressed by the amount of activity going on in preparation for response to a terrorist nuclear attack on a major American city. Obviously, there are enormous challenges and things that are yet undone, but I appreciate the four opening statements because they show that a lot is being done.

I wanted to ask you, Chief, whether you have ever coordinated with local law enforcement in other cities that are probably potential targets. I am thinking of New York, Chicago, or Los Angeles.

Mr. SCHWARTZ. I think most of my experience with law enforcement is in the National Capital Region.

Chairman LIEBERMAN. Right.

Mr. SCHWARTZ. I have regular conversations with fire chiefs in other metropolitan areas, and as they get information from their police chiefs, there is a lot of information exchange.

Again, we like to see a framework or a way to sort of facilitate some of that collaboration because we do recognize that these issues of boundaries, the silos that we all work in every single day, are vitally important to the services that we deliver to our communities every day. But we are going to have to look a lot harder during a crisis.

Chairman LIEBERMAN. And you accept the responsibility for the initial response at the local level. Is that right?

Mr. SCHWARTZ. Absolutely.

Chairman LIEBERMAN. And I know Senator Collins mentioned it in her opening statement. Over what time period do you think that you and your local forces will be primarily responsible for a response?

Mr. SCHWARTZ. All of our assumptions are that we will be largely on our own for the first 24 to 72 hours, and that is despite our proximity to the Federal city. We see that as a given.

Chairman LIEBERMAN. That is very important. And could you itemize the major functions you think you will have to carry out during that period of time?

Mr. SCHWARTZ. They are establishing or isolating the area initially involved in the explosion, dealing with the casualties on the periphery of that explosion, those that have the most survivability—we have, quite frankly, meager resources to apply to the number of casualties that we would envision initially—and dealing with those casualties. Informing the public about what actions we need them to take is absolutely vital.

Chairman LIEBERMAN. Yes, very important. Right.

Mr. SCHWARTZ. Yes. And then asking for additional assistance going directly to the State, getting the governor to ask for additional assistance from the Federal Government, and getting all of this effort really spun up, getting it moving in a positive direction.

Chairman LIEBERMAN. So at what point would you expect that Federal help would arrive?

Mr. SCHWARTZ. I would see something like a CST probably arriving some time along 6 to 8 hours. We have the benefit and I think we will see in an incident——

Chairman LIEBERMAN. And you have one right there in Virginia.

Mr. SCHWARTZ. We have one in Richmond. There is also one in the National Capital Region.

Chairman LIEBERMAN. Right.

Mr. SCHWARTZ. Actually, it is part of the DC National Guard. So we can expect to see that, I think, very quickly and get some of that technical expertise, again, because I already have the capabilities through our work with Pentagon force protection, I have some of that plume modeling that I am going to need very early on.

But I think that I should also note that we will see members of the Radiological Assessment Teams (RAT) that come out of DOE, we will see those, I think, probably in the first 8 hours or so. And, that is where we will start to prepare for the larger Federal response that I will not anticipate seeing for largely another 48 hours or so.

I am looking forward to the Consequence Management Teams coming from DOD, but I understand we are probably 3 days out from seeing those 4,500 people at my doorstep.

Chairman LIEBERMAN. Yes. Let me ask about this question of surge capacity because as someone said here earlier, a terrorist nuclear attack is a low-probability event, but if it happens, of course, it is of an enormously impact. And I want to ask you, Admiral, to talk a little about this. You mentioned some of the numbers of preparedness to respond. I think you said there were 400,000 people

nationwide that have the ability to be involved in decontamination. But then the question obviously is: How do you get an adequate number of people to the site attacked quickly enough? Are we capable of doing that?

Admiral VANDERWAGEN. Well, I agree with Chief Schwartz that a reasonable assumption is that 24- to 72-hour time frame for full coverage, and he has already covered some of the mitigation effects that he can draw from DOD.

Our operational plan right now is to begin delivery of pharmaceutical supplies, medical supplies, burn supplies, etc., within a 12-hour period, and personnel in that 12- to 24-hour period. And that would include personnel that are specialized in emergency triage capability. That would be the DMAT teams. It would include the Disaster Mortuary Assistance Group because we are talking about significant numbers of deaths here. It would include drawdown against our uniforms that could provide more street-corner primary care triage kinds of activities for the walking wounded.

So we think that we can start to deliver pharmaceutical supplies and push them in that 12- to 24-hour period.

Chairman LIEBERMAN. Do you have the transportation capability to move people that quickly?

Admiral VANDERWAGEN. Transportation for that particular charge is there. The challenge here is evacuation of patients for definitive care, recognizing that, say, here in the National Capital Region, we are going to have a finite number of beds for trauma, for burns, and for radiation.

Chairman LIEBERMAN. Right.

Admiral VANDERWAGEN. Our DOD colleagues assist us in that, and there is pre-scripted activity built into the operational plans. We are working with the——

Chairman LIEBERMAN. Again, for transportation.

Admiral VANDERWAGEN. Right.

Chairman LIEBERMAN. With Department of Defense assets.

Admiral VANDERWAGEN. Exactly, their airframes and some medical personnel. We have contracts now for ground and air transportation with private air and ground ambulance capability. We are working with the Department of Transportation on the Civil Reserve Air Fleet for wide-bodied mothballed aircraft so that we have the aircraft. We have specialized teams now trained in the Disaster Medical Assistance Group. In Hawaii, for instance, the Coast Guard provides the airframes; we provide the medical personnel.

We are not there yet, but the operational activity is ramping up to assure that we have appropriately trained teams and appropriately capable air assets and ground assets to move equipment, people, and supplies in an appropriate time frame.

Chairman LIEBERMAN. In the pre-scripted planning that you are doing, do you focus on major American cities that are more likely to be the target of a nuclear or radiological attack? Or do you have a system set up to move these personnel surge, medical personnel anywhere in the country that this might happen?

Admiral VANDERWAGEN. Well, there are 72 cities identified within the Cities Readiness Initiative, which focuses on the unique risks of larger urban populations, and, indeed, we are trying to regionalize our supply caches so that we are in closer proximity rath-

er than depending upon it all to come from one or two national caches. And the same thing is true for people. There are currently something on the order of magnitude of more than 100 teams in the NDMS system, including the mortuary folks, the veterinary folks, the emergency medical folks, and the DMATs. Those are spotted all around the country, and we would pull the people that were closest to the event.

For the World Trade Center, for instance, we had three teams on the ground in New York City within 16 hours, but those included teams that came from Connecticut and could get in by ground, and teams that came from Massachusetts and New Jersey, again, who could get there on the ground. And that is our overall strategy, is to pull from the teams that are closest proximity initially, and then bring in other teams to fill.

Chairman LIEBERMAN. My time is up on this round. Senator Collins.

Senator COLLINS. Thank you.

Chief Paulison, one of the issues that came up in the previous hearings was the importance of communicating effective, accurate information about whether people should shelter in place or evacuate. And we learned at our previous hearing that in many cases, sheltering in place is the right decision, and I do not think that is intuitive to people at all. I think most people's first reaction is to flee.

Now, we have talked a lot about the importance of the plume modeling so that you know how to make an accurate decision in that regard. But what our witnesses told us in the previous hearing is that it was not clear who makes that decision and who should communicate that decision.

Tell us what you think or what you are doing to clarify the confusion on the very essential communication piece of the strategy because accurate, believable, and timely communication literally would make the difference in saving potentially thousands of lives.

Mr. PAULISON. Senator, no question about it. The communication piece in all of our 15 scenarios is extremely important. We have laid out a communication plan for each one of those, particularly with a nuclear incident. Chief Schwartz accurately pointed out that the message has to be to shelter in place until your local officials give you information on whether to evacuate or not.

The difficulty is going to be, quite frankly, if you do have a large nuclear device, such as a 10-kiloton bomb go off, communications systems are not going to be what they should be. We do not know if the radios are going to work. We do not know if the telephones are going to work or television is going to work or what is going to work and what is not going to work.

So it is really going to fall in those first few hours on the local community leaders who have a responsibility for making a decision on evacuation to get that message out.

We are going to be providing and are providing information to them of what that should be. We have protective action guidelines that are coming out very shortly that will give some very clear direction on first responder decisionmaking, on exposure guidelines, on clean-up and decontamination procedures and things like that, and those will be coming out very shortly.

Senator COLLINS. Is that the common alerting protocol that the Chairman and I have also written to you about?

Mr. PAULISON. That is correct. Again, the Integrated Public Alert and Warning (IPAW) system we are talking about in Arlington County has most of that already. They have the ability to activate BlackBerrys and cell phones. I live in Arlington—I actually live in Florida, but my wife says I live up here. I get Reverse 911 calls all the time anytime there is a weather alert. So they have a very robust system in place. What we do not know is if that system is going to work after there is an explosion like that. And so that is the thing we really do not have a handle on.

I think your assumption is correct. Most people intuitively will want to flee, but, quite frankly, they should shelter in place until they are told what to do because we do not know—they may be going from a safe place into harm's way going through a plume.

Senator COLLINS. But is it clear who has the responsibility for communicating that information?

Mr. PAULISON. I think for the first several hours, it is the local community that has that responsibility, and the State, if the local community has been decapitated. But very shortly after that, the Federal Government is going to have to step in and work with the State to provide those lines of communication.

Senator COLLINS. Chief Schwartz, do you think it is clear who has responsibility for, first of all, making the decision on what the population should do and, second, communicating that?

Mr. SCHWARTZ. I think in communities such as mine, it is. I think there is still more work to be done, again, through these collaborative processes so that everybody comes to that common understanding because as we said in part of our earlier comments, I am not sure that many communities are even focusing on this kind of an incident as a potential reality.

Senator COLLINS. I think you are very unusual, the level of planning that you have done, the preparedness, the experience. You are close to the capital area. You are part of the Capital Region. And I am impressed with what you have done, extremely impressed, but I do not think you are typical.

Mr. SCHWARTZ. I can appreciate that, Senator. One of the things that the IAFC has done—and we are beta testing right now something we call the "Fire Chief's Checklist for Terrorism." One of the things we are trying to do is get out to fire chiefs all across this country their responsibility to ask these hard questions, work with their partners in their jurisdictions or in their regions, and come to some solutions around some of these problems because I appreciate that we may be unusual, but we would like to think, too, that we, along with some others that have advanced some of these concepts, that we can provide a way forward, some guidance for other communities that need to do the same thing.

Again, I would urge that we consider just how real this threat is for even some metropolitan communities who are trying to make very tough resource decisions, and how they are going to apportion their time around threats that they see as relatively small in probability.

Senator COLLINS. Thank you.

Mr. PAULISON. Senator, can I make one more comment?

Senator COLLINS. Yes.

Mr. PAULISON. Under our Emergency Support Function-15 (ESF–15), we really do have good, solid communication plans in place and protocols laid out. And what we really need to do, I think, based on what you are observing, is that we need to do a better job of getting those protocols out to local communities so everyone understands how that system is going to fall in place. But they are in place. We do have those. We have been working very hard to develop those since Hurricane Katrina and to make sure that those—because I think what you said earlier is that communication is going to be extremely important. People want to know what is going on. They want to know what to do, and they want to know what the right thing to do is.

Senator COLLINS. Thank you.

Doctor, you talked about your efforts to educate the medical profession and other health care providers about radiological issues. And I was impressed that you are using specialized medical publications and an online training course. For example, are you working with the American Medical Association (AMA) and the American Nurses Association (ANA)? It seems to me that a way to educate health care professionals is through continuing education courses, which all of them have to take as a condition of their licensure. When I was in State government, I oversaw the licensing board, so I am very familiar with that whole aspect.

Have you thought of developing and disseminating through State licensing boards a standard course that could be offered in States across this country for which medical professionals could receive continuing education credit?

Admiral VANDERWAGEN. Well, specifically, no.

Senator COLLINS. Good idea, though.

Admiral VANDERWAGEN. Yes, good idea. [Laughter.]

The fact of the matter is that part of the funding that went into Public Health Emergency Preparedness went through the Centers for Disease Control and Prevention (CDC), part of HHS, to schools of public health to develop these kind of curricula for various events. The curricula exist, but we have not formally reached out to the credentialing organizations, for instance, and suggested to them that they make it sort of a required part of licensure. Easy enough to do through the Federal licensure organization that brings together all the State licensure groups to do that.

I have been impressed—last week, again, when I was in New Jersey, I went to Burlington Community College up there, and their president is now president of the National Association of Community Colleges. And I asked the question: How do we utilize community colleges to more effectively outreach this kind of educational awareness of issues? Because 85 percent of first responder training occurs in a community college environment. So we are exploring other means, but that is an idea that we had not pursued.

Could I comment on one or two things? One is the National Governors Association (NGA) is working with us now to try to develop a non-classified briefing for elected officials so that we can help develop a greater understanding among elected officials, at least in a non-classified way, what are the risks that they really have.

Second, Chief Schwartz's idea of regional dialogue is extremely important here. There are a number of active regional organizations in the Northeast. Your State is a participant in that. They have already negotiated agreements for mutual aid with Nova Scotia and New Brunswick as well as the United States. We could use those regional organizations in a much more effective way, I think. Those were ideas based on Chief Schwartz's recommendation, which I support, and ideas that you and the Chairman have brought forth.

Senator COLLINS. Thank you. Just so I clarify my comment, I was not suggesting that it be a condition of licensure, but it could be an available course under continuing education requirements of taking so many credits of some continuing education courses. I believe that if you developed a course in this area, States would be very happy to have that as one of the offerings and that you would reach far more medical professionals.

Thank you.

Chairman LIEBERMAN. Thanks, Senator Collins.

Secretary McHale, let me ask you a question or two. In the work that our staff did in preparing for the hearing, perhaps you will not be surprised to hear that there was a concern expressed by people who think about this that the Department of Defense, notwithstanding the commitments that you mentioned in your opening statement, treats civil support, which is the readiness to come to the response of the civilian population in a catastrophic attack of this kind, as secondary mission to its warfighting mission. This in some ways seems logical, and yet I want to raise the question about whether after September 11, 2001, that is still appropriate, since that decision to treat civil support as a secondary mission probably means the Department has limited resources to devote to that. In your own testimony today with regard to civil support, you make various commitments, and then you say "as appropriate and consistent with the law and the imperative to maintain the Department's readiness"—perfectly understandable—"will provide support to civil authorities."

As you know, the Commission on the National Guard and Reserves testified about its report, and made the point that the current threats to the homeland mean that the homeland is now part of the battlefield. They testified that civil support should become a primary mission and recommended that Congress codify such civil support as a responsibility of DOD.

So let me ask you to comment on that, whether civil support is considered a secondary mission to the warfighting mission in the Department today, whether we ought to codify it as a primary mission and, therefore, hopefully set a predicate for increased resources to be committed to this critical function. Because I think in the end, most of us feel that only the Department has the scope of assets available for responding to either a catastrophic natural disaster or a catastrophic unnatural disaster such as a terrorist nuclear attack.

Mr. MCHALE. Senator, about 30 years ago when I was studying for my bar exam, I was taught that an attorney, to be ethical, had a duty of candor to the tribunal, and I will in that spirit be completely candid in my response to your question.

Chairman LIEBERMAN. Thank you.

Mr. MCHALE. Up until September 11, 2001, I believe that civil support was considered a secondary mission. I think that at that point in time, there was a failure to recognize that in the 21st Century, when our adversaries recognized that we have conventional military capabilities that are unparalleled, even dominant in some ways, that our adversaries would, therefore, turn to asymmetric attacks, particularly attacks on the U.S. homeland, where the intent would not be to necessarily degrade our warfighting capability but, rather, to cripple the American spirit, to demoralize the American people through casualties that would be seen as unbearable. September 11, 2001, I think, was a recognition of that horrific insight on the part of our adversaries. And so I think coming out of two centuries of warfighting experience where the defense of the Nation really meant power projection overseas, our Department was culturally resistant to the warfighting concept of the 21st Century, which is that, unfortunately, because of our adversaries' decision-making process, we are now very much a part of a global conflict where the preeminent battle space of that conflict is the U.S. homeland from their point of view.

Having, I think, admitted with some candor that pre-September 11, 2001, our perspective was inappropriate to the 21st Century, let me give you a rock solid assurance that all of that has changed in the last 5 years, and that the observations that have been given to you were once true, but they are no longer. Arnie Punaro is a very good friend of mine, and I worked closely with him during the development of the report of the Commission on the National Guard and Reserves. It was a very good report. There were some issues where we took exception, somewhat heatedly, I think, in a public forum initially, but cooler heads have prevailed, and there is now recognition that General Punaro and his staff made a fine contribution to the public dialogue.

Secretary Gates agreed with 21 out of the first 23 recommendations presented in their interim report, and I was present in the room when General Punaro asked the Secretary of Defense to clarify our Department's assessment of the civil support mission, whether we considered it to be equal to our warfighting responsibility. And Secretary Gates, without a moment's hesitation, said that the domestic security of the American people is not simply a mission requirement co-equal with overseas warfighting; it is the primary mission of the Department of Defense and superior in its importance when compared to all other missions. It is ultimately why we exist, to protect American citizens here at home.

And so as far as the issue of statutorily recognizing that importance, I am an agnostic on that. There may be some benefit in that, but I can tell you that the practical effect has already been achieved, which is why we now have capabilities, cited in my earlier response, that we did not have. Nobody would have believed pre-September 11, 2001, that 20,000 military personnel would have as their primary mission domestic catastrophic response, and yet that is, in fact, the capability that we are in the process of developing.

Chairman LIEBERMAN. I appreciate your response and the quote from Secretary Gates because though the focus of the American

military is different, as you quite accurately restate our history, than it was for the preceding couple of centuries, it is certainly what the Framers of the Constitution must have had in mind when they talked about the responsibility to provide for the common defense.

You also encouraged me to believe—and I appreciate your agnosticism—that therefore, in this post-September 11, 2001, world, the law ought to catch up with the reality of the Department's focus and we ought to codify this civil support function, as one at least equal—and, I appreciate what the Secretary said—in some real way even superior. So I thank you for that.

I want to, if I may, just go ahead, with your indulgence, ask a different question to Chief Paulison. This is about mass care, FEMA's responsibility to provide for sheltering and feeding of evacuees. At our last hearing, we heard that the Red Cross is the Nation's largest provider of mass care but that, frankly, they are having financial difficulties, and their ability to respond as fully as they have in the past is in some question. Certainly their ability to respond to a catastrophic incident of this kind is.

So I want to ask you to talk for a moment, Chief, about where you think FEMA is and, therefore, where the country is, in our planning and capabilities to shelter and feed evacuees from a nuclear attack.

Mr. PAULISON. It is definitely an issue that I have been having regular conversations with the Red Cross on. In fact, I talked to their new President and CEO yesterday, welcomed her on board and committed our continued 100 percent support for that agency. They play a tremendous role in sheltering people in the aftermath of any type of disaster, and this country needs to make sure that agency stays viable because they are invaluable to us.

There are two different issues. I read Mr. Becker's testimony when he made those comments, and the sheltering of people during a natural disaster is not going to be the major issue. The major issue is going to be the capability of sheltering people in a nuclear event because of their lack of ability to make sure that people who come into the shelter have been decontaminated, and how they are going to do that. And that is where we need to work with them very closely, and that is one of the reasons we made the phone call yesterday to talk about that particular issue.

The Department of Defense is going to be a major player for us in any type of event like this because like you very clearly pointed out, they have a lot of the resources to help us, particularly with the decontamination side.

We also have put a lot of money into decontamination. If it is around the country, it will fall on fire departments like Arlington and others, and most of the major cities have plans in place to be able to decontaminate people.

The Red Cross has assured me that they will be able to work with us to shelter people. We just need to make sure that we can work with them to make sure that we can decontaminate people prior to them going into the shelters. So it is an issue we are working on. I do not have all the answers yet, but it is something—it is right up on top of our dance card as far as how we are going to handle this.

I would like to point out, too, that I do agree with Mr. McHale about the primary mission of the military needs to be the defense of our country, and particularly the domestic side of it. We need to make sure, though, that the lead agency in these disasters is still the Department of Homeland Security, and I think he will agree with me on that.

Mr. MCHALE. Yes.

Mr. PAULISON. I do not think what we want is a military takeover just because it was a nuclear event as opposed to a natural disaster. I think that would confuse things and not work as smoothly as we have put in place over these last couple years.

Chairman LIEBERMAN. It is an important point, and I take it you agree, Secretary McHale.

Mr. MCHALE. Yes, sir. The Department of Defense has an enormously important role to play in rapidly bringing resources to bear in response to the catastrophic consequences of the attack. There is no need for the Department of Defense to be the lead Federal agency in that response. We provide the muscle. We provide the capability. We have to be able to operationally apply the resources. We can do all of that, as Mr. Paulison indicated, in support of a lead Federal agency, in this case the Department of Homeland Security. We do not believe that their leadership role in this area in any way impairs our operational response.

Chairman LIEBERMAN. Very good. Thank you. Senator Collins.

Senator COLLINS. Thank you.

Secretary McHale, we talked earlier about those first responders from the State and local level who first appear on the scene. Right behind them is always the National Guard because the first thing the governors do when there is a catastrophic event, and that they would certainly do in the event of a nuclear terrorist attack, is to call up the National Guard.

For the last year or so, the Committee has repeatedly heard that the National Guard is seriously underequipped. General Blum, for example, testified that 88 percent of the Army National Guard were "very poorly equipped" to perform a civil support function. At a hearing that this Committee held, we had the Adjutant Generals from a couple States, including Maine, who said that we were at significant risk.

A year later, I continue to hear troubling assessments about the current readiness of the National Guard to provide civil support services. You have talked a lot this morning—and I agree with you—that we have come a long way when you look at the Civil Support Teams or CERFP, but the National Guard's readiness is still an issue.

Could you comment on where you think we are in terms of the role that the National Guard would inevitably be called upon to play and the preparedness of the Guard?

Mr. MCHALE. In our Strategy for Homeland Defense and Civil Support, published in June 2005, we placed "a focused reliance" on our Reserve component forces for these kinds of missions with a particular emphasis upon the central role of the National Guard. So, Senator, your question is quite appropriate in terms of how well prepared is our central capability to execute the missions that are reflected in that strategy. We have pinned the rose on the National

Guard. Have we given the National Guard the resources, the capabilities that they require to execute the mission?

Even in the context of Hurricane Katrina, about 70 percent of our force that we deployed, which was the largest, fastest civil support mission in the United States, came out of the National Guard, about 70 percent, 50,000 of the 72,000 forces.

I checked with the National Guard this morning, and I guess the best summary I can give you is that there are indeed unmet resourcing requirements, and in my view, there is a critical unmet requirement for integrated planning so that National Guard capabilities can be correctly fused with State and local capabilities in the civilian sector, public and private, and the Title 10 capabilities that we would deploy under USNORTHCOM command and control.

We do not have integrated planning yet at the State and local level, so let me backstep just a moment. When I asked about personnel for the 10-kiloton nuclear mission, I was informed by the Guard Bureau this morning that we have 88 percent of the people that we would need for the foreseeable mission requirements associated with a 10-kiloton nuclear response. I said, that is fine, but where do we stand in terms of equipment? We have the people. Are they properly equipped? And the answer is, "Not yet," and that is a truthful, candid answer to this Committee. I am sure it is not surprising for you to hear it.

The fact is we have made enormous progress. Steve Blum has shown terrific leadership. We have gone from a resourcing and equipment availability in the 50 percentiles up to about 62 percent at the present time, and under his leadership and with appropriate funding, hopefully, from the Congress, it will move up to about 72 percent. That is the best equipped the Guard will ever have been, both in terms of quality and quantity, in the National Guard's history. But that does indicate that there are shortfalls that would need to be addressed in order to have an adequate response to a nuclear event. So we have made progress, but consistent with the plan that General Blum has laid out, we have further initiatives that have yet to be achieved.

On the second point, if I may very briefly, it is so important that we move from the strategic level down to the practical level of operational and tactical capabilities, and the concept that we are now pushing forward under the leadership of DHS is to create a Task Force for Emergency Readiness within each State where the Adjutant General would play the leadership role, along with other emergency managers, to ensure that the plan, let's say, in the State of Maine to address a 10-kiloton nuclear detonation would be properly integrated into all State and local capabilities to include coordination with USNORTHCOM and FEMA.

We have not yet achieved that—we are pretty good at the poetry of strategy. We are not very good at the level of practical, tactical planning to deliver the capabilities in a timely manner. And so with that candid recognition, I can also assure you we are on the cusp of achieving that integrated planning through the concept of the Task Force for Emergency Readiness, which has received widespread support within the National Guard.

Senator COLLINS. We are, however, going to have to get those planners down to the State level.

Mr. MCHALE. Yes.

Senator COLLINS. You and I have talked about that before. And the problem is that most National Guard bureaus at the State level simply do not have that capacity. DOD is awash with planners. That is what DOD does in addition to its other responsibilities.

Mr. MCHALE. The reason why the Adjutants General like this approach is that we take DOD planners—we will have about 450 Reserve component DOD planners, officers who will be trained in the planning process and who will as part of their monthly drill obligation serve alongside National Guardsmen under the immediate supervision of the Adjutant General so that DOD planning capacity can migrate to the State level.

We are a helping hand, but the leadership, the authority, and the accountability must ultimately be vested in the State government. And so we want to be as helpful as we can be without being intrusive in that process, and the Task Force for Emergency Readiness creates that kind of integrated planning capability.

Senator COLLINS. And when do you see that actually going into effect? I think it is a great plan. I think it makes a great deal of sense, but as far as States actually seeing DOD planners working side by side with them.

Mr. MCHALE. Again, we are in a supporting role. Mr. Paulison and I spoke about it as recently as 10 minutes before this hearing. I have also been working very closely with Harvey Johnson, Mr. Paulison's deputy, to make this a reality.

We, in fact, have developed a pilot program, and I would anticipate that DHS would announce that the pilot program later this year would be initiated in approximately a half-dozen States where, frankly, we are going to bend over backwards to make sure it is a success in those States because if it is, it will be much like the Civil Support Teams. We had nine of them back in September 2001. We have 55 of them authorized today. If the first half-dozen or so Task Forces for Emergency Readiness work in those five States, I have no doubt that the Adjutants General and emergency managers will spread the gospel.

Senator COLLINS. Thank you.

Chief Schwartz, my final question is for you. The Metropolitan Medical Response System program is a small grant program at DHS and FEMA compared to many of the other homeland security grant programs. But it is a program that is directly relevant to the issues we are talking about today.

It is my understanding that it provided just $300,000 to 124 urban areas that it covered this year, including Arlington County. It is a program that gives a great deal of discretion to local communities about how exactly they use it, which I think is a strength. But give us your assessment of the MMRS program. How valuable is it to you? Should it be expanded? Are we underfunding it at $300,000?

Mr. SCHWARTZ. I would tell you that it is probably as meager as the funds are, they are some of the best-spent funds in all of our efforts around homeland security. I would note that it is the only Federal program that creates a bridge between what government is going to do in a crisis and what the private health care community is going to do. We do not have anything else that facilitates

a collaboration between the private health care community as a full partner in a response to something like the events we are talking about today, and many others that we could envision, and what those of us represented at this table are also going to do. So it has great strength, great value there.

This may be a controversial comment, but I would have taken a program like the Urban Area Security Initiative and placed it under a framework like MMRS as opposed to the other way around. We have UASI and then we tell UASI cities to go work with their MMRS partners; whereas, the framework of MMRS, the goals that it sets out, however they need to be adjusted at the local level, I think is a far better approach to the kinds of issues that we are discussing today.

In its original form, it was geared toward the human health consequences that result from a weapon of mass destruction. I think that whether it is a weapon of mass destruction or a naturally occurring crisis, as we said before, in an all-hazards environment the problems are all virtually the same.

My job as a fire chief is to come to work in my community every single day and focus on the health and well-being of the citizens of and visitors to Arlington County. That may be because the threat is from a fire or an emergency medical incident. It may be because it is a public health outbreak, and then my role is slightly different, but no less important, to support my partners in public health. And if we have not done a good job of integrating our capabilities in that response, then we are all going to be going in different directions, and I think that ill serves our citizens.

So I think that the way MMRS is structured, I think that the goals that it lays out provide us with a far better approach to managing problems like we are talking about today. And I oftentimes say it is not about the MM; it is about the RS. It is about building a better response system, and as a part of that, we obviously focus on the medical well-being of those we serve.

Senator COLLINS. Thank you. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thanks, Senator Collins.

The testimony that you presented today tells me that a lot is going on to prepare to respond to a terrorist nuclear attack in an American city, but also that none of you thinks we are where we want to be or need to be.

So I want to ask each of you to do this. This is a classic. If you had a scale from 1 to 10 and 1 was totally unprepared—which it is also clear we are not—and 10 was totally prepared—which it is clear we are not—tell me where you think we are on that scale. And then what are your priorities or what should be our priorities for how to get as close to 10 as we can? In other words, what are the priorities of unmet needs? So, Chief, since you are the top guy and in charge, we are going to let you start first.

Mr. PAULISON. I thought you were in charge. [Laughter.]

Chairman LIEBERMAN. I will answer afterward.

Mr. PAULISON. We are not at a 10, no question about it. I think everybody at this table recognizes that and everyone in this room recognizes that. But we have made a tremendous amount of progress, and the fact that we are focusing on this is an important issue.

I would say, if I had to put us somewhere, between a 7 and 8. I think we know where we need to go, so that is key. And we are putting things in place to try to get there, and we are having some significant successes.

Chairman LIEBERMAN. So what are your priorities for the unmet needs?

Mr. PAULISON. Again, in all candor, we have worked very hard to develop these partnerships, and that is what made us successful in the disasters that we have had. We have not had another Hurricane Katrina, but the fact that everyone is at the table supporting the effort to respond is important. So my priorities would be that as we transition into this next Administration, not to lose that. That is going to be the key. And in all seriousness, that is going to be the key for this government at the local, State, and Federal level to continue what we started.

The surge capacity, getting equipment out there, the National Guard, the planning systems—all those things are important, but they will not happen if we do not continue the partnership that we have developed. And we have taken down the barriers. For the most part, we have gotten rid of the stovepipes. I wish that you could see the video conferences that we have every day at noontime when we are having these disasters and see the players at the table. And it is the top people from every agency. General Renuart is sitting there, General Blum, all of them from the partners we have not traditionally had good relationships with—not bad relationships, we just——

Chairman LIEBERMAN. Understood.

Mr. PAULISON. So if I had my number one priority I had to pick, that would be it, that this continue on and we keep working together to protect this country.

Chairman LIEBERMAN. Thanks. Admiral where would you put us, and what is your top unmet priority?

Admiral VANDERWAGEN. Well, thanks for the opportunity. I think that we are probably at around a 6, maybe a 5. We are in that midrange where I think we have really started to identify assets and so on.

I think I would echo Chief Paulison's view and what we have heard from both Assistant Secretary McHale and from Chief Schwartz, that continued collaborative processes in the articulation of a National Response Plan, not a State, Federal, local, but a National Response Plan is critically important. Part of that is through strengthening regional dialogue, because, again, for large-scale events like this, resources draw across in a regional environment—we saw it with the floods.

Chairman LIEBERMAN. Right.

Admiral VANDERWAGEN. They were able to either manage it on their own, locally and State, or they reached across with EMAC to their neighbors, and they got the help they needed. They did not really need a ton of Federal support for certain aspects of this. And I think strengthening that regional capability is a priority.

For me, in particular, I am concerned about the development of more tools. The research pipeline that I talked about and the advanced development of appropriate medical tools to advance our capability to be able to more effectively treat people, we do not have

much in the toolbox at this point for dealing with acute radiation sickness. So I think that the two things, collaborative processes across our national spectrum and the development of some more tools through research and advanced development, I think are the two critical pieces.

Chairman LIEBERMAN. Helpful. Thank you. Assistant Secretary McHale.

Mr. MCHALE. Sir, I would say that a nuclear event is exponentially more challenging than any other scenario that I can envision, certainly much more challenging than the other 14 national planning scenarios. And so specifically in the context of a nuclear event, I would say on September 11, 2001, we would have struggled to be a 2.

Chairman LIEBERMAN. Right.

Mr. MCHALE. Today we are probably a 5, and to improve our capabilities in the face of a challenge that is almost impossible to calculate—the consequences of a 10-kiloton nuclear detonation in the heart of a major American city, I think from a DOD standpoint, now that we have designed the right kind of capabilities—we have USNORTHCOM, we have the CSTs, the CERFPs, and we are building the CCMRFs—we have to bring an operational reality to the concepts that we have developed.

There is some operational reality there today. I do not want to communicate to our adversaries that we are ill prepared. But we are going to get much better than the significant capabilities we have. But then, most importantly, to move from a 5 to an 8—and I find an 8 to be an incredible achievement in the face of these kinds of challenges—we have to get realistic, detailed planning at the State and local level so that we properly communicate to our partners at the State and local level what it is we can deliver and how fast we can deliver it. They can inform us as to where they see their shortfalls, and you cannot do that with a virtual presence. You need a planning capacity that is a focal point that exists in a real building with real people every day doing the planning. And if we do that for the first of the 15 scenarios, I believe that we can move from a 5 to an 8 with deliverable capabilities.

For the other national planning scenarios, including the WMD scenarios, I think that we are much better prepared, probably a 6, 7, maybe an 8 today, with the capacity to move to a 9 through the same kind of improvements.

Chairman LIEBERMAN. That is great. Thank you. Chief Schwartz.

Mr. SCHWARTZ. I would say, again, representing the locals, that it is probably in the 4 to 5 range. And I realize we are being somewhat arbitrary here.

Chairman LIEBERMAN. Sure. It is an impression.

Mr. SCHWARTZ. In terms of specific next steps, if you had asked me first, I know I would have initiated the same theme that you have heard through these three comments, and that is, regionalism. And what I would say as a practical action step is incentivize regionalism through some of our grant programs and stop defining regionalism as two jurisdictions willing to work together, and instead incentivize it by asking the States to form real response regions within their confines, have those regions work collaboratively within the MMRS kind of framework to submit to the

States as part of their submission to Homeland Security for their grants exactly what the threats and risks are for each of the regions, be they natural or manmade, what capabilities they have to address those, and how they would use additional resources to build that capacity.

And I would ask those regions to do that really on three levels. What are the daily threats that they face, everything from those things that we serve our communities with every day—fires, crime, those sorts of things—and whether or not our resources are adequate to do that? Because if we do not have adequate capabilities there, we cannot possibly be expected to respond adequately to higher levels of emergency. Then what are the risks that are inherent to our region? Are they coastal storms? Are they flooding? Are they the threat of terrorism? And last, put in provisions for how regions will go help each other. In a 10-kiloton kind of incident where a significant portion of a region would be taken out, where are they going to look for assistance, and how can that assistance be provided in a meaningful way?

So I would say incentive regionalism through our grant programs, stop just laying it out there and letting people decide, force it through the grant guidance, make the States come up with real meaningful response regions where there are already relationships or where relationships need to be facilitated, and go forward from there.

Chairman LIEBERMAN. That is very helpful. I appreciate it. It is interesting, each of you mentioned the partnerships at the Federal level, but also across the Federal, State, county, and local levels. And I think the regional approach is a very practical idea. Obviously, we are going to be able to surge more quickly from within a region. As one of you described—I think it might have been you, Admiral—some of the first teams to surge into New York after the World Trade Center attack were from the surrounding region. Thank you.

Senator Collins.

Senator COLLINS. Thank you. I do not have anything further.

Chairman LIEBERMAN. Well, we thank you all. This is going to be a continuing focus of our Committee. In the next hearing we are going to go back to the prevention side and take a look at the Domestic Nuclear Detection Office (DNDO). But thanks for what you are doing.

Chief, I do not want to miss the opportunity, while we have you here, first to say that, as we joked before, the fact that nobody is criticizing FEMA and its response to the Midwest floods means that you must be doing a great job. And that makes Senator Collins and me very proud since we worked so hard post-Hurricane Katrina to reform FEMA, and you have really carried out those reforms. So I wanted to say thank you. In fact, to stop being facetious about it, I know that you are doing a great job. But do you want to say anything briefly about your experience here in response to this latest series of natural disasters?

Mr. PAULISON. I do, and I appreciate the opportunity, Senator. The unprecedented flooding—and we were lucky that all the States affected had a great emergency management system in place. All

the governors were personally involved, so the response piece of it went very well.

The culture change that we have put in FEMA of leaning forward, getting out there early, prepositioning supplies, and not waiting for the governors to ask for them before we started moving supplies really paid off tremendously in this particular event.

The difficult piece is yet to come. Less than 10 percent of the homeowners have flood insurance, so 90 percent of those people flooded may not have the funds to rebuild their homes. The maximum amount they can get from FEMA is $28,800 if they qualify for everything that is there. If they had flood insurance, they could have gotten up to $250,000 for the home and up to $100,000 for the contents, and that would have obviously put their home back in the shape that it was before the floods.

So we are going to have a difficult time. I say "we," and that is a collective "we," the State, local, and Federal levels. What are we going to do to make sure people have decent housing? And where are we going to put people and how are we going to get them back on their feet when there was not adequate insurance in place for them to do that on their own? So that is what we are going to struggle with.

So I do appreciate the comments, but I am sure that as we get into the recovery piece of it, we may get some negative comments. [Laughter.]

So just be prepared. But we are going to do the best we can. I have told all the governors that we are going to work as hard as we can to do everything we can legally do to help them and their States get back in shape.

Chairman LIEBERMAN. Thanks very much.

Senator COLLINS. Mr. Chairman, if I could just second your comments. I cannot imagine a greater turnaround than we have seen with FEMA. It does not mean that there are not still problems. It does not mean that there are not still issues and challenges that need to be addressed. But the change in leadership combined with the extensive reforms that this Committee put in place are paying dividends, and we have seen it, and thank goodness we did do all of the reforms and such capable new leadership was brought in, because our country has been challenged with natural disasters the likes of which I have never seen before, including my home State of Maine, where we had flooding this spring in northern Maine that was unlike anything in the State's history.

So I want to second your praise and thanks to Chief Paulison and to all of the rank-and-file FEMA members who are working so hard each and every day.

As I listen to this panel, it helps me be confident that we have so many people who are working so hard for our Nation, and you do not get thanked often. There is so much anti-bureaucracy, anti-Washington feeling in this country. And I think if the people of this Nation could all have heard this hearing and the seriousness and dedication that is represented by each of our panelists and by all the people that you represent, the men and women who are working hard each and every day to protect this country, it would be very heartening to the people of this Nation. We may not get the headlines and the attention, and that is typical when you are doing

a good job, as all of you are. But, in fact, I want you to know that this Committee does pay attention to your work, and we do appreciate it, and you are making a difference each and every day. So thank you.

Chairman LIEBERMAN. Thanks, Senator Collins. I could not agree with you more. I was looking at the four of you thinking you are living every day with an awesome responsibility that the positions that you hold have given you in terms of daily events, but then the unthinkable cataclysmic event may occur, and we live with that as a possibility, unfortunately, in our time. And, we cannot thank you enough for the way in which you are dispatching that responsibility. I was raised with an expression that the reward of a good deed is the deed itself. So even if you are not getting headlines, I hope you feel the satisfaction and the reward of all the good deeds that you do to protect the security of the American people every day.

The record of the hearing will be held open for 15 days if you want to add anything to your testimony or we want to ask you any more questions, but bottom line, thank you very much, and we look forward to working with you in our shared goal of protecting the homeland security of the American people.

The hearing is adjourned.

[Whereupon, at 11:55 a.m., the Committee was adjourned.]

THE GLOBAL NUCLEAR DETECTION ARCHITECTURE: ARE WE BUILDING DOMESTIC DEFENSES THAT WILL MAKE THE NATION SAFER FROM NUCLEAR TERRORISM?

WEDNESDAY, JULY 16, 2008

U.S. SENATE,
COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 10:02 a.m., in room SD–342, Dirksen Senate Office Building, Hon. Joseph I. Lieberman, Chairman of the Committee, presiding.

Present: Senators Lieberman and Collins.

OPENING STATEMENT OF CHAIRMAN LIEBERMAN

Chairman LIEBERMAN. Good morning. The hearing will come to order. Thank you all for being here.

This is the sixth in a series of hearings held by this Committee to examine the threats posed by nuclear terrorism and what our government is doing to protect us from it.

In previous hearings we have examined our state of preparedness if a nuclear detonation occurred in a major American city: Who would help the local first responders who would be clearly overwhelmed? What kind of follow-up medical response capabilities does our Nation have to treat the wounded? And the numbers there will run into the thousands, perhaps even hundreds of thousands. Do we have a clear communication strategy to let the public know exactly what they need to do to protect themselves after an attack? Should they move or shelter in place, for instance?

We have learned a lot in all of these hearings, and I would say that, speaking in summary, we have learned that a lot of work is being done to protect the American people from this threat, but we have a lot more work to do before we can rest easy, or anything approximating resting easy.

As we have said in each one of our previous hearings, our first priority must continue to be to prevent terrorists from obtaining the means, methods, and pathways of attacking us with nuclear weapons in the first place. And that is what we are going to focus on at today's hearing, which is the first, as far as we understand, that any committee of Congress has held on the so-called global nuclear detection architecture. We are going to review today the Federal Government's efforts to detect and thwart trafficking in nuclear materials so the terrorists never get their hands on a nuclear

weapon or, if they do, that we make sure that they are blocked from getting into the United States.

The danger of terrorists acquiring a nuclear weapon is real. Between 1993 and 2006, there were 1,080 confirmed incidents of illicit trafficking in nuclear materials. Eighteen of these cases involved weapons grade materials, and another 124 involved material capable of making a so-called dirty bomb that would use conventional explosives to spread nuclear material.

The Domestic Nuclear Detection Office (DNDO) is charged with designing the nuclear detection architecture to protect us from this threat. It is a multi-agency effort created by a Presidential Directive in April 2005 and housed within the Department of Homeland Security (DHS).

As we will hear from our witnesses, the responsibilities of the DNDO are daunting. Its first job was to perform an inventory of the 74 different Federal programs spread over the Department of Energy, the Department of Defense, and the Department of State and to try to create from these a unified system where all the different agencies were working together to protect America.

The reach of these programs is wide and layered, including efforts abroad, efforts at the border, and, of course, activities within our homeland. Many of these programs predate the establishment of the DNDO.

This is a significant effort, certainly as measured in dollars spent. During the last fiscal year, these programs cost a total of $2.8 billion—$1.1 billion to combat smuggling and secure nuclear materials held abroad, $220 million to detect materials at the border, $900 million for detection efforts within the United States, and $575 million for cross-cutting activities that support many of the other programs, like research and development, into detection technologies.

The goal of a layered system, as I understand it, is that each point of the system will offer another opportunity to detect and thwart terrorists before they can acquire a nuclear weapon or to stop them before it can be smuggled into the United States.

But the system we have in place now, I conclude, is incomplete. As we are going to hear today, our global nuclear detection architecture—this "system of systems," as one of our witnesses calls it—may have both needless redundancies and/or dangerous gaps, which I suppose in this case is the worst of both worlds. Even if each program was working precisely as planned, holes apparently exist in this layered security net that could allow determined terrorists to get their hands on weapons grade nuclear material and bring it into the United States.

DNDO's job is to help find and plug those gaps. But that job is made significantly more difficult by the fact that DNDO is just a coordinating agency and has no effective power to order or implement desired changes.

DNDO has no authority to alter or direct the spending requests for programs that are critical to the architecture and little ability to ensure that money is spent efficiently and contributes to the overall contours of the architecture that DNDO itself has designed.

Therefore, I think we are at a point where we have got to ask today whether DNDO needs more authority to review and perhaps

even approve budgets and plans of the participating agencies as well as having authority to make sure that the billions of dollars that we have spent and will spend, must spend, are spent effectively.

So I look forward to our witnesses' testimony. We have an excellent panel here. The challenges posed are serious and our response to those challenges must be as serious, coordinated, and purposive. And I look forward to both hearing from the witnesses what is happening now and, of course, any suggestions they have, particularly with regard to legislation, about how we might improve the status quo to make it better.

Senator Collins.

OPENING STATEMENT OF SENATOR COLLINS

Senator COLLINS. Thank you, Mr. Chairman.

The global nuclear detection architecture overseen by the DNDO is a vital component of our Nation's defenses against a terrorist nuclear attack. That architecture is an elaborate and expansive structure involving the Departments of Defense, State, Energy, and Homeland Security. Its operations encompass work by crews of Coast Guard vessels, Customs and Border Protection cargo screeners at U.S. and foreign seaports, and many others, all compromising a multi-layered defensive screen to detect nuclear materials.

The SAFE Port Act, which I co-authored, enhanced such efforts by requiring that all cargo containers be scanned for radiation at the 22 largest American seaports, covering 98 percent of cargo coming into this country. That law also strengthened the Container Security Initiative, which targets inspection of high-risk cargo at foreign ports.

The architecture's multi-layered, cross-departmental, international orientation against multiple and shifting threats relies on a "system of systems." Assessing the effectiveness of that approach is the purpose of this hearing.

Today's witnesses can give us valuable insights into the challenges that the DNDO confronts, and which Congress must consider, as we make additional decisions about structure, resources, operations, and authorities of our global nuclear detection architecture.

Detecting nuclear materials in transit, at seaports, and ports of entry before they reach target areas and can be detonated is obviously of the highest priority. As the recent example of drug smugglers using submersibles to smuggle tons of cocaine demonstrates, however, our enemies seek ways to avoid our efforts. They have many options: Using all-terrain vehicles to cross the long stretches of wooded land borders in Maine and Minnesota, for example; piloting small boats into isolated inlets along our coast; or flying small aircraft low over unpopulated areas to land on fields in the Southwest.

Technologies and multi-layered defenses can help, but we can never be sure of blocking every path that determined enemies might select to reach targets in our homeland.

That sobering conclusion clearly underscores the need to keep intelligence and law enforcement capabilities at the highest levels of skills and readiness. It also highlights the importance of reducing

the chances that nuclear materials can ever be obtained by terrorists.

Our first line of defense must be working with domestic and foreign partners to ensure that nuclear materials are secured and accounted for, and to use our best diplomatic efforts to prevent or minimize nuclear proliferation. The more effectively we can pursue those efforts, the lighter will be the burden that rests on our global nuclear detection architecture. Nevertheless, we know that those efforts are imperfect, and, thus, we must make sure that the architecture is as strong and robust as possible.

Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thanks, Senator Collins, for that thoughtful statement.

We will go now to the panel of witnesses. We have five, so we are going to give you all 10 minutes. Please try to keep within the 10 minutes. There will be a special award for those who come in under 10 minutes. It may not be until the next world, as my late mother would say, but you will definitely be rewarded.

We are going to begin with Mark Mullen, Assistant Director for Architecture at the DNDO, U.S. Department of Homeland Security. Good morning, and thank you for your testimony.

TESTIMONY OF MARK MULLEN,[1] ASSISTANT DIRECTOR FOR ARCHITECTURE, DOMESTIC NUCLEAR DETECTION OFFICE, U.S. DEPARTMENT OF HOMELAND SECURITY

Mr. MULLEN. Good morning, Chairman Lieberman, and Ranking Member Collins. My name is Mark Mullen. I am the Assistant Director for Architecture in the Domestic Nuclear Detection Office. Thanks for the invitation to meet with you today and tell you about the work we have been doing to develop an enhanced global nuclear detection architecture because that, in fact, is our main job in my office.

Our job basically is to figure out how to strengthen our defenses against nuclear terrorism by improving the detection systems around the world that give us opportunities to detect and interdict nuclear threats on their way to targets in the United States. We do this in partnership with other agencies in the U.S. Government as well as other domestic and international organizations and partners. We work closely with State and local law enforcement agencies in the United States, and we also, through our partners and other U.S. Government agencies, work closely with other countries that have nuclear detection systems. And it is through the integration of all these activities that we think we can maximize the effectiveness of the nuclear detection architecture.

Detection is only one of many technical, operational, and policy measures that are used to combat nuclear terrorism, but it is an important one, and it is one where there are a lot of improvements underway. And there is a lot of room for strengthening our architecture by focusing on the nuclear detection aspects. And that, in fact, is what the Domestic Nuclear Detection Office was set up to do.

[1] The joint prepared statement of Mr. Mullen and Mr. Gallaway appears in the Appendix on page 647.

In my office, in the Architecture Office, we started our work on the global nuclear detection architecture right away, as soon as DNDO was set up in April 2005. And the first thing we did was to take stock, what we call the "baseline architecture analysis." We assembled as much information as we could about what was already being done at that time to detect and interdict radiological and nuclear threats. Not surprisingly, we found a lot was already being done, both domestically and internationally. We found, for example, that in 2005 there were more than 70 U.S. Government programs across multiple agencies, totaling at that time about $2.5 billion a year; that number has increased now to where it is approaching about $3 billion. All these programs were already in place working and contributing in various ways to the global nuclear detection architecture.

We also found that thousands of detectors had already been deployed, both domestically and internationally, and plans were underway at that time to expand those deployments significantly.

We also found, however, that there were some gaps and vulnerabilities that were not being fully addressed and in some cases were not being addressed at all. And so that was really the starting point for the next stage in our work.

We immediately began developing solutions to fill the most significant gaps that we had identified in our baseline analysis, and to do this we partnered with agencies that have operational responsibility and the domain expertise to begin filling in some of these areas where we had identified vulnerabilities. For example, for the land border in between the ports of entry, we teamed up with the Border Patrol, and we have been working with them to develop solutions for that domain. And for the small maritime issues that Senator Collins alluded to, we have been working with the Coast Guard in particular, and other agencies as well, to try and address the small maritime vulnerabilities. Together with our partners, we examined these vulnerabilities and various options for starting to address them.

The result of this work was a series of initiatives that DNDO has launched with our partners over the last few years. Now they are in various stages of implementation to begin to reduce the nuclear risks associated with these vulnerable pathways. And Dr. Gallaway in a moment will describe briefly several of these initiatives and present the status of them as they exist today.

To sum up, I would just like to reiterate that DNDO's work to develop and enhance the global nuclear detection architecture has proceeded in three stages: First, the baseline architecture analysis where we took stock, we took an inventory, as the Senator said; second was the options analysis phase where we began to try and identify solutions to begin to fill the gaps, and we have made considerable progress in that direction; third is the implementation phase, and that is what we are in right now where, through pilot projects and initial deployments, which Dr. Gallaway will elaborate on, we have begun to introduce new detection systems and concepts of operation into practice, and where we are continuing to improve and strengthen the systems based on experience we are gaining through the implementations as well as ongoing evaluations.

I would like to stress one final point, and that is, the importance of a phased approach to building and strengthening the nuclear detection architecture with a near-term perspective and also with a long-term perspective. Not only are technologies and systems improving all the time based on research and development, testing and evaluation, and practical experience that we are gaining in the field, but the threat is also evolving in ways that may be difficult to predict if we look 5 or 10 years in the future. Therefore, we need to continually update and strengthen the architecture in the near term and long term as new options and challenges arise. Dr. Gallaway in the next presentation will expand on the progress we are making and give a status on that.

Thank you very much.

Chairman LIEBERMAN. Thanks, Mr. Mullen. Good beginning. Just out of curiosity, I always wonder how people get to positions like this. What is your own background in terms of training and experience?

Mr. MULLEN. I am a nuclear engineer. I have worked in this area for more than 30 years. I am actually detailed to DNDO from the Los Alamos National Laboratory as a technical adviser, and I have worked over many years on a wide range of different nuclear security and nuclear threat reduction programs, including several that you mentioned in your opening remarks. I spent quite a few years in the 1990s, for example, working in Russia on the nuclear security and material protection control and accounting programs, and I came to DNDO at the beginning because I thought there were some important problems there that I could contribute to.

Chairman LIEBERMAN. That is great. It sounds like you are actually qualified for this job, which is reassuring. [Laughter.]

Dr. Chuck Gallaway, Deputy Director, Domestic Nuclear Detection Office. Thanks, Dr. Gallaway. Please proceed with your testimony.

TESTIMONY OF CHARLES GALLAWAY, PH.D.,[1] DEPUTY DIRECTOR, DOMESTIC NUCLEAR DETECTION OFFICE, U.S. DEPARTMENT OF HOMELAND SECURITY

Mr. GALLAWAY. Good morning, Chairman Lieberman and Ranking Member Collins. The question you posed—Are we building domestic defenses that will make us safer?—is obviously a critical one.

To get right to the point, I believe the answer is yes, we are safer from nuclear terrorism today than we were 3 years ago when we formed the Domestic Nuclear Detection Office. Of course, we recognize that there is still a lot of work to be done.

Mr. Mullen's analysis has shown that greater security can be achieved by focusing on all three layers of the architecture: Overseas, at the border, and within the United States. Our colleagues at the Department of Defense, the Department of Energy, and the Department of State are responsible for implementing the overseas layer. I will briefly discuss several programs that DNDO has imple-

[1] The joint prepared statement of Mr. Gallaway and Mr. Mullen appears in the Appendix on page 647.

mented on the domestic front—in other words, at our borders and within the United States.

Starting with the border layer, cargo security has been our major emphasis to date. As mentioned just a few moments ago, 3 years ago only 22 percent of the cargo at seaports was being scanned. In December 2007, DHS met the congressionally mandated goal in the SAFE Port Act of scanning all incoming containerized cargo with radiation portal monitors at the Nation's top 22 seaports. That represents 98 percent of all incoming containerized cargo. Future work will entail finishing the remainder of the port work as well as moving into cargo challenges including on-dock rail, bulk cargo, and international rail.

Guided by the analysis of the baseline global nuclear detection architecture, we have expanded into the aviation pathway. We have equipped every Customs and Border Protection (CBP) officer who meets an international general aviation flight with detection equipment. This pathway is complicated, and we are working with CBP, our Federal partners, and our international partners to potentially push out our borders by screening flights overseas.

Another important pathway identified in the architecture work is the maritime vector. We have acquired and delivered radiological/nuclear detection equipment to all Coast Guard boarding teams. We have initiated pilot projects in the Puget Sound and the San Diego area. We are currently conducting a test campaign to characterize the performance of radiological/nuclear detection equipment in the maritime environment. This work will guide our future maritime programs.

A third pathway driven by the architecture study and still in its formative stage is non-port-of-entry land crossings. We are working closely with Customs and Border Protection to develop options and conduct field evaluations of relocatable and personal detectors for use by the Border Patrol along the Southern and the Northern borders. So let's leave the border layer and move towards the interior layer of the architecture.

At the regional level, we have worked closely with nine States and the District of Columbia on the Southeast Transportation Corridor Pilot. This pilot deployed fixed detection systems at weigh stations as well as augmentation by mobile systems. Throughout the country, we have a vigorous training and exercise program. In the last 3 years, we have trained over 7,000 State and local officials in preventative radiological/nuclear detection through a host of different courses.

Staying with layered defense concept, we have developed an approach to defend a potential high-value target such as the New York City region. The Securing the Cities Initiative enables State and local jurisdiction, along with Federal partners, to coordinate and execute preventative radiological/nuclear detection screening operations. Lessons learned in the New York City region will serve as a model for future work across the country.

In conclusion, we are safer today than we were 3 years ago when DNDO was established. Guided by the analysis of the global nuclear detection architecture, we are taking a measured, balanced approach across multiple layers.

Our work at DNDO along with the cooperative efforts of our partners within DHS, throughout the U.S. Government, and within State and local governments, are making our Nation safer from nuclear terrorism. Thank you.

Chairman LIEBERMAN. Thank you very much, Dr. Gallaway. I appreciate the statement, and we will now move on to David Maurer, Acting Director, Natural Resources and Environment, U.S. Government Accountability Office (GAO).

TESTIMONY OF DAVID C. MAURER,[1] ACTING DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Mr. MAURER. Thank you. Good morning, Mr. Chairman and Ranking Member Collins. I am glad to be here today to testify on DNDO's efforts to develop a global nuclear detection architecture. As you well know, preventing the smuggling of nuclear or radiological materials and devices into the United States is one of this country's top national security priorities. Several Federal, State, and local agencies as well as foreign governments are involved in addressing this threat.

To better integrate these efforts, DNDO was required to develop and enhance global nuclear detection architecture in coordination with the Departments of Defense, Energy, State, and other Federal agencies. For the past few months, we have been reviewing DNDO's progress in developing this architecture. Our work is still underway, so my statement today provides our preliminary observations on DNDO's efforts. We plan to issue our final report to you and other congressional requesters in January 2009.

This morning, I will discuss three facets of DNDO's efforts: First, its status; second, the challenges DNDO and other Federal agencies face; and, third, the cost of the various programs that comprise the architecture.

Regarding status, we found that DNDO has developed an initial architecture but lacks an overarching strategic plan to help guide how it will achieve a more comprehensive architecture. Specifically, DNDO has coordinated with the Departments of Defense, Energy, and State to identify 74 Federal programs that combat smuggling of nuclear or radiological material. DNDO has identified gaps in this architecture, such as land border crossings into the United States between formal ports of entry and has started to develop programs to address these gaps.

Our preliminary observation is that these pilot programs appear to be a step in the right direction. However, DNDO has not developed an overarching strategic plan to guide the transition from the initial architecture to a more comprehensive architecture. As a result, DNDO lacks a strategic road map with clearly established goals, responsibilities, resource needs, and mechanisms for assessing progress along the way.

It is only fair to point out that developing an enhanced architecture is not an easy task. DNDO and other Federal agencies face a number of coordination, technological, and management challenges. I would like to highlight three.

[1] The prepared statement of Mr. Maurer appears in the Appendix on page 657.

First, DNDO will need to avoid the implementation and coordination problems that initially plagued U.S.-funded nuclear detection programs overseas. Although there have been recent improvements in these overseas programs, DNDO will need to closely examine its domestic efforts to ensure they do not suffer similar problems.

Second, radiation detection technology has limitations, and even improved, more advance equipment would need to be closely integrated with proper training, intelligence gathering, and law enforcement operations to effectively combat nuclear smuggling.

Third, DNDO has been charged with developing an architecture that depends on program implemented by other agencies. As a result, DNDO may face challenges, ensuring that the individual programs within the architecture are effectively integrated and coordinated.

Finally, there is the important issue of how much this is going to cost. Looking back, according to DNDO, approximately $2.8 billion was budgeted in fiscal year 2007 for the 74 programs in the architecture. Of this $2.8 billion, a little over $1 billion was for international programs, $220 million was for programs at the U.S. border, $900 million was for security and detection activities within the United States, and $575 million funded a number of cross-cutting activities.

Looking forward, the future costs for DNDO and the other Federal agencies to address the gaps identified in the initial architecture are not yet known or included in these amounts. In other words, no one really knows what an enhanced architecture would cost. What is clear is that DNDO has an important and complex task. Developing a global nuclear detection architecture involves coordinating a vast array of programs and technological resources that span the globe. While DNDO's vision of a more comprehensive architecture is laudable, to achieve this goal it will need to address a number of key challenges. What is more, implementing an enhanced architecture will likely cost billions of dollars, take several years, and rely on the expertise and resources of agencies and programs across the government.

Moving forward, DNDO should work closely with its counterparts within DHS as well as in other departments to develop a comprehensive strategic plan to help safeguard the investments made to date, more closely link future goals with the resources necessary to achieve those goals, and enhance the architecture's ability to operate in a more cohesive and integrated fashion. Thank you.

Chairman LIEBERMAN. Thanks, Mr. Maurer. That was an excellent statement, and we want to get back to some of the questions you raised.

Next is Dr. Dana Shea, specialist in science and technology at the Congressional Research Service (CRS) of the Library of Congress. Good morning.

TESTIMONY OF DANA A. SHEA, PH.D.,[1] SPECIALIST IN SCIENCE AND TECHNOLOGY POLICY, RESOURCES, SCIENCE, AND INDUSTRY DIVISION, CONGRESSIONAL RESEARCH SERVICE, LIBRARY OF CONGRESS

Mr. SHEA. Good morning. Chairman Lieberman, Ranking Member Collins, and other Members of the Committee, thank you for the opportunity to testify before the Committee today. My testimony today has three parts: First, I will provide a brief overview of the requirement to develop a global nuclear detection architecture; second, I will summarize the approach taken by the Domestic Nuclear Detection Office; and, third, I will identify several policy issues that may be of interest to the Committee.

To start with the overview, the SAFE Port Act of 2006 gave DNDO the statutory responsibility to develop an "enhanced global nuclear detection architecture." This architecture is to be implemented by multiple Federal agencies, including the Departments of State, Homeland Security, Energy, and Defense. Similar language was included in Homeland Security Presidential Directive 14. This Directive established the Domestic Nuclear Detection Office within the Department of Homeland Security in 2005. Neither the Presidential Directive nor the SAFE Port Act explicitly defined the global nuclear detection architecture. To meet their statutory responsibility, DNDO interpreted this phrase. Their global nuclear detection architecture consists at least of Federal detection systems deployed domestically and overseas, the programs that support them, the data they generate, the mechanisms that coordinate them, and a systems engineering-based process for future growth and development.

The global nuclear detection architecture aims to prevent the detonation of a radiological or nuclear weapon within the United States. It is a system of systems, that is, a structure that aligns detection systems and the programs that support them into geographically based layers. The architecture has both physical and conceptual components. The physical component is composed of the sensor systems deployed by Federal agencies. The conceptual component is the mechanism for organizing and analyzing program capabilities in this system-of-systems context.

The DNDO global nuclear detection architecture has three layers—exterior, border, and interior—and each layer is composed of several sublayers and provides an independent opportunity to detect the radiological or nuclear threat. It is likely that no single layer will provide perfect detection, but the combination of these less than perfect layers may be sufficient to detect the threat. Several Federal programs are aligned with each architecture layer and experts may compare architecture requirements and program capabilities to identify gaps in the architecture. Such a gap analysis is one example of the benefits of creating an overarching architecture.

The DNDO has identified baseline funding and participation levels in the architecture. According to DNDO, the global nuclear detection architecture has been used to identify gaps in the Nation's

[1] The prepared statement of Mr. Shea with an attachment appears in the Appendix on page 675.

abilities to detect radiological and nuclear materials, and these identified gaps are in the process of being addressed.

I will discuss four key issues facing decisionmakers when considering the global nuclear detection architecture and its use: First, the architecture's ability to meet its primary goal of detecting radiological and nuclear material; second, the prioritization of current and future investments in the architecture; third, the criteria for policymakers to judge the architecture's success; and, last, DNDO's ability to sustain and evolve the architecture in the future.

A failure of the architecture will likely become readily apparent, and the success of the architecture may not be so clear. The success of the architecture will depend on efforts beyond detecting these materials. The DNDO has identified the protection of radiological and nuclear sources as part of the global nuclear detection architecture. These components beyond detection require the coordination and cooperation of multiple agencies, potentially in multiple countries, and the ability to correlate and combine data from multiple sources. Accurate information gathered by DNDO regarding the performance and benefits of the architecture's programs is essential to the architecture's effectiveness. However, such information may be difficult to generate, measure, or even estimate. Absent such validated information, policymakers may find judgments regarding success in meeting architecture goals hard to make. Congress may face the issue of what constitutes an acceptable level of risk in the architecture. It is unlikely that any single sublayer in the architecture will be 100 percent effective. What constitutes an acceptable level of risk will likely be a major policymaking decision, especially in the case where additional small benefit may come at substantial cost.

The system-of-systems approach embodied in the global nuclear detection architecture can be a powerful tool for prioritization and planning. If DNDO can establish an overall view of radiological and nuclear detection, it may attempt to optimize the total architecture. It might do this both by refining investment in existing programs as well as identifying areas where investment in new programs would yield particular benefit. A key component of this approach is the development of an accurate representation of the architecture, a model. The DNDO might use this model to identify tradeoffs and alternative approaches, establish the risk reduction benefits and economic costs of these approaches, and inform policymakers' critical decisions regarding further investment.

These architecture priorities may not exactly align with the priorities of the participating agencies or their individual programs. The DNDO is a coordinating office, not an implementing agency, and does not control the budgets of other agencies or have the ability to require other agencies to revise or adjust their funding investments. Therefore, a key issue for Congress is priority setting for the global nuclear detection architecture's implementation. Policymakers may need to choose between future agency priorities and supporting architecture needs. Congressional comparison of architecture priorities and participating agency program activities may be a key component of the architecture's effective implementation.

One possible mechanism to achieve such oversight is to provide the DNDO Director with the authority to review and assess the

budgets of other participating agencies. Another mechanism might be to require the compilation and submission of an annual, unified global nuclear detection architecture budget supplement. Linking the identification and reporting of the architecture to the budget cycle could provide Congress with insight into how the priorities of the architecture are being implemented by the various participating agencies. Congress would also obtain an overarching view of the implications of changing funding levels among programs.

The robustness of the global nuclear detection architecture likely depends on three factors: The information DNDO receives from other agencies; DNDO's interpretation of that information; and DNDO's continual reassessment of the architecture based on this information.

Strategic goals, metrics, and benchmarks for the architecture are needed to assure that important aspects of other agency activities are provided and incorporated. Without these metrics and benchmarks, factors not essential to the mission of the architecture may become the criteria by which success is judged.

Congress could solicit from DNDO timelines, milestones, and funding estimates for portions of the architecture along with a series of implementation alternatives. By identifying the different stages for implementation of the architecture, Congress may be able to determine what qualifies as a near-term success while still allowing for growth and completion of longer-term goals.

The DNDO has identified the architecture as having an evolving component to it, where future iterations of the architecture may address concerns that cannot be best addressed with current technology. The DNDO draws upon subject matter experts and detailees from other agencies to provide unique expertise and necessary interagency input and coordination. This use of detailees may pose challenges to the maintenance of the architecture due to the limited duration of their positions. Congressional oversight of the architecture's evolution is a key component to its maintenance. Congress might require DNDO to provide detailed reports identifying DNDO's long-term vision for the architecture. Such reports might provide Congress with the information necessary to balance the long-term goals of the architecture with other policy objectives under consideration. Congress might also address the issue of maintaining institutional knowledge by requiring DNDO to identify those positions best filled by permanent staff and to establish specific mechanisms to maintain this knowledge.

Mr. Chairman, that concludes my prepared statement. I would be happy to answer any questions that you or other Members of the Committee might have.

Chairman LIEBERMAN. Thanks very much, Dr. Shea. Really through you to CRS and, Mr. Maurer, through you to GAO, thanks to both of your agencies for the really extraordinary work that you do in assisting this Committee and Congress generally in carrying out our oversight responsibilities. I thank you for the statements you have made today, which will be very helpful to us.

Our final witness is Robert Nesbit, Senior Vice President and General Manager, Center for Integrated Intelligence Systems at the MITRE Corporation. Mr. Nesbit has served, as I understand it, as chairman of a panel convened by the Defense Science Board at

the Pentagon to review the specific question of protecting our homeland from weapons of mass destruction (WMD). So you are an ideal witness for us. We thank you for being here and look forward to your testimony now.

TESTIMONY OF ROBERT F. NESBIT,[1] SENIOR VICE PRESIDENT AND GENERAL MANAGER, CENTER FOR INTEGRATED INTELLIGENCE SYSTEMS, THE MITRE CORPORATION

Mr. NESBIT. Good morning, Chairman Lieberman and Ranking Member Collins. My name is Bob Nesbit. I work for the MITRE Corporation in Boston, Massachusetts, and have been a member of the Defense Science Board for the last 10 years.

The Board conducted a study to examine the best strategies to employ against the threat of terrorist use of weapons of mass destruction. Larry Lynn and I served as the co-chairs with members from industry, academia, the Federal Funded Research and Development Centers (FFRDCs), and the National Laboratories. The findings and recommendations of the Board are advisory. They do not represent the official position of the Department of Defense.

We examined attacks in three distinct time frames—during the planning and preparation, while the attack would be in progress, and in the aftermath of the event. For the nuclear terror topic of today's hearing, one finding clearly stands out. If a terrorist or rogue state somehow gains possession of a nuclear device and intends to use it against the United States, we are in big trouble. Our recommendations, therefore, stressed doing everything possible to prevent acquisition since once this happens it would be most difficult to detect in transit, stop, and secure the device prior to detonation.

We recommend increased effort in three pre-attack areas: First, the area of intelligence. The intelligence analysts we met with said they have less information on this subject today than they did prior to September 11, 2001. We recommend that improved intelligence on these threats to include greater emphasis on tracking key individuals who have specific technical expertise; increased fielding of deep penetration and close access intelligence sources and methods; more persistent surveillance assets to include tagging tracking and locating; and in-depth analysis to create a better understanding of adversary motives and intentions.

Second, we recommend that we develop diplomatic, economic, and military response options to serve as a deterrent against the original source of the nuclear device or material. The President has clearly articulated a policy about this, but we do not have response options. To make these options credible will require improved forensics to be able to identify the original source. Extended planning and publication of the outline of the response options will make U.S. intentions perfectly clear to all.

Third, we recommended strengthening and broadening international cooperative efforts in non-proliferation and increased security of nuclear materials, including the Proliferation Security Initiative, the Nunn-Lugar Cooperative Threat Reduction Program, and other special diplomatic efforts.

[1] The prepared statement of Mr. Nesbit appears in the Appendix on page 705.

We were very taken with the take-down of the A.Q. Khan network and the Libyan program. It was a remarkable success based on intelligence, diplomacy, and, most importantly, international cooperation. It is likely the highest value nuclear counterproliferation operation in the last 10 years. It stands as a real model of what we ought to be doing more and more of.

As a second priority, we recommend increased emphasis in consequence management following an attack. I was pleased to see that you held a hearing on this subject a couple weeks ago. You came to the same conclusion we did, that, unfortunately, if you are at the point of the blast, there is not much that can be done, but there is a lot that can be done to limit total casualties—some estimate by as much as a half if we had the proper medical response. We need radically increased medical surge capabilities to treat radiation exposure and deal with trauma and burns. Many more people with first-level disaster training are needed to stabilize the injured until professional medical care is available. And DOD personnel may be required to deal with quarantine of affected areas and eventual decontamination.

Finally, in our study we determined that detecting a nuclear device in transit is very difficult. The physics of the situation makes the sensor technology quite challenging, and if the perpetrator is clever and uses shielding, non-obvious entry paths and transit means, or employs salvage fuzing to initiate the weapon upon detection, it would make detection prior to detonation even less likely.

A terrorist group that was adept enough to acquire a nuclear device or material should be assumed to have a similar skill level in carrying out the attack. While we did not endorse deploying a large number of fixed, pre-emplaced radiation detectors throughout the United States, we did conclude that we ought to make terrorist planning more difficult by selectively deploying these detectors to small areas cued by intelligence or heightened alerts; near certain key portals, high-value targets, or special events; but, most particularly, in a mobile randomized, non-overt manner, but the existence of which is publicized, to add complexity to the offense.

We derived this strategy using a fairly quantitative approach. DHS produced 14 potential scenarios in which terrorists might use WMD against the United States. We estimated the most probable beneficial impact in terms of lives saved and injuries and economic loss avoided if each defensive alternative were employed against each scenario. The sum of those benefits over all 14 scenarios provided a measure of impact. The individual approaches were then ranked based on their value, which was a combination of the impact and the cost of implementing the defensive approach.

This concludes my prepared statement, and I thank you very much for your invitation to testify.

Chairman LIEBERMAN. Thanks very much, Mr. Nesbit, for that testimony, which was unsettling but if that is the way you see it, it is important that you said that to us. We will have 7-minute rounds of questions.

I want to go back to something you said in your testimony, and I quote, "If a terrorist or rogue state somehow gains possession of a nuclear device and intends to use it against the United States,

we are in big trouble." Just develop that a bit more. Are we in big trouble because you are skeptical of our ability to stop a terrorist group from getting a device into the country?

Mr. NESBIT. Our reasoning on this was that if a terrorist got his hands on a nuclear device, that would be a really big deal. That shows a level of skill way beyond the normal terrorist that we deal with. And if they have that level of skill, expertise, and financing to be able to get their hands on the device, they could be really clever about how they got it into the United States. It is such a big country, and it is so hard to defend against everything. We thought that the probability of them getting it in or exploding it upon detection was fairly high, that it is likely they could get past the defenses.

Chairman LIEBERMAN. Yes. Let me just ask, how do you, therefore, evaluate the progress that we have made so far? For instance, screening cargo, as Dr. Gallaway indicated, coming in by water and at least radiation monitoring of all flights that come in, is that constructive?

Mr. NESBIT. It is definitely constructive. There is still a long way to go there, but, I mean, it has only been 5 or 6 years, and the progress made in the technology of the devices has improved; the false alarm rate has gone down; the deployments are up. But it is just really a tough problem.

Chairman LIEBERMAN. So that leads you obviously to try to stop it over there before it gets near here, and the interest in expanded or improved intelligence, which I think is very well placed. Did your panel meet with the Director of National Intelligence (DNI) or other heads of intelligence?

Mr. NESBIT. Yes, we did.

Chairman LIEBERMAN. And it is on the basis of that that you would argue that they need more help in these areas?

Mr. NESBIT. Yes.

Chairman LIEBERMAN. I was interested in your second recommendation, developing and deploying diplomatic, economic, and military response options. Presumably, we have those. In other words, but no, you say not.

Mr. NESBIT. We could not find in the Department of Defense any plans for what we would do if we were attacked with a nuclear weapon and we determined the source.

Chairman LIEBERMAN. In other words, not the option if we find out that a terrorist has a nuclear device somewhere in the mountains between Pakistan and Afghanistan.

Mr. NESBIT. No. If a terrorist got a weapon from North Korea and it exploded in the United States, what would our response be to the North Koreans.

Chairman LIEBERMAN. So this is by way of deterrence.

Mr. NESBIT. Yes, sir.

Chairman LIEBERMAN. In other words, if we found out that you, North Korea, were complicit in a terrorist nuclear attack against the United States, what could you expect us to do?

Mr. NESBIT. Right. In the Cold War, as you well know, we not only had a policy of deterrence, we had an organization that planned, practiced, was well qualified, and had options laid out in great detail, and that proved to be a very valuable deterrent.

Chairman LIEBERMAN. I appreciate those answers.

Dr. Gallaway, let me move to you and ask first for a quick general response to what Mr. Nesbit has said.

Mr. GALLAWAY. I agree in principle with what he has said. We support the idea of deterring a terrorist all the way from the point where he may acquire a weapon through interdiction or through transit; and then, finally, if, in fact, the weapon is used, that we try to mitigate the effects of the detonation as much as possible. So I am very much in sync with what he has proposed.

Chairman LIEBERMAN. Mr. Mullen, let me ask you this because Dr. Gallaway has reported, and, of course, this Committee has followed with appreciation, the increasing efforts to detect the movement of radiological material in another country by cargo ship and through commercial aviation or established aviation. I understand that in developing the baseline architecture in 2005, you and your colleagues concluded that the general aviation pathway and the small maritime pathways posed a serious risk and actually needed to be a priority. In other words, we have a big country. There are a lot of places where small boats can come in and a lot of places where small private aircraft can come in.

Let me ask you first to discuss, if I am right, that conclusion and what the basis of the conclusion was.

Mr. MULLEN. That is correct. We did identify those two pathways as particularly important ones for additional work. Let me start first with the small maritime craft.

As you are probably aware, there are more than 13 million small boats in the United States, and by small boats, we define that as less than 300 gross tons. And we have a very effective Coast Guard, but the number of boats and the 95,000 miles of coastline and inland waterways present just a huge area to cover for the Coast Guard. And so if you look at the number of boarding teams and the number of Coast Guard vessels and officers compared to the size of the problem, you can see right away that it is a very daunting challenge. So we wanted to team up with the Coast Guard and see what we could do together to try and deal with that pathway, and we have made some progress in that direction.

So that is really what is behind the emphasis on small maritime craft—the size of the job compared to the capabilities that we have at this time.

Chairman LIEBERMAN. I presume underlying all this discussion is our conclusion that if a terrorist or terrorist group got hold of a nuclear device, it would likely be a small nuclear device and, therefore, capable of being brought into the country by a small boat or a small aircraft. Is that correct?

Mr. MULLEN. That is correct. There would not be a constraint on the size of the aircraft or the boat for being able to transport a nuclear device.

Now, let me answer the second part of your question on aviation. It turns out that there are approximately 400 flights a day of generally small—sometimes it is larger aircraft, but privately owned—aircraft that enter the United States from other countries, most of them from Canada, Mexico, and the Caribbean, but also some long-range flights. And in the past, this form of aviation was relatively

lightly regulated compared to commercial aviation, the large airlines that we are most familiar with.

Chairman LIEBERMAN. Sure.

Mr. MULLEN. And so in terms of a programmatic gap, it had not gotten the kind of attention that some of the other pathways had, and so we identified that as something that needed a closer look, and we have, in fact, done that.

Chairman LIEBERMAN. I am going to ask Senator Collins for her indulgence so I can continue this line of questioning, and then she can continue as long as she wants in her line of questioning.

I have seen some records that show that in November 2005, DNDO staff briefed Vice President Cheney and the Homeland Security Council on the need to emphasize defenses against the risk that a terrorist group would use a private aircraft or a small boat to deliver an improvised nuclear weapon. What would you describe in this open setting about the response of the Homeland Security Council and the White House to those briefings?

Mr. MULLEN. What I think you are referring to, Senator, is the briefings that we did on a fairly wide basis on what we called our baseline architecture analysis—we completed that analysis in November 2005, and we briefed all of our partner agencies as well as various officials and committees in the administration, and——

Chairman LIEBERMAN. Right. So these were not——

Mr. MULLEN [continuing]. They basically endorsed our——

Chairman LIEBERMAN. Let me just interrupt just for clarity. You are saying that the two meetings that I have mentioned were not exclusive, that you were briefing many people at this time.

Mr. MULLEN. That is correct.

Chairman LIEBERMAN. Go ahead.

Mr. MULLEN. And in essence, they endorsed our baseline analysis and encouraged us, as we have identified these vulnerabilities, to go ahead and begin tackling these vulnerabilities and attempting to identify solutions that could then be implemented.

Chairman LIEBERMAN. So this is an enormous task, of course, because of the enormity of our country and the number of boats and small aircraft coming in. In brief, how would you describe the progress we are making as a result of those briefings in regard to small boats and small planes?

Mr. MULLEN. I think we are making good progress. We have put together in the small maritime area a joint program with the Coast Guard as well as with State and local partners to begin to build out detection capabilities in the major seaports. As Dr. Gallaway mentioned, we are launching that through a series of pilot projects initially on the West Coast. Dr. Gallaway mentioned the Puget Sound area and San Diego. We have similar pilot activities in New York City and several other locations. And what we are doing through this process is expanding the coverage, as we say of radiation detection, so that we can get more detectors in the hands of more people, not just the Coast Guard but State and local law enforcement, and we are also, through the Small Vessel Security Strategy that Coast Guard Commandant Thad Allen has talked about, reaching out to partners in the private sector who can also serve as eyes and ears to help extend our ability to detect sus-

picious activities and perhaps target and focus the radiation detectors toward anomalous situations that would be identified there.

So I think we are making good progress on the small maritime front, although certainly we have quite a ways to go given the size of the problem. And likewise with aviation, I think we are making good headway.

Chairman LIEBERMAN. Would I be correct in concluding, nonetheless, that our priority thus far has been on the ports of entry, that is to say, the cargo screening, for instance, at our major ports where we have made substantial progress? Or has this other work with small boats and small planes come up as an equal priority now?

Mr. MULLEN. I would say broadening the architecture to cover more pathways, such as the ones that we have just been discussing, is a high priority. The ports of entry were programs that had started actually before DNDO was even set up in 2005, and they had a large amount of momentum behind them, and they have been going forward. But I think we are beginning to shift the balance to cover more broadly all of the pathways instead of a focus on ports of entry only.

Chairman LIEBERMAN. Thanks very much. Thank you, Senator Collins.

Senator COLLINS. Thank you.

Mr. Nesbit, I want to follow up with you on the issue of setting priorities. Obviously, part of the challenge that we face is allocating limited resources to reduce our vulnerabilities to all types of WMDs. And this is an area where the Defense Science Board has done a lot of work and discussed this topic in terms of prevention, response, mitigation, recovery, as well as detection.

The Defense Science Board report from the summer of 2005 proposes a system to prevent nuclear attack that obviously includes more than just relying on detection. The system that you recommended includes enhanced intelligence capabilities, an improved counterproliferation regime, and greater domestic preparedness, and these are all issues that this Committee has been examining and held hearings on.

Give us your advice on how we should allocate resources across those five areas of prevention, response, mitigation, recovery, and detection.

Mr. NESBIT. In the report we had some detailed numbers on that very issue across all the WMD modalities. We thought the number one area needing increased emphasis was on the prevention of acquisition. So in the intelligence area, in the diplomatic area, that was far and away, we thought, the most under-resourced in this topic. And, second, we thought the consequence management following the event would be the second priority.

We had specific numbers in there that across all the modalities totaled up to $44.1 billion.

Senator COLLINS. Thank you. Now, looking within DNDO, DNDO reported to Congress that the Federal Government spent approximately $2.8 billion in fiscal year 2007 for 74 programs included in the global nuclear detection architecture. And of this amount, $1.1 billion was allocated to combating international nuclear smuggling and $220 million was devoted to border security measures.

I am going to ask Mr. Shea and Mr. Maurer this question as well, but let me start with you, Mr. Nesbit. Looking within DNDO on the allocation of funding on fighting nuclear smuggling versus border security measures, do you think that the priorities are right within DNDO?

Mr. NESBIT. We recommended that more emphasis be placed on mobile non-overt sensing. So instead of these large things that sat there every day, you had things that could move around, that terrorists would not know where they might be, and that if you shipped something and it took 3 weeks to get to the United States, you would have no idea whether you would be detected or not. We thought that was a critical element that ought to be high on their list.

Senator COLLINS. Actually, the University of Maine is developing a smart sensor that can be placed on a container to monitor en route, detect any tampering, and also detect radiological, biological, or chemical contamination or danger materials. It is fascinating work because that is a big challenge.

Mr. Shea, Mr. Maurer, the same question for you. Within DNDO, the allocation of funding for international nuclear smuggling versus border security measures, do we have it right? Mr. Shea.

Mr. SHEA. Thank you for that question, Senator Collins. As I understand DNDO's allocation of program investment to their architecture, these are the programmatic budget numbers for the programs in other agencies that are aligned to DNDO's baseline architecture. And so to a great extent, the budget that is being spent in these layers that DNDO has identified are other agency budgets, especially in the area outside of the United States. And I think what the best balance in the architecture is will be an output of further refinement and optimization of the global nuclear detection architecture, and it will be an identification of priorities from this baseline moving forward. And so I think that would be something that would come out of DNDO's further analysis of this initial baseline.

Senator COLLINS. Mr. Maurer, has GAO looked at that aspect of DNDO yet, the allocation across the various programs?

Mr. MAURER. We have not done a detailed analysis of the various allocations of funds, but I think it is difficult to really make an assessment of whether or not they are making the right resource allocation decisions absent having some kind of strategic plan that clearly lays out their priorities. One of the things we are calling for today is developing an overarching strategic plan that would really initiate a debate within the Administration, hopefully involving the Congress as well, about where those resource allocation decisions should be made. For example, should there be more emphasis on the international programs or should there be more emphasis on the domestic programs?

Senator COLLINS. Thank you.

Mr. Gallaway, you mentioned that the Coast Guard boarding teams are equipped with radiation devices, and that obviously is very important. An important layer of the nuclear detection architecture is the role played by first responders, by State and local police, firefighters and other emergency response personnel. Our previous hearings have made very clear that they are the ones who

are going to be first on the scene if there were a nuclear incident or the explosion of a dirty bomb. And, thus, they need access to effective radiation detection equipment to protect themselves and also to provide situational awareness to the public and to the leaders who are making the decision.

What steps has DNDO taken to ensure that State and local responders have effective radiation detection equipment available?

Mr. GALLAWAY. Senator Collins, right now the DNDO mission has been pretty much exclusively focused on preventative radiological/nuclear detection—in other words, preventing the use of a nuclear weapon.

We have not entered into the response and recovery part, which I think is what you are asking about. The Department is leading an interagency discussion right now to figure out how the Executive Branch should deal with response and the different roles and responsibilities, and then within DHS, we are going through a discussion to decide who is responsible or not for the various components.

Senator COLLINS. Is DNDO responsible for testing and evaluation of detection equipment in order to make the acquisition decisions as far as which equipment should be made available to the Coast Guard and CBP, for example?

Mr. GALLAWAY. Yes, ma'am. But we are focused on the equipment that would be used to detect a weapon before it is detonated.

Senator COLLINS. But wouldn't that kind of equipment and the information about standards and testing be very helpful, for example, to the New York Police Department, which has a robust effort to detect as well as to respond?

Mr. GALLAWAY. I guess I would argue that the detection equipment you need before an event is aimed at finding the device or finding the radiological materials; whereas, when we are doing detection after an event, that is for public safety and personal health of the first responders, as you mentioned, and also subsequently the public that might come back into the area. And so it is two very different missions, the basic detection technology might be similar, but I think it would be employed in very different ways. And also, the standards are very different.

For example, in response and recovery, many of the standards have already been set over many years by Federal agencies. I would recommend that we would build on those and come up with maybe some overarching ones now.

Senator COLLINS. I guess what I would suggest to you is that even when we are talking about detection and not looking at response, involving State and local first responders is a very important part of the architecture and of our ability to detect——

Mr. GALLAWAY. I am sorry, ma'am. I misunderstood.[1] We engage the State and local folks. For example, with the Securing the Cities Initiative in the New York City region, we have State involvement, local involvement, as well as Federal involvement. And they are working very closely together to develop the detection technology

[1] The post-hearing response for the Record submitted by Mr. Galloway appears in the Appendix on page 712.

that would be used by all of the local responders, both police and firefighters but, again, from a preventative perspective.

Senator COLLINS. Thank you.

Chairman LIEBERMAN. Thank you very much, Senator Collins. Those were good questions and good answers.

I appreciate the discussion about the budget goals that you have, Mr. Nesbit. Dr. Gallaway, do you have any response to that? I am sure every Federal Government agency would like more money, but this is really a priority concern because of the consequences of what we are talking about.

Mr. GALLAWAY. I guess I would just like to re-emphasize, DNDO has an overarching role, as Mr. Mullen laid out, to develop the architecture. But when it comes to what the different departments contribute to that architecture, we do not have any direct statutory control over that. And so we talk with our colleagues in the other departments, and we may suggest to them an increased emphasis in the area, but we do not have any direct control over that.

Chairman LIEBERMAN. So that leads to the next obvious question about whether DNDO has sufficient authority to do what needs to be done. It is doing what it was intended to do, which is with regard to the overall architecture. But do you think the whole system and basically the goal of protecting the American people from a nuclear terrorist attack would be benefited if DNDO had other authorities? And let me be specific. The first is one you have talked about, whether you had some budget authority, at least to approve if not to comment on, but ideally to approve the budget submissions of the agencies that you are coordinating.

Mr. GALLAWAY. Sir, in principle, I think it would be a good idea.

Chairman LIEBERMAN. Right.

Mr. GALLAWAY. I think in reality it would be very difficult to actually implement and make effective, and the reason I say that is we can work informally with our colleagues in the other departments, and we can come up with what we think may be the best plan. But then each of them will go through their respective budgeting process in their departments. Those departments will then submit their budgets to their respective committees in Congress. And all along the way, there are a variety of priorities within each of those stovepipes that are all competing.

Chairman LIEBERMAN. Right. I hear you. Look, I know I have put you in an awkward position with your colleagues in the other agencies, but this is so important that it seems to me we want to make sure that the funding is going where it should, and that each of the component agencies will naturally advocate for themselves. And just to me it seems that somebody over there should have the big view and allocate priorities.

I wonder if I could invite Mr. Maurer and Dr. Shea to comment on this. I know, Mr. Maurer, you have testified that DNDO lacks that overarching strategic plan to help guide how it will achieve its goals, and I appreciate that and I agree with you. What about the next step, which is some kind of budget authority?

Mr. MAURER. We issued a report in January 2005 that partially addresses that issue. Back then we were asked to take a look at the overall U.S. effort to address nonproliferation. We looked specifically at State Department, Defense Department, Department of

Energy, and what we found then is that there was really a need for a White House-level strategy to guide and direct those efforts. That may be called for here as well, and we have not completed our work looking at DNDO's efforts. But I would say that it is a definite challenge for an organization within DHS to try to influence or direct the activities of other Cabinet departments.

Chairman LIEBERMAN. Dr. Shea, in offering your answer, I want to note that Section 1107 of the Implementing Recommendations of the 9/11 Commission Act, which was passed in 2007, requires that each agency conduct self-assessments related to its support of the global nuclear detection architecture and that the results of these be reported to Congress as part of a joint interagency annual review, and that at the request of the Committee, the CRS has evaluated the joint interagency annual review. So I wanted to ask you to share with us what your evaluation is as you answer the overall question of whether DNDO should be strengthened with budget authority or perhaps even some greater coordination of implementation authority.

Mr. SHEA. Thank you, Mr. Chairman. I think that the issue at hand here is whether or not there can be forward planning for the global nuclear detection architecture when the priorities of the architecture, as GAO has stated, have not been set and a strategy document and benchmarks have not been laid out in an overarching manner in such a document.

The self-assessments in the review report that you asked us to look at did not provide information with regard to future budget years, for example. As a consequence, the optimization of these programs in the future, synergies between these programs, and the identification of whether or not the programs are meeting the goals of the architecture, while they still may be meeting their programmatic goals, those issues are somewhat still unresolved.

The point that was brought up by Dr. Gallaway regarding the difficulties of organizing budgets across the Federal Government might be addressed by, as I mentioned in my testimony, a global nuclear detection architecture budget supplement which would consolidate all of the information regarding these programs and the different agencies in one location. That might provide a common ground for all of the various parts of Congress that are looking at this issue to understand the implications of these program funding decisions.

Chairman LIEBERMAN. Let me finally on this round, Dr. Gallaway, ask whether short of budget authority you are able to or have developed plans that might be suggestions for the component agencies as to where they should be investing their funds to meet the overall goals of the architecture that DNDO has described?

Mr. GALLAWAY. Mr. Chairman, the annual report that Mr. Mullen drafted and we submitted recently brought together for the first time all the various components and presented it to the Congress. I was pleased by the participation by all the departments in that process. I am optimistic that as we do the next version of that, we will actually get better. I am also hopeful that in that process we will start actually having a better dialogue with our partners and that we may actually make some progress on our own on work-

ing together within the departments and improving the overall architecture.

Chairman LIEBERMAN. Thank you. Senator Collins.

Senator COLLINS. Thank you, Mr. Chairman.

Dr. Gallaway, the Science and Technology Directorate within the Department of Homeland Security has expertise and is responsible for testing and evaluating a wide range of homeland security technology that will be used by the Department to respond to a wide range of threats. In light of that, does it make sense for DNDO to also have responsibility for testing and evaluation?

Mr. GALLAWAY. Yes, I think there is a reason for having two sets of testing organizations. As we are developing a new device, we need to do what we call developmental testing. And this is where the program office is making sure that the device is progressing logically as it moves towards a final system. I think that kind of testing should definitely be done by the program office.

On the other hand, the operational testing to assure that the device meets the requirements of the end customer, should be done by an independent organization. We are now starting down that road with one of our new detection systems where we are going to the operational test authority within the Science and Technology Directorate, George Ryan, and he will be leading the operational testing of our new device. And so I am very comfortable with that relationship where we do the developmental testing and an independent organization does the operational testing.

Senator COLLINS. The GAO has been quite critical of DNDO's testing of the Advanced Spectroscopic Portal (ASP) monitor, which has been going on since 2005. Last year, DHS indicated that it was nearing certification of the system, but then operational and other concerns were raised by Customs and Border Protection, and the Secretary's certification was delayed until sometime this year.

Does that suggest that DNDO does not have a sufficiently well-defined and rigorous testing and evaluation program? What went wrong on the ASP testing?

Mr. GALLAWAY. Well, the ASP testing that was done last year was done all within DNDO. We learned a tremendous amount during that process. We actually think some of the criticism of the testing that was done was not well founded.

With that said, we are in the process right now of going through the ASP test series. We have just come out of system qualification testing, which is actually done by the vendors. As we speak, we have just moved into technical performance testing at the Nevada test site. Very shortly, we will do a test readiness review to move into integration testing, which will be done at Pacific Northwest National Laboratory, which we call integration testing where we see that all the parts work together.

Assuming everything continues to look good at that point, the systems will be handed to Customs and Border Protection for a field validation where their folks actually run them at ports of entry to assure that they are meeting their needs. And then, finally, and getting back to the operational test component, an independent tester from the Science and Technology Directorate will come in and do an operational test to assure that the systems are working to meet the requirements that were laid down.

So I think we have laid down a very rigorous series of testing. We have run this system through probably the most rigorous series of tests that have ever been conducted on a nuclear detection device. And we are confident that the systems will be well tested.

Senator COLLINS. Mr. Mullen, my last question is for you. In response to questions from the Chairman, you indicated that you were on loan to the DNDO from Lawrence Livermore National Laboratory, I believe.

Mr. MULLEN. Los Alamos.

Senator COLLINS. Sorry, I meant the Los Alamos National Laboratory. I imagine there is competition there, so that was probably a terrible error for me to make.

In any event, that reminded me that DNDO has chosen to be staffed with detailees from multiple Federal agencies, including the Federal Bureau of Investigation (FBI), the Department of Energy, the Coast Guard, and CBP. And on the one hand, I think that is a very appropriate approach that strengthens the interagency connections that allows, much as the National Counterterrorism Center does, analysts to share information. It helps form a common culture. It encourages information sharing, breaks down those stovepipes. That is on the plus side.

The negative side is that detailees go home, they go back to their originating agencies, and you lose some continuity, some institutional knowledge within the office being staffed by the detailees.

Since you are a detailee, I am interested in what your assessment is of the strengths and weaknesses and, on balance, is this a good way for us to be staffing DNDO?

Mr. MULLEN. I think it is a very good way to be staffing DNDO provided we do it properly. Just to give my own perspective on it, in the work that I have done in the Architecture Directorate, we have benefited tremendously from having detailees from the Transportation Security Administration, the Coast Guard, the Department of Defense, the Department of Energy, and their contributions have really been indispensable in trying to get our arms around this global nuclear detection architecture. It just would not be possible to do it properly without having that kind of broad participation and input. So that is the plus side, as you say.

If you had only detailees, then as you say, you would be in big trouble when they start to rotate out. So what you need in practice is a balance. You need a certain number of permanent Federal employees that will provide the institutional memory over time, but a continual infusion of detailee expertise is also extremely important. In the case of somebody like myself, for example, the way we handle that is through succession planning so that at a certain point when it is time for me to go back home, we will already have groomed and in place people that are ready to step in and carry out the job that I have been doing.

So it can be done. It is a question of striking the right balance, but it is really indispensable to have that kind of input.

Senator COLLINS. I agree that having that input from detailees enriches the entire organization. In fact, I think we need to do more of that throughout the Federal Government, but particularly within the intelligence community. But you have raised the key issue, which is, have we struck the right balance between staffing

with detailees versus what you call those core employees? From your observations, have we struck the right balance in staffing DNDO?

Mr. MULLEN. I would say yes. Both within my own office and more broadly across DNDO, we have put a lot of effort over the last couple of years into recruiting permanent staff that will help us to maintain that balance. In my office, for example, we were quite shorthanded in 2005, but we now have a cadre of permanent Federal staff to balance the detailee staff. And I think it is a good mix now.

Senator COLLINS. Thank you. Thank you, Mr. Chairman.

Chairman LIEBERMAN. Thanks, Senator Collins. I just want to follow up, and then we are going to have to adjourn the hearing.

Dr. Gallaway, do you want to add anything to Mr. Mullen's answer to Senator Collins' question? In other words, speaking for DNDO overall, do you have any plans to, for instance, increase the permanent staffing as the years go on?

Mr. GALLAWAY. Thank you for the opportunity to jump in on this issue. We are very comfortable with the mix that we have right now. As Mr. Mullen mentioned, it has evolved with time, and we think we have struck a good balance at this point. So our biggest challenge, quite frankly, is to just stay fully manned because employees with the talent set that we are looking for or with the skill set that we need are often hard to hire into the Federal Government.

Chairman LIEBERMAN. Do any of you, Mr. Maurer, Dr. Shea, or Mr. Nesbit, have an opinion on the balance between the permanent staff and the detailees?

Mr. MAURER. It is certainly something we are going to be looking into as we continue our work looking at it.

Chairman LIEBERMAN. I understand. Dr. Shea.

Mr. SHEA. I think that another aspect could be considered by DNDO. Beyond the succession planning that Mr. Mullen referred to is documentation. This is another way of maintaining institutional knowledge by documenting decisions, both the reason why one did make a decision in one way, but also the reasons that other alternatives were rejected.

Chairman LIEBERMAN. Mr. Nesbit.

Mr. NESBIT. I do not have a real opinion. The only thing I would note is on our study we had three people from DHS in the DNDO on the study, and they were very impressive individuals. Several of them were detailees.

Chairman LIEBERMAN. Good. I want to thank the five of you. It has been a very educational and actually encouraging hearing in the sense that there is a lot going on. I hope it is encouraging to those in the general public who are maybe paying attention to it. And, frankly, I hope it is obviously discouraging to any terrorist groups that are attempting to gain nuclear weapons capacity. But, of course, we have a lot more to do, and in some ways, though this is the stuff of—I was going to say "movies," but it is really TV, "24" drama. There is a very small inner group of people who really care about this and worry about this—that is what I really mean—and work on this every day. We depend on you not only for what you do every day—because the consequences of failure here are so dis-

astrous for our country—but also to come forward and speak to people like Senator Collins and me, if you think that you do not have enough authority or you do not have enough resources, because we really want to be supportive.

Do you have anything you would like to say?

Senator COLLINS. I do not. Thank you.

Chairman LIEBERMAN. I thank you, Senator Collins, for your cooperation and the joint venture we have on this, and so much else.

We are going to keep the record of this hearing open for 15 days so that Members of the Committee may submit additional questions or you may have additional testimony that you would like to include in the record.

With that, I thank you very much. The hearing is adjourned.

[Whereupon, at 11:30 a.m., the Committee was adjourned.]

PREVENTING NUCLEAR TERRORISM: HARD LESSONS LEARNED FROM TROUBLED INVESTMENTS

THURSDAY, SEPTEMBER 25, 2008

U.S. SENATE,
COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 9:45 a.m., in room SD–342, Dirksen Senate Office Building, Hon. Joseph I. Lieberman, Chairman of the Committee, presiding.

Present: Senators Lieberman and Akaka.

OPENING STATEMENT OF CHAIRMAN LIEBERMAN

Chairman LIEBERMAN. Good morning. The hearing will come to order. Sorry not to be here right at 9:30. I apologize, and also for the Ranking Member, Senator Collins, who in the press of the close of this session will be unable to be with us this morning, but will file statements and questions for the record. I thank all the witnesses for being here.

This is the seventh in a series of hearings held by this Committee to examine the very real and present threats and challenges posed by the possibilities of nuclear terrorism against the United States.

With today's hearing, we will specifically examine the Domestic Nuclear Detection Office's management of the two main programs designed to detect and thwart the smuggling of nuclear materials into the United States: The Advanced Spectroscopic Portal (ASP) monitors and the Cargo Automated Advanced Radiography System (CAARS).

I hope we can also use some of our time to examine the overall problems the Domestic Nuclear Detection Office (DNDO) has experienced with the hope that we can together make it a more effective organization and create a blueprint the next Administration can use to move forward.

The programs administered by DNDO are a mission where failure is, quite literally, not an option because the danger of terrorists acquiring a nuclear weapon, we know from previous hearings that we have held on this subject, is real and present.

Between 1993 and 2006 there were 1,080 confirmed incidents of illicit trafficking in nuclear materials, with 18 of these cases involving weapons-grade materials and another 124 involving material

capable of making a so-called "dirty bomb" that would use conventional explosives to spread nuclear material. This is serious stuff.

ASP and CAARS were supposed to work in tandem, scanning all cargo coming by air, sea, and land for nuclear material.

ASP was designed to detect unshielded nuclear materials with greater accuracy and fewer false alarms than the portal monitors now in use.

CAARS was designed to complement the ASP system by detecting high-density materials that terrorists could use to shield radiation from nuclear materials from ASP detection.

These programs looked very promising when announced just a few years ago, but it now seems that neither is likely to live up to expectations, which does leave our Nation at risk, especially the unprotected areas that lay outside of the established land, air, and sea ports of entry.

Let me start by saying a little more about ASP. According to a tough and disturbing report from the Government Accountability Office (GAO), that we will hear about this morning, the price of ASP has ballooned from an estimated $1.2 billion 2 years ago to as much as $3.8 billion today and apparently no less than $3.1 billion. It is also behind schedule and, apparently, will not be deployed as aggressively as initially planned. For instance, it will not be used to screen rail cars and extra-wide trucks, leaving dangerous gaps that can be exploited by terrorists that, apparently at this point, DNDO does not know how to fill.

The short life of the ASP program has raised fundamental questions that need to be answered, most importantly how much can the system be improved to improve our security against nuclear terrorism?

The current generation portal monitors—that is, the ones that are being used—apparently do an excellent job of detecting radiation. But they do not identify the type of radioisotope or determine whether it is harmless or dangerous. That much we do know.

DNDO advocated the ASP program as a means of reducing the rate of false alarms from the current portal monitoring system. But Customs and Border Protection (CBP) officials, who are the ones that will deploy and operate the radiation portal monitors system, have concluded that the false alarm rate of the current generation of portal monitors does not present a serious operational problem.

Second, I am concerned about the consequences of what the GAO's report tells us about DNDO's recent decision not to develop the other variations of the ASP system.

Previously, we had understood that these ASP programs were going to provide a "family" of 12 systems of various sizes and configurations that were supposed to fill other gaps in the domestic nuclear detection architecture, by mounting these ASP sensors on the roofs, for instance, of Border Patrol trucks or building ASP sensors into mobile devices. So I would like to know here this morning what DNDO's plans are moving forward.

I would also like to know how much DNDO now thinks a complete system that covers not just ports, but also general aviation, small-craft maritime activities, and unprotected land border areas, which have to be part of a comprehensive system to detect and pre-

vent the smuggling of nuclear material, is going to cost and when we can reasonably expect it to be deployed.

I am also concerned about the future of the $1.3 billion CAARS program. The CAARS system was supposed to have delivered 20 units this year, but as far as I can determine, it has essentially been abandoned following technical difficulties that would have made the system too complex to deploy in domestic ports.

DNDO has called this a "course correction" and now refers to the effort as the Joint Integrated Non-Intrusive Inspection Program (JINII), with dramatically scaled-down goals.

CAARS was supposed to be the next generation of an automated x-ray technology that could detect shielded nuclear material, a critically important function. However, this program also seems to have failed to live up to its promise.

DNDO says it has halted the CAARS acquisition, apparently decided to start over, and is now considering using already available technology. So I want to know what has transpired over the last 2 years which has left us basically where we were 2 years ago.

I must say I am troubled. Two years ago, ASP and CAARS were being described by the DNDO as absolute necessities in the quest to secure our Nation from nuclear terrorism. They were going to represent DNDO 2.0, if I can put it that way. But now both are in jeopardy.

Finally, on a matter of process, I want to express my concern about GAO investigators' claim that DNDO refused to provide the kind of detailed documentation needed by GAO to prepare an accurate report, and that DNDO also instructed its contractors to refuse to cooperate with GAO.

GAO works for Congress and the American people. These are vitally important programs, and the importance of GAO's work in helping Congress oversee them cannot be underestimated. So I want to say publicly here how important I believe it is that DNDO fully cooperate with GAO in its investigations.

As we explore these questions, I also want the witnesses to help us with the broader and really most critical question. This Committee is not about "gotcha" investigations. It is about getting the work of government and homeland security right. So the ultimate question is that: How do we get DNDO back on the right track?

I must say with all the criticism of DNDO, I want to note that it is a relatively new agency, formed by executive order just 3 years ago, and it has an enormously difficult task it has been given.

But the point I want to make finally is that its mission is critical to our homeland security against a clear and present danger. And as I said at the outset, failure is not an acceptable option. So I want to say that I intend to be both DNDO's strongest supporter and its toughest critic in the years ahead to make sure that together we get this right.

I welcome our witnesses. I also thank Senator Akaka for being here, and I will call on him now if he has an opening statement.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. Thank you very much, Mr. Chairman.

I would like to thank Senator Lieberman and Senator Collins for holding this hearing. Nuclear terrorism is among the most critical,

long-term threats facing the United States. I believe that securing nuclear and radioactive materials at their source is the most important step we can take in preventing nuclear terrorism.

Our work overseas, especially in the states of the former Soviet Union, has dramatically reduced the availability of nuclear materials. Ongoing interagency efforts domestically are securing radioactive source materials used in civilian applications.

Nuclear detection systems are also a key part of the architecture to keep unsecured nuclear materials out of the United States. When used alongside intelligence, law enforcement, and counterproliferation techniques, and informed by risk assessment, we will best deter terrorists from smuggling dangerous nuclear material into the United States.

Finally, our investments in radiography and nuclear detection equipment should be developed and deployed in accordance with a strategic plan with maximum involvement with interagency partners and in a transparent and responsible manner.

I am concerned that the ASP and the CAARS programs have not lived up to the expectations of Congress and the American people. GAO's findings are especially troubling since they indicate that the true program costs of ASP may be over $1 billion more than DNDO was willing to admit.

With that, Mr. Chairman, let me add my welcome to the witnesses, and I look forward to hearing from them.

Chairman LIEBERMAN. Thanks very much, Senator Akaka. I appreciate your statement very much.

We will go right to the witnesses now, beginning with Eugene Aloise, Managing Director of the Natural Resources and Environment Team at the U.S. Government Accountability Office. Thanks again for your work on our behalf, and we look forward now to your testimony.

TESTIMONY OF EUGENE E. ALOISE,[1] DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Mr. ALOISE. Thank you, Mr. Chairman.

Mr. Chairman and Members of the Committee, I am pleased to be here today to discuss the plan of the Department of Homeland Security (DHS) to develop and deploy advanced portal monitors at the Nation's borders to prevent nuclear material from being smuggled into the United States.

According to DHS, the current system of radiation detection equipment is effective and does not impede the flow of commerce. However, DHS wants to improve the capabilities of the existing system with the new equipment.

One of the major drawbacks of the new equipment, which is still undergoing extensive testing, is the substantially higher costs compared to their existing system of radiation detection equipment. Today I will discuss our recent report on the potential cost of deploying radiation detection equipment nationwide and the preliminary findings of our ongoing review of DNDO's current testing campaign that started in April of this year.

[1] The prepared statement of Mr. Aloise appears in the Appendix on page 715.

These tests are critically important because they will serve as the support for a congressionally mandated certification by the Secretary of Homeland Security as to the effectiveness of the equipment. Presently, that certification is scheduled for late November, although, as I will discuss, that date is looking less likely as each day goes by.

Regarding cost, GAO developed its own cost estimate of DNDO's program because DNDO's past and current estimates were based on flawed methodologies and, therefore, were not reliable. Our analysis shows that from 2007 through 2017, the cost of DNDO's program to equip U.S. ports of entry with radiation detection equipment will likely be about $3 billion. Our estimate is based on the cost of DNDO implementing its 2006 project execution plan, the most recent official documentation of the program.

DNDO officials have told us that the agency is now following a scaled-back ASP deployment strategy; that is, it will only be deploying the standard cargo portal and eliminating other portal types, such as train and mobile portals. Also, DNDO officials told us that even this scaled-back ASP deployment strategy could change dramatically, depending on the outcome of ongoing testing, and that an entirely new technology might be needed to cover the areas where ASPs may not work.

We estimate the cost of DHS's scaled-back ASP deployment strategy to be about $2 billion. However, this estimate is based on limited documentation provided to us by DHS, namely, a one-page spread sheet.

The frequent changes in DNDO's deployment strategy and the lack of detailed documentation supporting it makes it difficult to assess the cost of the ASP program. Our report recommended that the Secretary direct DNDO to update its program plan, revise its cost estimate, and communicate these changes to the Congress. DHS has agreed with our recommendations.

Regarding testing, we are pleased that DNDO has made progress on a number of problems we identified in the previous rounds of ASP testing, of which we were highly critical. In particular, it appears that DNDO has improved the procedures used at the Nevada test site to provide a fairer comparison between ASPs and current-generation equipment. However, we have identified some potential areas of concern with the current round of testing. We are hopeful these concerns can be resolved before certification occurs.

First, DHS's criteria for a significant increase in operational effectiveness seems to set a low bar for improvement. Specifically, it requires that ASPs perform at least as well as current equipment when nuclear material is present in cargo, but does not specify an actual improvement.

Second, the schedule leading up to certification does not allow for completion of some tests that could provide critical information on the performance of ASPs. It is our view that DHS and the Congress need as much information as possible regarding the effectiveness of this equipment before deploying it to our borders.

Finally, the current testing schedule leading up to certification is highly compressed and is running about 8 weeks or more late. Specifically, DHS has pushed back the certification date from Sep-

tember to late November, but this still leaves little time for analysis and review of results.

Furthermore, field validation tests will not start until October, which makes it unlikely that DHS can complete field validation and still go to certification in November.

Mr. Chairman, in conclusion, let me state that for over 2 years now, GAO has been asking three fundamental questions regarding the ASPs. One, does the equipment work? Two, how much will it cost the taxpayer? And, three, does the marginal increase in security gained with the new equipment justify its very high cost?

This last question is particularly important in an era of tight budgets because the effort to upgrade equipment that we know works, even though it has limitations, may divert scarce resources from addressing higher risks.

That concludes my remarks. We would be happy to respond to any questions you may have.

Chairman LIEBERMAN. Thanks, Mr. Aloise, for the questions you have raised and the work you have done.

Next we will hear directly from Vayl Oxford, who is the Director of DNDO, with some answers to those questions.

TESTIMONY OF VAYL S. OXFORD,[1] DIRECTOR, DOMESTIC NUCLEAR DETECTION OFFICE, U.S. DEPARTMENT OF HOMELAND SECURITY

Mr. OXFORD. Good morning, Chairman Lieberman and Senator Akaka.

Chairman LIEBERMAN. Good morning.

Mr. OXFORD. I would like to thank the Committee for the opportunity to come before you today and discuss the progress we have made regarding our address of the nuclear threat. I am also pleased to be joined by my colleague, Assistant Commissioner Tom Winkowski, with whom I have worked very closely to ensure that the operational user receives the capabilities needed to address the threat posed by both nuclear and radiological terrorism.

In respect to the Committee's time, I would like to curtail my opening comments and just highlight a few key points.

The nuclear threat is real and growing, as the Chairman has said. The United States has a comprehensive strategy in place to put together a layered defense to combat this threat that includes several key factors. We have increased intelligence collection and analysis against the threat. We have a focused interdiction program against illicit trafficking of nuclear materials and expertise. We are working to prevent the import into and use of nuclear weapons materials against the United States. We are improving our nuclear forensic capabilities to support both deterrence and attribution. And we are increasing our focus on response and recovery capabilities to minimize casualties should prevention fail.

DNDO's role in preventing the import and use of nuclear weapons against the United States is a critical component of this overall strategy and represents a domestic layered strategy to reduce the risk of nuclear terrorism. We are working closely with both CBP

[1] The prepared statement of Mr. Oxford with attachments appears in the Appendix on page 731.

and the Department of Energy (DOE) to address the vulnerabilities of the current systems and to evaluate the performance of new systems. We have a rigorous process in place, which I will be glad to address during the course of the hearing, to test new systems, evaluate their cost, and make recommendations to the Secretary that provide the best solution to secure the Nation against a nuclear threat.

I am confident that the steps we are taking are sound and will lead to a well-reasoned recommendation to the Secretary once all of our testing is complete.

Mr. Chairman, we take this responsibility very seriously, and we will ensure that our taxpayer dollars are spent wisely. While some may argue that these systems are too costly, we must be able to weigh the balance of the capability and cost of current systems and the improved capability and cost of new systems against the cost and damage of a nuclear weapon detonating in a U.S. city.

Given the threat and known limitations of current systems, there is a real sense of urgency to complete the work necessary to make a sufficiently informed decision and begin deploying these systems to enhance the defense of this Nation.

Mr. Chairman, this concludes my opening comments. I look forward to your questions.

Chairman LIEBERMAN. OK, Mr. Oxford. Thanks. Obviously, we will have a lot of questions for you. Thank you.

Now we go to Thomas Winkowski, Assistant Commissioner, Office of Field Operations, U.S. Customs and Border Protection. Thanks for being here.

TESTIMONY OF THOMAS S. WINKOWSKI,[1] ASSISTANT COMMISSIONER, OFFICE OF FIELD OPERATIONS, U.S. CUSTOMS AND BORDER PROTECTION, U.S. DEPARTMENT OF HOMELAND SECURITY

Mr. WINKOWSKI. Thank you and good morning, Chairman Lieberman and Senator Akaka. Thank you for the opportunity to discuss CBP's efforts to strengthen supply chain security while facilitating the flow of legitimate trade and travel.

I would also like to express my gratitude to the Committee for the strong support you provided for important CBP initiatives over the past year and ask for your continued support of other important CBP initiatives, such as the Security Filing requirement, better known as "10+2." Your support has enabled CBP to make significant progress in securing our borders and protect our Nation against the threat of terrorism.

CBP has made tremendous progress in ensuring that supply chains importing goods into the United States are more secure against potential exploitation by terrorist groups aiming to deliver weapons of mass effect. CBP uses a multi-layered approach to ensure the integrity of the supply chains from the points of loading through arrival at U.S. ports of entry. The multi-layered defense is built upon interrelated initiatives, which include the 24-hour rule, the Automated Targeting System, non-intrusive inspection equipment and radiation portal monitors, the Container Security Ini-

[1] The prepared statement of Mr. Winkowski appears in the Appendix on page 740.

tiative, and the Customs-Trade Partnership Against Terrorism (C–TPAT) initiative. These complementary layers enhance security and protect our Nation.

Prior to September 11, 2001, not a single Radiation Portal Monitor (RPM) and only 64 large-scale Non-Intrusive Inspection (NII) systems were deployed to our Nation's borders. By October 2002, CBP had deployed the first RPM at the Ambassador Bridge in Detroit.

Currently, 94 percent of trucks arriving through the Northern border ports, 100 percent through the Southern border ports, and 98 percent of arriving sea containers are scanned by our radiation portal technologies. CBP scans 97 percent of all cargo arriving in the United States by land and sea using RPMs.

In addition, CBP officers now scan 100 percent of general aviation aircraft arriving in the United States from foreign destinations using handheld radiation identification devices. We believe this is real progress.

I also am pleased to report to this Committee that on September 8, 2008, our first RPM deployment within the airport cargo environment was commissioned at Dulles International Airport. This milestone deployment allows CBP to scan 100 percent of all air cargo terminating at Dulles. CBP plans to deploy radiation portal systems to 30 of our Nation's airports, which will result in the scanning of 99 percent of all air cargo entering the commerce of the United States for nuclear and radiological materials.

In addition to the significant strides made in the area of radiation detection technology, CBP also continues to deploy non-intrusive inspection systems. NII technology serves as a force multiplier that allows officers to detect possible anomalies between the contents of the container and the manifest. To date, CBP NII systems have been utilized to conduct more than 26 million exams resulting in over 6,800 narcotics seizures with a total weight of in excess of 2.2 million pounds.

The CBP NII Acquisition Plan is continuously being reevaluated as available technology is constantly being assessed against the evolving threat. To help refine our acquisition strategy, we consider factors such as traffic volume, types and density levels of imported commodities, port infrastructure constraints, an appropriate mix of equipment, and cost-effectiveness of available technology.

As you know, in fiscal year 2006, financial management of RPM efforts transitioned from CBP to the DNDO. I am happy to report that, even though the procurement role changed, the collaborative working relationship did not. CBP maintains an active consultation role in the research, development, and deployment of RPM technology and looks forward to a continued, positive relationship with Director Oxford and his staff.

The first-generation RPM systems, although very sensitive, do have limitations. While they alert CBP officers to the presence of radiation, a secondary exam is necessary to positively identify the location and specific isotope causing the alert. In the event that a CBP officer is unable to positively resolve the alert, scientific reachback is available 24 hours a day, 7 days a week.

The ASP system is expected to enhance our detection capability, while significantly reducing the number of secondary exams due to

its ability to distinguish between actual threats and natural or medical radiation sources that are not security threats.

It should be noted that, out of the approximately 275 million conveyances scanned with RPMs to date, CBP officers have responded to and resolved over 1.5 million alarms. As a specific example, the Port of Los Angeles-Long Beach, our Nation's largest seaport, adjudicated nearly 115,000 radiological alarms last year, which translates to between 400 and 600 adjudications on a typical weekday. The ASP's ability to make the distinction between naturally occurring and real security alarms is expected to significantly reduce the burden of responding to benign, nuisance alarms—mostly generated by everyday products found at a home improvement center—thus, allowing us to focus our staffing and resources on high-risk shipments and other border security initiatives.

CBP has worked closely with DNDO in the development and operational testing of the ASP. CBP's focus for operational testing is to determine that those systems can be deployed and are acceptable and effective in our operational environments. Specifically, CBP has provided DNDO with functional requirements for the ASP and has actively engaged in every step of testing, including performance testing at the Nevada test site and the integration testing currently ongoing at a mock port of entry at the Pacific Northwest National Laboratory.

Mr. Chairman and Members of the Committee, today I have addressed CBP's commitment to investing in new and emerging detection technology, along with some of the very positive steps we have taken towards enhancing cargo security. As the scope of CBP's mission increases, we must continue to maintain our tactical edge by integrating new technology into our ports of entry. Working in collaboration with DNDO and other agency partners to identify emerging technology is a priority for CBP.

Again, I want to thank you for the opportunity for me to testify, and I will be looking forward to answering your questions. Thank you, Senator.

Chairman LIEBERMAN. Thanks, Mr. Winkowski, and I just want to say after listening to you and Mr. Oxford, that we are focused on shortcomings and cost overruns in these two programs that improve the technology—and there is a lot of technical vocabulary here. But for anybody listening, the point that both of you make, which I do want to stress here for a moment, is that our concerns about these two programs does not mean that everything is coming in here undetected, that intelligence is the first level of defense against nuclear terrorism—and I think it is one that we have really improved our capacity on as a result of the reforms of our intelligence community in response to the 9/11 Commission Report—and interdiction obviously abroad is the second. And then the question is to stop smuggling into this country.

As you indicated, Mr. Winkowski, we are checking most of what is coming in here. How do you deal with the number of radiological false alarms you have? And how do we develop a better capacity to see and find radiological material that may be shielded and that would not show up in a radiological test? And that is what these investments are about. So we will come back to that during the question and answer period, but I wanted to stress, with all of our

concerns about the effectiveness of these two programs, notwithstanding those real concerns, that we are not saying the Nation is undefended at this point. We have considerably raised our defenses since September 11, 2001.

Next we have two witnesses in a sense from outside, and we really welcome their independent testimony. First is Dr. Thomas Cochran, who is a Senior Scientist at the Nuclear Program of the National Resources Defense Council (NRDC).

Dr. Cochran, thanks for being here, and we invite your testimony now.

TESTIMONY OF THOMAS B. COCHRAN, PH.D.,[1] SENIOR SCIENTIST, NUCLEAR PROGRAM, NATURAL RESOURCES DEFENSE COUNCIL, INC.

Mr. COCHRAN. Thank you, Mr. Chairman and Senator Akaka. Thank you for providing the NRDC with the opportunity to present our views on the Advanced Spectroscopic Portals that are currently being considered for deployment at ports and border crossings.

Before summarizing our conclusions, please permit me to submit for the record several documents I have provided your staff, including a recent *Scientific American* article prepared by my colleague, Matthew McKinzie, and myself.

Chairman LIEBERMAN. Without objection, those will be entered into the record in full.

Mr. COCHRAN. I will just summarize the summary in my written statement.

The Advanced Spectroscopic Portal monitors are not cost-effective. Additional units should not be purchased. The limited number of ASP monitors already purchased should be used for continued field testing and research and development.

A crude nuclear device constructed with highly enriched uranium (HEU) poses the greatest risk of mass destruction by terrorists to the United States.

Neither the ASPs nor the currently deployed RPMs can reliably detect lightly shielded, significant quantities of highly enriched uranium.

Mr. Chairman, in your opening statement you mentioned that the current generation of detectors does a good job in detecting radiation. That is true for many types of radiation, but, unfortunately, the physics is against us when it comes to the material that is of most importance, and that is highly enriched uranium. And these detectors, as well as the newer ASPs, do not reliably detect highly enriched uranium—if the threat has the wherewithal to develop an improvised nuclear explosive device out of HEU, that same threat would have the wherewithal to defeat these systems almost 100 percent of the time, even if they were guaranteed to be screened.

Chairman LIEBERMAN. Those are the current systems that you are talking about?

Mr. COCHRAN. And the advanced.

Chairman LIEBERMAN. And the advanced, too?

[1] The prepared statement of Mr. Cochran with attachments appears in the Appendix on page 746.

Mr. COCHRAN. Where I perhaps part ways is that the current systems have two problems, not one problem. They do not reliably detect the primary threat material, and they have a large false alarm rate. The new systems are designed to reduce the wrong problem——

Chairman LIEBERMAN. The false alarm rate.

Mr. COCHRAN. They are designed to reduce the false alarm rate, and I think they will be able to do that in due course, if not already.

Chairman LIEBERMAN. But they do not increase our capacity to detect highly enriched uranium?

Mr. COCHRAN. Not significantly.

Chairman LIEBERMAN. OK.

Mr. COCHRAN. Marginally, yes, but not significantly.

Therefore, the thrust of my testimony is that the priorities of the Federal Government are not right yet, is that we need to place a much higher priority on eliminating sources of material. As Senator Akaka mentioned, this is the primary thing we ought to be doing, and I agree with him.

I do not think we are going to solve this threat problem by pouring more money into advanced methods of detecting radiation from materials coming across the borders because the physics is simply against us with respect to the material that represents by far the greatest threat.

Now, with regard to the false alarm rate improvements, there is no evidence that the potential benefits of the ASP monitors in reducing the false alarm rate and improving the accuracy of alarm resolution is cost-effective. And as noted by Mr. Aloise, the current systems appear to be adequate in terms of the fact that they are not delaying commerce significantly in the current screening process.

For purposes of certifying the ASPs, the Department of Homeland Security has defined "significant increase in operational effectiveness," the requirement for certification, primarily in terms of its ability to reduce the false alarm rate, rather than in terms of its ability to increase the probability of detecting HEU. Consequently, the process is rigged to ensure certification of the ASPs even though they will not significantly increase the probability of detecting nuclear weapon-usable HEU and plutonium; even though the reduction in the false alarm rate and an improvement in the accuracy of alarm resolution is not cost-effective.

Some of this I have already covered so I will not repeat myself.

In my view, the President of the United States should declare, backed with the full weight of our diplomacy, that the United States seeks—in the interest of and in cooperation with all nations—to achieve as quickly as possible a global ban on the civil use of HEU. I can think of no civil use of HEU that justifies the risk associated with its use anywhere on the globe.

Chairman LIEBERMAN. In other words, it is not necessary for the production of electricity, for instance.

Mr. COCHRAN. It is not. And all of our reactors and most of the vast majority of reactors used around the world use low-enriched uranium. And it is not necessary for research and test reactors. We have some that use HEU. Many of those are being converted. We

have programs to convert them in the government. But, I do not think we give enough attention to eliminating for all times in the future the civil use of this material. We banned nuclear testing. We ought to ban civil use of HEU. It is not sufficient just to say we need to improve the security of its use abroad. We need to get it out of commerce, period.

Mr. Chairman, I will stop there and answer your questions.

Chairman LIEBERMAN. Thanks, Dr. Cochran. Am I hearing you correctly that you are saying that at this point not only have we not developed these two advanced technology systems to detect the most serious threat, highly enriched uranium, but from your point of expertise, you are saying it is not really possible to do it, that as you said, the physics is against us?

Mr. COCHRAN. Well, in theory, given enough time and money, you can detect anything. I mean, you can go into the containers and take everything out and so forth. In the real world, I think the physics is against us in terms of deploying cost-effective systems and for detection of highly enriched uranium because people who would know how to design and construct an improved nuclear explosive device will certainly know how to defeat these systems.

Setting aside the first problem, they probably will not come through the portals. We have more than 10 million people in this country who did not come through the portals. But even if you are assured the material is coming through the portals, smart people can design ways to beat the system.

Chairman LIEBERMAN. Yes.

Mr. COCHRAN. And so we ought to put the priorities, really high priorities at eliminating the material. If there is no material, it cannot hurt you.

Chairman LIEBERMAN. Understood. Eliminating the material, and also, if I recall from your *Scientific American* article, we need to do even more aggressively what we are doing now, which is through intelligence and law enforcement to stop the smuggling.

Mr. COCHRAN. Absolutely.

Chairman LIEBERMAN. That is very helpful to understand.

Our final witness on the panel is Dr. Richard Wagner, Chairman of the Nuclear Defense Working Group at the Center for the Study of Presidency, and I want to note for the record, Dr. Wagner, that you are testifying this morning in your personal capacity. We thank you for being here and look forward to your testimony.

TESTIMONY OF RICHARD L. WAGNER, JR., PH.D.,[1] CHAIRMAN, NUCLEAR DEFENSE WORKING GROUP, CENTER FOR THE STUDY OF THE PRESIDENCY (TESTIFYING IN HIS PERSONAL CAPACITY)

Mr. WAGNER. Thank you, Senator Lieberman and Senator Akaka. Coming last is always an opportunity and a problem. Let me say I, too, would like to submit a prepared statement for the record, which I will try hard to aim toward the specific question of the management of ASP and its utility.

Let me say a few things which will appear disjointed, but then maybe we can weave them together later.

[1] The prepared statement of Mr. Wagner appears in the Appendix on page 773.

I agree with Tom Cochran that we ought to do everything that the Nation and the international community can do to take HEU off the table. I do not think it is a zero sum game between doing all those things and doing the things we are talking about here this morning. We can do both. Sometimes it is posed as an either/or decision. It is not either/or. We have to do both.

I also believe that it is going to be very hard to take HEU off the table, and it is going to be hard to eliminate the possibility of improvised nuclear devices, as I believe you do too, sir. So I think we have to be able to detect and interdict attempts to smuggle them.

Radiation detection is only one of the means. You referred to intelligence and what I will call upstream interdiction. I think that is crucially important. We are making progress in doing that better. There is a long way to go, but we are making progress.

I think there is a kind of a synergism between the ability to detect radiation from the threats coming into the country and the efficacy of the upstream measures. If you raise the bar for what the threat has to do to evade detection, that is in some measure increasing the signatures that the threat operation has that can then be detected upstream and interdicted upstream.

There is a narrower synergy, and you alluded to it in your opening statement, and Mr. Oxford mentioned it, which is between radiography and improved radiation detection. If we can increase the ability of detectors at portals and elsewhere to detect lightly shielded materials, and then detect shields themselves through radiography, perhaps we can pin it between the two and cover a large part of the threat spectrum.

We are a long ways from being able to do that. The current detectors at portals are deficient in both regards that Dr. Cochran mentioned—too many false alarms and not sensitive enough.

I believe that ASP is the right next step to take, but I am going to qualify that in just a minute.

There is a lot more that can be done, I believe, with improving radiation detection technology beyond ASP. ASP should not be viewed as the last and final step, the best step in radiation detection technology for portals or for other applications. I think that with research and development (R&D) of the sort that DNDO, DOD, and DOE are now really pursuing much more vigorously than they were a few years ago, we can get radiation detection improvements that are kind of on the order of a factor of 10. I cannot exactly say what I mean by a factor of 10, but you ought to think that there is a factor of 10 yet to go beyond ASP.

I hope that will come along in time to make ASP procurements wasted. I hope it will. But I do not think we ought to count on it. So I think that ASP is a good interim step, and against this threat, it is worth a billion dollars or a couple of billion dollars to take the interim step.

Now, one reason it is a good interim step is because of the history—and there is a history of detecting objects that somebody does not want to have detected using radiation detection. I think you might want to explore that history, but you would have to do it in closed hearings.

The theme that runs through that history is that operators learn from experience. You give them an improved piece of hardware, and they go out and they iterate their operations and iterate the details of the hardware you have given them, and they get better at it—in some cases, better than the theory might have predicted. The wet-ware in the operators' heads is able to learn how to use the detectors better.

So the way I would think about the ASP procurement is that it should be what I called in my prepared statement "an expanding spiral development," not just spiral in the sense of one generation after the next, but what I would do is, about now, buy—I do not know what the right number is—10 or 30 ASP systems, put them in the field with the CBP people, and let them start to learn. Get them to think how to modify their operations to use them better. Feed that experience back into the next spiral, modify the software to improve its performance, and make it more in conformance with what the operators have learned, and continue that until either we have ASP, or something like ASP, fully deployed or something better comes along.

One last thing about the ASP management. I think that the contractual arrangements for doing ASP were based on the perception that it could be what I will call "a relatively cut-and-dried procurement"—design, specify, lay out a test program, go through the test program, if it works buy it all. I think that is the wrong contractual model for a thing like ASP. Mr. Oxford inherited ASP from a predecessor organization, and because it was urgent—and I believe it is urgent, although I have not talked to Mr. Oxford about it—but I think he carried it on the way it was because that seemed the fastest way.

I think that the ASP procurement should have been structured more like an R&D procurement and less like a "test once and buy it all" procurement. In an R&D procurement, one recognizes the first law of R&D, which is that you cannot simultaneously specify the objective of the procurement, what it will cost, and its schedule. I think that there are contractual mechanisms that allow you to be more flexible among those things and not create the expectations that I think have been created by the procurement-like nature of the ASP contract, that have introduced some heat and noise into the process, and made it hard for you to oversee this process.

That is maybe as much as I can usefully say right now, sir. Thank you.

Chairman LIEBERMAN. Thanks, Dr. Wagner. A very thoughtful and helpful statement. We will begin a round of questioning now.

I think I would like to first ask both Mr. Oxford and Mr. Aloise to respond to the larger point that Dr. Cochran has made, which is that it is not that it is ultimately impossible, but it is so difficult to detect and so costly to detect highly enriched uranium that in some sense we are spending too much money when we would be better off spending money on intelligence, interdiction, and, of course, political efforts to ban highly enriched uranium. Both of you give me your reaction to that as a matter of overall strategy in our nuclear counterterrorism program. Mr. Oxford, will you go first?

Mr. OXFORD. Thank you, Mr. Chairman. This is clearly a very complex question that requires some attention. First of all, we are

advocates at DNDO and at DHS for an overall layered strategy. We are advocates for helping ensure that we do a better job overseas with material security.

I have quotes from both Governor Kean as the Vice Chairman of the 9/11 Commission and former Senator Sam Nunn recently, when questioned by the WMD Commission, that I will paraphrase instead of reading. In Governor Kean's case, when he testified 2½ years ago in front of a Senate committee, he said we had been into the work overseas of securing material for 14 years. He felt like there was at least another 14 years to get it done right. Does this country have 14 years to wait for that to evolve?

Chairman LIEBERMAN. What is your answer to that?

Mr. OXFORD. I think he is right, but I think we have got to continue to plod along.

Chairman LIEBERMAN. You think we do not have 14 years.

Mr. OXFORD. I do not think we have 14 years.

Chairman LIEBERMAN. Yes.

Mr. OXFORD. And I think we need to continue the layered approach. We need to continue to seek progress overseas where possible. It is not going to be possible in my mind for the United States to mandate that. We have got to continue to work collaboratively with a host of nations. There are over 40 countries that have highly enriched uranium. I know you would have to seek cooperative agreements and a time schedule that would make sense. Otherwise, I feel like we are outsourcing our security to others, and the pace may not be commensurate with what we need.

Senator Nunn recently—as the WMD Commission is going about its business for Congress—said he thinks we are worse off than we were 7 years ago in this regard. So I think there is a reason to support——

Chairman LIEBERMAN. In regard to the interdiction and material security of "loose nukes."

Mr. OXFORD. Yes, sir. So I endorse what Dr. Cochran is saying in principle. It is the operational practicality of getting that done on a timely basis that is in the best interest of U.S. security that I would argue with.

Second, from a technical point of view, as you already pointed out in your opening statement, we believe that a combination of ASP and not necessarily CAARS but radiography in operations at our ports of entry have a high probability of success against highly enriched uranium. And, again, I cannot give you the details in an open forum. We know what the current ASP systems can do. At what point does the shielding now become a problem for an ASP-like system? And we are looking at success against certain weapon designs that have highly enriched uranium about which Dr. Cochran is not privy to the classified details.

We then need to know where we leverage the radiography aspects that will get to the high-density materials that are indicative of either the shielding that is blocking HEU or the highly enriched uranium itself. So we think the combination of x-ray systems and the passive detectors are the right approach to enhancing domestic security.

Chairman LIEBERMAN. Mr. Aloise, do you want to enter this discussion?

Mr. ALOISE. Yes. GAO has always said that the way to go is—and many experts believe, if not all experts—that we should secure it at the source first and foremost.

Chairman LIEBERMAN. Right.

Mr. ALOISE. That is the best thing to do.

Regarding these systems, we have always thought that the ASP was sort of an advanced R&D program that was prematurely rolled out into an acquisition program. And I would differ with Mr. Oxford on one thing. I do not think we know what the ASPs can do yet, and that is what all the testing is about, especially when they are in the field. Those were the questions we asked from the beginning: Does it work? How much will it cost? And is the marginal increase in security worth the cost? We have higher risks to address.

So, we need to go on with the testing. We need to see if these things work. And then we need to make the determination if ASPs are worth the cost.

Chairman LIEBERMAN. Let me go to the second part of what moves us now to the advanced technologies. Mr. Winkowski, the numbers you cited of what we would call false alarms, radiological false alarms, are quite large. If I remember correctly, 600 a day at Long Beach, California. Is that right?

Mr. WINKOWSKI. That is correct.

Chairman LIEBERMAN. So it seems to me what I am hearing from GAO and yourself—well, let me just ask the question. How much of a problem is that operationally? It seems like a large number, but as I indicated in my opening statement, I am under the impression that Customs and Border Protection thinks it is manageable.

Mr. WINKOWSKI. Well, it is a large number, and when you are looking at 400 to 600 in a place like Los Angeles-Long Beach, California, that means you have resources dedicated day in and day out to——

Chairman LIEBERMAN. Take one minute and just describe what happens. Describe a false alarm and then what you do.

Mr. WINKOWSKI. Well, what happens is the container comes through the primary RPM.

Chairman LIEBERMAN. The truck goes through the portal monitor, right?

Mr. WINKOWSKI. Right. And then an alert goes through a secondary RPM.

Chairman LIEBERMAN. The alarm goes off.

Mr. WINKOWSKI. Right. And if the alarm goes off in the secondary, then what we have to do to adjudicate is officers have to go with their radioisotope identifier (RIID).

Chairman LIEBERMAN. Handheld.

Mr. WINKOWSKI. Handheld.

Chairman LIEBERMAN. Right.

Mr. WINKOWSKI. And scan the container.

Now, a couple issues that concern me is: One, the RIID was really never made for that type of business. It was made more for vehicles and mail.

Two, the thing I do not think we talk enough about or stress enough is that you just cannot stand there next to the container and walk around with it. In order to get a good, accurate reading to find the isotope and location, officers have to actually get up on

a ladder or stairs in order to make sure that we are evenly scanning that particular container.

So when you start multiplying that—and then if there are some questions in the reach-back to LSS——

Chairman LIEBERMAN. What is LSS?

Mr. WINKOWSKI. That is Laboratory and Scientific Services that actually reads it and says this is a false alarm, this is just naturally occurring radiation material.

Chairman LIEBERMAN. Right.

Mr. WINKOWSKI. That adds delays to the release of that freight. And when you are talking about just-in-time inventories, and when you are talking about all those types of very sensitive issues, that adds up. Plus getting an accurate reading with that handheld RIID with an ASP-type system, it is read by the panels. You have a good reading from the standpoint of that container being saturated by that particular system.

So from an operator's standpoint, this is important to us. Whether it is an ASP or an ASP-like system, that is perhaps one of the questions here.

Chairman LIEBERMAN. Understood. And I understand you have to always weigh the interruption to commerce as against, obviously, the extraordinary threat of nuclear terrorism.

Mr. OXFORD. Absolutely.

Chairman LIEBERMAN. And ask some understanding, of course, from people in commerce.

Just a final question because my time has run out. How many times do you actually open up the container?

Mr. WINKOWSKI. Depending on the identification of the source, it depends. If it is just a naturally occurring material, such as tile, it may not necessarily be opened.

Chairman LIEBERMAN. Which the handheld monitor would show you?

Mr. WINKOWSKI. That is correct.

Chairman LIEBERMAN. But other times you do open it.

Mr. WINKOWSKI. Yes.

Chairman LIEBERMAN. I will ask Senator Akaka's indulgence just for a moment. Mr. Aloise, do you have a point of view on this as to the operational feasibility of how much of a problem is the high number of false alarms with the current equipment.

Mr. ALOISE. Well, we can only talk about our observations of the places we have been.

Chairman LIEBERMAN. Yes.

Mr. ALOISE. And I do not disagree with anything that has been said. But we have been to 14 or so ports. We have visited these places all over the world, and we have talked to CBP, and obviously it takes time, but no one has ever said that it impedes the flow of commerce.

And regarding this system, CBP's procedures with the reach-back, if there is anything at all they discover, that conveyance does not leave until that is resolved. So they will de-van if they have to.

Chairman LIEBERMAN. Right.

Mr. ALOISE. So, to us that is an advantage of this system. We have talked to truck drivers, we have talked to owners of trucking companies. In fact, they were happy to have it done because they

live in this country, too. They do not want to be taking anything into this country that they should not be.

Chairman LIEBERMAN. Yes, that is important to hear, and obviously, from our point of view, we would say it is worth some slight disruption in the flow of commerce to protect us from the potential of a nuclear incident in an American city.

Thank you.

Mr. OXFORD. Mr. Chairman, could I add something to that? Because one of the things that we did respond to from both CBP, DOE, and the GAO from the 2007 testing that we conducted to what we have done in 2008 is there is a concern that this "NORM material," as it is referred to, the normally occurring radioactive material, can mask actual special nuclear material threats. So we have the compounding problem of does the handheld device now just react to what the NORM material is and still miss the threat. A lot of ASP testing that we have been conducting this year is to find out can we make that distinction between two types of radiation and make the distinction between threat material and then normally occurring material that could confuse other detectors.

Chairman LIEBERMAN. Mr. Winkowski, then Dr. Cochran, and then we go to Senator Akaka.

Mr. WINKOWSKI. Just one moment. I agree that the trade community, the people in this country, they want us to do this, and there is no argument on that. But when we get down to the unnecessary impediment of commerce, my point is these containers are going into secondary unnecessarily because the RPMs cannot identify it. Otherwise, that container would be on the highway down the road.

Chairman LIEBERMAN. Yes. So if you had a more sophisticated, more capable initial monitor, you could avoid some of the false alarms.

Mr. WINKOWSKI. Right. So if I were a member of the trade community sitting here and saying you are unnecessarily impeding because you are doing things to a container that do not necessarily need to be done—it is getting delayed in secondary.

Chairman LIEBERMAN. Right. Dr. Cochran.

Mr. COCHRAN. I wish to respond to two comments Mr. Oxford made, one about the time it is taking to eliminate some of the sources of nuclear weapon materials, HEU in particular. I agree that it has been slow. It has been much faster since September 11, 2001. The programs actually started 30 years ago. It was called the Reduced Enrichment for Research and Test Reactors (RERTR). But there is a lot more we could do.

For example, we send highly enriched uranium to Canada to make molybdenum-99 to recover technetium-99, which is the most dominant medical isotope in the world. And we do it because we do not have a domestic source of molybdenum-99 and technetium-99. And the University of Missouri Research Reactor Center would like to get into the commercial business of making it, and they do not have the money. We could get out of the business of shipping highly enriched uranium to Canada if the Congress and the Department of Energy would accelerate that program. And we can accelerate that program, and we could have done it in this budget cycle, but we did not.

Now, the President of the United States went on the television last night and made about a speech about the urgency to solve the economic problem. He has never been on the television to make a speech about the urgency of eliminating highly enriched uranium from commerce. We can accelerate that program if the Federal Government would give it the urgency that it requires.

Finally, Mr. Oxford said that I do not have access to classified information, and he knows that a combination of ASP and CAARS can find efficiently highly enriched uranium in commerce. I will tell you, I do not need access to the classified information because I know a little bit of physics, and I can beat his ASP and CAARS systems 100 percent of the time, virtually, with what I know about how to design improvised nuclear explosive devices.

Chairman LIEBERMAN. Thank you.

Senator Akaka, I have gone way over on my time, so please take as much time as you need on this round.

Senator AKAKA. Thank you very much, Mr. Chairman. You have always been generous.

Thank you for this opportunity to speak about an issue that has not been given the proper attention, and that is our nuclear and radioactive materials and how we deal with them. I thank you for holding this hearing on trying to prevent nuclear terrorism and to learn from our witnesses, from their experiences and even from some procedures that have not worked as well.

One thing that comes to mind here, Mr. Chairman: Is there a strategic plan? I mentioned it in my opening statement, and I believe that any one of you can answer this. I believe that there are efforts to do that, but I believe that there is not a strategic plan.

Is there a strategic plan? Where is it? Is it coming soon, a strategic plan to deal with preventing nuclear terrorism?

Mr. OXFORD. Senator Akaka, I am not sure exactly what is referred to as a "strategic plan," because a lot of different things come to mind when I think of people putting strategic plans together that become coffee table books that do not really have much content. They are high, lofty goals. What we work on is a layered strategy that looks at each of the potential threat pathways, and we identify goals and objectives to address each of those threat pathways.

One of the things that we have acknowledged with CBP and others is that we wanted to secure our ports of entry first, and as Mr. Winkowski said in his opening statement, we have started to address other potential threat pathways into this country, like the general aviation threat. We are working the small maritime craft threat jointly with CBP and the U.S. Coast Guard to look at interdicting threats that may come through craft smaller than the large merchant ships that you see, things that are below 300 gross vehicle tons.

So we are addressing this in a layered strategy. It is not tied to the ASP program. It is tied to whatever the best solution may be associated with how we do both the operations and the technical aspects of that. So we look at it as a layered approach, and so we do have strategies in each of those various layers.

Senator AKAKA. And the reason I pose that question is in my statement I mentioned securing nuclear and radioactive material at its source, and Dr. Cochran did mention about HEU, highly——

Mr. COCHRAN. Highly enriched uranium.

Senator AKAKA. Enriched uranium, and that it is one that has not been detected. And so I do not know whether something like that belongs in a plan and whether a strategic plan would be one where we would try to work with other nations as well to get to wherever the sources are to try to prevent it from happening there.

Mr. OXFORD. And, Senator, if I could, the responsibility for doing that as part of the U.S. Government's response to this threat is within the Department of Energy that is working overseas with a variety of nations to help secure sources overseas, so I would invite you to consult with the National Nuclear Security Administration (NNSA) in terms of what their plan is to do that.

Senator AKAKA. Do you think a strategic plan would be needed?

Mr. OXFORD. Again, tying all these different things together, it would be a useful thing to do.

Mr. ALOISE. Senator Akaka, if I may?

Senator AKAKA. Yes, Mr. Aloise.

Mr. ALOISE. A couple of years ago, GAO issued a report calling for a strategic plan at the top levels of the government, combining all of the programs of NNSA, DHS, DOD, and the National Research Council (NRC). The State Department was supposed to head up that effort, and they have come up with one. We have not looked at it recently.

Also, earlier this year we did call for the development of a strategic plan for the global nuclear architecture, which is all this radiation detection equipment worldwide we are talking about, and I believe DHS agreed that they would do that.

Senator AKAKA. Dr. Wagner, Mr. Oxford stated that there is now a director of ASP Operational Test and Evaluation. Based on your experience in DOD, do you believe that having an Operational Test and Evaluation Office is important to the success of the ASP program?

Mr. WAGNER. Yes, sir. I think that is important not only for ASP but for the whole ensuing range of developments. There is an art, of course, to how you do operational testing and development testing and where the line between the two is. And I think the question of exactly how you draw the line is maybe a little bit deeper than we can go here this morning. But I think in general, yes, an Office of Operational Testing is a good thing to have.

It may be a little late for ASP. I think that we ought to think about the ASP product as being one of sequential cycles, where you deploy a few, get field experience with those, feed that back, upgrade the hardware for the next round of buying, and so on, until finally you have reached the end.

The role and the distinction there between development testing and operational testing is a little fuzzy.

Senator AKAKA. Let me ask any one of the panelists who wish to comment on this, do you think all major acquisition programs would benefit from a similar office? Why or why not?

Mr. OXFORD. Senator, if I can address that, first of all, this now has become Department policy, so within DHS, this Director for

Operational Testing would be applied to all major acquisitions that go through the Investment Review Board. So we just happen to be the first program to overlay the operational test feature on this, but you will see that in other endeavors within the Department as well. So it is not just a DNDO operational testing. It is the Department's operational testing entity that would be applied to all major programs.

Senator AKAKA. Mr. Oxford, you mentioned that technology to distinguish automatically between low-density, non-threat materials and higher-density materials is under development. This sounds like important technology to counter the threat posed by nuclear smuggling.

How long will it be until this CAARS technology is ready for demonstration testing and evaluation?

Mr. OXFORD. Thank you for the question because I would like to refer back to what the Chairman mentioned in his opening statement about what we call the CAARS course correction. What we recognize is that because we have a variety of R&D elements within DNDO, we have the CAARS program that was pursuing some rather aggressive technical goals, and we also have some exploratory research that is evaluating other radiographical concepts. We recognized that the pace of development was moving so quickly that we did not want to restrict future acquisitions to just the three CAARS contractors. So what we did within the CAARS program is we took out some of these sub-goals. For example, at one time we were looking for 120-vehicle throughput for each CAARS machine per hour in support of CBP operations. That was driving the CAARS vendors down certain paths without worrying about the detection challenge.

We had other detection concepts that were proceeding in parallel to this, so what we have done with the CAARS program and, as the Chairman referred to it, the JINII program, the Joint Integrated NII Program, is we have opened up the door for additional competition with these other parallel radiography systems. We will do a test in 2009 to look at how suitable those concepts are to meet the similar goals to what we had in the CAARS program. So we have opened up the door for competition to help get the best value for the government.

Senator AKAKA. Mr. Oxford, Mr. Aloise in his testimony mentioned that your submissions to the Office of Management and Budget (OMB) for budget years 2008 and 2009 describe an ASP sister program that includes land crossings, seaports, rail lines, airports, and other ports of entry. How are you planning to provide this type of nuclear detection capability for these other potential smuggling routes?

Mr. OXFORD. Again, thank you for the question because we are working very closely with CBP as we look at every one of these operational issues because one of the things that I like to mention is that the developer cannot do this on his own. We have got to work with the operational community.

And let me just mention rail as an example. There are 37 high-priority rail crossings coming into the United States from our northern and southern allies. It is a very difficult proposition to do detection at the border once the train is put together. So it puts

an operational burden on CBP, and I will ask Mr. Winkowski to address some of that. But if you do a detection, you have an alarm of a long train coming across, for example, the Northern border. Now you have to figure out how to separate that one car from the entire train.

So what we chose to do when we did the change in the ASP program was to go back and study the rail problem from top to bottom, and we may end up in a situation where we have to ask our Canadian partners, for example, to do some of the scanning of the rail cars before the train is actually assembled so we are not putting the burden right at the border itself; we are working in cooperation with our allies to deal with the problem, as opposed to putting the burden on our partners at the Northern border. That is just one example of how we have to go back and look at every one of these venues.

Senator AKAKA. Thank you, Mr. Chairman. May I ask one more question?

Chairman LIEBERMAN. Go right ahead.

Senator AKAKA. Mr. Winkowski and Mr. Oxford, the new JINII program appears to accommodate both detection for radiological threats and contraband. What assurance do we have that the JINII program will focus first and foremost on nuclear detection for rapid short-term deployment?

Mr. OXFORD. Senator Akaka, I do not think we can choose the priorities. I will let Mr. Winkowski talk about it. I think we do have to make some priority decisions. I think what we are looking for is the ability to do the nuclear mission while not diminishing the capability to look at other contraband like people, drugs, explosives, and those kinds of things.

So I think there is a way that we can balance this, and that is why we wanted an integrated program to do both the nuclear and the conventional mission CBP has.

Mr. WINKOWSKI. And, Senator, all I would add to that is I agree with what the Director is saying, and we need technology that can find the shielding piece, as well as making sure that we are addressing our traditional mission on the drug side and all the other issues that we deal with.

So, working collaboratively with the DNDO is what we do, and as the operator, we will put down our requirements on what we need, and then we leave it up to the scientists and the scientific community to come in and address that.

Senator AKAKA. Thank you very much for your responses.

Mr. Chairman, thank you.

Chairman LIEBERMAN. Thanks, Senator Akaka, for your excellent questions. We will do one more round of questions this morning.

Director Oxford, the suggestion was made, I believe by Dr. Wagner, about the possibility of putting some of the ASP units into deployment as a matter of testing to see how they do and to advance the goals that you have.

Mr. WAGNER. As a matter of learning more than testing.

Chairman LIEBERMAN. I accept the amendment. [Laughter.]

Thank you. In your filing this year for the office, the so-called congressional justification, you indicate that DNDO has already

purchased 76 low-rate production models of the ASP monitor, and that approximately 45 of those are now sitting in warehouses.

I wonder what you would say about deploying those monitors and letting CBP officers use them for a year or so to find out how they perform in a variety of settings. I mean, in a sense, would that not be the equivalent of the spiral in the ASP program that Dr. Wagner has suggested?

Mr. OXFORD. Based on the way, Mr. Chairman, that you have stated it, that would meet his requirement. I am not sure that I agree with that kind of spiral approach.

Chairman LIEBERMAN. So talk about that.

Mr. OXFORD. I do not think the pace of the software development is going to be so rapid that we would want to do that. Right now, we are trying to accommodate addressing of the threat through both our testing as well as the CBP functionalities. So when we take the recommendation of the Secretary later this year, he will have an option to deploy at whatever pace, once he thinks these machines actually do represent an increase in operational effectiveness, and clearly he could dictate one of kind of deployment strategy versus another, and we are going to give him those options.

We do believe in a spiral approach, and what we would do—it is a matter of, first of all, these systems will take a while to produce. Once we make a production order, for example, and the Secretary says go, it is a 6-month period of time before the systems actually would show up and be able to be deployed.

So in the interim, we would deploy those first 45. CBP would start to get information from those. The software then could start to be adapted if there were issues that arose from that. But I do not think doing 30 at a time, first of all, works from a performance point of view, nor is it cost-effective for the government to buy small amounts and then have to reorder systems. And I think it is awkward for CBP—and I will let Mr. Winkowski address this—to deal with small batches of systems coming into the field. Now they have to manage multiple systems.

Chairman LIEBERMAN. So you would prefer for now to have those 45 units sitting in the warehouse?

Mr. OXFORD. We are prohibited from deploying those by the appropriations law that we are living with until the Secretary makes the certification decision. But they would be the first 45 that would be deployed. So they would be available for deployment immediately.

Chairman LIEBERMAN. I see. I understand now that you have clarified it. If you did not have that certification requirement that the appropriations process has put on you, would you more proactively deploy those 45——

Mr. OXFORD. We had actually discussed that at one time with CBP to go ahead and get those into the operational environment and locations where they would feel comfortable evaluating them for a while. We were prohibited by the appropriations law from doing a parallel deployment until all testing and certification was done.

Chairman LIEBERMAN. So you did not reach a judgment as to whether or not, if the certification process was not there, you would deploy those units now?

Mr. OXFORD. Well, again, when the law came out, we did not continue the discussion.

Chairman LIEBERMAN. You never reached a point of judgment.

Mr. OXFORD. Right.

Chairman LIEBERMAN. Mr. Aloise, do you have an opinion on this question about the deployment of these units that are sitting there now?

Mr. ALOISE. Well, we think that it would be a good idea to deploy some of these for testing, as has been suggested, and learning for at least 6 months or a year. And I think most experts we talked to thought that was a reasonable period.

In our view, to rush these out before you know they work could cause more havoc at the border than not.

Chairman LIEBERMAN. Right.

Mr. ALOISE. Last year's validation test did not go well, and we are back to doing it again.

Chairman LIEBERMAN. Do you agree that—I have not spent time on this—the certification process that the Appropriations Committees put on DNDO prohibits them from doing the testing before the certification?

Mr. ALOISE. I would imagine that DNDO could approach the Committee staffers and ask them for an exception to that.

Chairman LIEBERMAN. Is it worth doing that, Mr. Oxford?

Mr. OXFORD. Mr. Chairman, we did that. They were afraid that what we would be doing is a slowly phased deployment as opposed to an evaluation. So there is actually a phrase in the appropriations law that prohibits that.

Chairman LIEBERMAN. Right.

Mr. OXFORD. And because we could learn some of that even while we were going through some of the testing, we would have been doing that over the course of this last calendar year.

Chairman LIEBERMAN. Mr. Winkowski, what is your point of view on——

Mr. WINKOWSKI. Well, as the operator, testing is fine. But if I am going to be given a system that is unstable, if I am going to be given a system that does not meet some of my demands, all that does is add a burden onto the men and women that are on the ground making the system go day in and day out. And we want a system that is stable. I agree with what Dr. Wagner is saying, that sometimes you just have to put it in the field, and we ought to see how it works in a real live environment. But we have to make sure that we measure that and we do not deliver to the men and women of CBP field operations in the ports of entry a system that is unstable and is going to do nothing but add problems and complications.

As I said, we are going to be there with the screwdriver fixing it day in and day out. So many systems on software, to reboot it and to reinstall software can take 7 or 8 minutes. That is the kiss of death in my business from the standpoint of delays.

Chairman LIEBERMAN. I think probably most people do not know that—you are operating on that quick a time frame. This is minutes you are talking about.

Mr. WINKOWSKI. Absolutely—seconds.

Chairman LIEBERMAN. Yes.

Mr. WINKOWSKI. Yes.

Chairman LIEBERMAN. Dr. Wagner, I would like to get you into this discussion, and if I can invite you to elaborate on some statements you made in your prepared testimony, which I found very interesting, which was to contrast the procurement system of the DNDO with the procurement system of the Manhattan Project, let us say, and to suggest that, interestingly, these are both nuclear related, of course, in this case—not to develop a nuclear weapon but to protect us from one being used to attack Americans. So talk about that a little bit. If I heard you right, you think that we may be too tight in procurement in the model that we have now.

Mr. WAGNER. I think that the Federal Government in general, as my prepared statement said, over the last 10 or 20 years has changed what was once a flexible procurement system into one that is too bureaucratic, too rule-bound. There are some situations where it is good to do that and other situations where it is harmful, and I think in general these technologies are a place where it is harmful.

In my prepared statement, I listed 10 or so characteristics of a more flexible procurement process. One of them is getting the system developers, the guys in the white coats, out in the field with the operators where they can learn together.

I would say about the CBP people, if they are anything like the uniformed military, some of them will welcome the opportunity to work with developers and make the system better. DOD for years—I am a few years out of date on it—had the 9th Infantry Division at Fort Lewis, Washington, that was the experimental division. The 9th Infantry Division was supposed to be prepared to go to war, and they had to train as if they were going to go to war, but they understood that they were going to take things to war that were pretty experimental and learn how to use them, and learn how to use them in training beforehand.

I think that this nuclear threat should be thought of as so much a part of dealing with the normal flow of cargo into this country that it would not be a bad idea for CBP to put together kind of an operational/experimental entity.

Chairman LIEBERMAN. That is a very thoughtful and provocative and fresh point of view, which I think as we turn this problem over to the next Administration, we ought to think about part of this problem is that Congress and the Budget Office put restrictions on offices like DNDO because we are worried about waste. On the other hand, we may be overbureaucratizing to the point that we are frustrating the realization of the urgent goals that we have.

So, I am going to go back and look at the specific recommendations you make about how we might turn this somewhat in the direction of the more flexible procurement model.

Mr. WAGNER. Can I make one other suggestion about how to walk down this line a little further?

Chairman LIEBERMAN. Yes.

Mr. WAGNER. I was in the Pentagon—it was in 1985 or 1986—when the Competition in Contracting Act was passed and signed by the President. It was intended to reduce fraud, waste, and abuse and get a better product via competition. It was largely aimed at DOD, although I think maybe other agencies too. The Congress of-

fered to DOD the opportunity to exempt R&D from many of the strictures of the act, and DOD chose not to exempt R&D.

If I were going to start to delve into this, I would go back and look at that particular juncture and see why the Congress thought it was a good idea to exempt R&D and maybe why DOD thought it was not a good idea. I think that might be a good place to start.

Chairman LIEBERMAN. Good point. Thank you.

Mr. OXFORD. Mr. Chairman, could I address that quickly? Because I know Dr. Wagner and I have chatted about this a couple of times where he refers to this as "bending the FAR," which, of course, as a government official, I cannot bend the Federal Acquisition Regulation (FAR). So I think there are some flexibilities that may be useful as some of these programs across the U.S. Government go forward. But I would like to point out that what was talked about as an 8-week delay in the program is really because of one of the features that Dr. Wagner mentioned, and that is, we have an immersed CBP in the program to the point that we are not going forward until the operator is comfortable with this system. And we are committed to not taking a recommendation to the Secretary until we both have met the technical objectives of the program and the operational objectives, at least the one feature that Dr. Wagner mentions, to make sure the developer and the users are hand in hand as a feature of the program.

Chairman LIEBERMAN. That is a very good point. We know on this Committee that some of the problems that we have had with the investment we have made in another area, which is the so-called virtual or electronic fence at the Southern border, are the result, some of us conclude, in part of the fact that the private contractors went ahead without effectively any involvement by the Customs and Border Protection, and they would have avoided a lot of problems if they had had that consultation.

Senator Akaka.

Senator AKAKA. Thank you very much, Mr. Chairman.

Mr. Winkowski, Mr. Oxford testified that CAARS units are too large and complex to be operationally effective. To what extent did CBP and DNDO collaborate when this decision was made?

Mr. WINKOWSKI. My understanding—and Senator, this is before my time as the Assistant Commissioner—is that we became engaged with DNDO on CAARS back in late 2005, worked with DNDO, talked about the footprint, and then I believe the course correction was in about 2007, if I remember correctly.

So we were at the table, but our concern was that the footprint was too big. As I was saying, for all your trucks to go through a car-wash type system, as I call it, and the driver comes out and you do your scan, realistically that presents a tremendous amount of problems from a cycle time.

So our position was that we really needed a different technology that was more flexible and did not have such a big footprint and require so much handling.

Senator AKAKA. In terms of the CAARS system being too large, what percentage of our port facilities would not be able to accommodate it?

Mr. WINKOWSKI. It is a big footprint, 60-by-160, as I recall. I would say that if you went with the CAARS on the blueprint, most of the seaports could not handle the footprint.

Senator AKAKA. In Dr. Wagner's testimony, he stated that the United States should be putting even more resources into countering the threat of nuclear smuggling, including detection and interdiction of attacks. Which threats can be best countered by technology like the ASP system?

Mr. WAGNER. That is a tough question. There are a lot of different threats and different ways of shielding different materials. It is a very complicated question to find that part of the threat that you can imagine just barely dealing with today and designing a system to deal with that, knowing that there is a lot more threat that you cannot deal with today that is going to have to come later.

The art in this game of managing R&D and getting it into the field to beat this threat is in properly picking the threat you choose to beat this year and putting something in place to do that, and at the same time starting development for a threat that you know you cannot beat this year, but will hope to beat later.

Forty years ago, I went through that same kind of problem in the first phase of missile defense. This is a lot harder than missile defense. There is more diversity of possible things that an attacker could do. I think that an approach to doing it—I think I am not giving you the answer you wanted—is to develop better systems analysis tools, computer models, for instance, of the whole sequence of how the threat might approach and how the defense might choose to defend in-depth and begin to learn from what those tell you to develop both operational plans and the strategic plans that you talked about.

Mr. Oxford and his counterparts in DOD and DOE are building such systems analysis tools. They know that they need to do that. They are coming slowly. If there were a single place where I would put more emphasis, it is on bringing those along so that we could answer those kinds of questions better 2 years from now.

Senator AKAKA. Well, let me ask a question that deals with resources and money. Do you believe the current resources to counter the threat of nuclear smuggling are properly distributed?

Mr. WAGNER. Your first question was, I think, are there enough, and now you asked are they properly distributed? Let me answer the properly distributed part in two ways.

Mr. Oxford has quite properly, over the last years in DNDO, started to put more emphasis on non-cargo flow paths. Senator Lieberman referred to civil aviation and small craft and maritime approaches. I think that is a proper next thing to work on. I might have wanted to start working on it sooner.

My own opinion is that the Nation as a whole ought to be putting even more emphasis on stopping this threat overseas. I would not do that to the detriment of defending at our borders and in-depth inside the country. But I think more emphasis ought to be put on doing it overseas, from intelligence to covert operations to whatever.

On another dimension of whether there are enough resources, when I go out to the labs and an occasional contractor and talk to the principal investigators of these detector development projects,

my general sense is that many of those projects are underfunded, that the principal investigators and the government people who are allocating the funding are required to choose among alternative paths prematurely, before they have explored them enough.

Now, that is a matter of judgment on my part, but the way I would approach this from this Committee's point of view is to expect about a year from now that very good questions be addressed on a more analytic basis, and to prepare a year from now for the possibility that on the basis of that analysis you might want to see the Appropriations Committees increase the funding in this area substantially.

Right now, it is my judgment, I would like to see it—but you should not follow that until you can back it up with better analysis and you ought to be working hard to get that better analysis.

Senator AKAKA. Thank you.

Mr. OXFORD. Senator, could I address one of your questions? Because we have enjoyed great support from the Congress. When I first stood up DNDO and we brought together some resources that had been within the Department from multiple components, we had about a $195 million budget, which was probably the most this country has spent on nuclear detection in two decades. I cannot give you statistics on that per se, but I know there was not much money going to the National Laboratories for this specific mission. We are now at a level of about $561 million, so we have enjoyed good success. We are reluctant to just come in and ask for lots of money without some foundation, as Dr. Wagner said.

There are some impending crises in this country, though, and that has to do with the nuclear expertise that is rapidly dwindling across our entire complex. NNSA Administrator Tom D'Agostino and I are working this collectively along with some colleagues in DOD. We are losing nuclear engineers; we are losing nuclear weapons designers across the complex as the support for the nuclear weapons program goes down. These programs, like ours, are riding on the backs of the nuclear weapons complex. So I think we need to figure out that we do not have unintended consequences of going from what has been apparently an offensive mission to know that we are in the defensive posture, that we do not diminish one to the detriment to the other too drastically. We need about 100 Ph.D.s per year coming out of our colleges and universities to reinvigorate that complex so we can take on the kind of challenges that you are asking about. So there are some issues that resource-wise that are kind of lower level than the programs we have been talking about today, but really portend for the future of this country.

Senator AKAKA. I know I have exceeded my time, Mr. Chairman. May I ask one more question?

Chairman LIEBERMAN. Go ahead.

Senator AKAKA. Mr. Winkowski.

Mr. WINKOWSKI. Senator, if I could just elaborate a little bit on what Dr. Wagner said. He had mentioned about doing this overseas, and as I had mentioned in my opening statement, we have a layered approach, whether it is a 24-hour rule or it is an automatic targeting system. But one of those layers is what we call the Container Security Initiative (CSI), as well as the Secure Freight Initiative (SFI), where we have pushed a lot of our processing over-

seas in 58 locations, and it accounts for about 86 percent of the freight that comes into the United States now, which has had some type of screening, if you will. I am not here to say that everything has gone through a RPM or even a NII device, but we are in these 58 countries, and under the SAFE Port Act with the Secure Freight Initiative, we are doing scanning, for example, in Pakistan, Port of Cortes, Honduras, and Southampton. Now, they are small footprints and we are doing some in Hong Kong, not all of Hong Kong, but we have one lane there in Hong Kong, and we do have the APS system up and running in Southampton in secondary. So I think Dr. Wagner's point is very important, that we have to look at pushing this overseas, and, of course, we have the 100-percent standing requirement in July 2012, which is a real challenge, but we are looking at our high-trade risk corridors to see if we can put in some type of protocols like we have in Pakistan, where everything is being scanned and everything is going through an RPM type of device.

Senator AKAKA. Mr. Oxford, in DNDO's response to GAO's cost estimate report, your office claimed that GAO incorrectly assumed that DNDO picks up operation and maintenance costs. DNDO asserted that it is U.S. Customs and Border Protection that covers these costs. If you consider the operation and maintenance costs borne by CBP along with the $2.1 billion cost estimate DNDO advocates, is this cost close to the range that GAO presented?

Mr. OXFORD. Mr. Aloise and I have chatted about this recently. We are conducting a full lifecycle cost estimate that will include many of the same elements that their estimate has. Some of the documents have been referred to in the past; for example, the $1.2 billion number that was really the ceiling on the contracts available for acquisition and R&D. So it was not representative of the lifecycle cost estimate and never was intended to do so. The $2.1 billion that you have seen referenced was actually predicated on the OMB 300 requirement where we go in and it is the DNDO portion of that program, and it spans a different lifecycle than what the GAO analysis did. It is only 8 years. That is what OMB requires when we submit it.

So before we go to the Secretary, we are doing a full-blown lifecycle cost estimate for the 11-year time period that is required to do this, in a way very consistent with what the GAO has done. It is premature for me to say what that outcome is going to be, because we are also doing it along four pathways, and that is, whatever the deployment options the Secretary may want to visit, we want a lifecycle cost estimate that would account for the current generation of RPMs and ASP systems across four different deployment strategies so he has options to choose from as opposed to a one-point solution.

So in the next month or two, we will have something that is more of a comparison with GAO, and we will be glad to share what the actual relative numbers are at that time.

Senator AKAKA. I really appreciate the responses from the panel, and thank you very much, Mr. Chairman.

Chairman LIEBERMAN. Thank you, Senator Akaka. Thanks for your excellent questions.

This is a time here in Congress where we go from urgent matter to urgent matter, and I have got to go now to some discussions about the national economic crisis. But I want to thank all of you. Thank you, Mr. Aloise, at the outset for the very important work that GAO has done here.

I think this has been a very good and constructive discussion. I would say for my part it has helped me better understand the decisions that have been made and the ones that have to be made. And there are many more questions that I have, and other Members of the Committee may have as well. So we are going to keep the record of the hearing open for 15 days so we may submit some questions to you asking you to respond in writing.

We also give you the opportunity during those days to add additional testimony as you see fit. But you made a really constructive and important contribution to our discussion of this critical element of national security. Whenever we deal with this problem, I always remember that last year at one of the first hearings of this session, Secretary Chertoff was a witness, and someone on the Committee asked him the classic and perhaps trite, but very important, question: "What element of homeland security keeps you up at night, Mr. Secretary?" And he said, "It is my concern about a nuclear weapon or dirty bomb being smuggled into the United States and exploded in an American city." And that has led to these seven hearings. They have been very helpful. Obviously, Director Oxford, you and DNDO play a very important role here, including the coordination of other R&D and other efforts going on in other departments.

So my intention is that after we complete the questions and answers that we will file, the Committee will make a series of observations and recommendations to the incoming Administration, particularly the incoming Secretary of Homeland Security, as to where we hope that they will go with this to expedite this program.

But for now, I thank all of you for what you have contributed certainly this morning, and with that, the hearing is adjourned.

[Whereupon, at 11:30 a.m., the Committee was adjourned.]

APPENDIX

PREPARED STATEMENT OF SENATOR BARACK OBAMA

APRIL 2, 2008

Mr. Chairman, thank you for holding this hearing and for giving us an opportunity to gather more information on the threat of nuclear terrorism. I also appreciate the willingness of the panelists to give their perspectives on this critical national security issue.

We know Al-Qaeda has made it a goal to acquire a nuclear weapon. If a sophisticated terrorist group obtained the right amount of plutonium or highly enriched uranium, it could potentially construct a crude nuclear device that could destroy the heart of any major city in the United States. While significant progress has been made in securing nuclear materials, there are still large stockpiles that remain vulnerable to theft. In the civilian sector alone, there are an estimated 60 tons of highly enriched uranium, enough to make over 1,000 nuclear bombs, spread out at facilities in over 40 countries around the world. Many of these facilities do not have adequate physical security.

There have been an alarming number of attempted exchanges of small quantities of dangerous nuclear materials. The International Atomic Energy Agency (IAEA) confirmed 16 incidents between 1993 and 2005 that involved trafficking in relatively small amounts of highly enriched uranium and plutonium. That is 16 incidents too many, in my opinion, and 16 incidents that should not have been allowed to happen. And those are just the incidents that we know about. How many cases are there that we do not know about?

It is imperative that we build and lead a truly global effort to secure, consolidate, and reduce stockpiles of nuclear weapons and weapons-usable material to prevent them from falling into the wrong hands. It is also essential that we make preventing nuclear terrorism a top national security priority—with the resources, diplomatic effort and funding to match the threat.

I traveled to the former Soviet Union with Senator Richard Lugar in 2005 to investigate the dangers posed by unsecured weapons. Building on this experience, Senator Lugar and I introduced legislation that was signed into law in January 2007 to help other nations detect and stop the transfer of weapons of mass destruction.

Last year, I worked with Senator Chuck Hagel to introduce a broad bill that seeks to prevent nuclear terrorism, reduce global nuclear arsenals, and stop the spread of nuclear weapons and related technology. One provision, which was signed into law as part of the FY2008 omnibus appropriations bill, requires the President to submit to Congress a comprehensive plan for ensuring that all nuclear weapons and weapons-usable material at vulnerable sites around the world are secure by 2012 to keep them out of the hands of terrorists.

I will continue to push for stronger efforts to secure nuclear stockpiles and look forward to working with the committee on a range of initiatives to prevent terrorists from acquiring and using a nuclear device against our homeland.

Thank you.

PREPARED OPENING STATEMENT OF SENATOR COLLINS

SEPTEMBER 25, 2008

Mr. Chairman, thank you for holding this hearing to continue the Committee's work on the threat of nuclear terrorism. Today we will hear testimony about a much-criticized DHS program to deploy advanced radiation-detection technology at our ports of entry.

Detecting nuclear materials at ports of entry—before they enter the stream of commerce—must be a high priority. The SAFE Port Act, which I co-authored, enhanced the Federal Government's ability to detect illicit radiological materials by requiring that all cargo containers be scanned for radiation at the 22 largest U.S. seaports. This mandate covers 98 percent of cargo coming into the United States.

Customs and Border Protection (CBP) has now completed deployment of the required radiation portal monitors. These first-general portal monitors detect radiation from any type of material in a cargo container and, as a result, are often set off by innocent sources of trace radiation such as ceramic tiles or even kitty litter. CBP officers then have to resolve the alarms through sometimes time-consuming measures.

To avoid these delays and to be able to react more quickly to potentially dangerous materials, DHS has spent the last few years developing next-generation technology that will determine the type of radiation that is being emitted. If effective, this will allow CBP officers to know immediately if a cargo container contains innocent or potentially threatening materials.

The DHS office responsible for making decisions about the development, testing, evaluation, and acquisition of detection equipment is the Domestic Nuclear Detection Office (DNDO). This Office must make well-informed and threat-based investment decisions to meet the challenge of interdicting illicit material at our Nation's borders and within our country. Given our Nation's significant investment in this critical area, DNDO must also serve as a responsible steward of taxpayers' dollars.

In the past, DNDO has been criticized for its management of technology-development programs. It has responded to concerns of a disconnect between laboratory testing and real-world operational use by engaging CBP in the development and testing process.

DNDO's technological development efforts support not only CBP screening officers at U.S. ports, but CBP officers at 58 foreign seaports, Coast Guard crews on the high seas, and local law enforcement cooperating in targeted detection efforts around our major cities. Successful development and acquisition of equipment by DNDO is vital for nuclear-detection efforts that other DHS components and local governments are implementing.

Our witnesses today can give us valuable insights into the challenges that the DNDO and its partners confront—challenges which Congress must examine as we consider our Nation's investments in an effective nuclear-detection architecture. I look forward to their testimony.

**TESTIMONY OF MAJOR GENERAL ARNOLD L. PUNARO, USMCR (Ret.), CHAIRMAN
LIEUTENANT GENERAL JAMES E. SHERRARD, AFR (Ret.), COMMISSIONER, AND
MAJOR GENERAL E. GORDON STUMP, ANG (Ret.), COMMISSIONER
COMMISSION ON THE NATIONAL GUARD AND RESERVES
BEFORE THE SENATE
HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS COMMITTEE
FEBRUARY 13, 2008**

It is a pleasure to appear before the Committee this morning to discuss the final report of the independent Commission on the National Guard and Reserves, titled *Transforming the National Guard and Reserves into a 21st-Century Operational Force.* I ask that our full statement, as well as the executive summary of our final report, be entered in its entirety into the record.

I am accompanied this morning by two fellow Commissioners, James Sherrard and Gordon Stump. Each has had an extraordinarily distinguished career and possesses unique expertise in the subject matter addressed both by the Commission and the Committee this morning. On behalf of our nine other fellow Commissioners, whom we are representing, we want to thank you, Mr. Chairman, and Ranking Member Senator Collins, for the support you have given to the Commission and for the strong bipartisan leadership this Committee has shown over the years in improving the nation's capabilities to protect and defend the nation and to manage and recover in crisis situations. This Committee and the Senate Armed Services Committee, along with the Defense Appropriations Subcommittee, have always enjoyed a strong crossover membership, a feature that has resulted in significant enhancements to our security.

As established by section 513 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005, the Commission was chartered to identify and recommend changes in law and policy to ensure that the National Guard and Reserves are organized, trained, equipped, compensated, and supported to best meet the national security requirements of our nation now, and in the future. Congress subsequently tasked us to study the "advisability and feasibility of implementing" the provisions of the proposed National Defense Enhancement and National Guard Empowerment Act. That report – with 23 recommendations – was submitted on March 1 of last year. Defense Secretary Gates acted on it quickly and decisively. He conducted a thorough review and accepted, in large measure, 20 of its 23 recommendations on reforms to the National Guard and Reserves. Implementation of those recommendations is well under way within the Department. Likewise, Congress acted quickly and decisively by incorporating most of the Commission's recommendations requiring statutory action in the

recently enacted National Defense Authorization Act for Fiscal Year 2008. In doing so, Congress and DOD have sent a powerful message that DOD's roles and responsibilities in the homeland have changed in several fundamental ways. In the Commission's opinion, this represents the kind of sweeping change that is essential given the threats our nation faces at home and overseas.

I would also like to take this opportunity to say a few words about the Government Accountability Office. As its committee of jurisdiction, you should know what a great help this agency has been to the Commission. Its work has been thorough, objective, and professional. I know that all 12 commissioners extend their thanks to GAO and its fine leader, David Walker, for the tremendous job they have done in helping us fulfill our responsibilities. The GAO, in fact, has written dozens and dozens of reports in the homeland area in addition to the work they did for us.

The 95 recommendations in our final report both address the Commission's initial charter and also engage more deeply with issues addressed in the March 1 report: specifically, our concerns with respect to the sustainability of an operational reserve, codification of the Department of Defense's role in the homeland, and the planning and resourcing processes to address threats in the homeland.

With regard to these and other areas addressed in our final report, we have tried to identify the problems that need to be fixed and have suggested solutions. Many of these issues are extremely complex, and people of good character and conscience will disagree with some of the solutions we propose. We believe Congress's mandate to us was to report what we found, and we did that. We also recognize that further analysis by the Department of Defense, the Department of Homeland Security, and Congress may lead to alternative remedies. We encourage these improvements or alternatives to our recommendations. The Commission's focus is on fixing the problems. Fewer than half of our 95 recommendations require legislation. These are areas where DOD can undertake a change in policies and regulations right away, and Congress can enact some immediate statutory changes as well, particularly on our recommendations on the homeland. Other recommendations, primarily in the area of personnel management, will take careful thought and analysis by DOD and Congress to determine how best they should be implemented in order to achieve the desired outcomes. Some are likely to require phased implementation over a lengthy period of time.

I cannot emphasize too strongly that our recommendations are in no way a critique of officials currently serving in Congress or the Pentagon or of their predecessors in previous administrations. Many of these problems have persisted for decades and have often seemed intractable. Others are tied to new and emerging threats. It is understandable, given the operational commitments that have by necessity been its first priority, that the Department of Defense has not been able to fully develop strategies regarding the National Guard and Reserves.

The Department has made real progress on many issues since 9/11. For example, it has addressed the more immediate challenges associated with recruitment and retention in an increasingly difficult environment. It has ensured that mobilized Guard and Reserve units are fully trained and equipped prior to deployment. It has also made a down payment on addressing the complex personnel management issues it expects to confront in the 21st century. Funding for the reserve components is trending upward, and additional funding is in the pipeline to remedy the equipment shortages, particularly in the Army National Guard.

The Commission's work is not a report card. The Commission's enabling statute did not direct us to examine how far we've come; rather, our mandate was to concentrate on how far we need to go to get to the desired end state. It will be up to Congress, DHS, and DOD to make the ultimate determinations about that end state, and about how much of the gap between where we are now and where the Commission suggests we need to go you are committed to addressing.

As we prepared the report, we attempted to be both thorough and all-encompassing in the collection and analysis of data. We held 17 days of public hearings with 115 witnesses; had 52 Commission meetings; conducted more than 850 interviews with public officials and other subject matter experts, including current and former Secretaries of Defense and Chairmen and Vice Chairmen of the Joint Chiefs of Staff; and examined thousands of documents. We did not just gather "official wisdom" in Washington; we made a concerted effort to get outside the Beltway for field hearings, site visits, and focus groups and talked to service members, families, employers, and many others. I want to add, Mr. Chairman, that the 12 members of the Commission brought 288 total years of military service, 186 total years of non-military government service, and many years of private-sector experience to this task. We have

Commissioners and staff with firsthand experience in emergency management as well as in commanding military organizations in both homeland and overseas operations.

I. Creating a Sustainable Operational Reserve

Historically, the National Guard and Reserves have functioned as a strategic reserve force expected to be used to augment the active force only in the event of a major war, perhaps once in a generation or once in a lifetime. This role was defined in statute. It was a Cold War–era model that assumed long lead times to train and prepare reserve component forces to backfill active duty troops in response, for example, to the Russians rolling through Fulda Gap. That model began to change with the reserve call-up for the first Gulf War in 1990–91 and during the rest of the decade of the '90s, and changes have increased with the employment of reserve component forces since 9/11. The force resulting from this evolution has repeatedly been referred to as the "operational reserve," and this transition to the operational reserve is highlighted in the DOD FY09 summary budget report (see pp. 108–12).

In our March 1 report, the Commission concluded that DOD had declared that we have an operational reserve without making the changes necessary to make such a force sustainable. It was the Commission's view that continued use of the Guard and Reserves in this manner was neither feasible nor sustainable over time without major changes to law and policy. As my colleagues with me today will confirm, the Commission debated at great length the issue of whether we need an operational reserve. We were particularly concerned that the notion of an operational reserve had occurred almost by default, as a result of the need for more forces than were available in the active component. In our view, the nation effectively backed into the operational reserve. Contrary to what some may expect, this demand for reserve forces will likely continue long after U.S. engagement in Iraq and Afghanistan diminishes, owing to the nature of the threats we will face in the future both at home and abroad. Yet, there has been no public debate within Congress or among the American people on this dramatic change. There has been no formal adoption of the operational reserve. Steps taken by DOD and Congress thus far have not focused on an overarching set of alterations necessary to sustain the reserve components as a ready, rotational force that also retains necessary strategic elements and characteristics.

Almost 600,000 individuals have been mobilized in support of the global war on terror. More than 40 percent of the Selected Reserve has served since 9/11. In 2006, reservists on active duty totaled 61.3 million man-days – the equivalent of almost 168,000 full-time personnel. In the absence of the 600,000 national guardsmen and reservists mobilized as an operational reserve, and those on additional duty for the homeland, the nation would not have been able to sustain operations in Iraq and Afghanistan and to maintain requested force levels without a return to the draft. That reality – and its implications for the future – was the first reason the Commission endorsed continued reliance on an operational National Guard and Reserve force for both overseas and homeland missions.

The second compelling reason for having an operational Guard and Reserves is to address new threats in the homeland. We need to enhance DOD's role in the homeland because the threats we face here at home are radically different than those we confronted at the peak of the Cold War. A terrorist's use of a weapon of mass destruction (WMD) in a major metropolitan area would cause a catastrophe to which only the Department of Defense could respond: no other organization has the necessary capacity, capability, command and control, communications equipment, and mass casualty response personnel and equipment. For their appropriate role in responding to catastrophic events whether natural or man-made, such as the 15 National Security Planning scenarios identified by DHS, our National Guard and Reserve forces must be resourced, equipped, manned, and trained at a higher level of readiness than was appropriate when they were treated as a strategic reserve. This higher state of readiness is an essential element of a sustainable operational reserve.

The Reserve Components

There are seven reserve components of the United States' armed forces. The Army has two reserve components: the Army National Guard of the United States and the Army Reserve. The Air Force also has two reserve components: the Air National Guard of the United States and the Air Force Reserve. The Navy, the Marine Corps, and the Coast Guard each have one – the Navy Reserve, the Marine Corps Reserve, and the Coast Guard Reserve.

Unique among the reserve components, the Army National Guard and Air National Guard have both federal and state missions. While in federal service, the Army National Guard and Air National Guard are reserve components of their respective services and are referred to as the "Army National Guard of

the United States" and the "Air National Guard of the United States." When not in federal service, the Army National Guard and Air National Guard are part of the federally recognized, organized militias of the several states and territories. They are trained, and have their officers appointed, under the 16th clause of section 8, article I of the United States Constitution. In addition, they are organized, armed, and equipped largely at federal expense. The governors of the states and territories serve as commanders in chief over their state's Army National Guard and Air National Guard when those forces are not in federal service.

National Guard personnel may operate under three different statuses: state status, with state control and funding; Title 32 status, with state control and federal funding; and Title 10 status, with federal control and funding. While in state or Title 32 status, the National Guard operates under the command and control of the governor in accordance with state laws. The National Guard operating in state status is generally the "first military responder" to domestic incidents.

As the DOD *Strategy for Homeland Defense and Civil Support* notes, the National Guard is particularly well-suited to this role. It is "forward deployed" in 3,000 communities across the country, is readily accessible to state authorities, routinely exercises with law enforcement and first responders, and is "experienced in supporting [local] communities in times of crisis." The National Guard, acting in state or Title 32 status, represented approximately 50,000 of the 72,000 troops that deployed in response to Hurricane Katrina. And the National Guard was first on the scene, together with the Coast Guard and some Title 10 reserve forces in the area.

Finally, the economics of the National Guard and Reserves underscore the desirability of their continued operational use supporting the active forces who lead overseas, and, supported by the active forces, playing the lead role for DOD in addressing threats in the homeland. Our analysis found that reservists are more cost-effective than active component personnel. Quantitatively, they are a cost-effective source of trained manpower, particularly as the cost of active duty manpower has grown exponentially in recent years. Our analysis of all the facts led us to the conclusion that the National Guard and Reserves are about 70 percent less expensive than the active components. In the area of compensation, for example, according to the Government Accountability Office, the per capita cost for an active duty service member was more than $126,000 in 2006. That compares to $19,000 per reserve component member.

On the qualitative side of the equation, reservists reside in and know their local communities, local officials, and local first responders. They bring unique civilian-acquired skills that are particularly critical in the event of catastrophes in the homeland – whether natural or man-made. We believe they have a distinct advantage over the active forces – operationally, geographically, in their skills, and, most importantly, in their cost.

For all these reasons, the Commission found overwhelming evidence that the nation requires an operational reserve force for the foreseeable future to meet the threats both overseas and in the homeland.

Notwithstanding our conclusion on the necessity of an operational reserve for the reasons just discussed, the Commission reiterates our March 1 concerns about sustainability. As our first recommendation in the final report declares, Congress and DOD must modify existing laws, policies, and regulations related to roles and missions, funding mechanisms, personnel rules, pay categories, equipping, training, mobilization, organization structure, and reserve component categories. The remainder of the report addresses these following specific issues in much greater detail:

- Enhancing DOD's role in the homeland;
- Creating a continuum of service by instituting personnel management for an integrated total force;
- Developing a ready, capable, and available operational reserve;
- Supporting service members, families, and employers; and
- Reforming the organizations and institutions that support an operational reserve.

II. The Commission's Homeland Recommendations in Its Final Report

For purposes of today's hearing, we will be focusing on enhancing DOD's role in the homeland. Today, the homeland is part of the battlefield, and the federal government must use all elements of national power to protect it. Dangers to the homeland include traditional military threats, such as conventional attacks on people and property, and more unorthodox ones, such as terrorist attacks. In addition, Hurricane Katrina and other recent devastating events have raised the public's awareness of the hazards posed by catastrophic natural disasters.

As a result of these threats to the homeland and the new awareness of the danger, protecting the homeland has become a greater priority for all levels of government. The Commission believes that the Department of Defense must be fully prepared to protect American lives and property in the homeland. We know that the Department shares this view. To ensure full preparation, it must improve its capabilities and readiness to play a primary role in the response to major catastrophes that incapacitate civilian government over a wide geographic area. The Commission further believes that the National Guard and Reserves should play the lead role within DOD in supporting the Department of Homeland Security, other federal agencies, and the states in addressing these threats of priority equal to or higher than its warfighting mission.

Consistent with our recommendations in March 2007, the Commission concludes in our final report that DHS must define the requirement for capabilities it expects DOD to provide in responding to catastrophic incidents such as those in the 15 National Planning Scenarios. DOD must in turn include these requirements for civil support missions that it validates in its programming and budgeting process, and improve its capabilities and readiness to meet them.

In order to ensure that these steps occur, and that these missions are resourced appropriately, the Commission recommends that Congress define and assign these civil support responsibilities to DOD through statute. Such statutory language should clarify that DOD's homeland responsibilities are equal in priority to its combat responsibilities, and should codify the roles of the National Guard and Reserves in such responses. The Commission also recommends that U.S. Northern Command be reoriented into a command primarily manned by reserve component personnel more focused on the new threats in order to improve DOD's capabilities to respond. Congress also needs to pass a law that would enable DOD service Secretaries to call up Title 10 reservists to deal with imminent natural or man-made disasters. The Commission sets forth the following specific recommendations in Chapter II of its final report:

2. Congress should codify the Department of Defense's responsibility to provide support for civil authorities. This statutory language should include the acknowledgment that responding to natural and man-made disasters in the homeland is a core competency of DOD, of equal importance to its combat responsibilities. Congress should also clearly state that DOD should be prepared to provide the bulk of the response to a major catastrophe that incapacitates civilian government over a substantial geographic area and that DOD should initiate the necessary planning, training, and coordination for such events.

3. Consistent with DOD's *Strategy for Homeland Defense and Civil Support,* homeland defense and civil support should continue to be total force responsibilities. However, Congress should mandate that the National Guard and Reserves have the lead role in and form the backbone of DOD operations in the homeland. Furthermore, DOD should assign the National Guard and Reserves homeland defense and civil support as a core competency consistent with their required warfighting taskings and capabilities.

4. A majority of U.S. Northern Command's billets, including those for its service component commands, should be filled by leaders and staff with reserve qualifications and credentials. Job descriptions for senior leaders and other key positions at NORTHCOM should contain the requirement of significant Reserve or National Guard experience or service. In addition, either the officer serving in the position of the commander or the officer serving in the position of deputy commander of NORTHCOM should be a National Guard or Reserve officer at all times.

5. In accordance with §1815 of the 2008 National Defense Authorization Act, the Secretary of Homeland Security, with the assistance of the Secretary of Defense, should generate civil support requirements, which the Department of Defense will be responsible for validating as appropriate. DOD should include civil support requirements in its programming and budgeting. As part of this effort, DOD should determine existing capabilities from all components that could fulfill civil support requirements and rebalance them where appropriate (consistent with their other obligations), shifting capabilities determined to be required for state-controlled response to domestic emergencies to the National Guard, and shifting capabilities currently resident in the National Guard that are not required for its state missions but are required for its federal missions either to the federal reserve components or to the active duty military, as appropriate.

6. The Secretary of Defense should ensure that forces identified as rapid responders to domestic catastrophes are manned, trained, and equipped to the highest levels of readiness.

7. As part of its efforts to develop plans for consequence management and support to civil authorities, DOD should develop protocols that allow governors to direct the efforts of federal military assets responding to an emergency such as a natural disaster. This direction may be accomplished through the governor's use of a dual-hatted military commander.

8. Congress should amend the mobilization statutes to provide service Secretaries the authority to involuntarily mobilize federal reserve components for up to 60 days in a four-month period and up to 120 days in a two-year period during or in response to imminent natural or man-made disasters, similar to that employed to mobilize the Coast Guard Reserve under 14 U.S.C. §712.

In the following sections, we explain the justifications for these proposals.

A. Budgeting and Programming for Civil Support (Recommendations ##5 and 6)

Department of Defense operations in the homeland contribute to homeland security in two ways: by performing homeland defense missions and by providing civil support. Homeland defense is the military defense of the homeland, while civil support is DOD support to other agencies in the performance of their mission. Civil support missions are often performed in support of homeland security operations, which are generally led by the Department of Homeland Security and the Federal Emergency Management Agency (FEMA). *Homeland security* is not synonymous with *homeland defense;* rather, homeland security refers both to protecting the homeland against terrorism and to performing other non-terrorism-related DHS functions. In contrast, homeland defense is defined by DOD as the "protection of U.S. sovereignty, territory, domestic population, and critical defense infrastructure against external threats or aggression, or other threats as directed by the President."

The Department of Defense provides defense support of civil authorities (DSCA) to federal agencies and to state and local governments in response to requests for assistance during domestic incidents. DSCA, also referred to more generically as "civil support," is "DoD support, including [the use of] Federal military forces, the Department's career civilian and contractor personnel, and DoD agency and component assets, for domestic emergencies and for designated law enforcement and other activities." For defense support of civil authorities, the Secretary of Defense has the authority to approve the use of military personnel, units, supplies, and equipment. The Secretary also is responsible for providing overall policy and oversight for DSCA in the event of a domestic incident. Within the Office of the Secretary of Defense, the Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs (ASD-HD&ASA) provides overall supervision for homeland defense and DSCA.

A key responsibility of the reserve components, particularly the National Guard, is supporting civil authorities. While "civil support" encompasses a variety of potential missions, such as support to law enforcement and emergency response, the most important homeland mission of National Guard and

Reserve units is saving lives and protecting property following a disaster. Their role in this area is indispensable, but it is important to remember that they represent only one part of the nation's capacity to prepare for and respond to disasters and emergencies. State and local government, including the National Guard in state status, plays a critical, frontline role in managing the response to natural disasters, terrorist attacks, and other domestic incidents. Most emergencies can and should be handled by state and local officials and the private sector with no or minimal involvement of DOD.

DOD views homeland defense as part of its core warfighting mission, and thus has taken on responsibility for it. DOD explicitly trains and equips its forces for homeland defense. The Joint Chiefs of Staff's document on homeland defense, Joint Publication 3-27, states: "DOD is responsible for the [homeland defense] mission, and therefore leads the [homeland defense] response, with other departments and agencies in support of DOD efforts."

In contrast, the Department of Defense historically has viewed civil support as a "lesser included" mission and a lower priority. Although DOD has consistently stated in its policy documents, including the *National Defense Strategy,* that protecting the homeland is its most important function, the Department historically has not made civil support a priority. Rather, DOD has sought to perform civil support missions by relying primarily on "dual-capable forces." DOD's Joint Publication 3-28, "Civil Support," describes this policy: "[civil support] capabilities are derived from Department of Defense (DOD) warfighting capabilities that could be applied to foreign/domestic assistance or law enforcement support missions." In fact, Department of Defense Directive 3025.1 explicitly prohibits DOD from procuring or maintaining supplies, materiel, or equipment for providing support in civil emergencies. To perform civil support missions, DOD has instead utilized equipment procured and personnel trained for warfighting-related missions.

The Commission's March 1 Report and DOD's and Congress's Response

In our March 1 report, the Commission criticized as a "flawed assumption" DOD's position that preparing for and responding to emergencies and disasters is simply a subset of another capability, and recommended that "the Secretary of Homeland Security, with the assistance of the Secretary of Defense, should generate civil support requirements which the Department of Defense will be responsible for validating as appropriate" and which DOD should include in its programming and budgeting.

Following the publication of our March 1 report, the Secretary of Defense agreed that the Defense Department must begin to program and budget for civil support. This was a very favorable and breakthrough development. We know that the current Secretary of Defense and Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs holds such programming and budgeting to be a very high priority and has the Department working hard to fulfill this goal.

Congress mandated in section 1815 of the recently enacted National Defense Authorization Act for Fiscal Year 2008 ("Determination of Department of Defense Civil Support Requirements") that "the Secretary of Defense, in consultation with the Secretary of Homeland Security, shall determine the military-unique capabilities needed to be provided by the Department of Defense to support civil authorities in an incident of national significance or a catastrophic incident." Congress in the same section also mandated that the Secretary of Defense develop and implement a plan to fund civil support capabilities in the Department of Defense, and delineate the elements of the plan in DOD's budget materials. Passage of this legislation was another significant step toward addressing the concerns raised by the Commission's earlier report, as well as by many, many other expert reports and after-action commentaries.

Progress on Programming and Planning for Civil Support

The fact that there is no formal budgeting and programming process for civil support does not mean that DOD has not prepared for its civil support missions. For instance, the National Guard Bureau (NGB) has attempted to ensure that the National Guard is prepared to perform its civil support responsibilities by identifying the "essential 10" warfighting capabilities inherent in National Guard units for Title 10 missions, and also essential for missions on the homeland.

DOD has used the 15 National Planning Scenarios prepared by the President's Homeland Security Council – which contemplate natural and man-made catastrophes with high loss of life – to develop an understanding of which capabilities will be required to respond to the disasters.

U.S. Northern Command has "developed 25 pre-scripted mission assignments to respond to specific predetermined requests for assistance from designated lead agencies," such as FEMA; NORTHCOM has also conducted major exercises to improve planning and coordination, and to identify shortfalls.

Congress authorized the creation of chemical, biological, radiological, nuclear, and high-yield explosives consequence management (CBRNE-CM) response forces, such as the weapons of mass destruction civil support teams (WMD-CSTs).

Moreover, as discussed below, DOD has created force packages, now in various stages of development, to respond to domestic CBRNE events; these include the USMCR Chemical, Biological Incident Response Force (CBIRF), CBRNE Consequence Management Response Forces (CCMRFs), and, led by the NGB, CBRNE enhanced response force packages (CERFPs). Each of these response capabilities represents an improvement over what had existed before. However, more needs to be done.

CBRNE Consequence Management

Experts estimate that the detonation of a 10-kiloton nuclear device in a major metropolitan area would result in hundreds of thousands of people killed, hundreds of thousands injured, more than a million residents displaced, a large geographic area affected by nuclear fallout or contamination, and significant disruption of communications capabilities and capabilities of civilian government. Such estimates are not news to this Committee, as you have previous testimony on the record in this area.

For good reason, then, CBRNE consequence management is a key civil support responsibility for DOD. Should a catastrophic event occur, DOD will be expected to respond rapidly and massively. No other agency of government has the resources and capability to deal with such a major catastrophe in the homeland. DOD therefore must be manned, trained, and equipped to do so. This effort should include ensuring that all forces assigned and needed for domestic CBRNE consequence management are fully budgetcd for, sourced, manned, trained, and equipped.

The Joint Staff defines CBRNE consequence management (CBRNE-CM) in the homeland as "those actions taken to maintain or restore essential services and manage and mitigate problems resulting from disasters and catastrophes, including natural, man-made, or terrorist incidents. CBRNE-CM may include

measures to restore essential government services, protect public health and safety, and provide emergency relief to affected governments, businesses, and individuals." As stated in DOD's *Strategy for Homeland Defense and Civil Support,* consequence management for CBRNE mass casualty attacks is the Department's most important civil support objective. In the event of a catastrophic CBRNE incident, DOD can be expected to assist in responding to the massive disruption of the "production and delivery of essential goods and services."

The potential missions are diverse and may include providing public safety and security, supporting public health, and responding to terrain and infrastructure contamination. While not all CBRNE incidents will require a federal response, those that do will be coordinated through the National Response Framework, with DOD assisting the lead federal agency. In addition, the affected state or states can be expected to respond massively, with the National Guard of the affected state and those surrounding it (deployed pursuant to Emergency Management Assistance Compacts, or EMACs) playing a major role.

Because of the priority it already assigns to this mission, DOD seeks to ensure that appropriate responders are available for the CBRNE domestic consequence management mission. As discussed above, the U.S. military organizes, trains, and equips forces primarily to conduct combat operations and considers the capability to conduct civil support missions to be inherent within its combat capabilities. CBRNE-CM generally follows this policy, but does employ some dedicated CBRNE consequence management responders and related units. These include

- **NORTHCOM's Joint Task Force Civil Support (JTF-CS):** a standing joint task force, staffed by 160 personnel and commanded by a two-star Army National Guard general in Title 10 status, that plans and integrates DOD support for domestic CBRNE consequence management. In the event of a domestic CBRNE incident, JTF-CS will deploy to the incident site to exercise command and control over federal military forces.
- **National Guard Weapons of Mass Destruction Civil Support Teams (WMD-CSTs):** 22-member National Guard units operating in Title 32 status. WMD-CSTs are tasked with identifying CBRNE agents or substances, assessing the consequences of the event, advising on response measures, and assisting with requests for state and federal support. Congress has authorized 55 WMD-CSTs – one for every state and territory.

- **National Guard CBRNE Enhanced Response Force Packages (CERFPs):** National Guard force packages created to assist local, state, and federal authorities in CBRNE consequence management and to fill the anticipated 6- to 72-hour gap between the first response and the federal response to a catastrophic incident. CERFPs combine four elements from existing National Guard units: search and extraction, decontamination, medical, and command and control. They operate in state or Title 32 status, but may be federalized under "extraordinary circumstances." There are 17 CERFPs, 12 of which are assigned to the 10 FEMA regions.

- **CBRNE Consequence Management Response Forces (CCMRFs):** three Title 10 force packages at different levels of readiness consisting of several thousand joint personnel from separate units identified and organized to perform CBRNE consequence management missions, with capabilities including medical, decontamination, communications, logistics, transportation, and public affairs. The National Guard is currently designated to provide much of the manpower associated with the CCMRFs.

- **U.S. Marine Corps Chemical-Biological Incident Response Force (CBIRF):** a Title 10 unit consisting of several hundred personnel capable of "providing capabilities for agent detection and identification, casualty search and rescue, personnel decontamination, emergency medical care, and stabilization of contaminated personnel."

Mr. Chairman, this is real progress from where this nation was on September 11. However, as impressive as the capabilities of these units are that exist today, we are still a long, long way from having all the highly skilled, specially equipped, highly trained forces required in sufficient numbers and at the highest state of readiness to respond to the catastrophe scenarios.

Efforts are now being made to identify the gaps present in homeland security and civil support capabilities, but they do not appear to be fully coordinated. Three major homeland security and civil support assessments are currently under way. First, DHS has drawn on the National Preparedness System (NPS) and Target Capabilities List (TCL) to develop an assessment system evaluating the preparedness of the state and federal government. Such preparedness efforts are designed to maximize the nation's ability to respond under the National Response Plan and the successor to this emergency response plan, the National Response Framework. Second, the National Guard Bureau is developing the Joint Capabilities Database, which will give each state "the ability to provide near-real-time input on unit status and availability [of its National Guard] in each [emergency response] capability area." Finally, NORTHCOM is leading a "homeland defense and civil support capabilities based assessment [that will] provide detailed information on gaps in DOD's [homeland defense and civil support capabilities in order] to influence and inform decisions on managing risk and allocating resources." The

DHS, NGB, and NORTHCOM assessments are all at varying levels of maturity; none is yet complete. Moreover, although the three studies should provide useful information, there appears to be no overarching strategy for translating these assessments into requirements.

As the state of these assessments indicate, there has been no formal process to generate civil support requirements or to budget and program for civil support missions, no comprehensive assessment of how DOD's requirements for civil support should be balanced against its other priorities, and insufficient planning on fully organizing, manning, training, and equipping DOD forces for catastrophe response.

Because the nation has neither adequately identified the requirements related to nor adequately resourced its forces designated for response to weapons of mass destruction, it does not have sufficient trained, ready forces available for that mission. In our report, we call this an **appalling gap**, though we are certainly not claiming to be the first to recognize it.

The Role of DHS

The Commission believes that the requirements generation process should begin with DHS. By statute and policy, DHS is central to national preparedness efforts: it is the federal agency with the most comprehensive national perspective on the response capabilities present in federal, state, and local government. Therefore, it is the agency with the expertise and the responsibility to inform DOD of which capabilities the Department will be expected to provide in response to a catastrophe. Although DOD and DHS have worked together on planning, exercising, and other efforts, such as developing NORTHCOM's pre-scripted mission assignments and carrying out exercises such as Ardent Sentry, DHS has not provided DOD with requirements for civil support.

The failure by DHS to take this critical first step in the budgeting and programming process is a major flaw in how DHS and DOD prepare for DOD's civil support mission. However, it should in no way be used as an excuse to delay or set back efforts in progress within DOD to fund and enhance DOD civil support capabilities. The recommended changes should instead build on those positive efforts DOD currently has under way.

The goal of these efforts should be to identify those requirements necessary to create an operational National Guard and Reserve that is able to augment and reinforce the active component overseas and to perform the homeland missions that are so critically important. **The Secretary of Defense should ensure that forces identified as rapid responders to domestic catastrophes are manned, trained, and equipped to the highest levels of readiness.** The required National Guard and Reserve units must be fully equipped, fully manned, fully trained, and fully ready to respond in the homeland, just as the "ready battalion" of the 82nd Airborne or First Marine Division or strategic airlift and tankers are for the overseas mission.

B. Making Civil Support a Statutory Responsibility (Recommendations ##2 and 3)

The Department of Defense has historically placed a low priority on civil support, viewing it as a "lesser-included" or "derivative" capability of its core warfighting responsibility and not one for which it must budget and program. The DOD leadership has clearly changed its stance in this area and is willing to raise the priority given civil support. The Office of the Secretary of Defense recently agreed that civil support is a role for which the Defense Department must begin to program and budget. Congress has also taken this position in the National Defense Authorization Act for Fiscal Year 2008. These are both extremely important steps in the right direction.

But despite these positive developments, there is no guarantee that civil support will remain a high priority. With a change in administration, it could return to its historical place as a "derivative" capability, as it was for many years prior to the current leadership. The Commission believes that the best way to avoid this outcome is for Congress to explicitly charge the Department of Defense with the statutory responsibility to provide civil support. Doing so will ensure that the Department continues to move in the right direction and will clearly signal that this and future congresses intend to hold it accountable for its supporting role in homeland security.

While the Stafford Act and other statutes authorize DOD to conduct civil support operations, these statutes do not constitute a sufficient formal charge of responsibility. The Commission believes that only such a statutory mandate will ensure that DOD, now and in the future, shifts its priorities and commits sufficient resources to planning, training, and exercising for homeland missions.

This statutory mandate should have several elements. It should make clear that DOD has the responsibility to carry out civil support missions when called upon to do so; it should state that responding to natural or man-made disasters in the homeland is a core competency of DOD that is equal in priority to its combat responsibilities; it should make clear that in the event of a major catastrophe incapacitating civilian government over a wide geographic area, DOD can be expected to provide the bulk of the response; and it should assign the National Guard and Reserves the lead role within DOD for catastrophe response. The last point warrants further explanation.

The United States armed forces are guided by the Total Force Policy. Under this policy, all components of the armed forces – active and reserve – act as a homogeneous whole. They are viewed as a single force when the Department considers the best way to meet national security requirements. As a result, the active and reserve components are assigned missions on the basis of which unit is best able to fulfill specific national security requirements.

Under this Total Force Policy, the National Guard and Reserves are the most important elements of the Department of Defense for protecting the homeland. While DOD and other policy documents generally recognize this fact, they have not sufficiently clarified the role that the reserve components currently play and should play in the future.

A tremendous amount of homeland-related capability resides in the reserve components, which are located in communities throughout the nation. The reserve components – the National Guard and the Title 10 reserve components – consist of more than 1.1 million men and women based in almost 5,000 facilities throughout the United States and the U.S. territories. The connections with their communities foster public support for and trust of military members, and this relationship can be indispensable when disaster strikes at home.

The National Guard's experience, skill sets, and nationwide dispersal make it particularly well-suited for civil support operations. State emergency response is its most important responsibility when it is not under federal control. National guardsmen often are the first military responders. Because of its unique, constitutionally designated status as both a state and a federal force, the National Guard is able to function as a key element of state emergency response, as a state responder, and as a coordinator of the

federal military and state response. For this reason, the National Guard has long experience in civil support missions. At a recent congressional hearing, Lieutenant General H Steven Blum, Chief of the National Guard Bureau, noted that during 2006–07 alone, the states had more than "100,000 soldiers and airmen . . . supporting Homeland Security missions."

The Army National Guard is structured to provide large formation combat arms capabilities for overseas missions. These forces, and the combat support and combat service support capabilities they represent, also are useful at home. The National Guard is not the only reserve component important to civil support, however. The U.S. Army Reserve, for example, is primarily made up of combat support and combat service support units – such as military police, civil affairs, transportation, and medical personnel – that are widely dispersed across the country and could be extremely valuable in emergency response. Army Reserve units have skilled medical professionals, hazardous material reconnaissance teams, and casualty extraction, mass casualty decontamination, engineer, aviation, and water purification units that would be very useful for catastrophe response. Other reserve components and members also have specialized capabilities, such as those in the emergency response field, that are vital to consequence management and exist only in the reserves.

The Commission believes that DOD should take the reserve components' expertise in homeland operations and refine it so that they will become the backbone of future homeland operations. If DOD is to make civil support a core mission, its forces need to reflect that doctrine. The most efficient means to that end would be to amplify the current homeland capabilities present in the reserve components. The Commission therefore recommends that Congress explicitly recognize the function that the reserve components should play in the homeland by assigning to them a leadership role in the homeland.

Mr. Chairman, this recommendation is commonsense and should not be controversial, as we believe it reflects the current direction of DOD. It in no way should be taken as suggesting that the overseas warfighting capability of the reserve components should be reduced.

In increasing the priority of the civil support mission, both within the Department as a whole and for the National Guard and Reserves in particular, our final report stresses that "the Department should not compromise the reserve components' ability to perform their warfighting responsibilities" (p. 96). In

other words, neither the National Guard nor any other reserve component should be converted into an exclusively domestic disaster response force, nor do we believe this would be the effect if our recommendations were implemented.

Rather, as we make clear, once the civil support requirements are identified, DOD should undertake any rebalancing, as appropriate – among the active and reserve components – "to ensure that those capabilities useful for civil support reside, where practicable, in the reserve components, and are readily accessible for civil support-related missions" (p. 96). The Commission was not in a position to determine what, if any, shifting of capabilities among components would in fact be appropriate, since no civil support requirements have yet been generated by DHS or validated by DOD. The overseas warfighting capabilities of the National Guard and Reserves will absolutely be required now and for the future, and the Commission's recommendations in no way call that reality into question.

C. Integrating the Reserve Components at U.S. Northern Command (Recommendation #4)

Paralleling the reserve components' increased role in the homeland is the need for U.S. Northern Command, like the rest of DOD, to more fully integrate the reserve components into its homeland mission. NORTHCOM is the unified command with primary responsibility for homeland defense and civil support missions. Joint Publication 3-26, "Homeland Security," reflecting the Unified Command Plan, describes its mission as "conduct[ing] operations to deter, prevent, and defeat threats and aggression aimed at the United States, its territories, and interests within the assigned area of responsibility (AOR) and as directed by the President or SecDef [Secretary of Defense], provide military assistance to civil authorities including [consequence management] operations. USNORTHCOM [is] . . . the single, responsible, designated DOD commander for overall command and control of DOD support to civil authorities within the USNORTHCOM AOR." In practice, NORTHCOM views homeland defense, but not civil support, as its highest priority.

NORTHCOM has few forces permanently assigned to it; it provides defense support of civil authorities primarily through its subordinate and service-specific commands, such as Joint Task Force Civil Support, Army North, and Air Force North. NORTHCOM does not command National Guard forces in state or Title 32 status.

As already noted, DOD has not engaged the reserve components in the homeland mission in a manner that takes full advantage of their skills and experience. This shortcoming, along with the lack of a civil support requirements definition, programming, and budgeting process, has been carried over into how NORTHCOM is organized. In our March report, the Commission concluded that "U.S. Northern Command does not adequately consider and utilize all military components – active and reserve, including the National Guard – in planning, training, and exercising and in the conduct of military operations while in support of a governor, in support of another lead federal agency, or in the defense of America."

As DOD makes civil support a core function and begins to budget and program for civil support as now required by law, NORTHCOM must elevate civil support's priority so that both it and homeland defense become core missions of the command. To that end, more must be done to integrate the reserve components into NORTHCOM.

Although there has been progress since we issued that earlier report, the Commission continues to find wanting the planning efforts of NORTHCOM. It still does not adequately consider and plan for the utilization of all military components, active and reserve (including the National Guard serving under the command of state governors), in its planning, training, and exercising for support to civil authorities.

NORTHCOM must incorporate personnel who have greater knowledge of National Guard and Reserve capabilities, strengths, and constraints and must assemble a cadre of experts on the intricacies of state and local governments, law enforcement, and emergency response. Such knowledge currently resides in the National Guard and Reserves and, despite the Commission's earlier recommendations, remains untapped and unintegrated, in disparate commands.

The Commission therefore reiterates in our final report our recommendation that a majority of U.S. Northern Command's billets, including those for its service component commands, should be filled by leaders with reserve qualifications and credentials. A larger percentage of reservists on the staff and in key leadership positions, including in the position of commander or deputy commander, would provide NORTHCOM with greater insight into the unique skills and strengths available in the reserve forces. Increasing the numbers of members of the National Guard and Reserves within the service components

of NORTHCOM would ensure that those preparing and coordinating homeland missions will consider the unique contributions of the reserve component. Having less than 10 percent of its full-time billets and few senior billets allocated to the National Guard and Reserve, as we found was the case when writing our interim report, hardly provides the type of integration and experience required. We also believe that the reserve qualifications and credentials must be substantive – mere exposure to the reserve components would be insufficient.

D. Governors' Authority to Direct Military Forces in Disaster Response (Recommendation #7)
As chief executives, governors bear the primary responsibility of protecting life and property within their state. Each also serves as the commander in chief of his or her state National Guard when it is not in federal service. This authority originates in the Constitution and is consistent with current U.S. law and policy, which establishes that domestic incidents are managed at the lowest jurisdictional level possible and that lower jurisdictional levels are supported by additional response capabilities when necessary.

Governors command their state's National Guard and frequently deploy it in response to domestic incidents, such as natural disasters or civil unrest. The President may also deploy Title 10 military forces to a state as part of disaster response. Such a civil support operation is likely to be undertaken as part of a larger operation coordinated by DHS and its component FEMA.

Under existing procedures, if a major crisis occurs in a state where both federal and non-federal (National Guard under state control) forces provide civil support, military assistance is coordinated in two ways. NORTHCOM controls the movement of Title 10 active and reserve forces into the state and maintains command and control over them through a joint task force. Simultaneously, the state, aided by the National Guard Bureau, coordinates the movement of all National Guard forces in Title 32 status; once they are in a state, they are commanded by the governor as if they were National Guard forces of that state. This dual coordination leads to two separate chains of command for military forces in the state. One chain of command leads from Title 10 forces through NORTHCOM to the President, while another leads to the governor. Although the governor may request assistance from Title 10 military forces within the state, he or she does not have the authority to direct them. This dual reporting could

cause confusion, wasted or duplicated effort, and even potentially greater loss of life and property in a catastrophe response.

To remedy this problem, the Commission recommends that as part of its efforts to develop plans for consequence management and support to civil authorities, DOD should develop protocols to allow governors to direct the efforts of federal military assets responding to an emergency such as a natural disaster. This direction may be accomplished through the governor's use of a dual-hatted military commander.

We want to be clear that this recommendation does not, in our view, in any way violate the President's authority as the commander in chief over federal forces, an authority conferred by Article II of the Constitution; does not imply that all 50 state governors would be routinely allowed access to federal forces; and does not imply that all Title 10 forces participating in a response necessarily would be subject to direction by a governor (for example, there might be no logical reason for the governor to direct naval forces).

Rather, relying on protocols arranged in advance of a disaster, it would allow the President for some defined period of time to "chop" a portion of his or her command authority over particular identified federal forces – the portion for operational control – to a state's governor who is in charge of the disaster response. The federal forces could be part of a joint federal–state military task force commanded by an officer dual-hatted under Title 10 and Title 32. The Commission believes that this method would be more effective in achieving unity of effort in those instances where the disaster response is led by the governor of a state than the approach taken in Hurricane Katrina, when Title 10 and National Guard forces responding in the Gulf Coast were under separate control.

Governors routinely command National Guard troops from other states in disaster response. If governors can be trusted to direct National Guard soldiers from their own state or from other states, then they can be trusted under similar circumstances to direct federal active and reserve component forces as well. Nor is the assignment of active duty personnel to Title 32 National Guard commands a novel undertaking. Federal law specifically authorizes that both enlisted members and commissioned officers may be

detailed for duty with a state National Guard. In fact, Title 10 officers detailed in this fashion may accept a commission in the National Guard.

In addition, current military doctrine explicitly allows members of the United States armed forces to serve under the operational control of foreign commanders, with the President retaining ultimate command over U.S. forces. If the command relationship with the President can be maintained while American troops are operating under the control of foreign commanders, we see no convincing reason that it cannot be maintained by prearranged agreement while troops are under the control of a state governor acting through the adjutant general.

Analysts from the Rand Corporation discussed this issue in a 2007 report, *Hurricane Katrina: Lessons for Army Planning and Operations.* They noted,

> When U.S. forces conduct multilateral operations that are led by foreign commanders, they are placed under the operational control of that commander. This issue was examined thoroughly in 1993 during the drafting of Presidential Decision Directive 25, Reforming Multilateral Peacekeeping Operations. During this deliberative process, each of the services, the joint staff, and the Office of the Secretary of Defense agreed that this type of arrangement preserved the federal chain of command and, therefore, was not a violation of existing federal statutes or military practices. Using the logic and rationale employed in PDD-25, there is no legal reason why federal forces could not be temporarily placed under the tactical control of individual states for a specific time, place, and mission. (p. 66)

E. Activating Title 10 Reserves for All-Hazards Preparation and Response (Recommendation #8)

Finally, the Commission recommends that Congress amend the mobilization statutes to provide service Secretaries the authority to involuntarily mobilize federal reserve components for up to 60 days in a four-month period and up to 120 days in a two-year period during or in response to imminent natural or man-made disasters. Under this proposal, access would be allowed to the federal reserve components for all-hazards response prior to or after a disaster similar to the access now available to the Secretary of Homeland Security with regard to the U.S. Coast Guard. No such statutory authority exists today. The need for such an authority was underscored by General Peter Schoomaker, then Army Chief of Staff, when he testified before the Commission about the homeland-related responsibilities of the Army Reserve. The Commission believes there should be a statutory mechanism allowing greater access to Title 10 reserve forces for all-hazards civil support operations.

III. Other Recommendations Necessary to Sustain the Operational Reserve

On the basis of our research, the Commission came to the inescapable conclusion that sustaining an operational reserve force in the 21st century will require major changes. Conclusions and recommendations relevant to the homeland activities of the operational reserve are found in a number of other sections of the Commission's report.

Changes to Reserve Component Categories

The Commission recommends a change in how the total manpower pool should be managed so that our armed forces can accommodate homeland and overseas missions, fully implementing a structure often referred to as the "continuum of service." Today, there is an active duty force of 1.4 million personnel; the National Guard and Reserve force contains about 800,000 personnel in units, and another 300,000 in the Individual Ready Reserve. The retiree pool contains about 1.9 million people. Beyond that, there is the Selective Service System, which registers more than 6,000 young men every day.

The Commission envisions moving from the traditional, little-used strategic reserve force to a future structure which includes parts of the force that serve operationally on rotational deployment tours and others that provide strategic depth to the force but may not be required to be kept at such a high state of readiness. These changes are illustrated in the attached charts. The new reserve component categories we have recommended will facilitate a continuum of service, with easy transitions for members along a continuum spanning full-time service to low annual requirements of those who agree to serve when needed but most of the time participate minimally. To make this continuum a reality, we need an integrated pay and personnel system, an integrated retirement system, duty status reform, an integrated, total force management system, and other reforms. Our force planners – if they have a mission, if they have a requirement to meet a contingency overseas or a contingency here at home – must be able to draw from this total force pool of manpower.

The Commission believes that the existing reserve component categories, which were instituted in response to the Cold War, should be replaced with two new categories. In the Operational Reserve Force, the Department would put those units required to be kept at the highest level of readiness, those units that are getting ready to deploy overseas, and individuals in various full-time assignments, such as

serving on the staff of the U.S. Northern Command or some other command, or in the Pentagon. The second category would be the Strategic Reserve Force, consisting of the Strategic Ready Reserve Force and the Strategic Standby Reserve. In the Strategic Ready Reserve would be units kept ready to be capable of activation and deployment if needed, individuals who have time left on their military service obligation or who have kept their military skills current through training and duty activities, and recently retired members (regular or reserve) who are viable mobilization assets. Those retirees who could not be activated immediately and all those in today's Individual Ready Reserve who are not in the Strategic Ready Reserve Force would be placed in the Strategic Standby Ready Reserve. Finally, if the mobilization of all these personnel could not meet the requirements of a major war, the Selective Service System would be engaged.

Equipment and Readiness

Congress tasked the Commission to assess how effectively the organization and funding structures of the National Guard and Reserve are achieving operational and personnel readiness. An operational reserve requires a higher standard of readiness, for a greater duration, with less time to restore readiness levels between deployments. The Cold War–era model relied on a lengthy period of time – post-mobilization – to address training shortfalls, update equipment, and fix such problems as individual medical readiness. That framework is out of sync with the periodic and sustained rotational use of the National Guard and Reserves envisioned in the current manpower planning models, such as the Army's Force Generation Model. ARFORGEN is instead designed to rely on a "train, mobilize, deploy" model that will require increasing levels of readiness for several years prior to deployment. Sustained operational use of the reserve component will make it necessary to devise a very different way of doing business.

The Department of Defense must improve the readiness of the National Guard and Reserves, in the homeland and overseas. The readiness of units and of individuals varies greatly among the services, and the differences relate largely to funding. In our March 1 report, we said that 88 percent of Army National Guard combat forces here in the United States were not ready. On the basis of information we received from Department of Defense officials shortly before publication of our final report, we believe that this assessment of National Guard readiness remains accurate. In fact, the situation is a little worse. There are a number of improvements in the pipeline that should improve National Guard readiness in future years. But as Army Chief of Staff General Casey has testified in recent months, Army readiness is being consumed as fast as we can build it.

With the exception of those reserve forces deployed or just getting ready to deploy, readiness of the Army Guard units at home in their states is extremely low. Their unreadiness leaves us at greater risk should the nation suffer a catastrophic WMD attack on our homeland or a natural disaster inflicting greater damage than did Hurricane Katrina. As discussed above, we recommend in our report that National Guard and Reserve units required to be ready to respond domestically to a catastrophe be maintained at higher readiness levels than were routinely maintained in the past.

We recognize that most of the problems in this area are not new; they have arisen because Cold War policies and laws remain in effect while the reserve components are being used in ways never envisioned when those policies were developed. Policies that allowed cascaded equipping and tiered readiness for the Army reserve components resulted in those forces being largely "not ready" before 9/11. That the wars in Iraq and Afghanistan have exacerbated readiness problems should come as no surprise.

We also recommend that the Department expand and improve on its readiness reporting system in ways that both provide operational planners more details and also answer the question "ready for what?" Today, in the readiness reporting system managed by the Chairman of the Joint Chiefs of Staff, the standards by which all units are measured are determined by their wartime missions. They are not assessed for their capability to respond to crises here at home. The system we envision should be common across all services and components, contain data from the individual through the major unit level, and report on readiness for a full spectrum of missions, including support to civil authorities. The Defense Readiness Reporting System currently being put into operation by the Department may be a start on the road to such a comprehensive system, but progress on its implementation has been slow.

We also recommend that DOD conduct zero-based reviews of the reserve components' equipment and levels of full-time support personnel. Adequate levels of equipment are critical for realistic training, particularly as a unit moves into its force generation model deployment cycle. Equally critical are the full-time support personnel who both maintain that equipment and ensure that reserve component units are trained to the standards that the active component expects from an operational reserve force. We are familiar with current service plans to fund these areas, but we are skeptical that existing requirements, based on Cold War tables of organization and equipping, are accurate. The requirements for reserve forces employed operationally overseas and prepared to

respond to catastrophes here at home will surely differ from those developed for a once-in-a-generation conflict against the Soviet Union. Most of the expense of funding the necessary equipment and personnel is already budgeted in service plans. The Army G-8, Lieutenant General Stephen Speakes, told us that current Army plans include full funding to equip Guard and Reserve units and meet full-time support requirements. We are recommending that these plans be modified in accordance with the zero-based reviews, and that funding for these requirements be accelerated.

Individual medical readiness, particularly dental readiness, was a serious issue during mobilization for the first Gulf War. It has remained a significant problem for some reserve components during mobilizations for Iraq and Afghanistan. New force generation models will provide much less time post-mobilization for needed fixes, and no-notice catastrophic events provide even less. As in the case of training, any remedial work will have to be completed pre-mobilization. In the Commission's view, ensuring individual medical readiness for an operational reserve force is a corporate responsibility of the Department of Defense, as well as a responsibility of the individual service member. We recommend a number of changes to ensure that service Secretaries have the authority to provide the medical and dental screening and care necessary to make certain that service members meet the applicable medical and dental standards for deployment.

Personnel Management

We can no longer rely on personnel management laws, policies, and systems that are a relic of the Cold War era. DOD's personnel management strategies must instead foster a continuum of service as part of an integrated total force. As generally understood, a continuum of service would facilitate the seamless transition of individual reservists on and off of active duty to meet mission requirements and would permit different levels of participation by service members over the course of a military career. The integrated total force management necessary to achieve this continuum is the next phase of reforms required to achieve the enhanced military effectiveness envisioned by Congress in enacting the Goldwater-Nichols Department of Defense Reorganization Act of 1986.

Two critical enablers of an enhanced continuum of service are a reduction in the number of duty status categories and the implementation of an integrated pay and personnel system. Equally important, however, is an integrated personnel management system that, when fully mature at some point in the future, would include an integrated promotion system, integrated compensation system, and integrated retirement system.

Conclusion

Commissioners are honored to have been selected to undertake the most comprehensive, independent review of National Guard and Reserve forces in the past 60 years. Many of today's profound challenges to the National Guard and Reserves will persist, notwithstanding force reductions in Iraq and Afghanistan. This is particularly true for threats to the homeland. Thus, the need for major reforms is urgent regardless of the outcome of current conflicts. The Commission believes that the nation must look past the immediate challenges and focus on the long-term future of the National Guard and Reserves and their role in protecting the United States' vital national security interests at home and abroad. We have labored to identify and categorize the challenges that must be addressed, and have proffered a series of recommendations to address those challenges. We understand that responsibility for implementation is the purview of Congress and the executive branch. We hope that our report conveys an appropriate sense of urgency, and we are confident that you will build on and improve upon our efforts, particularly in the homeland.

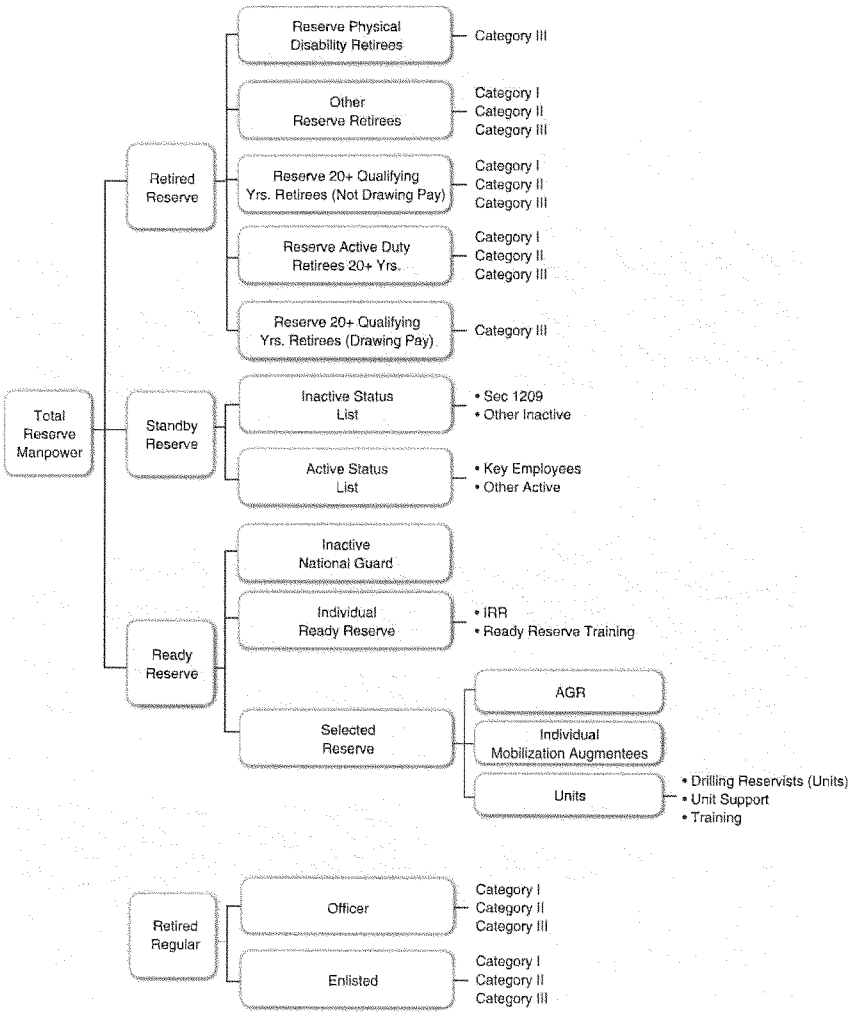


Figure VI.1. Current Reserve Component Categories

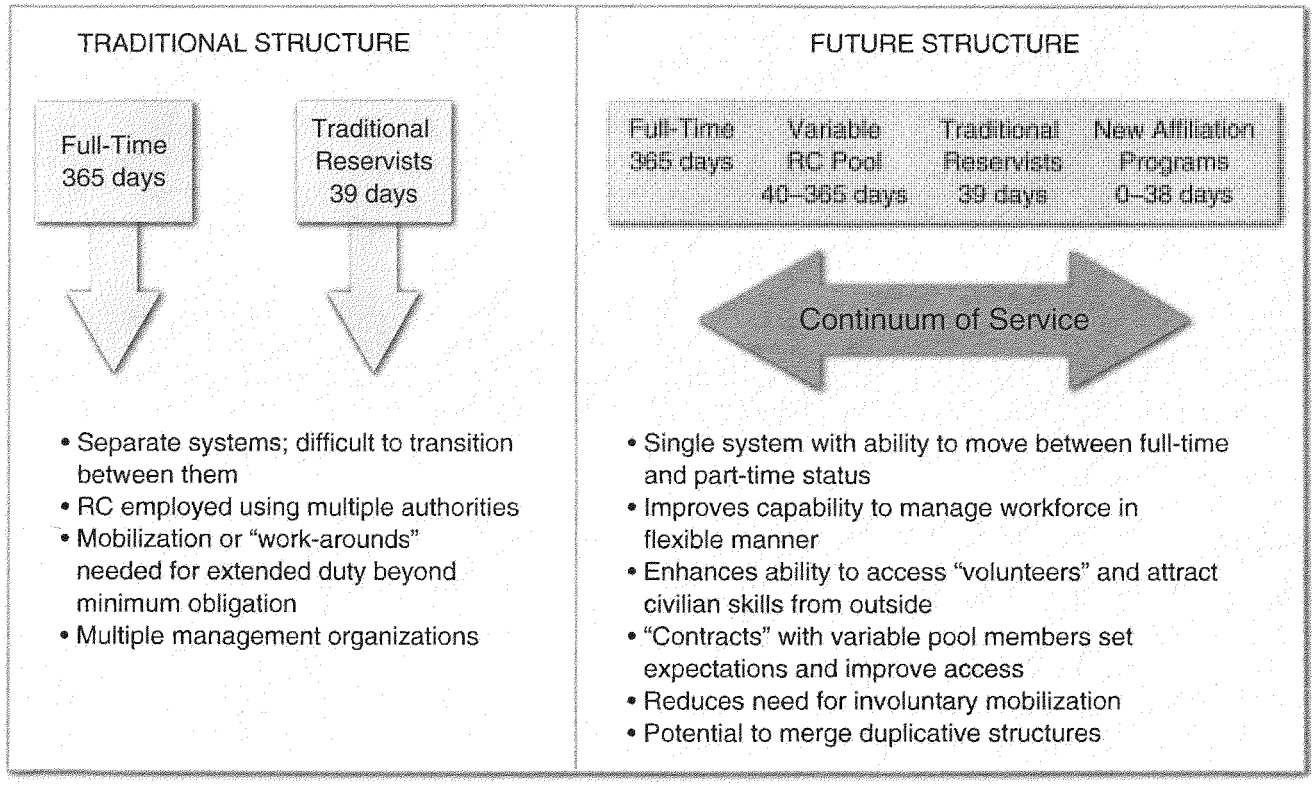
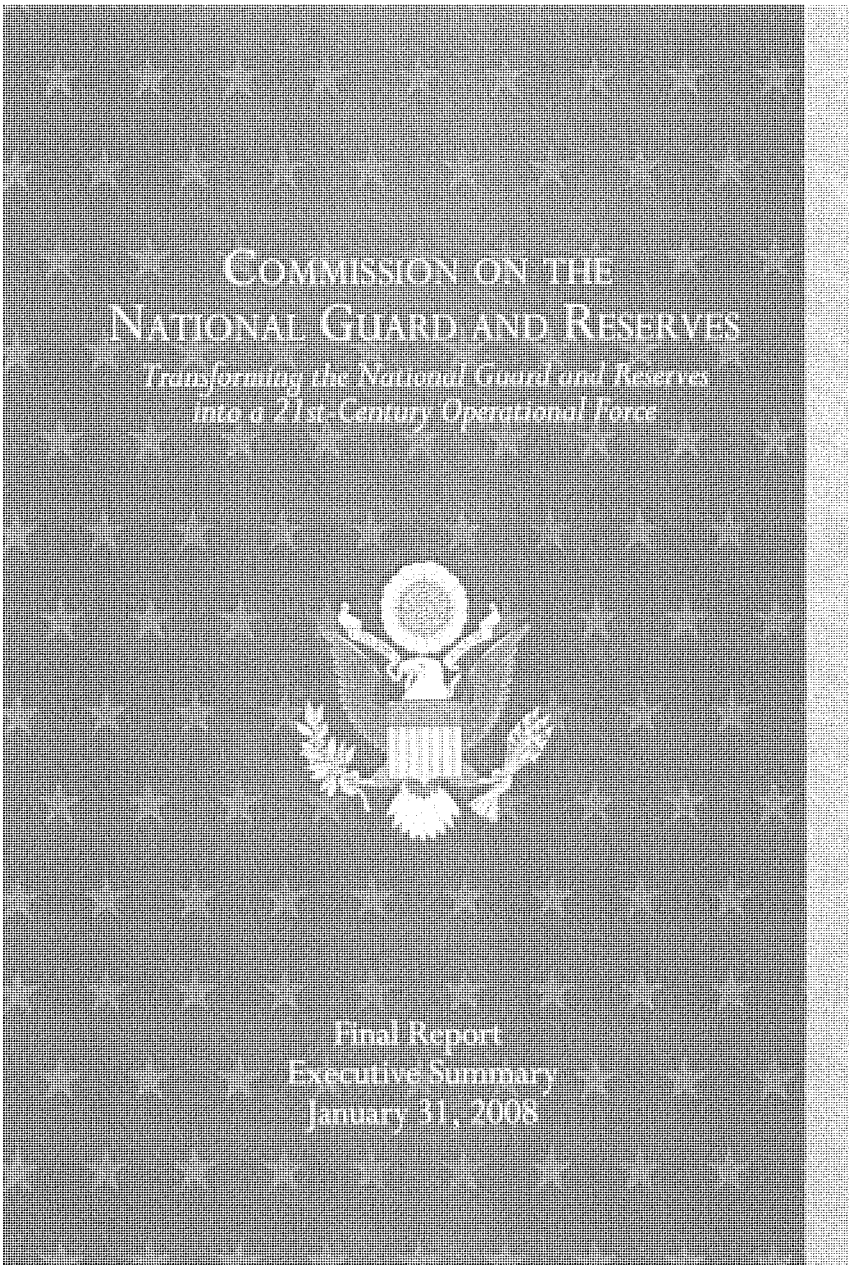


Figure VI.2. A Continuum of Service Structure for the Active and Reserve Components

Figure VI.3. Proposed Reserve Component Categories



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The Honorable Carl Levin
Chairman, Committee
on Armed Services
United States Senate
Washington, DC 20510

The Honorable John McCain
Ranking Member, Committee
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United States Senate
Washington, DC 20510

The Honorable Ike Skelton
Chairman, Committee
on Armed Services
United States House
of Representatives
Washington, DC 20515

The Honorable Duncan Hunter
Ranking Member, Committee
on Armed Services
United States House
of Representatives
Washington, DC 20515

January 31, 2008

Dear Chairmen and Ranking Members:

The Commission on the National Guard and Reserves is pleased to submit to you its final report as required by Public Law 108-375, the Ronald Reagan National Defense Authorization Act for Fiscal Year 2005 (as amended by Public Law 109-163). As you know, Congress chartered this Commission to assess the reserve component of the U.S. military and to recommend changes to ensure that the National Guard and other reserve components are organized, trained, equipped, compensated, and supported to best meet the needs of U.S. national security.

The Commission's first interim report, containing initial findings and the description of a strategic plan to complete our work, was delivered on June 5, 2006. The second interim report, delivered on March 1, 2007, was required by Public Law 109-364, the John Warner National Defense Authorization Act for Fiscal Year 2007, enacted on October 17, 2006. That second report examined 17 proposals contained in the National Defense Enhancement and National Guard Empowerment Act, and included 23 Commission recommendations covering the broad spectrum of issues raised by the legislation.

The Commission applauds Congress's timely and decisive action in implementing a number of these important provisions in the 2008 National Defense Authorization Act. In carefully considering the Commission's recommendations, Congress has changed in a fundamental way the Department of Defense's role for the homeland,

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ESTABLISHED PURSUANT TO THE RONALD W. REAGAN NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2005, PUB. L. NO. 108-375,118 STAT 1880 (2004)

and taken significant steps to make the nation safer from man-made and natural disasters. Secretary of Defense Gates also has taken timely and decisive action to implement those recommendations not requiring legislation, and has advocated before Congress for those requiring legislation.

The final report of the Commission was informed by 17 days of public hearings involving 115 witnesses; 52 Commission meetings; more than 850 interviews; numerous site visits, forums, and panel discussions; and the detailed analysis of thousands of documents supplied at the Commission's request by the military services, government agencies, experts, and other stakeholders. It contains six major conclusions and 95 recommendations, supported by 163 findings.

In conducting its work, the Commission has gathered information, analyzed evidence, identified significant problems facing the reserve components, and sought to offer the best possible recommendations to solve the problems identified. The problems we identify in this report are systemic, have evolved over many years, and are not the product of any one official or administration. Many of the Commission's recommendations to solve those problems can be implemented immediately; however, a number of them may take years to implement effectively. Their full implementation will require additional work by Congress and the executive branch.

At the core of these changes is the explicit recognition of the evolution of the reserve components from a purely strategic force, with lengthy mobilization times designed to meet Cold War threats from large nation-states, to an operational force. This operational reserve must be readily available for emergencies at home and abroad, and more fully integrated with the active component. Simultaneously, this force must retain required strategic elements and capabilities.

The Commission concludes that there is no reasonable alternative to the nation's continued increased reliance on reserve components as part of its operational force for missions at home and abroad. However, the Commission also concludes that this change from their Cold War posture necessitates fundamental reforms to reserve components' homeland roles and missions, personnel management systems, equipping and training policies, policies affecting families and employers, and the organizations and structures used to manage the reserves. These reforms are essential to ensure that this operational reserve is feasible in the short term while sustainable over the long term. In fact, the future of the all-volunteer force depends for its success on policymakers' undertaking needed reforms to ensure that the reserve components are ready, capable, and available for both operational and strategic purposes.

In reviewing the past several decades of intense use of the reserve components, most notably as an integral part of operations in Iraq, Afghanistan, and the homeland, the Commission has found indisputable and overwhelming evidence of the need for policymakers and the military to break with outdated policies and processes and implement fundamental, thorough reforms in these areas. The members of this Commission share this view unanimously. We note that these recommendations will require the nation to reorder the priorities of the Department of Defense, thereby necessitating a major restructuring of laws and DOD's budget. There are some costs associated with these recommendations, but the problems are serious, the need to address them is urgent, and the benefits of the reforms we identify more than exceed the expense of implementing them.

These issues are extremely complex, and people of good character and conscience will disagree with some of the solutions we propose. That is to be expected. No significant reforms have been undertaken in the laws affecting the reserve components for more than half a century. The last major Defense reform effort—the Goldwater-Nichols Department of Defense Reorganization Act of 1986—made fundamental adjustments to the roles of the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and combatant commanders but did not affect the structures or policies of the reserve components. We hope and anticipate that this report will generate lively debate among the institutions and key policymakers responsible for protecting U.S. national security.

With the submission of this our last report, the Commission turns our findings, conclusions, and recommendations over to the legislative and executive branches, where we feel confident they will be carefully considered, improved upon, and implemented. We believe that this action will have the same profound and positive effects as did the Goldwater-Nichols legislation.

The Commission wants to express our continuing deep appreciation for the significant support and cooperation from the Congress and the Department of Defense as well as the sustained, superb work of the Commission's staff. The Commission also wishes to recognize the public service of Senator John Warner, as he concludes a long and distinguished career that has set the standard for statesmanship and bipartisan advocacy of a strong national defense.

We close by thanking all military members in our nation's active and reserve forces. Our nation is indebted to them for their service and the sacrifices that they, their families, and their employers have made—and will continue to make—on behalf of the United States of America.

Sincerely,

ARNOLD L. PUNARO, CHAIRMAN

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cc: The Honorable Robert Gates, Secretary, Department of Defense

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The Honorable Robert Gates
Secretary, Department of Defense
1000 Defense Pentagon, Room 3E880
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The Commission's first interim report, containing initial findings and the description of a strategic plan to complete our work, was delivered on June 5, 2006. The second interim report, delivered on March 1, 2007, was required by Public Law 109-364, the John Warner National Defense Authorization Act for Fiscal Year 2007, enacted on October 17, 2006. That second report examined 17 proposals contained in the National Defense Enhancement and National Guard Empowerment Act, and included 23 Commission recommendations covering the broad spectrum of issues raised by the legislation.

The Commission applauds Congress's timely and decisive action in implementing a number of these important provisions in the 2008 National Defense Authorization Act. In carefully considering the Commission's recommendations, Congress has changed in a fundamental way the Department of Defense's role for the homeland, and taken significant steps to make the nation safer from man-made and natural disasters. We also commend you for taking timely and decisive action to implement those recommendations not requiring legislation, and advocating before Congress for those requiring legislation.

The final report of the Commission was informed by 17 days of public hearings involving 115 witnesses; 52 Commission meetings; more than 850 interviews; numerous site visits, forums, and panel discussions; and the detailed analysis of thousands of documents

supplied at the Commission's request by the military services, government agencies, experts, and other stakeholders. It contains six major conclusions and 95 recommendations, supported by 163 findings.

In conducting its work, the Commission has gathered information, analyzed evidence, identified significant problems facing the reserve components, and sought to offer the best possible recommendations to solve the problems identified. The problems we identify in this report are systemic, have evolved over many years, and are not the product of any one official or administration. Many of the Commission's recommendations to solve those problems can be implemented immediately; however, a number of them may take years to implement effectively. Their full implementation will require additional work by Congress and the executive branch.

At the core of these changes is the explicit recognition of the evolution of the reserve components from a purely strategic force, with lengthy mobilization times designed to meet Cold War threats from large nation-states, to an operational force. This operational reserve must be readily available for emergencies at home and abroad, and more fully integrated with the active component. Simultaneously, this force must retain required strategic elements and capabilities.

The Commission concludes that there is no reasonable alternative to the nation's continued increased reliance on reserve components as part of its operational force for missions at home and abroad. However, the Commission also concludes that this change from their Cold War posture necessitates fundamental reforms to reserve components' homeland roles and missions, personnel management systems, equipping and training policies, policies affecting families and employers, and the organizations and structures used to manage the reserves. These reforms are essential to ensure that this operational reserve is feasible in the short term while sustainable over the long term. In fact, the future of the all-volunteer force depends for its success on policymakers' undertaking needed reforms to ensure that the reserve components are ready, capable, and available for both operational and strategic purposes.

In reviewing the past several decades of intense use of the reserve components, most notably as an integral part of operations in Iraq, Afghanistan, and the homeland, the Commission has found indisputable and overwhelming evidence of the need for policymakers and the military to break with outdated policies and processes and implement fundamental, thorough reforms in these areas. The members of this Commission share this view unanimously. We note that these recommendations will require the nation to reorder the priorities of the Department of Defense, thereby necessitating a major restructuring of laws and DOD's budget. There are some costs associated with these recommendations, but the problems are serious, the need to address them is urgent, and the benefits of the reforms we identify more than exceed the expense of implementing them.

These issues are extremely complex, and people of good character and conscience will disagree with some of the solutions we propose. That is to be expected. No significant reforms have been undertaken in the laws affecting the reserve components for more than half a century. The last major Defense reform effort—the Goldwater-Nichols Department of Defense Reorganization Act of 1986—made fundamental adjustments to the roles of the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and combatant commanders but did not affect the structures or policies of the reserve components. We hope and anticipate that this report will generate lively debate among the institutions and key policymakers responsible for protecting U.S. national security.

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Sincerely,

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J. STANTON THOMPSON

cc: The Honorable Carl Levin, Chairman, Committee on Armed Services, United States Senate

The Honorable John McCain, Ranking Member, Committee on Armed Services, United States Senate

The Honorable Ike Skelton, Chairman, Committee on Armed Services, United States House of Representatives

The Honorable Duncan Hunter, Ranking Member, Committee on Armed Services, United States House of Representatives

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The Commission extends a sincere thank-you to all seven reserve components for detailing staff to assist the Commission's efforts. We also extend thanks to the following individuals who contributed to this report while serving on the Commission staff at some time prior to its completion: Eric C. Chase, Dale D. Fair, Betsy Freeman, Max J. Jakeman, Karen E. Lloyd, Andrew V. Napoli, John Raidt, Henry J. Schweiter, Brian T. Smith, Jodie L. Sweezey, and Mildred R. Wears.

EXECUTIVE SUMMARY

INTRODUCTION

The Commission on the National Guard and Reserves was established by the Ronald Reagan National Defense Authorization Act for Fiscal Year 2005. Through its enabling statute, Congress tasked this Commission to report on the roles and missions of the reserve components; on how their capabilities may be best used to achieve national security objectives, including homeland defense; on their compensation and benefits and on the effects of possible changes in these areas on military careers, readiness, recruitment, and retention; on traditional and alternative career paths; on their policies and funding for training and readiness, including medical and personal readiness; on the adequacy of funding for their equipment and personnel; and on their organization, structure, and overall funding. Congress has asked this Commission to provide it a road map to a strong, capable, sustainable reserve component.

Congress directed the Commission to deliver three separate reports. The first of these reports, detailing the status of the Commission's organization and the progress of our work, was submitted to the Senate Armed Services Committee, the House Armed Services Committee, and the Secretary of Defense on June 5, 2006.

The second report, *Strengthening America's Defenses in the New Security Environment,* was submitted on March 1, 2007, and primarily addressed 17 provisions of legislation titled the National Guard Empowerment Act, introduced in the 109th Congress and reintroduced in the 110th Congress (S. 430/H.R. 718). DOD has supported in whole or in part 20 of the Commission's recommendations, and Congress in the National Defense Authorization Act for Fiscal Year 2008 has addressed all those that require legislation.[1]

This third and final report, *Transforming the National Guard and Reserves into a 21st-Century Operational Force,* contains six major conclusions and 95 recommendations, supported by 163 findings. The

1 As this report was about to go to press, President Bush vetoed the National Defense Authorization Act for Fiscal Year 2008. We are confident, however, that the sections pertaining to the National Guard and Reserves will remain in the bill that ultimately is signed into law. We therefore cite those sections of the act in their current form, as published in House Report 110-477, the Conference Report to accompany H.R. 1585, December 6, 2007.

Commission began organizing in September 2005, held its first official meeting in March 2006, and, following the submission of this report, concludes its work in April 2008. At that time, as Congress envisioned, the most comprehensive, independent review of the National Guard and Reserve forces in the past 60 years will be complete, and the burden for action will fall to the legislative and executive branches.

The Structure of the Report

This report is the first step in a comprehensive reevaluation of the reserve components of the U.S. military in which the legislature and general public soon should join. In reviewing the past several decades of heavy use of the reserve components, most notably as an integral part of recent operations in Iraq, in Afghanistan, and in the homeland, the Commission has found indisputable and overwhelming evidence of the need for change. Policymakers and the military must break with outdated policies and processes and implement fundamental, thorough reforms. Many of today's profound challenges to the National Guard and Reserves will persist, notwithstanding force reductions in Iraq and Afghanistan. The need for major reforms is urgent regardless of the outcome of current conflicts or the political turmoil surrounding them. The Commission believes the nation must look past the immediate and compelling challenges raised by these conflicts and focus on the long-term future of the National Guard and Reserves and on the United States' enduring national security interests.

. . . the Commission has found indisputable and overwhelming evidence of the need for change.

In our final report, the Commission first assesses the necessity, feasibility, and sustainability of the so-called operational reserve, which is significantly different from the strategic reserve of the Cold War. We assess the unplanned evolution to an operational reserve. We then evaluate the factors that should influence the decision whether to create a truly operational reserve force, including the threats to our nation in the current and emerging security environment; the military capabilities, both operational and strategic, necessary to keep America secure in this environment; the urgent fiscal challenges caused by the spiraling costs of mandatory entitlement programs and ever-increasing cost of military personnel; and the cost and value to the nation of the National Guard and Reserves. And we consider the challenges the nation faces in funding, personnel policy, recruiting, equipment shortages, and other obstacles to creating a sustainable operational reserve force.

Second, we assess the Department of Defense's role in the homeland and whether it is clearly defined and sufficient to protect the nation; the role that the reserve components, as part of DOD, and other interagency partners should play in preparing for and responding to domestic emergencies; the role and direction of U.S. Northern Command, the joint command in charge of federal homeland defense and civil support activities; the role that states and their governors should play in homeland response; the need to rebalance forces to better address homeland response needs; and the implications of these assessments for the readiness of the reserve components.

Third, we examine what changes need to occur to enable DOD to better manage its most precious resource—its people. We consider what attributes of a modern personnel management strategy would create a true continuum of service; how reserve component personnel should be evaluated, promoted, and compensated; what educational and work opportunities they should be given to maximize the return to the nation from their service; how DOD should track the civilian skills of reserve component members; whether the active and reserve personnel management systems should be integrated; why the prompt establishment of an integrated pay and personnel system is urgent; how many duty statuses there should be; and what changes need to be made to the active and reserve retirement systems to ensure that both serve force management objectives and are sustainable.

Fourth, we explore what changes need to be made to develop an operational reserve that is ready for its array of overseas and homeland missions. We examine how policies related to equipping, training, funding, and access must be transformed to ensure that the resulting force is ready, capable, and available to the nation when it is needed, whether for war, for routine peacetime deployments, or for unexpected emergencies here at home.

Fifth, we assess current programs supporting service members, their families, and their employers. We consider whether disparities remain between the active and reserve service members' compensation, whether the legal protections for activated members are sufficient, what can be done to improve the support provided to members and their families when reservists are activated and after they return home, and how DOD can strengthen the relationship between the Department and employers of reserve component members.

Sixth, we scrutinize the organizational and structural changes required to support a truly operational reserve force: specifically, changes to remove cultural barriers that hamper the effective use of the reserve

components, changes to the categories used to manage the reserve components, changes to the Office of the Secretary of Defense, and changes within the reserve components and their headquarters.

For these topics, we address the issues and discuss in detail the areas where we believe reform is required, explain how we arrived at our conclusion that reform is urgently needed, state the principles we believe should guide reform, and make specific recommendations to solve the problems identified. Where possible, we have articulated appropriate milestones and benchmarks to gauge progress toward the full implementation of those recommendations.

Finally, we identify the Commission's vision, or end state, for the future National Guard and Reserves: what it will mean to be an operational guardsman and reservist of the 21st century; what their future roles and missions will be; how they will be integrated into the total force; what the nature will be of the compact between the reservists and their families, employers, and the nation; what future career paths for reservists will look like; and what organizational structures, laws, and policies affecting personnel, compensation, benefits, training, equipping, mobilization, and funding will look like. All our recommendations are geared to achieving this end state.

In developing these recommendations, the Commission solicited formal and informal input from a broad range of individual service members, family members, military and civilian leaders, subject matter experts, businesspeople, and elected representatives. We examined reports, studies, lessons learned, and papers on the topics before us. We visited Guard and Reserve personnel, families, and employers where they live, train, and work. We benefited from outside analytical support from the Government Accountability Office, the Congressional Budget Office, and the Federal Research Division of the Library of Congress. We sought to define and document as clearly as possible the issues and problems facing the National Guard and Reserves and to present a reasonable and achievable set of solutions to those problems.

Our study has been informed by 17 days of public hearings involving 115 witnesses; 52 Commission meetings; more than 850 interviews with officials and other subject matter experts, including the current and former Secretaries of Defense, and current and former Chairmen and Vice Chairmen of the Joint Chiefs of Staff; numerous site visits, forums, and panel discussions; and the analysis of thousands of documents supplied at the Commission's request (a comprehensive list of persons interviewed is contained in Appendix 10 of the full report).

We recognize that the problems we discovered through our study are systemic and have evolved over many years, and some were created as new threats evolved. This report is in no way meant to be a report card on past or current officials. Most of the challenges facing the reserve components have existed for decades. While the Goldwater-Nichols Department of Defense Reorganization Act of 1986 made fundamental adjustments to the roles of the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and combatant commanders, no significant reforms have been undertaken in the key laws affecting the reserve components for half a century.

We recognize that the problems . . . are systemic and have evolved over many years, and some were created as new threats evolved.

The Secretary of Defense reacted positively, constructively, and quickly to the limited but significant set of recommendations in the Commission's March 1 report to Congress, and Congress also has demonstrated a strong willingness to address National Guard and Reserve issues through its recent passage of the 2008 National Defense Authorization Act, which incorporated most of the Commission's March 1 recommendations. By mandating that the Department of Defense work with the Department of Homeland Security to identify and fund what is needed to protect the homeland, and updating the status, structure, and activities of the National Guard Bureau and its leadership, Congress has sent a powerful message that it is time for fundamental change in DOD's roles and responsibilities for the homeland. This legislation represents the kind of dramatic and sweeping change that is long overdue.

But reform is difficult, and a number of the Commission's March 1 recommendations will continue to face continued resistance from within the DOD bureaucracy and the other government institutions that they affect (see Appendix 8 of the full report for the Commission's assessment of how completely the March 1 recommendations have been implemented).

The Nature of the Reforms

Instead of meeting immediate needs, or satisfying the requests of particular interest groups, proposed reforms should serve a set of guiding principles that reflect the new 21st-century realities. On the basis of all its analysis to date, the Commission has identified values or principles against which proposed reforms should be judged. In general, proposed reforms must

- Serve the national security interests of the United States by improving the ability of the National Guard and Reserves to meet all threats to the nation as part of a total integrated force.
- Improve the nation's return on its investment in its military.
- Build upon the jointness among the military services, developed as a result of the Goldwater-Nichols Act, to create an effective operational reserve force whose units and individuals can rapidly integrate with the active component.
- Ensure that service plans to employ the reserve components produce a force that is ready, capable, and available for predictable overseas rotations, responses to emergencies in the homeland, and strategic depth with the ability to surge when required.
- Produce a sustainable reserve component, by which we mean one that is affordable, that attracts and retains high-quality people, that remains relevant and effective in a changing security environment, and that maintains the support of the public.
- Be practical and executable.

Accordingly, the reforms that the Commission believes the nation must adopt to enable the National Guard and Reserves to fulfill U.S. national security objectives are significant and transformational. They will be welcomed by some and engender considerable opposition in others. To successfully execute the national military strategy in the 21st century, the active and reserve components must increase their military effectiveness by becoming a more integrated total force. It has taken the U.S. armed forces two decades to approach the level of jointness envisioned by the authors of the Goldwater-Nichols Act, which did not address the reserve component. Achieving total force integration of the active and reserve components will require changes to the defense establishment of a magnitude comparable to those required by Goldwater-Nichols for the active component.

. . . the active and reserve components must increase their military effectiveness by becoming a more integrated total force.

These recommendations will require the nation to reorder the priorities of the Department of Defense, thereby necessitating a major restructuring of laws and DOD's budget. There will be some costs associated with

these recommendations, but the need for these reforms is critical, and the benefits, in terms of the improved military effectiveness of the total force, more than exceed the cost to implement them.

Many of the Commission's recommendations can be implemented immediately. However, a number of these large, systemic changes may take years to implement effectively. We recognize that the details of implementation will need to be worked out by Congress and the executive branch, and that some reforms will be transitional, remaining in effect only until others are fully realized. At the core of the needed changes is the explicit evolution of the reserve components from a purely strategic force with lengthy mobilization times, designed to meet Cold War threats from large nation-states, to an operational force in periodic use, readily available for emergencies, that retains required strategic elements and is seamlessly integrated with the active component.

I. CREATING A SUSTAINABLE OPERATIONAL RESERVE

During the Cold War, the reserve components were designed to facilitate rapid expansion of the armed forces for a major war with the Soviet Union; in this role, they were commonly referred to as the strategic reserve. Beginning in the early 1990s, the National Guard and Reserves have evolved into an essential element of the military's operational forces. Our nation is now faced with the prospect of a decades-long engagement with enemies who seek to attack us and harm our interests throughout the world, including in our homeland. Congress directed the Commission to study the roles, missions, and capabilities of the National Guard and Reserves in this new climate. The issues that must be addressed are whether the reserve components should continue to play the significant role they have assumed in operations, foreign and domestic; whether they should also retain a strategic role; and what changes are necessary to ensure both that they succeed in their missions and that our national security is protected. In studying this issue, the Commission has evaluated possible alternatives to the current operational use of the reserves, given the significant changes required for such a force. Our analysis leads us to conclude that for the foreseeable future, there is no

> . . . there is no reasonable alternative to the nation's continuing increased reliance on its reserve components for missions at home and abroad.

reasonable alternative to the nation's continuing increased reliance on its reserve components for missions at home and abroad, as part of an operational force.

The uncertain security environment ahead and the challenging fiscal realities faced by our government make obvious the necessity for more flexible sources of manpower that are better able to respond rapidly in the homeland, that can be efficiently increased in times of need, and that can be reduced in a way that economically preserves capability when requirements diminish. To meet these criteria effectively, the manpower pool must be organized to facilitate the required flexibility and ensure that resources can be focused where they are needed with desirable returns on investment.

It is a difficult problem, and the answer clearly lies in the reserve components—uniquely capable of responding in the homeland, employed operationally at costs on a par with the active components, yet able to be maintained at much lower expense when requirements allow for a reduced operational tempo. Employing the reserves in this fashion has proven necessary and effective from Operation Desert Storm onward, and they in fact have been relied on in every major military operation since then.

We conclude that this reliance should continue and should grow even after the demands for forces associated with current operations are reduced. We base this conclusion on a number of factors discussed below.

At the same time, the current pattern of using the reserves is endangering this valuable national asset, and reforming laws and policies will be necessary to reverse the damage done and make certain that an operational reserve is sustainable. It is to those ends that the Commission has devoted significant effort and the majority of our final report. In order to create a sustainable reserve, we must understand how we got to this point, why it is necessary to continue our reliance on the reserves as part of an operational force, and what the challenges to achieving their sustainability are.

A. THE UNPLANNED EVOLUTION TO AN OPERATIONAL RESERVE

At many times in our nation's history, the reserves have been called up, often in conjunction with a draft of the broader population. They have served, and then returned to civil society. Members of the reserves played significant roles in the Revolutionary War, the War of 1812, the Mexican-American War, the Civil War, the Spanish-American War, World War I, World War II, the Korean War, and the Gulf War. Today, the reserves are playing an indispensable role in the global war on terror.

In each case, the nation called forth and trained its reserves, sent them into battle under federal command, and then, after the war ended, grappled with the size, structure, and funding of the reserve forces. In several instances, the nation sought a "peace dividend" in the form of a large postwar reduction in the size of national security institutions, including military forces. Following the Spanish-American War, which exposed grave weaknesses in the training and readiness of the state militias, Congress created a federal reserve and increased federal oversight of the state militias, now called the National Guard.

The last major reform to the reserve components took place after the Korean War, for which the nation was poorly prepared. Established as a force designed to facilitate rapid expansion of the armed forces for a major war with the Soviet Union, the reserves were commonly referred to as the strategic reserve. The Vietnam War was the last conflict fought with a draft and without a large reserve mobilization. It was followed by a significant shift in the mid-1970s to an all-volunteer force; however, the reserves remained a strategic force to be used only for extraordinary contingencies overseas, with the assumption that they would have the benefit of lengthy mobilization periods, and threats to the homeland continued to be viewed in the context of the threat from Soviet nuclear weapons.

Since employing the reserves in Desert Shield and Desert Storm, DOD has increased their operational tempo to sustain global commitments. The reserves have fought in two wars that have not relied on a draft or on full mobilization. The National Guard and Reserves' contribution to our nation's defense efforts has risen to almost five times the level it was before 9/11. Some components have been drawn on even more heavily: by the end of the same period, the Army Guard and Army Reserve workload had increased more than seven times. At their peak use in 2004, national guardsmen and reservists constituted more than 33 percent of all U.S. military forces in Iraq.

Reserve component personnel use has increased from 12.7 million duty days in fiscal year 2001 to 61.3 million duty days in fiscal year 2006. Reservists have been mobilized more than 597,000 times since September 11, 2001; and in addition to the mobilizations, thousands of reserve component members have volunteered for extended periods of active duty service.

The notion of an operational reserve developed almost by default, in response to current and projected needs for operations in Iraq and Afghanistan and the associated force generation requirements. The Commission believes that backing into such a far-reaching decision is a mistake, because it is not clear that the public or its elected representatives stand behind this new concept. Major changes in the roles and missions of the reserve components must be examined, discussed, and accepted by the public and Congress if they are to succeed. Our analysis shows that there is much to debate, and the debate is overdue.

Although DOD has sought to define the operational reserve,[2] it has taken several years to come up with a definition, and that definition does not answer the basic questions policymakers face: What missions will the National Guard and Reserves perform in their strategic and operational roles? How will DOD resource and equip the reserve components for these missions so they will be a ready force capable of operating both overseas and in the homeland? And what can combatant commands, the services, service members and their families, and civilian employers expect in terms of predictable deployments? Because it does not answer these questions, it offers no road map for what changes in resources or to laws, policies, force structure, or organization are required to make the reserves truly operational within the total force.

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2 "The total Reserve component structure which operates across the continuum of military missions performing both strategic and operational roles in peacetime, wartime, contingency, domestic emergencies and homeland defense operations. As such, the Services organize resource, equip, train, and utilize their Guard and Reserve components to support mission requirements to the same standards as their active components. Each Service's force generation plan prepares both units and individuals to participate in missions, across the full spectrum of military operations, in a cycle or periodic manner that provides predictability for the combatant commands, the Services, Service members, their families, and civilian employers" (Joint Staff, "Operational Reserve Definition," draft, October 15, 2007).

B. THE NECESSITY FOR AN OPERATIONAL RESERVE

Given the threats that the United States faces at home and abroad, the looming fiscal challenges the nation confronts, the projected demands for forces, the unique capabilities resident in the reserve components, and their cost-effectiveness, the Commission sees no reasonable alternative to an increased use of and reliance on the reserve components. This conclusion is not dependent on the wars in Afghanistan and Iraq and on the reserves' current sizable role in the total operational force: the factors below indicate that their contribution to operations at home and abroad will be enduring.

Challenges presented in today's strategic environment are radically different than those that faced previous generations.

The New Security Environment

Challenges presented in today's strategic environment are radically different than those that faced previous generations. The current operational environment is volatile, uncertain, complex, and ambiguous. Traditional threats posed by nation-state actors remain, but new threats have emerged as well. National security challenges fall into five categories:

- The proliferation of weapons of mass destruction that constitute a growing threat across the globe, including to the U.S. homeland, and the potential access to such weapons by individuals or terrorist groups who wish to use them indiscriminately on civilian populations.
- Violent extremists, Islamist and other, who seek to control populations and geographic areas, attack U.S. soil, and harm U.S. interests throughout the world.
- Disasters in the homeland such as pandemic disease, hurricanes, earthquakes, and floods that can harm populations and cause losses that equal or exceed those incurred by war.
- Failed states; numerous ethnic, tribal, and regional conflicts that can cause humanitarian crises and endanger global stability; and nation-states containing safe havens for uncontrolled forces that threaten us.
- Traditional nation-state military threats, including the rise of a near-peer competitor.

This modern threat environment requires that the United States bring to bear all instruments of national power to achieve its national security objectives, including using its global leadership to prevent conflicts from occurring and developing partnerships to avert them. Among these instruments is the U.S. military, including the National Guard and Reserves, which must be properly organized, trained, equipped, and coordinated with other government agencies to present in a timely manner the multitude of capabilities necessary to meet the many irregular, catastrophic, and disruptive threats to America both at home and abroad.

These capabilities are

- The ability to engage any adversary and win on the battlefield in many different kinds of environments.
- The ability to prevent and recover from warfare through peacekeeping, stability operations, capacity building, military-to-military exchanges, theater security cooperation, and civil support activities.
- The ability to support civil authorities at all levels of government in responding to domestic emergencies in which military manpower and assets are useful to save lives or property, secure communities, or mitigate the consequences of or recover from a major natural or man-made disaster.
- The ability to respond to the national security requirements arising from an adversary's use of a weapon of mass destruction.
- The ability, even during times of peace, to sustain a global military presence as a means of providing credible deterrence toward potential enemies and to shape and maintain stable relations with U.S. allies and friends.

At the same time, the resources to generate and sustain these capabilities are not unlimited. Ultimately, we can afford and must be willing to allocate appropriate resources to ensure our national security. However, the nation is confronting a major fiscal challenge in the form of escalating and ultimately unsustainable federal deficits and debt, tied to the expansion of mandatory entitlement programs. If this fiscal imbalance is not addressed, it will consume a growing share of federal resources and damage our economy and national security. The most compelling presentation of these challenges is offered by the Comptroller General of the United States, David Walker, in his report titled "21st Century Challenges: Reexamining the Base of the Federal Government" (February 2005). This grave fiscal reality dictates that every government department, in-

cluding the Department of Defense, must fundamentally reexamine how it spends money to become more effective and efficient.

DOD Plans for Continued Reliance on the Reserves

DOD leaders have repeatedly stated their expectation that the National Guard and Reserves will continue to provide a wide range of capabilities that include warfighting, humanitarian assistance, disaster relief, and post-conflict and transitional operations such as democracy building, stability efforts, and peacekeeping. DOD also plans a "focused reliance" on the National Guard and Reserves for civil support missions in the homeland. Each service has developed detailed plans to train, equip, and use the National Guard and Reserves for the foreseeable future on a rotational basis in coordination with the active component. This shift—away from a force primarily designed for infrequent federal use against a large nation-state and toward a better manned, trained, and equipped force that is more interdependent with the active duty military, is employed in predictable cyclical rotations overseas, and is more ready and more able to respond quickly at home—would mark a significant adjustment to how the nation has historically conceived of and used its reserves. The change is particularly significant for the largest reserve components, the Army National Guard and Army Reserve.

The Cost and Value of the Reserve Components

The Commission has analyzed the cost of the reserve components as a function of their share of the DOD budget over time, as their share of their services' budget over time, and as calculated by think tanks and by the Government Accountability Office. Using a comprehensive approach to this question, the Commission finds that an active component service member costs approximately four times as much as a reserve component service member when he or she is not activated. This significant cost advantage for the reserves will drive policymaking in coming years, when pressure on the forces from current conflicts will have abated. The Commission believes the nation should avoid the kind of shortsighted policy decisions made after past conflicts that left the military ill-prepared for the next conflict, and should instead focus on where

. . . an active component service member costs approximately four times as much as a reserve component service member when he or she is not activated.

the best value for the taxpayer can be achieved in an ever-tightening fiscal environment.

The Commission also finds that the National Guard and Reserves offer the nation great capability and return on its investment. Reservists provide our military's most intimate and extensive links to the American people and form an important bridge to their neighbors and coworkers who have never served in uniform. They are forward-deployed in thousands of communities across the United States, pretrained, and available to respond to an emergency that exceeds the capacity of local government personnel.

The reserve components act as a repository of military skills and experience gained over years of service that would otherwise be lost. They also have skills acquired through their civilian careers that are invaluable to DOD for both domestic and overseas missions. These skills are not easily attained or maintained by personnel in full-time military careers. Members of the reserves who are not being used operationally also continue to provide strategic, or surge, capability for a military that has reduced personnel significantly since the peak of the Cold War. The value of these skills, and of the capability resident in the reserves to respond to unforeseen events, is not easily quantified, but it is significant.

One alternative to the continued use of the reserve components as part of the operational forces is to expand the active force. However, respected analysts question the affordability and achievability of this option, given the high costs of active duty benefits and infrastructure and the current recruiting challenges being experienced by the services. The per capita annual cost of active duty manpower has risen from $96,000 to more than $126,000 since 2000, owing largely to increases in such deferred benefits as health care, as well as to the expenses of recruiting, retention, and other initiatives to maintain an all-volunteer force strained by prolonged conflict. From a cost perspective, the reserve components remain a significant bargain for the taxpayer in comparison to the active component.

In addition, significantly increasing the active force—versus investing more in the reserves—may not be the right long-term choice in light of the new threats to our homeland, where the reserves have a significant advantage over the active component. When disaster strikes at home, the first military responders will be national guardsmen and reservists coming to the aid of their friends and neighbors close by. The value of this linkage cannot be discounted. In contrast to the nationwide presence of reserve component forces, the nation's active duty military forces are increasingly isolated, interacting less frequently with the civil society they serve. There are fewer active duty military bases, and mem-

bers of the active component only reside in or near this limited number of government facilities.

Another politically nonviable alternative would be to return to a draft. It is worth recalling that the all-volunteer force was not designed for a sustained, long-term conflict, and that the nation continues to mandate that young men register for the Selected Service in the event a draft becomes necessary. However, the draft is an instrument not employed since the Vietnam War, and its use would be extremely unpopular.

Thus, the Commission believes that the nation will need to rely on an operational reserve force for many years to come. We are not suggesting that reliance on the reserve component is somehow undesirable. In fact, without the National Guard and Reserves, the nation would have needed to reinstitute the draft to fight in Iraq and Afghanistan. Thus, the reserves are the key to ensuring the success of the all-volunteer force and avoiding the draft.

. . . the reserves are the key to ensuring the success of the all-volunteer force and avoiding the draft.

Meeting that challenge—creating an operational reserve force that is feasible in the short term and sustainable in the long term—will require fundamental reforms to homeland roles and missions, to personnel management systems, to equipping and training policies, to policies affecting families and employers, and to organizations.

C. THE CHALLENGE OF SUSTAINING THE RESERVES AS AN OPERATIONAL FORCE WITHIN A COLD WAR FRAMEWORK

In our March 1 report, the Commission concluded that the current posture and utilization of the National Guard and Reserves as an operational force cannot be sustained over time. Our conclusion in this regard subsequently has been supported by the October 2007 findings of the Defense Science Board Task Force on Deployment of Members of the National Guard and Reserve in the Global War on Terror. Our conclusion remains unchanged.

The fact that in some respects the reserve components are currently being used operationally does not make them a sustainable operational force. The reserve components were not established to be employed on a rotational basis, and key underlying laws, regulations, policies, fund-

ing mechanisms, pay categories, mobilization processes, and personnel rules that manage the reserve components will have to be modified to support their evolution into such an operational force.

Additional significant challenges exist. The propensity of our nation's youth to enlist in the military was at a historical low of 9 percent in June 2007. At the same time, DOD estimates that more than half the youth in the U.S. population between the ages of 17 and 24 do not meet the minimum requirements to enter military service. Approximately 22 percent of America's youth exceed the limits set for enlistees' body mass index. The military services will face extremely stiff competition from civilian employers seeking to recruit and retain the quality workforce required for the 21st century. Recruiting the all-volunteer force is more difficult and costly today than it has ever been. Only 79 percent of the new recruits entering the Army in fiscal year 2007 possessed a high school diploma (the DOD standard is 90 percent), and the Army approved more waivers for candidates with a criminal history (10 percent of all recruits) than it has done in years past.

At the other end of the service continuum, those highly skilled service members who are in the Individual Ready Reserve or are retired constitute a pool that is rarely tapped to benefit the nation.

Other long-standing obstacles continue to hamper total force integration and, hence, military effectiveness. Outdated personnel policies prevent DOD from addressing the demographic challenges above and from making the most effective use of their personnel resources. The military retirement system is not serving important force management goals, and because of the growing cost of personnel it is not sustainable. The military, despite acknowledging that civilian skills are a reserve component core competency, has done little to take advantage of those skills. While the Air Force, Navy, and Marine Corps have each made significant progress toward integrating their active and reserve components into a total force, persistent cultural and structural barriers between Army active and reserve component members block meaningful progress toward a more integrated, effective Army.

. . . since 2002, 168 pieces of legislation pertaining in some fashion to the reserve components have become law. These are a patchwork of incremental changes.

The Commission has heard from DOD officials who contend that the changes necessary to create an operational reserve have already occurred. They point out that since 2002, 168 pieces of legislation pertaining in some fashion to the reserve com-

ponents have become law. These are a patchwork of incremental changes that mend problems at the margins—they are not bold and systemic reforms designed to address the needs of the reserve components today and in the future. Moreover, they include some changes of very dubious merit, such as cutting the numbers of active duty personnel providing full-time support for the Army reserve components.

The Commission believes that continued use of the reserve components as part of an operational force will be feasible and sustainable only if the nation commits to and invests in this increasingly important portion of our military forces.

Conclusion One: The nation requires an operational reserve force. However, DOD and Congress have had no serious public discussion or debate on the matter, and have not formally adopted the operational reserve. Steps taken by DOD and Congress have been more reactive than proactive, more timid than bold, and more incremental than systemic. They thus far have not focused on an overarching set of alterations necessary to make the reserve components a ready, rotational force. Congress and DOD have not reformed the laws and policies governing the reserve components in ways that will sustain an operational force.

Recommendation:

1. **Congress and the Department of Defense should explicitly acknowledge the need for, and should create, an operational reserve force that includes portions of the National Guard and Reserves. In order to place the reserve components on a sustainable path as part of that force, Congress and DOD must modify existing laws, policies, and regulations related to roles and missions, funding mechanisms, personnel rules, pay categories, equipping, training, mobilization, organizational structures, and reserve component categories. These significant changes to law and policy are required if the reserve components are to realize their full potential to serve this nation and if existing adverse trends in readiness and capabilities are to be reversed. Moreover, the traditional capabilities of the reserve components to serve as a strategic reserve must be expanded and strengthened.**

II. ENHANCING THE DEFENSE DEPARTMENT'S ROLE IN THE HOMELAND

Protecting the people and territory of the United States is the mission of state and local government, the Department of Defense, the Department of Homeland Security, and the rest of the federal government. As these levels of government and agencies work together in that broad effort, each has a specific role to play. State and local governments are the nation's first line of defense. Their first responders, the National Guard, and other state and local officials often represent the bulk of the capabilities responding to a disaster. Furthermore, as the chief executives of the states, governors are vested with a primary responsibility to protect the lives and property of their citizens. On the federal level, the Department of Defense ensures the military security of the people and territory of the United States, commonly referred to as homeland defense. The Department of Homeland Security is responsible for coordinating national homeland security efforts to protect the United States from terrorism and to carry out the functions of its constituent agencies, including emergency management. DOD is often called on to support DHS, other federal agencies, and state and local governments in carrying out their missions, thereby providing what is termed civil support. Congress tasked the Commission to assess the capabilities of the reserve components and determine how the units and personnel of the reserve components may best be used to support national security objectives, including homeland defense of the United States.

A. MAKING CIVIL SUPPORT A STATUTORY RESPONSIBILITY

The nature and scope of the Department of Defense's role in providing support to civil authorities have been described in policy. DOD's *Strategy for Homeland Defense and Civil Support* recognizes that homeland defense and civil support are total force responsibilities, and it directs a "focused reliance" on the reserve components for those missions. But there is no equivalent statement of DOD's homeland role in law, and Congress has not specifically tasked the Department with its civil support responsibilities. Policymakers seem reluctant to acknowledge what is obvious to almost every expert who has written on the subject or spoken to the Commission: because of its manpower, communications, and transportation capabilities, DOD is the only organization that can deal with the consequences of a catastrophe incapacitating civilian government over a substantial geographic area, such as an attack by a weap-

on of mass destruction. The Commission believes that this reluctance to acknowledge reality places the nation at risk.

> DOD is the only organization that can deal with the consequences of a catastrophe incapacitating civilian government over a substantial geographic area.

While DHS will have the responsibility to coordinate the overall federal response in most national emergencies, DOD must be fully prepared to play a primary role, at the President's request, in restoring order and rendering other assistance in the aftermath of certain catastrophes. To ensure its readiness to perform these missions, DOD must be told that it is required to perform these critical functions and make advance planning, coordination, and training for them a high priority.

Another element not yet written in law is the proper role of the reserve components in emergency response activities. Nowhere is specified the role that the National Guard and Reserves should play in providing homeland civil support, up to and including responding to a major catastrophe of the type described above. While civil support is a responsibility of the total force, it is a mission that the National Guard and Reserves are particularly well-suited to performing. National guardsmen and reservists live and work in communities throughout the country. Their nationwide presence gives them a unique capability as well as the knowledge, experience, and relationships needed to assist civil authorities effectively in restoring order, protecting the public, mitigating damage, and relieving suffering.

B. INTEGRATING THE RESERVE COMPONENTS INTO HOMELAND OPERATIONS

The Department of Defense and the Department of Homeland Security have not yet acted adequately to integrate DOD and National Guard leadership into national preparedness and response planning activities. DHS still does not contain a resident National Guard presence sufficient to promote necessary levels of coordination among these two vital elements of our national response tool kit. DHS and DOD need to act and act quickly to ensure that DOD is ready to respond, particularly to catastrophic events, in the homeland.

It also is not clear that the nation's military capabilities are arrayed appropriately to meet the threats facing the country. The Army Reserve contains primarily combat support and combat service support capabili-

ties that are useful in responding to domestic crises. The Army National Guard is structured to provide large formation combat arms capabilities for overseas missions, as well as combat support and combat service support capabilities useful at home. Although specific requirements for the homeland must be developed before informed decisions can be made, it is likely that some rebalancing of forces will be necessary for DOD to meet its homeland responsibilities. Because the nation has not adequately resourced its forces designated for response to weapons of mass destruction, it does not have sufficient trained, ready forces available. This is an appalling gap that places the nation and its citizens at greater risk.

There remain significant continuing challenges associated with U.S. Northern Command. The commander of NORTHCOM is responsible for the planning, exercising, and command and control of Title 10 (federal) forces in response to a domestic contingency. NORTHCOM should focus equally on homeland defense and civil support missions. Although DOD agreed in principle with the Commission's March recommendation to alter the staffing at NORTHCOM and its component commands, and the Secretary of Defense prescribed that "a significant percentage" of NORTHCOM's billets should be filled by National Guard and Reserve personnel, U.S. Northern Command has made only limited progress toward that goal.

C. BUDGETING AND PROGRAMMING FOR CIVIL SUPPORT

The National Response Plan; its successor, the National Response Framework; and related preparedness efforts have not been translated adequately into DOD's programming and budgeting requirements. As we discussed in our March report, the Department of Defense has neither explicitly programmed and budgeted for civil support missions nor adequately equipped the National Guard for its domestic missions, relying on the flawed assumption that they are derivative of its wartime missions. In addition, the Department of Homeland Security has not demonstrated a commitment to assuming its responsibility as the lead agency for identifying the requirements that the Department of Defense must meet to adequately perform domestic civil support missions. DOD has now agreed, as part of its budget processes, to evaluate civil support requirements generated by DHS, but DHS has thus far failed to generate those requirements for DOD to evaluate. In the 2008 National Defense Authorization Act, Congress requires DHS and DOD to coordinate

their programming for civil support. While this constitutes important progress, DOD and DHS must demonstrate continuing commitment to the successful implementation of this initiative in order for it to fulfill its purpose of making the nation and its people safer.

D. PROVIDING GOVERNORS THE AUTHORITY TO DIRECT ALL MILITARY FORCES WITHIN THEIR STATE

There is a need to clarify lines of authority for military actions in the homeland.

There is a need to clarify lines of authority for military actions in the homeland. The foundational tenet of national emergency management is that problems should be solved at the lowest level practicable, and most domestic response efforts will be managed at the state level or below. Unity of command, by which we mean the direction of the efforts of all military forces by one government official, is a time-honored principle of military doctrine. However, no mechanism has been established to permit a governor to direct within his or her state the unified efforts of all military forces that are responding to domestic contingencies. In a catastrophe, this lack could lead to confusion, wasted efforts, and loss of life and property. The Department of Defense disagreed with the Commission's March 1 recommendation to develop protocols that allow governors to direct the efforts of federal military assets responding to an emergency such as a natural disaster, and incorrectly suggested that such an approach is inconsistent with established law. In fact, similar protocols are employed routinely overseas when U.S. forces are placed under the command of a foreign commander. The process is fully consistent with law and precedent. The President, as commander in chief, can assign a task force of active duty forces as a supporting command to a state military joint task force while retaining ultimate command authority over those federal forces. This decision by the Department to reject the Commission's recommendation, while offering no viable substitute, places the nation at risk of a disjointed federal and state military response to a catastrophe.

The Commission believes proposed reforms in this area must

- Take advantage of the positioning and expertise of the National Guard and Reserves, stationed throughout the United States in more than 3,000 communities.

- Promote cooperation and proper interrelationships between the chief institutions responsible for homeland defense and homeland security.
- Improve DOD's ability to bring its resources and capabilities to bear efficiently in response to a catastrophe.

Conclusion Two: The Department of Defense must be fully prepared to protect American lives and property in the homeland. DOD must improve its capabilities and readiness to play a primary role in the response to major catastrophes that incapacitate civilian government over a wide geographic area. This is a responsibility that is equal in priority to its combat responsibilities. As part of DOD, the National Guard and Reserves should play the lead role in supporting the Department of Homeland Security, other federal agencies, and states in addressing these threats of equal or higher priority.

Recommendations:

2. Congress should codify the Department of Defense's responsibility to provide support for civil authorities. This statutory language should include the acknowledgment that responding to natural and man-made disasters in the homeland is a core competency of DOD, of equal importance to its combat responsibilities. Congress should also clearly state that DOD should be prepared to provide the bulk of the response to a major catastrophe that incapacitates civilian government over a substantial geographic area and that DOD should initiate the necessary planning, training, and coordination for such events.
3. Consistent with DOD's *Strategy for Homeland Defense and Civil Support*, homeland defense and civil support should continue to be total force responsibilities. However, Congress should mandate that the National Guard and Reserves have the lead role in and form the backbone of DOD operations in the homeland. Furthermore, DOD should assign the National Guard and Reserves homeland defense and

civil support as a core competency consistent with their required warfighting taskings and capabilities.

4. A majority of U.S. Northern Command's billets, including those for its service component commands, should be filled by leaders and staff with reserve qualifications and credentials. Job descriptions for senior leaders and other key positions at NORTHCOM should contain the requirement of significant Reserve or National Guard experience or service. In addition, either the officer serving in the position of the commander or the officer serving in the position of deputy commander of NORTHCOM should be a National Guard or Reserve officer at all times.

5. In accordance with §1815 of the 2008 National Defense Authorization Act, the Secretary of Homeland Security, with the assistance of the Secretary of Defense, should generate civil support requirements, which the Department of Defense will be responsible for validating as appropriate. DOD should include civil support requirements in its programming and budgeting. As part of this effort, DOD should determine existing capabilities from all components that could fulfill civil support requirements and rebalance them where appropriate (consistent with their other obligations), shifting capabilities determined to be required for state-controlled response to domestic emergencies to the National Guard, and shifting capabilities currently resident in the National Guard that are not required for its state missions but are required for its federal missions either to the federal reserve components or to the active duty military, as appropriate.

6. The Secretary of Defense should ensure that forces identified as rapid responders to domestic catastrophes are manned, trained, and equipped to the highest levels of readiness.

7. As part of its efforts to develop plans for consequence management and support to civil authorities, DOD should develop protocols that allow governors to direct the efforts of federal military assets responding to an emergency such as a natural disaster. This di-

rection may be accomplished through the governor's use of a dual-hatted military commander.

8. **Congress should amend the mobilization statutes to provide service Secretaries the authority to involuntarily mobilize federal reserve components for up to 60 days in a four-month period and up to 120 days in a two-year period during or in response to imminent natural or man-made disasters, similar to that employed to mobilize the Coast Guard Reserve under 14 U.S.C. §712.**

III. CREATING A CONTINUUM OF SERVICE: PERSONNEL MANAGEMENT FOR AN INTEGRATED TOTAL FORCE

DOD's personnel management strategies and the laws, policies, and systems that support them were designed during the middle of the last century. They addressed the problems faced by the armed forces after World War II, in response to Cold War national security and force structure issues and to the demographics of the day. The 21st century presents a completely different set of challenges to planners focusing on our national security and on military manpower. They must recruit, train, and maintain a technologically advanced force in an era that will be characterized by ever-increasing competition for a shrinking pool of qualified individuals whose expectations about career paths and mobility are changing dramatically. It is essential that the nation recognize these new strategic and demographic realities by developing a personnel management strategy for the new century and by reforming laws, policies, and systems to implement it.

It is essential that the nation recognize . . . new strategic and demographic realities by developing a personnel management strategy for the new century.

The reserve components' role in such a new strategy will be key. They will provide the flexibility to retain highly trained and skilled personnel who desire career mobility. They will remain a repository of increasingly essential skills that can be gained only in the civilian workforce. Their service in the operational force will be required in peacetime, and they

will continue to provide a cost-effective means of ensuring that strategic requirements to meet a large wartime threat are also available.

The phrase "continuum of service" appears frequently in testimony and documents, but with little explicit description of what would actually constitute such a continuum. As generally understood, a continuum of service would facilitate the seamless transition of individual reservists on and off of active duty to meet mission requirements and would permit different levels of participation by the service member over the course of a military career. In this report, the Commission makes specific, concrete recommendations for changes to law and policy required to bring into existence a true continuum of service. Two critical enablers of an enhanced continuum of service are a reduction in the number of reserve duty status categories and the implementation of an integrated pay and personnel system. Equally important, however, is an integrated personnel management system.

Congress directed the Commission to assess policies and programs for achieving operational and personnel readiness, to identify options for improving compensation benefits, and to assess those options' cost-effectiveness and foreseeable effects on readiness, recruitment, and retention for the regular and reserve components. Of particular concern were health benefits, health insurance, and career development.

The discussion and recommendations that follow provide the foundation of the integrated personnel management system required to meet the realities of the 21st century. Proposed reforms must

- Ensure that military manning decisions are based on national security (including homeland security) requirements, on merit, and on capability.
- Take advantage of the civilian skills of reserve component service members.
- Promote military effectiveness by breaking down barriers to service that prevent further integration of the active and reserve components, while respecting the different ways in which each service makes use of its dedicated, professional part-time force.
- Consider the capabilities that individuals can provide to their country over a lifetime, not just for 20 years.
- In the case of compensation-related proposals, serve specific force management purposes; increase flexibility; provide greater simplification; have a demonstrated systemic

benefit; expand choice, volunteerism, and market-based compensation; maximize efficiency; improve the transparency of the costs of compensation over time; draw on the strengths of the private sector; and be fair to service members and their families.

- Understand and respect the impact of reserve component policies and practices on service members and their families, on communities, and on employers.
- Improve the quality of medical care that reservists and their families receive during activation and upon their return to civilian life, and enhance individual medical readiness.

A. THE NEED FOR A NEW PERSONNEL MANAGEMENT STRATEGY

The demographics of the available talent pool from which DOD must draw in the 21st century will be different in many significant respects from those of the baby boomer generation, whose members will be retiring in increasing numbers over the next two decades. The services will have to compete with the private sector for a workforce that is growing more slowly and becoming older and more diverse. In addition, the accelerated pace of technological change will continue to intensify the demand for workers who are better educated and more highly skilled.

For DOD to remain competitive, it will have to institute a personnel management system that fosters a true "continuum of service."

The current movement in the private sector toward more decentralized, less vertically integrated business organizations is expected to be accompanied by a shift away from permanent lifetime jobs to more fluid and flexible working relationships. U.S. workers are changing jobs more frequently and staying in those jobs for shorter periods. Experts predict that more flexible, nontraditional working relationships will proliferate, a development that will increase the importance of flexible and portable benefit packages for workers. For DOD to remain competitive, it will have to institute a personnel management system that fosters a true "continuum of service."

Internal reviews within DOD have highlighted similar concerns. A Defense Science Board assessment of its human resources strategy in 2000

called for a single integrated personnel and logistics system for active and reserve components, a pay system that places greater emphasis on pay for performance and skills, modification of the "up or out" promotion system, and reform to the retirement system to provide earlier vesting, a 401(k)-type option, benefit portability, and varying service lengths and retirement points. In April 2006, the Defense Advisory Committee on Military Compensation recommended that changes to the military compensation system be based on increasing both the effectiveness and efficiency of the compensation system as a force management tool.

In its 2007 Human Capital Strategy, the Department of the Navy recognized that workforce demographics are changing and that a new generation of workers expects greater flexibility in their work lives and the opportunity for continued professional development. Many of the recommendations in this section reflect the work of these and previous reviews of force management, dating back to the President's Commission on an All-Volunteer Armed Force of 1970 (the Gates Commission). There is little question that in the decades ahead, the nation's military will be competing with civilian employers expected to be offering less rigidly structured organizations and more flexible and shorter-term relationships with employees. Moreover, it enters this competition at a disadvantage: unlike civilian employment, military service entails accepting the possibility of lengthy family separation, injury, and death. Rapid technological change will increase the importance of continuing education and training for personnel, and greater personnel mobility will increase the value of flexible and portable benefit packages.

Conclusion Three: Current law and policy still reflect a Cold War–era vision of the employment of valuable military manpower assets and do not adequately support an operational 21st-century force. A new integrated personnel management structure is needed to provide trained and ready forces to meet mission requirements and to foster a continuum of service for the individual service member.

Recommendation:

9. **DOD should develop a personnel management strategy for a modern military workforce that is diverse, technologically skilled, and desires flexible career opportunities. Key components of this strategy must include an integrated total force that provides opportu-**

nities for those who choose a civilian career, as well as ease of transition between differing service commitments; personnel management policies that promote retention of experienced and trained individuals for longer reserve or active careers; and maximum use at all levels of the skills and abilities acquired from civilian experience. Congress must support this strategy with changes to statute where required.

B. TIME-VERSUS COMPETENCY-BASED PROMOTION CRITERIA

DOD's current "up or out" promotion system was codified in 1947 to prevent a superannuated senior officer cohort from hindering military effectiveness, a problem observed at the outbreak of World War II. The Defense Officer Personnel Management Act of 1980 (DOPMA) and its follow-on reserve component counterpart, the Reserve Officer Personnel Management Act of 1994 (ROPMA), updated the 1947 legislation but retained the up-or-out structure. In recent years, it has been criticized by numerous studies and experts as inflexible and as a Cold War–era relic.

Up or out . . . pushes service members out of the force when they are most experienced.

The up-or-out system under DOPMA is time-based: officers are considered by selection boards for promotion at certain "time" or years-of-service points during their careers. If twice non-selected for the next highest grade, or failed of selection, the officer is subject to involuntary separation or retirement—forced to move "up or out." Such officers may be permitted by a selective continuation board to remain to meet service requirements, but they nonetheless bear the stigma of the label "failed of selection."

To remain competitive, officers must punch specific tickets at specific points in their careers. This time-based career management system prevents service members from pursuing alternative career paths and penalizes their attempts to do so. Up or out instead pushes service members out of the force when they are most experienced. A competency-based career management system, organized around the mastery of knowledge, skills, and abilities, would encourage more flexible career paths, thereby permitting longer assignments, greater opportunity for graduate education, time-outs for family responsibilities, the lateral entry of

skilled professionals, and longer overall careers. Such changes better reflect the new career patterns in the private sector previously discussed and offer a framework to foster a true continuum of service.

Under current law and policy, promotion boards rank officers on the basis of experience, demonstrated performance, and potential for success in the next grade. A competency-based system would rely on those same criteria but would use accumulated experience gained through assignments, education, and training to determine which officers are eligible for promotion. Such a system would allow officers to undertake additional or longer assignments or further their education without being at a disadvantage in relation to their peers. For some communities, the required skills, timing of promotions, and career length might change little from today's norms. For the combat arms, for example, a service might decide that the current framework is optimal because of the need for youth and vigor. Similarly, the services might make little change in the promotion timing for officers scheduled for a command/leadership track.

To prevent stagnation, competency would need to be demonstrated for officers to continue in service as well as to be promoted—in other words, "perform or out" in lieu of up or out. Their continuation would be determined by their continued employability by commands or agencies seeking their services.

Transitioning to a competency-based system would also facilitate the development of a single personnel management system, which is essential to the effective management of an integrated 21st-century total force.

Recommendations:

10. **DOD, with support from Congress, should implement a more flexible promotion system based on the achievement of competencies (knowledge, skills, and abilities, or KSAs); under this new system, the timing of and opportunities for promotion should vary by competitive category (career field), depending on service requirements.**

11. **The Defense Officer Personnel Management Act (DOPMA) and the Reserve Officer Personnel Management Act (ROPMA) should, over time, be merged into a single system, modified to base advancement on achievement of competencies—including compe-**

tencies acquired through civilian employment and education as well as military experience. To facilitate the transition, Congress should amend current statutes to create a single type of commission in lieu of the current regular and reserve commissions, consistent with the elimination of the use of reserve designations for personnel and units (see Recommendation #85).

C. JOINT DUTY EXPERIENCES, JOINT EDUCATION, AND ENHANCING THE CAPABILITIES OF FLAG AND GENERAL OFFICERS

The imperative to employ the reserve components as a portion of our nation's operational forces is not limited to deploying units but must also include reserve component leadership serving in integrated joint and service headquarters. The total force integration required for effective operational employment can best be achieved by ensuring that experts in reserve matters are serving in staff and decision-making positions at all levels. It is clear that future reserve component officers, with both military experience acquired in the operational reserve and civilian skills gained from a variety of experiences that cannot be duplicated in the full-time military force, will be qualified and desirable for senior leadership positions. But to date, both statutes and policies regarding joint qualifications, joint education, and opportunities for joint experience have been major obstacles to taking advantage of the considerable pool of talent resident in the reserve components.

. . . total force integration . . . can best be achieved by ensuring that experts in reserve matters are serving in staff and decision-making positions at all levels.

The Goldwater-Nichols Department of Defense Reorganization Act of 1986 did not, for the most part, include the reserve components. Though the act mandated that the Secretary of Defense establish policies "similar" to the active component's for governing reserve component joint education and experience, it contained no provisions requiring that reserve officers ever obtain joint qualification. Indeed, DOD did not even act on establishing similar policies for two decades after receiving Congress's direction to do so, and there is still no requirement for reserve component officers to be joint qualified. The systems put in place to offer such quali-

fications to reservists are so new that they cannot be fairly assessed at this time, but some early reports on their implementation are not favorable.

Until reserve officers are held to the same standards as their active component peers and are required to obtain joint experience, education, and qualification to achieve promotion to senior ranks, the armed forces will not be able to take full advantage of the unique skills and experiences that these professionals possess and will not achieve the integration essential for the most effective employment of an operational reserve. The recommendations that follow address these disparities.

Recommendations:

12. **Congress should amend the Goldwater-Nichols Act to require reserve component officers to be designated as "joint qualified" (under the new joint qualification system, effective October 1, 2007) and, at the end of a 10-year transition period, to make joint qualification a criterion for promotion to flag and general officer rank. Congress should mandate that the services develop an action plan and milestones and report regularly to Congress on progress made to accomplish this goal.**

    a. **To provide an incentive for early attainment of joint service qualification, service Secretaries should charge their reserve promotion boards selecting officers for the rank of colonel or Navy captain in the reserves to assign additional promotion weight to those officers who have achieved full joint education, have served in joint duty assignments, or are recognized as joint qualified.**

    b. **Each service should integrate the management of its active and reserve component service members to better administer its military personnel and ensure that all members are afforded the joint duty and educational opportunities necessary for promotion to senior ranks.**

13. **For the next five years, DOD should annually increase the number of fully funded slots allocated to reserve component officers at the National Defense University, service war colleges, and the 10-week Joint Professional Military Education II in-residence course to**

foster greater interaction between active and reserve component students and to increase the number of educationally qualified reserve officers. DOD should direct senior service schools to adjust the curricula and requirements in their distance learning programs to include material that will satisfy JPME II requirements for joint qualifications, as they have done for their in-residence courses.

a. Capitalizing on technology, Advanced Joint Professional Military Education should be redesigned to provide formats that encourage active and reserve component participation from all services in a manner that satisfies course objectives, affords social interaction, and values the individual service members' time and other obligations.

b. Active component officers should be permitted to attend and receive full credit for AJPME, and the course should be viewed as equivalent to the Joint and Combined Warfighting School.

c. DOD should require that all reserve component officers selected for general or flag officer rank attend CAPSTONE; the services should provide full funding for this effort, and the school should have sufficient capacity to accommodate these officers without significant delay.

14. DOD should establish programs to provide reserve component enlisted members with joint duty and JPME opportunities comparable to programs available to their active duty counterparts.

15. JPME-related courses offered as part of all levels of service professional military education, including service academies and ROTC programs, should contain significantly more material on reserve component organizations and capabilities to increase the understanding of, and appreciation for, the skills and background of reserve component service members.

16. For both active and reserve component officers, criteria for granting joint duty experience credit should be flexible enough to allow for a qualitative assessment of proficiency based on knowledge, skills, and

abilities in joint matters, not on inflexible time-based requirements. Congress should expand the statutory definitions of joint matters to incorporate service involving armed forces in operations, including support to civil authorities, with state and local agencies.

17. DOD should list all manpower billets in joint organizations in a single manpower document. As part of this change, DOD should review all positions thoroughly and identify the essential skills or special background qualifications required or desired for each. To develop a pool of reserve component officers with the range of professional and joint experience required for selection to senior ranks,

    a. DOD and the military services should develop a program that enables reserve component members to become fully joint qualified after rotating through the following assignments: serving over a period of years in a drilling status, serving on active duty for training in select joint billets, completing JPME either in residence or by distance learning, and, finally, serving a year on active duty in a joint designated billet. This program would allow reservists acting as individual augmentees to serve in a predictable manner and provide them joint qualification while supporting the operational needs of the Joint Staff and combatant commanders. To ensure that the best qualified officers are able to participate in this program, reimbursement of travel expenses for those selected should be mandated (see Recommendation #53).

    b. Congress should amend the Goldwater-Nichols Act to require that the level of reserve component officer representation in service headquarters and joint organizations, including combatant commands and the Joint Staff, be commensurate with the significant role that reserve components play in DOD's overall missions.

    c. The Secretary of Defense should require that National Guard or Reserve officers on tours of active duty serve as director, deputy director, or division

chief within each joint directorate on the Joint Staff and at the combatant commands.

18. In order to provide an incentive to the services to increase the number of billets available to reserve component general and flag officers, Congress should allow the services to assign reserve component general and flag officers to billets currently filled by active component officers by waiving up to 10 percent of the current statutory limitation (877) on the number of active component general and flag officers on a one-for-one basis, and sunsetting this additional head space at the end of 5 or 10 years. Priority should be given to assignment in joint positions. Congress should require DOD to report annually on the number of reserve component general and flag officers serving (1) in joint duty positions and (2) in positions of importance and responsibility. Following the sunset, Congress should reconsider the number of Chairman's exempt positions, taking into account the number of reserve general and flag officers who have successfully served in joint tours during this time.

D. TRACKING CIVILIAN SKILL AND EMPLOYER DATA

Civilian skills are a reserve component core competency, but DOD has done little to harness these skills. DOD's Civilian Employment Information (CEI) database is not an effective tool in this regard, in part because it does not capture updated employment information and because the way it records civilian skills data is not standardized for practical use.

By contrast, some U.S. allies around the world have developed reserve programs that track and to varying degrees utilize the civilian skills of their reserve military personnel. Such programs enable them to maintain a reserve force of personnel who are highly trained and experienced in their civilian and military specialization. In addition, some allies are collaborating with employers to develop military training programs focused on skills specific to both the military and civilian occupations of their reservist employees, thereby providing not only highly qualified reserve military members for the government but also highly qualified civilian employees for employers.

A robust civilian skills database that tracks, in standardized format, comprehensive education, training, and experience data on reservists would be a valuable tool for commanders seeking to fulfill mission requirements.

Recommendations:

19. **DOD should develop a standardized system for developing and maintaining a "civilian skills database" that is consistent with standardized database formats, such as that used by NATO, to allow worldwide interoperability.**

20. **Congress should direct DOD to revalidate the current civilian employer database annually, to require service members to update the information in this database annually, and to expand the database to include résumé-type narrative information.**

E. AN INTEGRATED PAY AND PERSONNEL SYSTEM

The military has a long history of problems with the administration of personnel and pay and its associated information technology. The current automated systems are neither joint, integrated, nor standardized across the military components, and the resulting deficiencies include incorrect pay, low data quality, multiple personnel files and records, and inaccurate accounting of credit for service. The Defense Integrated Military Human Resources System (DIMHRS) is the Department of Defense's solution to existing personnel and pay problems. It is a Web-based human resource system, integrating personnel and pay and designed to ensure that timely and accurate compensation, benefits, and entitlements are afforded to all military personnel throughout their careers and in their retirement.

The manpower management systems and processes in place today are crude tools that have evolved over decades of applying Cold War administrative policies and procedures. Many service members reported to the Commission that these systems routinely raise unreasonable obstacles to transitions between military jobs, cause loss of entitlements such as leave, and engender a reluctance to volunteer for service. These systems hinder the services from fully utilizing the talents of the available manpower pool. Initiated more than a decade ago, DIMHRS has struggled with numerous delays, a lack of accountability, increased

costs, and mismanagement; the system remains controversial within some of the services.

The future human resource system must be a "continuum of service system" that enables a trouble-free, easy transition between active and reserve statuses. Movement between the active component and reserve component will be based on the needs of the service and the availability of the individual member to support existing requirements. To make these transitions seamless, the "on-ramp" and "off-ramp" procedures must be smooth. The Defense Department is in critical need of an integrated pay and personnel system capability, whether a single system such as DIMHRS or multiple systems as part of a larger enterprise architecture, that enables an easy transition between active and reserve service, accurately records critical information regarding a member's service, and provides timely pay and benefits.

Recommendation:

21. DOD should implement a combined pay and personnel system as soon as possible to rectify the inadequacies in today's legacy systems. Further, this implementation, together with the reduction and simplification of duty statuses and duty categories (see Recommendation #22), should receive immediate attention at the highest levels of DOD leadership. Whether DOD establishes a single system or multiple systems as part of a larger enterprise architecture, the military personnel and pay system must be streamlined and made more efficient. It must provide better service to military personnel and their families, including accurate records of service and timely and error-free delivery of compensation, benefits, and entitlements.

F. DUTY STATUS REFORM

A complicated framework of laws, policies, and rules developed through the decades since 1916 has resulted in the current byzantine duty status structure. Today's 29 duty statuses are confusing and frustrating to both reserve component members and their operational commanders. Service members may encounter pay and benefit problems, including in health care eligibility for their family members, when they transition between one or more duty status categories. Commanders may experience similar frustration when seeking to access, in a timely manner,

reserve component members needed to meet operational requirements. The current operational use of the reserve component demands simplicity, compatibility, and administrative clarity to meet training and mission requirements and to promote a continuum of service. Under a simplified system, reserve component members, whether in a Title 10 or Title 32 status, should either be on duty or off duty. (This new system would not alter the nature of National Guard service in state active duty.)

Under a simplified system, reserve component members, whether in a Title 10 or Title 32 status, should either be on duty or off duty.

One sticking point in previous attempts to simplify duty status categories has been the difference between the pay and allowances received when the reserve component member is either activated or in an active duty training status and the pay received for two drills per day when the member is in an inactive duty training status. In recommending a reduction to two duty statuses, the Commission recognizes the continued salience of this issue, which would benefit from additional analysis, and offers a possible approach to deal with it in the full report.

Recommendations:

22. **DOD should reduce the number of duty statuses from the current 29 to 2: on (active) duty and off (active) duty. All reserve duty will be considered active duty, with appropriate pay and other compensation. The 48 drills should be replaced with 24 days of active duty. A day's pay should be provided for a day's work without reducing compensation for current service members. The system should be sufficiently flexible to deal with service-specific training requirements.**

23. **During the transition to two duty statuses, DOD should uncouple existing statuses from pay and other compensation, substantially reduce the number of duty statuses, and standardize them across the services for ease of understanding and use.**

24. **DOD should develop a plan to implement these changes within two years of this report, and should complete their implementation within five years of the report's issuance.**

The Operational Support Manpower Accounting Category

Each year Congress prescribes both active and reserve component end strengths. Following September 11, 2001, the active duty force needed more assistance from reserve component members. Those who served temporarily on active duty were not counted against active duty end strength, provided that they served for 179 days or less. Once they passed the 180-day threshold, however, they counted against active duty end strength and active duty grade tables.

In 2004 Congress created, at DOD's request, a new category for counting reserve component strength called active duty for operational support (ADOS). It is composed of reserve component members who volunteer for active duty for operational support missions. Those who are on voluntary active duty providing operational support can remain on active duty for up to three years, or for three years cumulatively over a four-year period, without being counted against active duty end strength. Congress tasked the Commission to assess DOD's implementation plan for the ADOS category. The Commission notes that DOD has successfully implemented a plan to manage the active duty for operational support category, but does not believe it to be an effective force management tool.

. . . the Commission believes that managing forces by end strengths is inefficient and makes it necessary to create workarounds.

To avoid problems with end strength authorization, some are seeking to remove the current three-out-of-four-years restriction on reserve component personnel serving in the ADOS category. The Commission believes that there are better alternatives, such as transitioning those ADOS billets to active duty, career civilian, or contractor billets.

Further, the Commission believes that managing forces by end strengths is inefficient and makes it necessary to create workarounds to remain within prescribed levels, as the ADOS manpower accounting category itself illustrates. By contrast, Congress recognized the inefficiencies inherent in managing by end strength for DOD civilians and eliminated such management in 10 U.S.C. §129.

The Commission concludes that the operational support (ADOS) category is not an effective force management tool and could be phased out if duty statuses were simplified and if there were less emphasis placed on managing the U.S. military through authorized end strengths.

Recommendations:

25. **As a part of the process of simplifying duty status categories, Congress should phase out the ADOS category and designate long-term billets as either active duty or civilian or as part of a program that rotates reserve members on full-time active duty tours. Such a program would benefit both the reservists, to whom it would provide career-broadening experience, and DOD, which would take advantage of the unique talents and experience within the reserve component.**

26. **Congress should cease to manage DOD manpower levels by using authorized end strengths. DOD should budget for—and Congress should fund—personnel, active and reserve, based on requirements and needed capabilities.**

G. AN INTEGRATED RETIREMENT SYSTEM

Today's non-disability retirement systems for both the active and reserve components were designed shortly after World War II for a Cold War–era force that relied on a draft. At that time very few inductees remained in uniform past their initial term of service, and the retirement benefit was intended to meet the needs of the relatively small proportion of service members who served a full 20-year career. The military offers very generous retirement benefits immediately upon separation to career service members in the active component, a comparable benefit received at age 60 by career service members in the reserve components, and no retirement benefits at all for non-disabled service members who serve for less than 20 years. Thus the increasingly integrated active and reserve components have two separate retirement systems. They are based almost entirely on the age when a service member receives his or her retirement annuity, with 20-year "cliff" vesting that excludes 85 percent of active duty enlisted personnel and 53 percent of officers from receiving any non-disability retirement benefits. Only 24 percent of reservists serve long enough to be eligible for 20-year retirement. Numerous studies undertaken since the inception of the all-volunteer force have recommended major modifications to the system, such as earlier vesting and deferred receipt of the annuity. The commission that recommended the creation of the all-volunteer force, the Gates Commission, in fact suggested that for such a force, earlier vesting was more appropriate than 20-year cliff vesting.

Reliance on deferred benefits, such as retirement pay, is costly and an inefficient force management tool. As discussed elsewhere in this report, manpower is becoming increasingly unaffordable. Under the current system, many service members retire soon after they reach the 20-year point. As the Gates Commission noted in its 1970 report, many of those who retire early are individuals with the best salary and employment opportunities in the civilian sector and thus are "precisely the individuals the services would like to retain longer." The current system should be modified to provide for earlier vesting, government contributions to the Thrift Savings Plan in a manner similar to the Federal Employee Retirement System, and retention incentives at critical career points. Such a change would improve force management and provide greater equity, particularly to enlisted members who seldom become eligible for any non-disability benefits. In addition, a single system for both active and reserve component members would foster a continuum of service, as envisioned in other changes recommended by the Commission. All current service members should be grandfathered under the existing scheme but offered the opportunity to switch to the new one.

. . . the military retirement system, for both the active and reserve components, is in need of deep, systemic reform.

In short, the military retirement system, for both the active and reserve components, is in need of deep, systemic reform.

Recommendations:

27. **Congress should amend laws to place the active and reserve components into the same retirement system. Current service members should be grandfathered under the existing system but offered the option of converting to the new one; a five-year transition period should be provided for new entrants, during which time they could opt for either the new or the old plan.**

28. **Congress should set the age for receipt of a military retirement annuity at 62 for service members who serve for at least 10 years, 60 for members who serve for at least 20 years, and 57 for members who serve for at least 30 years. Those who wish to receive their annuity at an earlier age should be eligible to do so,**

but the annuity should be reduced 5 percent for each year the recipient is under the statutory minimum retirement age (consistent with the Federal Employees Retirement System). For reserve component members, retired pay would continue to be calculated on the number of creditable retirement years, based on earning at least 50 retirement points per creditable year.

a. Congress should expand current statutory authority to permit all service members to receive up to 5 percent of annual basic pay in matching government contributions to the Thrift Savings Plan; the government's contribution would vest at 10 years of service, and the Thrift Savings Plan benefit would be portable and thus capable of being rolled over into a civilian 401(k) account.

b. Congress should pass laws providing that the military retirement system allow some portion of its benefits to be vested at 10 years of service.

c. As part of the reformed retirement system, retention would be encouraged by making service members eligible to receive "gate pay" at pivotal years of service. Such pay would come in the form of a bonus equal to a percentage of annual basic pay at the end of the year of service, at the discretion of the services.

d. As part of the reformed retirement system, service members who are vested would receive separation pay based on the number of years served and their pay grade when they complete their service.

IV. DEVELOPING A READY, CAPABLE, AND AVAILABLE OPERATIONAL RESERVE

Readiness is a key determinant in the ability of the reserve components to achieve their roles and missions, and therefore is closely monitored. Congress tasked the Commission to assess how effectively the organization and funding structures of the National Guard and Reserves are achieving operational and personnel readiness. An operational reserve component requires a higher standard of readiness than does today's

Ready Reserve, for a greater duration, with less time to achieve readiness goals between deployments. If the reserve components are to sustain this standard of readiness, the services must change their policies, budgets, and planning. Traditionally, readiness has three components: personnel, training, and equipment. In addition, individual medical readiness and the type and amount of full-time support are important factors in reserve component readiness. Readiness requirements vary by service and, within each service, by a unit's progression through the applicable appropriate force generation model.

The readiness of units and of individuals varies greatly among the services, and the differences relate largely to funding. The services are encountering difficulties in funding the readiness of both their active and reserve components. The Department of Defense exerts great effort in developing requirements and justifying budget requests for thousands of service programs. However, it does not program or budget to meet the needs of a ready, capable, and available operational reserve, including the funding required for individual medical readiness, full-time support, and homeland missions.

The Department of Defense . . . does not program or budget to meet the needs of a ready, capable, and available operational reserve.

In addition, DOD does little or nothing to measure the output of its programs in their year of execution. DOD measures programs against their spending plans; thus, it considers them successful when 100 percent of funds are fully obligated at fiscal year-end. This approach provides no mechanism for assessing the cost-effectiveness or value of a particular program or its effect on the readiness of the force.

Finally, the readiness of reserve forces is useful only as long as the services have assured access to all of the reserve components, and can draw on the resources invested in their reserve components to accomplish assigned missions.

Conclusion Four: The reserve components have responded to the call for service. Despite shortages in equipment, training, and personnel they have once again proven their essential contribution to meeting national security requirements in a time of need. To sustain their service for the duration of the global war on terror will require maintaining the force at a new standard of readiness. Current policies cannot accomplish this task. A ready, capable, and accessible operational reserve will require an enduring commitment to invest in the readiness of the reserve components. This commitment will necessitate service integration, additional resources, and new constructs for employing the reserve components and for assessing readiness.

Recommendations:

29. **The services should budget for, and Congress annually should authorize, the amount of funding necessary to support the operational portion of the reserve components, ensuring that their budget requests are sufficient to meet their readiness requirements for overseas and homeland missions, including for individual medical readiness and full-time support.**

30. **The Secretary of Defense should mandate that future programming decisions and budget requests be linked to the delivery of desired outcomes, conveyed in budget justification material in a manner that clearly delineates funding for reserve programs.**

31. **Senior leaders at service headquarters and large commands must be held accountable for the readiness and performance of Reserve and National Guard units within their purview. These responsibilities must be reflected in job descriptions and performance appraisals.**

Readiness Reporting

The service Secretary and Chief of each service are responsible for the readiness of both their active and reserve components. All too often, the Commission has found this statutory responsibility to be so diluted

through delegation that those with Title 10 responsibility for reserve component readiness do not monitor and report on that readiness.

Complicating any effort to assess the readiness of the reserve components is the lack of uniform reporting standards among the services. Moreover, their reports do not include information on full-time manning levels, on individual medical readiness, or on the readiness of the National Guard and Reserves to perform homeland missions.

Recommendations:

32. **Readiness reporting systems should be expanded to encompass full-time support and individual medical readiness. The readiness reporting system should also identify individual and unit readiness to perform the full spectrum of missions, including support to civil authorities.**

33. **The Secretary of Defense should mandate that a common readiness reporting system include reporting on all data needed to determine readiness of units and allow full access to underlying data on personnel, equipment, and training. The system should be managed by the Joint Chiefs of Staff to assist the Chairman in the Chairman's statutory requirement to report on readiness and should include both active and reserve component data, thereby precluding any need to transfer data on reservists.**

A. PERSONNEL

The personnel readiness of reserve component units is a measure of the number of personnel in each unit, the individual qualifications of the service members, and the distribution of leaders. The services have testified before the Commission as to ongoing shortages of junior and mid-grade officers in both the active and reserve components. There are also persistent shortages of individuals in certain "high-demand/low-density" skill categories, while certain skills are overrepresented in the reserve components. The impact of the current operational tempo on personnel readiness has been mitigated through force-shaping programs such as the use of recruitment and retention bonuses, advanced promotions, and the cross-leveling of units to obtain qualified personnel. However, these policies do not provide a sustainable basis

for maintaining the personnel readiness of the reserve components as part of an integrated total force that promotes a continuum of service. (Recommendations on attracting, managing, and supporting personnel appear in sections III and V.)

Complicating any effort to assess the readiness of the reserve components is the lack of uniform reporting standards among the services.

B. INDIVIDUAL MEDICAL READINESS

Although not included in the existing readiness rating system, two additional personnel factors are critical to the personnel readiness of the reserve components: individual medical readiness and full-time support. DOD sets a service-wide goal of 75 percent for individual medical readiness. Five of the seven reserve components are not satisfactorily meeting DOD medical readiness standards.

Recommendation:

34. **Ensuring individual medical readiness is a corporate responsibility of the Department of Defense. The Assistant Secretary of Defense for Health Affairs should create an account in the Defense Health Program for the reserve components to meet the individual medical readiness (IMR) requirements that it has established, and then hold individuals and their unit commanders responsible for maintaining individual medical readiness standards.**

    a. **DOD should provide annual dental screening at no cost to service members.**

    b. **To encourage reservists to maintain dental readiness, Congress should, for the member only, reduce the out-of-pocket costs for restorative dental care (currently 20–50 percent) under the TRICARE Dental Program.**

    c. **All services should adopt a policy of requiring service members to be medically ready at the time they complete annual training requirements.**

    d. **Commanders of all National Guard and Reserve units should be held responsible for the individual**

medical readiness of their unit, and reserve component members should have appropriate incentives to meet IMR standards.

Congress should authorize that service Secretaries may provide members of the Ready Reserve any medical and dental screening and care that is necessary to ensure that the member meets the applicable medical and dental standards for deployment. To provide such screening and care, service Secretaries should be authorized to use any available funds appropriated for the operations and maintenance for the reserve components involved.

C. FULL-TIME SUPPORT

Adequate full-time support is essential for reserve component unit readiness, training, administration, logistics, family assistance, and maintenance. The effective performance of such functions correlates directly to a unit's readiness to deploy.

In the Army, funding for full-time support has not been sufficient. In fact, the Army does not have a reliable process for determining full-time support requirements in its reserve components. But it is clear that in particular, small units (equivalent to company-size and below) have not received adequate FTS personnel. The provision of full-time support is an opportunity for the Army to more fully integrate its active and reserve components into a total force.

In the Army, funding for full-time support has not been sufficient.

The full-time support programs in the reserve components of the Navy, Marine Corps, and Air Force promote the achievement of total force readiness and one standard. The Marine Corps and Navy programs could, however, do more to increase interaction between the active and reserve component.

Recommendations:

35. **All reserve component full-time support personnel must be the best-qualified individuals, selected for these billets on the basis of their knowledge, skills, and abilities to fulfill unit full-time support needs, including needs for training and certification for de-**

ployment. To support a competitive career path they must be required to serve in periodic tours with the active component, in operational forces, or in total force assignments at joint or service-level headquarters.

36. Congress, with input from the Department of Defense, should adopt a new model to provide full-time support to the Army reserve components as part of an overall program to improve their military effectiveness and to more fully integrate the Army and its components into a total force. This program should have the following elements:

    a. On an expedited basis, the Army should complete a baseline review—that is, a full manpower review, down to the lowest level—to determine the full-time support requirements for the reserve components as part of an operational force, including those requirements related to DOD's homeland defense and civil support missions.

    b. DOD should program and budget, and Congress should fully fund by fiscal year 2010, the Army's identified full-time support requirement. The Secretary of the Army should also seek to generate additional military manpower for this purpose, including through military-to-civilian conversions.

    c. The Army should replace all Army Reserve Active Guard and Reserve (AGR) personnel with active component soldiers with recent operational experience serving rotational tours. The transition should take place gradually, in phases, to ensure that the careers of currently serving AGR Army reservists are protected.

    d. Military full-time support for the Army National Guard should be a mix of active component soldiers and AGR soldiers. Active component soldiers serving in Guard FTS positions should have recent operational experience and serve in rotational assignments of defined duration, under the control of the governor, and be dual-hatted, serving in Title 10 status and in the state's National Guard.

37. **The Secretary of the Army should prescribe that all military technicians in the Army's reserve components be assigned to the same organization in both their military and civilian capacities at all times, that they be required to maintain full qualification in both their military and civilian capacities, that they deploy with the organization to which they are assigned, and that such technicians who lose their military qualifications shall be either reassigned to non-deploying civilian positions or separated in accordance with established civilian personnel procedures.**

38. **The Marine Corps Active Reserve program should be merged into the active component with no loss to the Marine Corps Reserve in total full-time support billets. This merger should be completed in phases to protect the careers of marines currently serving in the Active Reserve.**

39. **The Navy Reserve's FTS program should be replaced with a program that provides active component full-time support to reserves with no loss in the number of billets that support the reserve component. The transition to active component FTS for the Navy should take place in phases to protect the careers of currently serving FTS Navy reservists.**

D. TRAINING

The reserve components have minimum training requirements defined in law that equate to approximately two days per month plus two weeks of annual training. In addition, some service members perform individual training and qualifications. Each reserve component trains its personnel differently, but all currently report unmet training needs. This problem is rooted in the additional training requirements generated from consolidation and transformation initiatives, as well as in wartime requirements that have combined to create unaddressed needs for increased training capacity. During their long wait to be trained, reservists are not available to fully engage in unit activities.

An operational reserve will require additional training resources to achieve necessary readiness levels for three reasons. First, an operational reserve will be expected to be ready to deploy under a "train, mobilize, deploy" model. As a result, most individuals and units will be required

An operational reserve will require additional training resources to achieve necessary readiness levels.

to train more than the traditional 39 days per year in order to meet standards established by the services' force generation models. The Army National Guard and Army Reserve will need to certify the readiness of their units at home stations. Army officials responsible for certification must be engaged before activation to avoid repeated checks at post-mobilization training sites. Post-mobilization training must be efficient and focused solely on theater-specific requirements in order to maximize the "boots on the ground" time of deployment within the limited period of activation. Reserve component training will require greater planning and coordination with the active component. Current Army reserve component training programs are inadequate to meet the needs of this operational force construct.

Recommendations:

40. **The Secretary of Defense should ensure that training institutions and facilities are resourced to meet the needs of the total force. In particular, institutions should be able to meet the current training needs of reserve component personnel, whether the courses they offer are resident, nonresident, or distance learning tailored to the reserve components. The service Secretaries should ensure that the school training system provides sufficient access to seats for members in its active and reserve components to meet total force training requirements, and should further integrate the system as necessary to achieve that goal.**

    a. **Each service should reassess the number of training and administrative days that reserve component units and members will need prior to activation. The services should fund and implement policies to undertake more pre-mobilization training and to focus training on mission requirements.**

    b. **The services should disclose fully to all prospective members of units the expected number of training days required annually to participate successfully in that unit. Annual training requirements beyond the traditional 39 days per year should be based on unit needs and accomplished by clear mutual**

agreement with the individual service member regarding his or her minimum obligation.

c. Training equipment must be sufficient to give service members regular access to modern warfighting equipment so that they can train, and can develop and maintain proficiency, on the same type of equipment with which they will be deployed and fight.

41. To effectively implement a "train, mobilize, deploy" model, the Secretary of the Army should direct that pre-deployment training is programmed for and that reserve component units are certified ready to the company level. This certified training should ensure that units arrive at mobilization stations without the need to be recertified and are ready to perform theater-specific training.

E. EQUIPMENT AND SUPPLIES

Congress tasked the Commission to assess the adequacy of funding for National Guard and Reserve equipment. The high operational use of reserve equipment in the current conflicts has degraded their readiness for both combat operations and domestic emergency response. Such degradation, added to the low priority historically given to reserve component requirements and such practices as passing down older, obsolete equipment from the active to the reserve components, has generated equipment deficiencies.

Existing equipping strategies and budgets for equipment are inadequate to sustain an operational reserve. DOD reports show a $48 billion unfunded shortfall for reserve component equipping at the beginning of fiscal year 2007. This figure does not include the projected costs of adequately equipping reserve forces to meet the requirements of the Army Force Generation Model or to prepare adequately for responding to catastrophes. Many reserve component units in the Army continue to have non-deployable substitute equipment. The Army's plans to modernize and equip its reserve components are unrealistic in light of plans to increase active component end strength, prior unfulfilled plans to equip its reserve components, and requirements associated with transformation initiatives. Too often Army materiel development, acquisition, and modernization programs, as well as multiyear procurement contracts, do not integrate reserve component requirements. For

example, the Army has not programmed to provide the Army National Guard with its multi-billion-dollar Future Combat System (FCS), its main transformation initiative.

Existing equipping strategies and budgets for equipment are inadequate to sustain an operational reserve.

The Army has funded or programmed nearly $47 billion for reserve component equipment between 2005 and 2013. Yet current Army plans and budgets for equipment will not restore readiness and attain the goal of fully manning, training, and equipping its units until 2019. The current strategies of equipping just prior to deployment and cross-leveling equipment between units will likely continue for some time. The Commission believes that this target date of 2019 delays the restoration of equipment readiness for too long and increases the likelihood the Army's plan will not be realized. The goal of fully equipping the Army reserve components should be reached much sooner, with particular emphasis on rapidly procuring critical dual-use (CDU) equipment.

The Army National Guard has identified a funding shortage for critical dual-use items needed for both warfighting and domestic emergency response. As noted above, the Department of Defense does not explicitly budget and program for civil support missions, and the Department of Homeland Security has not identified the requirements that DOD must meet to adequately perform domestic civil support missions.

Equipment readiness is a matter not just of adequate funding but also of ensuring oversight of funding allocations. It is extremely difficult to track reserve component equipment from its appearance in budget documents to its delivery. DOD officials responsible for performing this function can provide only estimates, not accurate assessments of progress in efforts to eliminate shortfalls in reserve component equipment levels.

The challenge for the reserve components in equipment funding is tracking the money from the budget line to execution. Procurement funding is consolidated for all components in each service in a document referred to as the P-1. A supplemental document, the P-1R, lists the equipment (and associated funding) that is identified in the P-1 as intended for distribution to the reserve components. However, there is no mechanism to ensure that the items specified in the P-1R are not subsequently diverted to other purposes. In the work leading to our March report, the Commission looked at the viability of establishing a separate procurement

appropriation for each component—consistent with current treatment of personnel, operations and maintenance, and military construction. The Commission concluded that the efficiencies of consolidation outweigh the benefits of a separate appropriation.

A better solution, which improves accountability for equipment destined for National Guard and Reserve forces while retaining the synergy and efficiency of the existing process, is to assign a separate program element code to each of the components. Requiring separate program elements would continue to provide the economy of scale and efficiencies of one appropriation while allowing oversight during the execution process. Any major reprogramming from reserve to active component use would require approval from the four defense oversight committees.

Recommendations:

42. Congress should require that total force equipment requirements be included in service and joint materiel development, acquisition, and procurement plans, production contracts; and delivery schedules.

43. Program elements should be added to the DOD procurement budget justification material and accounting system to increase transparency with regard to reserve component procurement funding and to improve DOD's ability to track delivery of equipment to the reserve components.

44. The services should conduct a baseline review of reserve component equipment requirements, encompassing the accelerated degradation of equipment readiness caused by the current operations as well as the services' plans to implement force generation deployment models for both the active and reserve components; those requirements for civil support identified through DOD's collaboration with the Department of Homeland Security; and a revalidation of existing requirements, some of which remain tied to Cold War force management and a strategic reserve.

45. The services should use this review to prioritize funding to restore equipment readiness for the current operations and to prioritize programming and budgeting for requirements, including

a. **Re-equipping programs for the Army and Marine Corps that would restore their reserve components to a C-1 level (as measured by the Status of Resources and Training System, modified pursuant to Recommendation #32) for required equipment on hand (including systems in training sets) as soon as possible, but no later than 2015.**

b. **Providing critical dual-use (CDU) equipment to conduct the full range of homeland missions as soon as possible, but no later than 2013.**

F. Access to the Reserve Components

Mobilization laws and policies are among the key factors that affect how the reserve components are used, in terms both of how accessible the reserve components are to the federal government and of how predictable deployments are for service members. These laws and policies must provide adequate authority and generate practices to support a predictable and effective mobilization process.

Current mobilization statutes were enacted for Cold War–era scenarios in which the National Guard and Reserves were a force to augment and backfill the active forces (after long post-mobilization training periods) only in the event of a major conflict. These statutes address neither the needs of the current prolonged conflict, in which portions of the reserve component are at an extremely high operational tempo, nor the permanent use of that force in a sustainable system of rotation.

Service Secretaries are tasked with the responsibility under Title 10 to organize, man, train, equip, and mobilize forces within their departments. However, the mobilization process is in fact managed within the Department at a higher level, burdened by lengthy approval processes that can cause delays in notification to units and individuals about pending deployments.

Current mobilization statutes were enacted for Cold War–era scenarios in which the National Guard and Reserves were a force to augment and backfill the active forces.

On January 19, 2007, Secretary Gates issued a mobilization policy that addressed the lack of effective guidance regarding how many times a reservist can be mobilized, for how long, and the amount of time reservists should be allowed to remain at home between deployments:

he announced that reservists can be remobilized, stating as a goal that mobilizations should be for periods of no longer than 12 months, with a five-year dwell time between them. However, this policy cannot be fully implemented by the Army and Marine Corps given current global commitments and the existing force structure.

In addition, DOD and the services have explored using contract-based service agreements to augment existing mobilization statutes. An example of such agreements is the variable participation reserve unit (VPR-U) concept, which provides for members to become part of a unit performing more than the minimum annual training commitment without involuntary mobilization. Such contracts further DOD's goal of enabling enhanced participation by reserve component service members.

Recommendations:

46. Congress should amend the partial mobilization statute (10 U.S.C. §12302) to clarify congressional intent with regard to the duration of the mobilization obligation.

47. The limitation of 1,000,000 service members at any one time that can be mobilized under a partial mobilization should be replaced with a limitation that is relevant to the size of the existing Ready Reserve or the new reserve component categories proposed by the Commission in Recommendation #86.

48. Congress should require the military services to report on any potential impediments to implementing dwell times and deployment periods that are sustainable during current and projected operations and to specify the necessary actions and appropriate milestones to overcome these impediments.

49. Service Secretaries should be empowered to exercise their statutory authority to conduct the functions of mobilizing and demobilizing their respective departments. Other DOD organizations should defer to this statutory authority.

50. The military services should provide their members with adequate notice of a mobilization. Until the Army and Marine Corps have fully implemented force generation models for predictability, alert noti-

fication for these services needs to occur earlier—one year out—to allow all units sufficient time to train and prepare for deployment.

51. **a. Congress should update 10 U.S.C. §12311 to provide for contract-based service agreements for units and individuals of the reserves.**

    b. DOD should employ a contract-based service and incentive system to ensure access to the reserve components and to provide predictable and sustainable activations.

    c. The services should expand the number of variable participation reserve units.

    d. The contract-based system of assured availability recommended here should form the basis of accessing the Operational Reserve category outlined in Recommendation #86.

V. SUPPORTING SERVICE MEMBERS, FAMILIES, AND EMPLOYERS

The Commission was tasked by Congress to assess "the adequacy and appropriateness of the compensation and benefits currently provided for the members of the National Guard and the other reserve components, including the availability of health care benefits and health insurance." Since that time, Congress has made a number of improvements in the compensation and benefits, including health care, provided to reserve component members. Congress has, for example, approved a reserve component critical skills bonus and permitted the Secretary of Defense to waive the requirement limiting that bonus to those with not more than 25 years of service, expanded high-priority unit assignment pay, improved the housing allowance, created new health care benefits for reserve component members and their families, and authorized payment of a stipend to continue civilian health plan coverage for an activated reservist's dependent with special health care needs.

The Commission examined remaining disparities in compensation and benefits and evaluated the availability and user-friendliness of DOD's health care program (TRICARE) for reserve component families. In addition, the Commission paid particular attention to two major influencers of the reserve component member's decisions about enlistment, participation, and retention: families and employers.

The ability of reserve component family members to receive medical care when a service member is activated (so-called continuity of care) remains a major worry for reserve component families, because civilian providers often do not participate in TRICARE and because for many family members, particularly those new to the military, TRICARE is difficult to navigate and not user-friendly.

Numerous serious shortcomings have been identified in the health care provided to injured service members, including inadequate case management, delays and inconsistencies in the disability determination process, lack of coordination between the Department of Defense and the Department of Veterans Affairs, and inadequate processes for assessing such grave conditions as post-traumatic stress disorder (PTSD) and traumatic brain injury (TBI).

The ability . . . to receive medical care when a service member is activated . . . remains a major worry for reserve component families.

In addition, although employer support is critical to recruiting and retaining a quality reserve force, DOD has not taken sufficient steps to recognize the vital role that employers play, such as providing them with greater predictability in their employees' deployments and creating a stronger partnership between employers and senior-level decision makers within the Department. There continue to be reports that employer support is waning.

Conclusion Five: To maintain an operational reserve force over the long term, DOD must appropriately support not only the service members themselves but also the two major influencers of members' decisions to remain in the military—their families and employers. Significant improvements in current programs in all three areas are essential to sustain an operational reserve force both today and in the future.

A. Compensation

Housing and Travel Issues

In 2004, a congressionally directed DOD report on reserve compensation identified the requirement that reservists be on active duty for 140 days or more in order to receive full basic allowance for housing (BAH)

as a funding-driven disparity impeding a seamless flow from reserve to active duty status. Congress subsequently reduced the threshold to 30 days. In the Commission's view, the lower 30-day threshold remains a funding-driven constraint that both is out of sync with duty status reforms recommended elsewhere in this report and impedes a continuum of service.

In testimony at public hearings, considerable concern was expressed to the Commission about the distances that some reserve component members must travel to their weekend drills and the out-of-pocket costs incurred by members for that travel. The average distance traveled varies among the services, depending on whether the reservist drills with a local unit or provides support to a more distant command. The problem has been exacerbated in some components by the Defense Base Closure and Realignment Commission process. As a result, commanders have found it increasingly challenging to recruit and retain qualified personnel, particularly for leadership positions, who may reside far from their training locations.

If Congress were to expand recently enacted legislation to provide DOD with broader authority to reimburse reserve component service members, on a discretionary basis, for inactive duty training (IDT) travel over 50 miles, military commanders would be better able to effectively manage the reserve component. In addition, authority to reimburse for travel is consistent with—and an important component of—the duty status reforms recommended elsewhere in this report.

DOD and Congress will need to further review compensation and personnel policy issues to ensure that reserve component members are treated equitably both during and after the transition to two duty status categories.

Recommendations:

52. **Congress should eliminate the ordered-to-active-duty-for-more-than-30-days requirement for receipt of full basic allowance for housing.**

53. **Congress should provide the service Secretaries with discretionary authority, delegable to the reserve component Chiefs, to reimburse service members for travel expenses in excess of 50 miles to participate in what are currently called drill periods. In addition, using existing authority, the services should budget for and provide lodging to each reserve component**

member who travels more than 50 miles from his or her residence to perform inactive duty training.

The Montgomery GI Bill

The Montgomery GI Bill–Selected Reserve benefit was designed as a retention tool that provides educational assistance to reserve component members who continue in a drilling reserve status. Over the past several years, more than half of reserve component members using a reserve educational benefit (including the MGIB-SR) were unable to continue their education because they were activated. Current law does not allow a reserve component service member to use the MGIB-SR benefit if he or she leaves the Selected Reserve and transitions into the Individual Ready Reserve.

Recommendation:

54. Congress should amend the law to permit reserve component service members who have been activated for a specified period of time to use MGIB-SR benefits after their discharge, provided that they remain subject to recall and supply DOD with accurate contact information.

B. SERVICE MEMBER PROTECTIONS

Reservists returning to civilian life sometimes encounter difficulties in their civilian employment. The Uniformed Services Employment and Reemployment Rights Act of 1994 defines the roles and responsibilities of individual agencies in aiding such reservists, but it does not make any single individual or office accountable for overseeing the entire complaint resolution process. The lack of such oversight makes it difficult for the relevant agencies—the Departments of Defense, Labor, and Justice, and the Office of Special Counsel—to effectively carry out their USERRA responsibilities, though all have taken action to improve the information provided to employers and the assistance offered to service members under the law.

USERRA, which establishes that an employee may be absent from work for military duty for a cumulative total of five years and retain reemployment rights, was originally written with a strategic reserve force as its focus, but its Cold War design does not appear to have disadvantaged service members or their families at a time when the reserves have become operational. USERRA affords reservists fundamental protec-

tion against employment and reemployment discrimination. Moreover, its cumulative five-year maximum, along with its exemptions to that limit, provides an essential safeguard for the service member. USERRA and Department of Defense policy offer adequate notice to and redress for employers, given the unpredictable nature of military duty. Nonetheless, USERRA would benefit from some fine-tuning as the reserves become an operational force.

USERRA does not specify how much advance notice of duty is required to be provided to employers. An employer may ask the unit for verification of the duty performed; but under USERRA, an employer is entitled to proof of service only when the period of absence exceeds 30 days. Any inconvenience to the services caused by providing proof of an employee's service is minor in comparison to the sacrifices that employers willingly bear.

Reservists returning to civilian life sometimes encounter difficulties in their civilian employment.

USERRA also provides that a reservist's health care plan can be reinstated on reemployment, without exclusions or a waiting period. However, in the case of flexible spending accounts (employer-established benefit plans, primarily funded by the employee, that are used to pay for specified medical expenses as they are incurred), this intent conflicts with the Internal Revenue Code, whose treatment of FSAs unfairly penalizes redeploying service members. Moreover, there is no clear rule that protects the health care reenrollment rights of a service member whose return to work is timely but who elects not to immediately reenroll in his or her employer-based health care plan, choosing instead to use the Transition Assistance Management Program (TAMP) benefit. The TAMP 180-day post-deployment transitional TRICARE coverage is a valuable benefit for redeploying service members and their families, and it is unfair that service members who elect to use this benefit are put in the position of losing USERRA's protection of civilian health insurance coverage.

The Servicemembers Civil Relief Act (SCRA) allows all members of the armed forces to suspend or postpone some civil obligations so that they may devote their full attention to their duties. An area of particular concern is mortgage foreclosure. Reservists face considerable stress when they return from deployment; while some of those stressors are unavoidable, service members can be given more time to deal with the threat of foreclosure.

Lastly, the use of Social Security numbers on military documents, identity cards, and dog tags increases the chance that military members and their families could be the victims of identity theft and related fraud.

Recommendations:

55. Congress should make a single entity accountable for overseeing the entire USERRA complaint resolution process.

56. USERRA's five-year limit and its exemptions should not be eliminated or modified. USERRA should, however, be amended to establish that an employer is entitled to documentation, if available, confirming that an employee performed any period of military service.

57. Both the Internal Revenue Code and USERRA should be amended to specify that when service members are mobilized and until their deployment ends, the "year" in which funds were deposited into their flexible spending accounts be frozen.

58. USERRA should be amended to specify that an exclusion or waiting period may not be imposed in connection with the reinstatement of an employer-based health care plan upon reemployment or upon termination of health care coverage under the Transition Assistance Management Program, whichever is later. In addition, the Servicemembers Civil Relief Act (SCRA) should be amended to increase the period during which a service member may apply for reinstatement of health insurance from 120 days to 180 days, the period of TAMP eligibility.

59. The SCRA should be amended to increase to a period greater than 90 days the time allowed a service member to file for relief from foreclosure.

60. DOD should replace Social Security numbers with another form of unique identifier for service members and their families in all Defense systems and should discontinue the use of SSNs on identity cards and dog tags.

C. HEALTH CARE

Using TRICARE is often a challenge for reserve family members unfamiliar with its complexities. Many "suddenly military" National Guard and Reserve families, whose service members are activated for the first time, find TRICARE to be difficult to navigate and non-user-friendly. Many reserve component families find it difficult to maintain continuity of medical care using their existing health care providers once their service member is activated, because many civilian health care providers do not participate in TRICARE. Simplifying the TRICARE reimbursement and claims process would encourage more providers to participate in the program.

TRICARE Management Activity and the military services have not undertaken a sufficiently aggressive educational campaign to help improve reserve component families' understanding of TRICARE. Important elements include more briefings, Web pages, and printed materials prepared for first-time users, as well as the creation of a centralized ombudsman capability to assist families in solving their TRICARE problems.

The Commission examined health savings accounts and flexible spending accounts as an alternative to TRICARE and found that they do not offer a viable option, as currently structured. However, as an add-on, flexible spending accounts could prove helpful in offsetting unreimbursed out-of-pocket costs, such as co-payments and deductibles.

The Federal Employees Health Benefits Program (FEHBP) makes a variety of insurance plans available to federal employees nationwide at reasonable cost. It offers a viable alternative to TRICARE, with the potential of improving continuity of care for family members when service members are activated. In addition, a stipend provided by DOD to the service member or employer, or a tax credit to the employer, to retain coverage for family members during activation could help maintain continuity of care for the member's family and could provide an incentive for employers to hire reservists. In the Commission's view, payment of a stipend would do more than give families an important benefit: it would constitute a major element of an enhanced compact with employers, whose continued support, like that

Many "suddenly military" National Guard and Reserve families . . . find TRICARE to be difficult to navigate and non-user-friendly.

of families, is essential to recruiting and retaining top-quality young men and women in the National Guard and Reserves.

Recommendations:

61. Congress should direct DOD to resolve long-standing issues for families not located near military treatment facilities (MTFs). This direction should include mandates to
    a. Update educational materials to be more user-friendly, written in easy-to-understand language.
    b. Establish an Assistant Secretary of Defense for Health Affairs ombudsman office, with a single toll-free customer support number, for family members who do not have convenient access to an MTF benefits counselor to resolve problems.
    c. Simplify the TRICARE claims and reimbursement process to eliminate current disincentives that discourage providers from participating in the TRICARE program.
62. In addition to offering TRICARE Reserve Select to all members of the Selected Reserve, Congress should amend the law to permit reserve component members to participate in the Federal Employees Health Benefits Program (FEHBP). When the service member is activated, with or without the member's consent, DOD should pay the premiums for coverage of the service member's family. When the member is inactivated, however, the member should again pay the premiums, as is now the practice, for TRICARE Reserve Select.
63. Congress should establish a program that provides the activated service member with a stipend (whose use for medical care must be certified) or provides the employer either a direct stipend or a tax credit as reimbursement for the cost of keeping the member's family in the employer's health insurance plan during the period of activation; the stipend should be based on an actuarially determined cost of the TRICARE benefit.

D. ENHANCING FAMILY SUPPORT

Family members play an important role in the service member's decision to remain in the military. Increased operational use of the reserves has placed added stresses on families and family relationships. Reserve component family members face special challenges because they are often at a considerable distance from military facilities and lack the on-base infrastructure and assistance available to active duty family members.

Some families have reported problems in obtaining needed information and assistance from other services or other reserve components. Military family members today believe that all families in the community should enjoy a comparable level of "purple" support services, regardless of an individual's service or component—with adequate funding and staffing resources. And while a robust network of reserve component family members who serve as volunteers assisting other RC family members is a critical element of an effective family support program, family readiness suffers when there are too few paid staff positions within family support programs to help maintain the volunteer network's administration.

Military family members today believe that all families . . . should enjoy a comparable level of "purple" support services.

For families living a considerable distance from on-base facilities, Military OneSource is the best current program providing "one-stop shopping" for military family support services, but it is underadvertised and underutilized. Many reserve component members and their families have never heard of this valuable resource. Families also need better sources of information and assistance during the mobilization and demobilization processes.

Recommendations:

64. **DOD should create a "purple" system, available to employees of any DOD family assistance center via the Internet and phone, that would allow any family member access to needed information.**

65. **DOD should increase funding within reserve component budgets for family support services to ensure that there are sufficient paid staff members within these programs to maintain the services' volunteer net-**

works. In order to reduce the isolation of reserve component families, DOD should place a paid, full-time employee charged with family support at the unit level in all units (and the term *unit level* should be defined by each component) to augment the existing volunteer network.

66. DOD should initiate and execute a massive information campaign to educate reserve component members and their families about the capabilities offered by the Military OneSource program.

67. DOD should change its policies to increase the amount of family participation in the mobilization and demobilization process in order to help educate family members about benefits, health care, family support programs, potential demobilization issues, and other family concerns.

E. ESTABLISHING A COMPACT WITH EMPLOYERS

Like families, employers have a major influence on whether reservists continue their reserve participation and on the level of that participation. In a 2002 report, DOD acknowledged the need for a stronger compact between DOD and the employers of its reserve members. Employers are experiencing many challenges because of the high operational tempo of the reserve components during the past several years. These challenges have caused a strain in relations between employers and DOD.

Created in 1972, the National Committee for Employer Support of the Guard and Reserves (ESGR) fosters support for reserve service within the employer community and assists individual reservists who are experiencing problems with their employers because of their reserve status. ESGR relies heavily on a nationwide network of local employer-support volunteers. Given the operational use of the reserves today, the role of ESGR within the Department of Defense and within the employer community clearly should be strengthened. In the Commission's view, employers need a stronger voice to make their concerns known at the highest levels of the Department of Defense. In addition, DOD currently has no one phone number that employers can call or Web site that they can visit to receive comprehensive information on reserve component issues; such a centralized source would greatly enhance employers' education about and knowledge of these issues and would benefit reserve component members as well.

The federal government employs more reserve component members than any other employer in the United States. In the benefits it offers reserve component members, such as military leave and continued medical coverage for family members during activation, the federal government sets the pattern for other employers. The federal government should also be a model employer in its treatment of reservists, but this is not always the case.

Several countries allied with the United States are using contracts between the government, employers, and employees to form a "sponsored/contracted reserve," which can be used to provide a manpower pool for military mobilization based on specific skills. A sponsored/contracted reserve is also part of the compact between the government and the employer in which all parties participate, enabling all to agree to the reservist's level of commitment.

> . . . employers need a stronger voice to make their concerns known at the highest levels of the Department of Defense.

The resources available from the Small Business Administration to aid small business owners who employ mobilized and deployed reserve component members are not well publicized. The Small Business Administration does not have an effective program to educate small business owners on how they can protect themselves from incurring a substantial monetary loss when one of their employees is deployed. The time period during which Military Reservist Economic Injury Disaster Loan (MREIDL) assistance is available to small businesses that employ reserve component members is inadequate.

Recommendations:

68. **The mission of the National Committee for Employer Support of the Guard and Reserves (ESGR) should be expanded. It should encompass helping employers find information on a wide range of topics, including those within the purview of the Department of Labor, Small Business Administration, and Department of Veterans Affairs; preparing and distributing information to employers on post-deployment health issues faced by reserve component members, such as post-traumatic stress disorder (PTSD) and traumatic brain injury (TBI); and providing employers with in-**

formation on the sources of assistance available to the member and his or her family.

a. DOD should increase the numbers of ESGR paid staff, particularly ombudsmen in the field, to enhance the level of expertise available to employers and service members and to promote greater institutional memory.

b. ESGR's name should be changed to reflect its expanded mission. The new organization should balance its outreach to employers and to service members and their families.

c. Supervision of ESGR should be removed from the Assistant Secretary of Defense for Reserve Affairs, and the ESGR's executive director should be made an advisor or assistant to the Secretary of Defense.

69. The Secretary of Defense should establish an employer advisory council to meet regularly with and provide direct input to the Secretary of Defense. The Secretary should appoint the council members in accordance with congressional direction regarding the type and mix of employers who should be included. In addition, DOD should establish a program for regularly surveying employer interests and concerns and should track data developed in those surveys on a longitudinal basis.

70. The President should direct all federal agencies and the U.S. Postal Service to issue guidance emphasizing the importance of reserve service; prescribing appropriate behavior for supervisors with regard to their employees who are reservists, including treatment of reservists as a criterion for rating performance; and prescribing sanctions for noncompliance. State and local governments should adopt similar policies and procedures.

71. Information on Military Reservist Economic Injury Disaster Loans (MREIDLs) and other assistance from the Small Business Administration should be provided to reserve component members and their small business employers at the time they join the National Guard or Reserves. Either these small busi-

nesses should be able to get MREIDLs immediately, because they have key employees in the reserve component, or they should be able to do all the paperwork and qualify for the loans at that time, and then secure them as soon as the employee learns that he or she will be activated.

72. **DOD should explore the possibility of creating and implementing a standardized program for a "contracted reserve" that is developed around a contract between volunteer civilian employers, their volunteer employees, and the U.S. government to provide a specialized and skilled reserve force for use in time of need.**

F. DEMOBILIZATION AND TRANSITION ASSISTANCE

The demobilization process is designed to assist reserve component members in transitioning back to civilian life. For today's operational reserve, it is also essentially the first opportunity to begin preparing reserve component members for their next deployment. Many problems in the demobilization process have come to light during the global war on terror. Those issues have been considered over the past year by a number of other commissions and task forces and by Congress in its passage of the landmark Wounded Warrior Act. Numerous serious shortcomings have been identified in the health care provided to injured service members, including inadequate case management, delays and inconsistencies in the disability determination process, lack of coordination between the Department of Defense and the Department of Veterans Affairs, and inadequate processes for assessing such grave conditions as post-traumatic stress disorder and traumatic brain injury. Several groups performing reviews have found significant differences in how disability ratings are assigned both within and between the services and between DOD and VA.

The demobilization process relies on data gathered before service members deploy, but the pre-deployment health assessment mandated by Congress may not adequately identify serious mental or physical health problems prior to deployment. Once service members return, shortcomings in the demobilization process delay timely identification of PTSD, TBI, and other serious health problems. There are significant disparities among the services with respect to how well health care providers follow up on the mental health questions on the Post-Deployment Health

Assessment (PDHA). The Office of the Secretary of Defense also has failed to provide uniform guidance. In addition, the services do not adequately track completion of the Post-Deployment Health Reassessment (PDHRA) within the required 90–180 days, a lapse in oversight that affects reserve component members.

While physical injuries are usually identified and treated when they occur, mental health problems may at first not be easily detected or may be the result of cumulative exposure. Inactivating reserve component members often lose touch with their colleagues and their chain of command during the transition process, as current DOD policy exempts involuntarily activated members from drill periods for 60 days after a unit returns from deployment. During that span of time, serious problems may go unrecognized. And problems may be exacerbated if the PDHRA is not administered in a timely manner.

> . . . the pre-deployment health assessment mandated by Congress may not adequately identify serious mental or physical health problems.

In fact, 44 percent of reservists and 41 percent of national guardsmen screened since 2005 have reported some concerns about psychological health. Because many reserve component members live at a significant distance from military installations, however, they often have considerable difficulty in finding good information about and access to medical care. Reserve component members who serve in cross-leveled units distant from their home station and as individual replacements can face particularly difficult challenges in finding needed support and assistance after they are inactivated.

Reserve component members returning from theater may be discharged with their dental problems unresolved. Many are unaware that they have a limited time period, recently increased from 90 to 180 days, to access dental care through VA. Failing to seek such care can impair dental readiness for the next deployment cycle and result in additional out-of-pocket expenses.

Many reserve component members do not receive adequate transition assistance information during briefings and during the demobilization process, especially when demobilization occurs at a site other than their home station. A good model is the Minnesota National Guard's Yellow Ribbon Program, which offers a promising holistic system for addressing the reintegration challenges of medical benefits, suicide prevention, family benefits, legal issues, education, employment, and business.

Recommendations:

73. To ensure coordinated implementation of the excellent recommendations of the reports submitted by numerous commissions over the past six months, as well as Congress's landmark Wounded Warrior Act, the President should require the development of action plans—including timelines for implementation—by the Department of Defense, the Department of Veterans Affairs, and other federal agencies. The President should also establish a cabinet-level task force to oversee their implementation, coordinate interdepartmental concerns, and address issues of funding with the Director of the Office of Management and Budget. The cabinet-level task force should make its top priority restructuring and streamlining the DOD and VA disability determination processes and eliminating other long-standing VA and DOD stovepipes, such as medical information systems that lack interoperability and bidirectionality.

74. The pre-deployment health assessment should be revised to reflect the original congressional intent to establish baseline health data, including data on psychological health; it should also go beyond the current reliance on self-assessment to incorporate greater participation by health care providers.

75. Reserve component units should resume monthly drills immediately after demobilization. As recommended by DOD's Mental Health Task Force, "At least the first drill should focus on reintegration issues with attention to discussion of deployment experiences, aspects of reintegration into community life, coping strategies and resilience supports, and other appropriate topics."

76. The services should more closely track Post-Deployment Health Reassessments to ensure that they are completed within the statutorily required 90–180 days and that a member who has identified problems on the reassessment receives face-to-face counseling from a provider. In addition, a tracking system should be established to identify reservists who have

not completed the PDHRA, and DOD should monitor the services' compliance with all requirements.

a. DOD should prescribe uniform guidance for providers who follow up on responses to the mental health questions on the Post-Deployment Health Assessment, and it should monitor the services' compliance.

b. DOD, VA, and the services should establish protocols requiring VA participation in the counseling of service members and their families both before and after deployment, as well as VA participation in all post-deployment health reassessments.

77. The services should develop a protocol to ensure that needed services are available to reserve members who do not demobilize at their home station or who are members of the Individual Ready Reserve. The services should establish a tracking system to make certain that these individuals receive all the information, help, and benefits to which they are entitled.

78. Reserve component members should have one year to apply for dental care through VA.

79. Transition assistance information should be provided not just during the demobilization process but also during the first several post-demobilization drill sessions. Family members should be encouraged to attend and to participate in transition assistance; they should be counseled on the services available to assist families in coping with post-deployment concerns.

80. A single standard of reintegration care should be provided to all those who serve on extended or multiple deployments regardless of their service or reserve component category (Individual Ready Reserve, Retired Reserve, or individual mobilization augmentee). Funding to provide these services should be reflected in each service's base budget for the reserve components.

VI. REFORMING THE ORGANIZATIONS AND INSTITUTIONS THAT SUPPORT AN OPERATIONAL RESERVE

Congress directed the Commission to assess the current and future organization and structure, roles, and missions of the National Guard and Reserves. The current leadership structure of the reserve components and categories of reserve service were created and evolved during an era when the reserve components were intended to be used solely as a strategic reserve. If the Department of Defense and Congress choose to continue to use the reserve components as both an operational and a strategic force, then they will need to reform department, service, and reserve component organization and leadership structures to sustain that force.

Conclusion Six: The current reserve component structure does not meet the needs of an operational reserve force. Major changes in DOD organization, reserve component categories, and culture are needed to ensure that management of reserve and active component capabilities are integrated to maximize the effectiveness of the total force for both operational and strategic purposes.

A. MAKING NECESSARY CULTURAL CHANGES

Though there have been efforts at the highest levels to bridge the cultural and structural divide between the active component and the reserve component and though improvements have been realized in some of the services, the divide persists, to the detriment both of components and of the overall military mission. Some cultural divisions are not just perceptions but are based in law.

Recommendations:

81. **While differences will persist, the Secretary of Defense should recognize the cultural divide that exists between the reserve components and the active components, and should develop a new Total Force Integration Policy to achieve the next level of integration among all components.**

82. **The service Secretaries should ensure that active component officers are encouraged to serve in reserve**

component units and that such service is considered favorably when determining who is most qualified for promotion.

83. **Reserve component officers and senior enlisted personnel should be selected for leadership positions in reserve component units without geographic restrictions. As proposed in Recommendation #53, reserve training travel allowances should be modified to eliminate fiscal obstacles to implementing this policy.**

84. **All vestiges of the cultural prejudice existing between reserve and active component personnel that remain in law and policy should be removed. In particular, Congress should modify section 1187 of Title 10 to allow reserve officers to serve on Boards of Inquiry for active component officers.**

85. **Reserve designations should be removed from all titles, signature blocks, and unit designators.**

B. TRANSFORMING RESERVE COMPONENT CATEGORIES

The existing reserve component categories (RCCs) were designed to facilitate rapid expansion of the armed forces for a major war with the Soviet Union. They do not optimally support the rotational use of the reserve components over a prolonged period, as now envisioned by the Army and Marine Corps. The existing reserve component categories are not meaningfully tied to mobilization statutes, in that the three major subdivisions of the RCCs—Ready Reserve, Standby Reserve, and Retired Reserve—are not constituted in a way that reflects their readiness for mobilization, their use on a cyclic rotational basis or as part of a strategic, surge force, or their priority for resourcing.

The existing reserve component categories . . . do not optimally support the rotational use of the reserve components over a prolonged period.

The current construct of RCCs must be expanded to encompass the total force, including the active components and retirees, both regular and reserve. This spectrum also includes men registered with the Selective Service System. Manag-

ing this entire spectrum holistically will foster required integration and a true continuum of service. It will support the reserve components' role as part of the operational forces and more efficiently allocate efforts to manage personnel who are part of the nation's strategic reserve force.

Recommendations:

86. **The current reserve component categories should be reorganized. The total force manpower pool should be viewed as consisting of the full-time active components and the reserve components, which should be divided into two categories that support integration, a continuum of service, the operational use of the reserve force, and continuing strategic depth and the ability to surge when required. DOD and the services should effectively manage and resource both of the categories.**

    a. **The two major divisions that should be established are**

        - **The Operational Reserve Force, which will consist of present-day Selected Reserve units and individual mobilization augmentees and will periodically serve active duty tours in rotation supporting the total force.**
        - **The Strategic Reserve Force, which will consist of two subdivisions:**
            - **The Strategic Ready Reserve Force, consisting of current Selected Reserve units and individuals who are not scheduled for rotational tours of active duty as well as the most ready, operationally current, and willing members of today's Individual Ready Reserve and retired service members (regular and reserve), managed to be readily accessible in a national emergency or incentivized to volunteer for service with the operational reserve or active component when required.**

- The Strategic Standby Reserve, consisting of those current Individual Ready Reservists and retired service members (regular and reserve) who are unlikely to be called on except in the most dire circumstances yet who still constitute a valuable pool of pretrained manpower worth tracking and managing.

b. Today's Standby Reserve category should be eliminated and its members that are not viable mobilization assets should be excluded from the total reserve force; those that are temporarily unavailable for mobilization should be maintained in the Strategic Reserve together with others unlikely to be called to service except in the case of full mobilization.

c. DOD and service leaders, in consultation with the Chairman of the Joint Chiefs of Staff and combatant commanders, must carefully determine which portions of each reserve component's current Selected Reserve should be placed in the Operational Reserve Force and which should be placed in the Strategic Reserve Force. These decisions must be based on requirements for units in rotation in constructs such as the Army Force Generation Model, the Marine Corps Total Force Generation model, and the Air Force Air and Space Expeditionary Force model. Requirements for homeland security and civil support capabilities must also be considered, and they may dictate that larger portions of the National Guard components be maintained in the Operational Reserve Force.

d. Each service must develop tools and incentives to manage each individual's movements between RCCs according to requirements for personnel, skills, and experience in active component and reserve component units and according to each individual's willingness and ability to serve. These tools must consist of both inducements for individuals to volunteer for service with operational forc-

es when needed and the legal authority to enforce their compliance with contractual obligations.

87. Members of the current Individual Ready Reserve and all military retirees should be placed into either the Strategic Ready Reserve Force or the Strategic Standby Reserve—depending on their readiness and willingness to serve, and on the need for their skills—and both categories should be managed to take advantage of these individuals' vast experience, including for homeland-related missions.

88. Regular retired service members and retired reserve service members should be managed together in the same RCCs and encouraged both to volunteer and to maintain readiness for identified mobilization assignments.

89. Service Secretaries should be held accountable for resourcing and managing their total reserve manpower regardless of category in order to maintain, ready for activation, the optimal pool of personnel with required skills and experience. The Secretary of Defense should report annually to Congress on the status of both the Operational and Strategic Reserve Forces.

90. DOD should treat individuals registered with the Selective Service System as part of the total manpower pool available in the event of national emergency, and should coordinate planning for the mobilization and training of those individuals with the Director of the Selective Service System.

C. REFORMING INSTITUTIONS TO SUPPORT AN OPERATIONAL RESERVE

Management of reserve forces was segregated from management of the active force during the Cold War. This approach, which worked when DOD plans assumed that the reserves would be called on once in a generation, is ill-suited to a long war that will require the use of the reserves as part of an operational force for the foreseeable future. Current and projected reserve component missions require greater interdependence between the reserve and active components than now exists.

As was discussed in our March 1 report regarding the Chief of the National Guard Bureau, the duties and responsibilities of the reserve component Chiefs have changed significantly since 9/11. As a result, a grade review is also needed in their case.

Title 10 of the United States Code assigns to the service Secretaries the responsibility and authority for conducting all affairs within their departments, including the management of reserve components. Service Chiefs have a similar mandate to oversee the manning, training, and equipping of their reserve forces, including the National Guard components. The Directors of the Army and Air National Guards, reporting solely to the Chief of the National Guard Bureau, are not optimally positioned to facilitate the execution of Title 10 responsibilities by the Secretaries and Chiefs of the Army and Air Force, respectively.

The Commission believes that the individuals serving in the Office of the Assistant Secretary of Defense for Reserve Affairs are some of the most highly qualified public servants in the Department of Defense. However, this office operates in isolation from functional managers elsewhere within the Office of the Secretary of Defense and thereby inhibits total force integration. It also operates in areas that interfere with the legal mandate given to the service Secretaries and service Chiefs to manage the reserve components. Moreover, its existence has exacerbated a tendency within the Office of the Secretary of Defense and the Joint Staff to deal with reserve component issues on a separate, stovepiped path, rather than efficiently integrating them with total force issues in the functionally organized offices of the Secretary. These problems are purely a function of the organizational structure with the Office of the Secretary of Defense, and do not reflect on the fine professionals who work in this office.

. . . the Office of the Assistant Secretary of Defense for Reserve Affairs . . . operates in isolation from functional managers elsewhere within the Office of the Secretary of Defense and thereby inhibits total force integration.

Recommendations:

91. The services Secretaries should manage reserve issues as part of the total force and assign the staffs who work on those issues to the appropriate assistant secretary assigned responsibility for the corresponding active component issues.

92. The Secretary of Defense should direct each service to review the duties, command relationship, authority, and grade of the respective DOD reserve component Chiefs/Commanders to determine whether the grade is appropriate for the duties being performed, and whether it is commensurate with duties performed by four-star officers in the Department. The Secretary should initiate action, as necessary, to change the grades determined to be appropriate for the reserve component Chiefs/Commanders. The grades of all reserve component Chiefs/Commanders and the Chief of the National Guard Bureau should be periodically reviewed to ensure that the duties and responsibilities required for these positions support the grade designated for them.

93. The statutory qualifications of all reserve component Chiefs should include the requirement that the officer appointed should be from the reserve component of the office to which he or she is appointed. Congress should amend sections 5143 (Office of Naval Reserve: appointment of Chief) and 5144 (Office of Marine Forces Reserve: appointment of Commander) of Title 10 to ensure that the Chiefs of the Naval Reserve and Marine Forces Reserve are from the reserve components of those services.

94. Congress should establish an office for the Director of the Army National Guard and an office for the Director of the Air National Guard within the Army and Air Force staffs, respectively. The directors of these offices would have responsibilities similar to those held by the Chief of the Army Reserve and the Chief of the Air Force Reserve. The Director of the Army National Guard of the United States would assist the Army Chief of Staff in executing the Chief's responsibilities pursuant to Title 10 U.S.C. §3033. The Director of the Air National Guard of the United States would assist the Air Force Chief of Staff in executing the Chief's responsibilities pursuant to Title 10 U.S.C. §8033. The Directors of the Army and Air National Guard would have dual reporting responsibilities—reporting both to their respective Chiefs of

Staff and to the Chief of the National Guard Bureau for non-federal National Guard matters. The Secretaries of the Army and Air Force should evaluate the need to establish commands for Army and Air National Guard forces serving in a Title 10 status as members of the Army National Guard of the United States and Air National Guard of the United States, respectively, and whether the Directors of the Army National Guard and the Air National Guard should command such organizations.

Explanation of Recommendation #94

The Commission believes that long-standing problems associated with relations between the Air and Army National Guard and their parent services, while to some extent necessary outcomes of tensions inherent in our federalist system of government, nevertheless must be examined and alleviated in order to enhance the ability of the National Guard to perform its vital state and federal missions. The Commission believes that any proposed solutions should better align the statutory authorities (10 U.S.C. §3013 and §8013) and responsibilities of the Secretaries of the Army and Air Force from the service Secretaries to the Directors of the Air and Army National Guard. These service Secretaries are responsible for formulating "policies and programs that are fully consistent with national security objectives and policies established by the President and Secretary of Defense" for their entire department, including the National Guard components.

The Chief of National Guard Bureau's role would be elevated by provisions in the 2008 National Defense Authorization Act, consistent with the recommendations of our March 1 report. Having been given a four-star rank and increased responsibilities as an advisor to the Secretary of Defense on matters related to the National Guard forces in non-federal status, the CNGB should retain the ability to influence decisions regarding such matters and ensure that the needs of states and their governors are addressed in policies formulated by the Secretary of Defense. The CNGB would also retain direct lines of communication to the service Secretaries and their Chiefs of Staff. At the same time, placing National Guard leaders on the staffs of the service Chiefs of Staff will ensure that those same policies are carried out at a lower level in the Department and that the National Guard components are provided the resources they require to perform effectively in both their state and federal roles. We believe this is the best approach to solving the problems we identify; we emphasize, however, that what is most important is not how the

problems are solved but that they are solved as soon as possible.

> . . . long-standing problems associated with relations between the Air and Army National Guard and their parent services . . . must be examined and alleviated.

The service Secretaries have statutory authority (10 U.S.C. §§3074 and 8074) to prescribe command organizations. When National Guard service members are called into federal service they are operationally attached to specific commands to perform their operational missions. However, as in the case of Army and Air Force Reserves, the Secretaries may determine it is beneficial to have a specific commander responsible for other oversight of these service members. The Commission sees considerable merit in the proposal to establish such commands, but believes the nature of these structures should be determined by the service Secretaries based on the needs of their service. (See Appendix 1 of the full report for Additional Views of Commissioner E. Gordon Stump on this recommendation.)

95. **Congress should pass legislation eliminating the Office of the Assistant Secretary of Defense for Reserve Affairs. The Secretary of Defense should report to Congress on how responsibility for reserve issues currently managed by the ASD-RA will be addressed by the appropriate under secretary or assistant secretary assigned responsibility for corresponding active component issues, and whether any further legislation is needed to ensure that personnel working on reserve issues hold rank and have responsibilities commensurate with those of their counterparts who handle active component issues.**

COMMISSION VISION FOR THE TOTAL OPERATIONAL FORCE

We believe that this report offers a starting point for a comprehensive reevaluation of the reserve components of this nation's military. It is clear that there is no reasonable alternative to continued increased reliance on the National Guard and Reserves, as part of a total operational force, for missions at home and abroad. The reforms that are needed to make this operational force feasible in the short term and sustainable in the long term are described in this report. We believe that implementing these reforms will move the nation toward an end state for the reserve components that best serves the interests of national security and toward the future that we envision.

VISION STATEMENT

In the future, National Guard and Reserve service members will perform missions vital to U.S. national interests at home and abroad as part of a flexible, accessible, cost-effective operational force that retains a necessary strategic ability to surge.

The operational force will contain individuals and units from both the active and reserve components. The reserve component portion will be organized, resourced, equipped, and trained to achieve in a timely manner the same operational standards as are required by the active components to perform their missions. The methods used to achieve these standards will vary according to each service's force generation process. The effects, however, will be the same—a single operational standard and maximum predictability for members, families, employers, combatant commanders, and the services themselves.

National Guard and Reserve members often will know in advance when they are scheduled to leave their families and employers to complete operational missions. They also will be ready and able on short notice to lead DOD's efforts in support of civil authorities contending with natural or man-made disasters, particularly catastrophes. National Guard and Reserve members will be fully integrated into federal, state, and local emergency response plans, along with active component members and units. In most instances in the homeland, all military forces will deploy in support of, and under the direction of, a state governor. National Guard and Reserve forces will constitute a majority of the per-

sonnel at U.S. Northern Command and other commands responsible for the homeland.

The services will use best practices in managing reserve military personnel as part of an integrated total force. Those personnel will serve under the terms of a commitment mutually agreed on by themselves and their service, be compensated through a system that recognizes their unique skills, be provided the professional and educational opportunities necessary to develop needed skills, be promoted on the basis of their competency to perform those skills, and be rewarded for their service through a retirement system—integrated with that of the active component—that provides incentives for service and removes barriers to continued service which will draw on their skills and abilities. There will only be two duty statuses—off duty or on duty—with service members able to move between them with the swipe of an ID card.

All service members will have opportunities to serve in a continuum spanning a range of missions and time commitments. Whether serving in the active components or in either of the two reserve component categories (Operational Reserve Force and Strategic Reserve Force), their annual obligations, scheduled activations, and availability to be involuntarily activated for crisis will be well-defined and clearly understood. Their transitions between the categories will be administratively easy and motivated by the individual circumstances of their careers and families, and by a system of compensation and incentives that reflect the services' requirements. The management of their service will be based on the workload and capability needed to perform a mission, and on their contractual obligation to perform that mission, not on an authorized end strength.

National Guard and Reserve members will have the opportunity to thrive in their civilian careers, and will serve as a vital link between the military and civil society in their home communities across America. They will be afforded the joint education and assignment opportunities required for promotion to senior ranks, and will be found in all echelons of military leadership, including on senior joint staffs, at the four-star rank, and in combatant commands, because their civilian-acquired skills, joint educational training, familiarity with state and local government leaders and institutions, and command experience will often make them the best-qualified candidates to lead.

Families and employers will support their guardsmen and reservists on predictable and sustainable deployments. DOD will recognize the important role employers play in recruiting and retention decisions and will seek a closer working relationship—a compact—with them. Fami-

lies will be supported by a robust network of services that ensures they receive the appropriate level of assistance when needed, regardless of where they live and with which unit or service they are affiliated. Service members returning home will be provided the medical and reintegration services they need for themselves and their families and will find ready access to other help from the government and other sources.

All service members, regardless of their component, will have the equipment and support they need to train for and accomplish their missions, and the nation will continue to have assured access to National Guard and Reserve capabilities on a sustainable basis.

Ultimately, the reserve components will be fully integrated with the active components, across a spectrum of missions and levels of commitment, during peacetime, wartime, domestic emergencies, and homeland defense missions, in the Army, Navy, Air Force, Marine Corps, and Coast Guard. Members will serve without separate "reserve" designation. It will not be efficient or necessary to manage the Title 10 reserve components as separate entities; they will instead be a vital component of a totally integrated force providing the United States with the military capability it requires.

II. ENHANCING THE DEFENSE DEPARTMENT'S ROLE IN THE HOMELAND

Today, the homeland is part of the battlefield and the federal government must use all elements of national power to protect it.[1] Dangers to the homeland include traditional military threats, such as conventional attacks on people and property, and more unorthodox ones, such as terrorist attacks. In addition, Hurricane Katrina and other recent disasters have raised the public's awareness of the hazards posed by catastrophic natural disasters. As a result of these threats to the homeland and the new awareness of the danger, protecting the homeland has become a greater priority for all levels of government. The National Guard and Reserves are key elements of this effort, yet there are a number of obstacles to the Department of Defense's playing an enhanced role in the homeland.

Conclusion Two: The Department of Defense must be fully prepared to protect American lives and property in the homeland. DOD must improve its capabilities and readiness to play a primary role in the response to major catastrophes that incapacitate civilian government over a wide geographic area. This is a responsibility that is equal in priority to its combat responsibilities. As part of DOD, the National Guard and Reserves should play the lead role in supporting the Department of Homeland Security, other federal agencies, and states in addressing these threats of equal or higher priority.

A. MAKING CIVIL SUPPORT A STATUTORY RESPONSIBILITY

The armed forces' civil support function, as their role in homeland security is often described, is critical to the nation's security. The 2007 National Strategy for Homeland Security describes the armed forces as "crucial partners in homeland security."[2] On the state level, the National Guard is a key element of state civil support. In an echo of the National Strategy for Homeland Security, the draft National Response Framework describes it as a "crucial state resource during emergencies and disasters. "[3] On the federal level, the Department of Defense plays a similarly vital role. In the National Response Plan, it is a supporting agency to all 15 Emergency Support Functions (ESFs), which align categories of resources (e.g., transportation, communication, and search and rescue) and provide strategic objectives for their use.[4] Likewise, in the draft National Response Framework, DOD plays either a supporting or primary role in 14 of the 15 ESFs.[5]

The two ways in which "[t]he Department of Defense contributes to homeland security . . . [are] homeland defense" and civil support.[6] Homeland defense is the military defense of the homeland, while civil support is DOD support to other agencies in the performance of their mission, which

1 See Appendix 2, "Homeland Security and the Reserve Components," for a full overview of how the federal government protects the homeland.

2 *National Strategy for Homeland Security* ([Washington, DC: Office of Homeland Security], 2007), p. 50.

3 *National Response Framework (Draft)* ([Washington, DC: Department of Homeland Security], 2007), p. 37.

4 *National Response Plan* ([Washington, DC: Department of Homeland Security], 2004), p. ESF-v; *National Response Framework (Draft)*, Glossary and Acronyms, p. 4.

5 *National Response Framework (Draft)*, p. ESF-v.

6 *National Strategy for Homeland Security* ([Washington, DC: Office of Homeland Security], 2002), p. 13.

often includes homeland security (for a full discussion of how these terms are defined, see Appendix 2, "Homeland Security and the Reserve Components").[7] DOD views homeland defense as part of its core warfighting mission, and thus has taken on responsibility for it.[8] In contrast, DOD has viewed civil support as a "lesser included" mission and a lower priority.[9]

DOD explicitly trains and equips its forces for homeland defense. The Joint Chiefs of Staff's document on homeland defense, Joint Publication 3-27, plainly states: "DOD is responsible for the [homeland defense] mission, and therefore leads the [homeland defense] response, with other departments and agencies in support of DOD efforts."[10] In contrast, DOD takes a different position on civil support, relying primarily on "dual-capable forces" for civil support activities.[11] Joint Publication 3-28, "Civil Support," describes this policy: "[civil support] capabilities are derived from Department of Defense (DOD) warfighting capabilities that could be applied to foreign/domestic assistance or law enforcement support missions."[12]

DOD views homeland defense as part of its core warfighting mission. . . . In contrast, DOD has viewed civil support as a "lesser included" mission and a lower priority.

Despite producing policy documents claiming that protecting the homeland is its most important function, the Department of Defense historically has not made civil support a priority. This shortcoming is especially glaring in the post-9/11, post–Hurricane Katrina environment. Ensuring that the homeland is secure should be the top priority of the government of the United States.[13] In fact, the Joint Staff has described it as the nation's "first priority . . . and . . . a fundamental aspect of the national military strategy," further stating that "[i]t is . . . essential to America's ability to project power, sustain a global military presence, and honor its global security commitments."[14]

The Office of the Secretary of Defense recently agreed that civil support must become a role for which the Defense Department must begin to program and budget.[15] Congress has also recently taken this

7 *Strategy for Homeland Defense and Civil Support* ([Washington, DC: Department of Defense], 2005), pp. 5–6.

8 Joint Chiefs of Staff, "Homeland Defense," Joint Publication 3-27, July 12, 2007, p. I-2.

9 CNGR staff meeting with ASD-HD staff, October 24, 2006.

10 Joint Chiefs of Staff, "Homeland Defense," p. I-2.

11 *Strategy for Homeland Defense and Civil Support*, pp. 38, 39: "Currently, the Department accounts for homeland defense activities through a variety of disparate programs and funding lines in every Military Department and combatant command and numerous initiatives under the purview of the Office of the Secretary of Defense. . . . DOD will maintain a ready, capable, and agile command and control structure, along with competently trained forces, to assist civilian authorities with catastrophic incident response. However, with the exception of a dedicated command and control element (currently the Joint Task Force–Civil Support) and the National Guard's WMD Civil Support Teams, DOD will continue to rely on dual-capable forces for consequence management and other defense support of civil authorities."

12 Joint Chiefs of Staff, "Civil Support," Joint Publication 3-28, September 14, 2007, p. I-1. See also Joint Chiefs of Staff, "Homeland Security," Joint Publication 3-26, August 2, 2005, p. IV-2: "The US military organizes, trains, and equips forces primarily to conduct combat operations. Inherent within the combat capabilities of the Services, is the military's ability to rapidly respond to assist civil authorities for domestic emergencies such as disasters, authorized law enforcement, and other activities that exceed the capability of civilian agencies."

13 *National Defense Strategy of the United States of America* ([Washington, DC: Department of Defense], 2005), p. 7; see also *Strategy for Homeland Defense and Civil Support*, p. 35 ("Securing the US homeland is the first among many priorities outlined in the National Defense Strategy").

14 Joint Chiefs of Staff, "Civil Support," p. I-1

15 Secretary of Defense Robert M. Gates, "Implementation of the Recommendations from the Commission on the National Guard and Reserves," memorandum for Secretaries of the Military Departments, et al., May 10, 2007, p. 1-2, attachment p. 4.

position in the National Defense Authorization Act for Fiscal Year 2008, an extremely important step in the right direction.[16] In addition, there are numerous statutes giving DOD the authority to conduct civil support operations.[17] Yet Congress has not clearly charged the Department of Defense with the statutory responsibility to provide civil support. The Commission believes that until this current lack of clarity is corrected by Congress and until DOD is charged with this responsibility in statute, it is not clear that the change in policy regarding civil support will be fully implemented.

Finding: Homeland security policies and plans depend on the Department of Defense to provide support to civil authorities. Yet Congress has not clearly charged the Department with this responsibility. Until Congress does so, it is not clear that civil support will become the priority it deserves to be.

. . . there are numerous statutes giving DOD the authority to conduct civil support operations. Yet Congress has not clearly charged the Department of Defense with the statutory responsibility to provide civil support.

To be successful, the statutory change would need to have three elements. First, it should place into law the Department of Defense's current responsibility, as defined in its *Strategy for Homeland Defense and Civil Support.* In other words, it should state that DOD—including federal military forces, the Department's career civilian and contractor personnel, and DOD agency and component assets—has the responsibility to provide support to the Department of Homeland Security (DHS) and other agencies for domestic emergencies and for designated law enforcement and other activities.[18] This charge of responsibility is not meant to imply that DOD *must* provide support under *any and all* circumstances, and it is not meant to place DOD at the disposal of other agencies. Instead, it is meant to state that DOD is responsible for civil support missions and must be ready to carry them out when called on to do so.

Second, the charge of responsibility should state that responding to natural and man-made disasters in the homeland is a core competency of DOD that is equal in priority to its combat responsibilities. Such a declaration does not mean that DOD should "become the default manpower resource for other Federal agencies or State or local governments" in every disaster.[19] Nor does it mean that DOD should displace DHS and the Federal Emergency Management Agency (FEMA) as the agency responsible for emergency management. It simply underscores that the Department's role in protecting the American people at home is of priority equal to defeating their enemies overseas. Given the threat of mass casualty terrorism and the increased sensitivity to the danger posed by natural disasters, DOD can no longer view its disaster response–related responsibilities as a derivative or "lesser included" capability. Only a statutory charge of responsibility will cause DOD to shift its priorities so that it begins to sufficiently plan, train, and exercise for the mission.

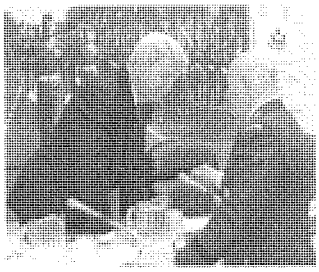
And third, the charge of responsibility should clearly state that in the event of a major catastrophe incapacitating civilian government over a wide geographic area, DOD can be expected to provide the hulk of the response. While the Department of Homeland Security has the lead in overall coordi-

16 House Report 110-477, Conference Report to accompany H.R. 1585, the National Defense Authorization Act for Fiscal Year 2008, 110th Cong., 1st sess., December 6, 2007, §1815.

17 See, e.g., the Robert T. Stafford Disaster Relief Act of 1984, as amended in 1988, 42 U.S.C. §§5170, 5170b, 5191.

18 *Strategy for Homeland Defense and Civil Support,* pp. 5–6.

19 The Honorable David S. C. Chu, Under Secretary of Defense for Personnel and Readiness, and Thomas F. Hall, Assistant Secretary of Defense for Reserve Affairs, prepared witness statement before the CNGR, Hearing on Proposed Changes to the National Guard, December 13, 2006 (www.cngr.gov/hearing121314/Chu-Hall%20Statement.pdf), p. 11 (they were arguing against such use of DOD).



Commissioner Brownlee with Lt. Gen. Blum at January 2007 hearing.

nation of federal incident management activities, it is not clear that it would have the capacity to coordinate the response to such a catastrophic event.[20] Indeed, many knowledgeable experts flatly state that only DOD has that ability.[21] Terrorist attacks or natural disasters of greater magnitude than Hurricane Katrina are very real possibilities.[22] A major nuclear attack on a large metropolitan area or a Category 5 hurricane striking a large city would kill great numbers of people and cause enormous damage to property and infrastructure. If such an event occurs, it is likely that civilian government at some level will be unable to deal with the consequences. In some circumstances, until civilian government is able to do so, the only organization with the manpower, communications, and transportation capabilities sufficient to deal with the crisis will be the Department of Defense. In that case, DOD may be required to perform many of the functions of civil government until the crisis is resolved and civilian government and the private sector are functioning.[23] While this and other nightmare scenarios have a low probability of occurring, their consequences are so severe that DOD must be prepared to respond to them. Such responses require advance planning, training, and coordination, which DOD should initiate now.

Recommendation:

2. **Congress should codify the Department of Defense's responsibility to provide support for civil authorities. This statutory language should include the acknowledgment that responding to natural and man-made disasters in the homeland is a core competency of DOD, of equal importance to its combat responsibilities. Congress should also clearly state that DOD should be prepared to provide the bulk of the response to a major catastrophe that incapacitates civilian govern-**

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20 *National Response Plan* (2004), p. 9; *National Response Framework (Draft)*, p. 4.

21 See, e.g., Christine E. Wormuth, Michèle A. Flournoy, Patrick T. Henry, and Clark A. Murdock, *The Future of the National Guard and Reserves: The Beyond Goldwater-Nichols Phase III Report* (Washington, DC: Center for Strategic and International Studies, 2006), p. 65 ("it is also clear that in the event of a single catastrophic attack, or multiple, simultaneous events around the country, the military may be the only organization that can communicate, command, and control large numbers of assets across very large areas"); James Jay Carafano, Ph.D., Senior Research Fellow, Defense and Homeland Security, The Heritage Foundation, prepared witness statement before the CNGR, Hearing on Homeland Defense/Homeland Security, May 4, 2006 (www.cngr.gov/hearing503-4/Carafano.pdf), pp. 6–7 ("In catastrophic disasters, tens-or-hundreds of thousands of lives are immediately at risk. State and local resources may well be exhausted from the onset and government leaders unable to determine or communicate their priority needs. . . . Having the military play a prominent role in the immediate response to catastrophic disasters makes sense. It would be counterproductive and ruinously expensive for other federal agencies, local governments, or the private sector to maintain the excess capacity and resources needed for immediate catastrophic response").

22 See, e.g., *Strategy for Homeland Defense and Civil Support*, p. 19: "The potential for multiple, simultaneous, CBRNE [chemical, biological, radiological, nuclear, and high-yield explosives] attacks on US territory is real."

23 "The Federal response to Hurricane Katrina demonstrates that the Department of Defense (DOD) has the capability to play a critical role in the Nation's response to catastrophic events. During the Katrina response, DOD—both National Guard and active duty forces—demonstrated that along with the Coast Guard it was one of the only Federal departments that possessed real operational capabilities to translate Presidential decisions into prompt, effective action on the ground. In addition to possessing operational personnel in large numbers that have been trained and equipped for their missions, DOD brought robust communications infrastructure, logistics, and planning capabilities" (*The Federal Response to Hurricane Katrina: Lessons Learned* ([Washington, DC: The White House], 2006), p. 54).

ment over a substantial geographic area and that DOD should initiate the necessary planning, training, and coordination for such events.

B. INTEGRATING THE RESERVE COMPONENTS INTO HOMELAND OPERATIONS

The Reserve Components in the Homeland

The United States armed forces are guided by the Total Force Policy. Under this policy, all components of the armed forces—active and reserve—act as a homogeneous whole. They are viewed as a single force when the Department considers the best way to meet national security requirements. As a result, the active and reserve components are not assigned distinct missions, but instead are assigned missions based on which unit is best able to fulfill specific national security requirements.[24]

The Total Force Policy ensures that active and reserve units are integrated into military strategy according to their capabilities, not on the basis of their being active or reserve. At the same time, this does not mean that the active and reserve components are interchangeable. Different components and units possess capabilities making them particularly useful for certain types of missions. One prominent example of this differentiation is found in homeland defense and civil support, as is recognized by the Department of Defense in its *Strategy for Homeland Defense and Civil Support*. In that document, the Department recommends a "Focused Reliance [on] the Reserve Components" for homeland defense and civil support missions. It further asserts that such reliance is not inconsistent with the total force policy.[25] At a Commission hearing, Assistant Secretary of Defense Paul McHale explained what this statement means:

> we use the phrase "focus[ed] reliance" to indicate the obvious benefit . . . of using domestically-based reserve component capabilities, capabilities that are spread in reserve centers and National Guard armories throughout the United States—forward deployed if you will—to rapidly respond in an effective way to domestic missions, be they missions related to war fighting—and that is the defense of critical infrastructure—or consequence management after a natural or man-made disaster. It simply made sense to us to recognize the fact that we had a lot of trained personnel in military uniforms spread throughout the United States able to defend our nation and well-trained to do so.[26]

In contrast to the *Strategy for Homeland Defense and Civil Support*'s use of the phrase "focused reliance," the White House report on Hurricane Katrina recommended that "the National Guard [and] other reserve components . . . should modify their organization and training to include a priority mission to prepare and deploy in support of homeland security missions." The report went on to state that "the reserve components are too valuable a skilled and available resource at home not to be ready to incorporate them in any Federal response planning and effort. . . . [E]fforts

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24 Lieutenant General James L. Lovelace, Jr., Deputy Chief of Staff, G-3, United States Army, prepared witness statement before the CNGR, Hearing on Reserve Component Policy Reform, April 12, 2007 (www.cngr.gov/hearing411-12/Lovelace%20CNGR%20testimony.pdf), pp. 2–3.

25 *Strategy for Homeland Defense and Civil Support*, p. 35.

26 Assistant Secretary McHale, testimony before the CNGR, Hearing on Homeland Defense/Homeland Security, transcript of May 3, 2006, (morning) hearing (www.cngr.gov/hearing503-4/0509natguard1.pdf), p. 27. See also Wormuth et al., *The Future of the National Guard and Reserves*, p. 63: "Yet, although this strategy document outlines a number of areas where National Guard and Reserve forces could contribute to the protection of the homeland, it provides neither a detailed nor definitive statement of how. Almost five years after the September 11 attacks, it is still not clear how the Reserve Component should organize, train, and equip for homeland defense and civil support, and what priority it should place on these missions."

should be made to leverage Reserve civilian skills in disaster relief efforts."[27] In addition, the Center for Strategic and International Studies (CSIS) and the Rand Corporation have recently produced reports that emphasize the importance of the reserve components to emergency response.[28] In its 2006 report on the reserves, CSIS concluded that "it is clear that almost five years after the September 11 attacks, DoD has not done enough to leverage the considerable resources resident in the reserve components to enhance the nation's preparedness and ability to respond to a catastrophic event."[29] Regardless of how their role is described, there is a consensus that the reserve components are particularly well-suited to performing homeland missions and need to have a more central role in the Department of Defense's homeland efforts.

. . . there is a consensus that the reserve components are particularly well-suited to performing homeland missions and need to have a more central role in the Department of Defense's homeland efforts.

The reserve components—the National Guard and the Title 10 reserve components—consist of more than 1.1 million men and women based in almost 5,000 facilities throughout the United States and the U.S. territories.[30] The connections with their communities foster public support and trust for military members and this relationship can be indispensable when disaster strikes at home.

The National Guard's experience, skill sets, and nationwide dispersal make it particularly well-suited for civil support operations. State emergency response is its most important responsibility when it is not under federal control. National guardsmen often are the first military responders. Because of its unique, constitutionally designated status as both a state and a federal force, the National Guard is able to function as a key element of state emergency response, as a state responder and as a coordinator of the federal military and state response. For this reason, the National Guard has long experience in civil support missions. At a recent congressional hearing, Lieutenant General H Steven Blum, the Chief of the National Guard Bureau, noted that during 2006–07 alone, the states had more than "100,000 soldiers and airmen . . . supporting Homeland Security missions."[31]

The Army National Guard is structured to provide large formation combat arms capabilities for overseas missions, as well as combat support and combat service support capabilities useful at home. The National Guard is not the only reserve component important to civil support. The other reserve components can also be expected to play major roles in future domestic missions. The U.S. Army Reserve, for example, is primarily made up of combat support and combat service support units—such as military police, civil affairs, and transportation—that are widely dispersed across the country and could be extremely valuable in emergency response.[32] The Rand Corporation has stated that "Army support personnel, currently units that are in abundance within the [Army Reserve], may

27 *Federal Response to Hurricane Katrina: Lessons Learned*, p. 95.

28 Wormuth et al., *The Future of the National Guard and Reserves*, pp. 90–91; Lynn E. Davis, Jill Rough, Gary Cecchine, Agnes Gereben Schaefer, and Laurinda L. Zeman, *Hurricane Katrina: Lessons for Army Planning and Operations* (Arlington, VA: Rand, 2007), pp. 74–75 (focusing on the Army National Guard).

29 Wormuth et al., *The Future of the National Guard and Reserves*, p. 90.

30 Office of the Assistant Secretary of Defense for Reserve Affairs (OASD-RA) Information Briefing, "Intro to RA FY 2006," p. 5.

31 Lieutenant General Blum, prepared witness statement before the Senate Committee on Homeland Security and Governmental Affairs, Hearing on the Military's Role in Disaster Response, 110th Cong., 1st sess., July 19, 2007, p. 2.

32 Lynn E. Davis, David E. Mosher, Richard R. Brennan, Jr., Michael D. Greenberg, K. Scott McMahon, and Charles W. Yost, *Army Forces for Homeland Security*, MG-221-A (Santa Monica, CA: Rand, 2004), p. 38.

be particularly useful for [domestic disaster relief] operations in the future."[33] Other reserve components and members also have specialized capabilities, such as those in the emergency response field, that are vital to consequence management and exist only in the reserves.

Adjutants General Rees, Valvala, and Umbarger at December 2006 hearing.

The reserve components' medical capability could also be of great value in a disaster response involving mass casualties. The services keep a significant amount of medical capability in their reserve components, and medical units are widely dispersed as well. The Army "maintains 60 percent of its medical capability in its reserve components" (30 percent in the Army National Guard and 70 percent in the Army Reserve); the Air Force, 58 percent (30 percent in the Air Guard and 70 percent in the Air Force Reserve); and the Navy, 41 percent in the Navy Reserve.[34] In the event of a catastrophic incident in the homeland requiring medical surge capacity, the reserve components should be an integrated capability in the military's total force response.[35]

Reservists also bring to the homeland their civilian experience and knowledge of local conditions. Their knowledge of their communities adds to their effectiveness in homeland response. For example, during the response to Hurricane Katrina, National Guard responders supporting search-and-rescue operations successfully brought to bear their familiarity with local conditions to improve operations.[36] Despite this, there is "no comprehensive assessment of what [reserve component] assets exist, where they are located[,] . . . and which military service controls them," as CSIS reported in July 2006.[37]

Of perhaps even greater concern is the speed with which reservists' capabilities can be brought to bear to alleviate suffering and save lives and property. The results of the 2007 Ardent Sentry nationwide emergency preparedness and response exercise indicate that reserve mobilization for domestic crises may not be timely.[38]

Finding: Despite its directing a "focused reliance" on the reserve components for homeland defense and civil support, the Department of Defense has not taken sufficient steps to take full advantage of the National Guard and Reserves' expertise in these areas.

Finding: The military, despite acknowledging that civilian skills are a reserve component core competency, has done little to take advantage of those skills for missions at home and abroad.

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33 Davis et al., *Army Forces for Homeland Security,* pp. 56–57.

34 Gary Cecchine et al., *Triage for Civil Support: Using Medical Assets to Respond to Terrorist Attacks* (Arlington, VA: Rand, 2004), p. 9.

35 The Navy Reserve is integrated with the active duty Navy. There are no "Navy Reserve medical units," only Navy units.

36 Senate Committee on Homeland Security and Governmental Affairs, *Hurricane Katrina: A Nation Still Unprepared,* 109th Cong., 2nd sess., May 2006, pp. 432–33.

37 Wormuth et al., *The Future of the National Guard and Reserves,* p. 72.

38 *Ardent Sentry-Northern Edge 07 Exercise Summary Report,* North American Aerospace Defense Command and United States Northern Command, August 17, 2007, Attachment L, p. 9.

Two overarching points can be drawn from this discussion. First, a tremendous amount of homeland-related capability resides in the reserve components, which are present in communities throughout the nation. And second, there is a consensus that the reserves either should be or will in fact be heavily relied on for use in homeland operations. The Commission believes that DOD should take the reserve components' expertise in homeland operations and refine it so that they will become the backbone of future homeland operations. If DOD is to make civil support a core mission, its forces need to reflect that doctrine. The most efficient means to that end would be to amplify the current homeland capabilities present in the reserve components.

In doing so, the Department should not compromise the reserve components' ability to perform their warfighting responsibilities. First, it should utilize dual-capable forces as much as possible. And second, it should rebalance in order to ensure that those capabilities useful for civil support reside, where practicable, in the reserve components, and are readily accessible for civil support–related missions.

Recommendation:

3. **Consistent with DOD's *Strategy for Homeland Defense and Civil Support,* homeland defense and civil support should continue to be total force responsibilities. However, Congress should mandate that the National Guard and Reserves have the lead role in and form the backbone of DOD operations in the homeland. Furthermore, DOD should assign the National Guard and Reserves homeland defense and civil support as a core competency consistent with their required warfighting taskings and capabilities.**

The Reserve Components and U.S. Northern Command

Paralleling the reserve components' increased role in the homeland is the need for U.S. Northern Command, like the rest of DOD, to more fully integrate the reserve components into its homeland mission.

NORTHCOM is the unified command with primary responsibility for homeland defense and civil support missions.[39] Joint Publication 3-26, "Homeland Security," reflecting the Unified Command Plan, describes its mission as "conduct[ing] operations to deter, prevent, and defeat threats and aggression aimed at the United States, its territories, and interests within the assigned area of responsibility (AOR) and as directed by the President or SecDef [Secretary of Defense], provide military assistance to civil authorities including [consequence management] operations. USNORTHCOM [is] . . . the single, responsible, designated DOD commander for overall command and control of DOD support to civil authorities within the USNORTHCOM AOR."[40] In practice, NORTHCOM views homeland defense, but not civil support, as its highest priority.[41]

NORTHCOM has few forces permanently assigned to it and provides defense support of civil authorities primarily through its subordinate and service-specific commands, such as Joint Task

39 U.S. Southern Command and U.S. Pacific Command play similar roles for those parts of the homeland that fall within their area of operations (Joint Chiefs of Staff, "Homeland Security," pp. II-7 to II-11).

40 Joint Chiefs of Staff, "Homeland Security," pp. vii–viii.

41 General Victor E. Renuart, Commander, U.S. Northern Command, prepared statement before the Senate Homeland Security and Governmental Affairs Committee, Hearing on the Military's Role in Disaster Response, 110th Cong., 1st sess., July 19, 2007, p. 2.

Force Civil Support, Army North, and Air Force North.[42] NORTHCOM does not command National Guard forces in state or Title 32 status.

As already noted, DOD has not engaged the reserve components in the homeland mission in a manner that takes full advantage of their skills and experience. This shortcoming, along with the lack of a civil support budgeting and programming process, has been carried over into how NORTHCOM is organized. In its March report, *Strengthening America's Defenses in the New Security Environment,* the Commission concluded that "U.S. Northern Command does not adequately consider and utilize all military components—active and reserve, including the National Guard—in planning, training, and exercising and in the conduct of military operations while in support of a governor, in support of another lead federal agency, or in the defense of America."[43]

To more fully integrate the reserve components, the Commission recommended three changes in NORTHCOM law and policy.

First, the Commission recommended that

> Because U.S. Northern Command is a command with significant responsibility for domestic emergency response and civil support, a majority of U.S. Northern Command's billets, including those for its service components, should be filled by leaders and staff with reserve qualifications and credentials. Job descriptions for senior leaders and other key positions at U.S. Northern Command should contain the requirement of significant Reserve or National Guard experience or service.[44]

In response, the Secretary of Defense agreed to review NORTHCOM billets to determine which could be better filled by National Guard and Reserve personnel.[45] The objective of this review would be to fill these billets with a significant number of reserve component personnel rather than a majority of them, as recommended by the Commission. NORTHCOM is currently studying senior leadership and other key positions at the command that it believes will require reserve component experience. The command is also determining how much reserve component experience is already present in its command and in its subordinate commands.[46] As our report is being produced, these studies are still under way.

Section 1821 of the 2008 National Defense Authorization Act also directs action to respond to the underutilization of the reserve components at NORTHCOM. The act tasks the Chairman of the Joint Chiefs of Staff with conducting a "review of the civilian and military positions, job descriptions, and assignments within the United States Northern Command with the goal of determining the feasibility of significantly increasing the number of members of a reserve component assigned to, and civilians employed by, the United States Northern Command who have experience in the planning, training, and employment of forces for homeland defense missions, domestic emergency response, and providing military support to civil authorities." The Chairman is directed to submit

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42 General Renuart, prepared statement, p. 2; "About USNORTHCOM," U.S. Northern Command Web site (www.northcom.mil/About/index.html).

43 *Strengthening America's Defenses in the New Security Environment,* Second Report to Congress, March 1, 2007 ([Arlington, VA: Commission on the National Guard and Reserves], 2007), p. 80. See section III.D in that report, "U.S. Northern Command" (pp. 78–82), for a full discussion of this issue.

44 Recommendation #16 in *Strengthening America's Defenses in the New Security Environment,* p. 80.

45 Secretary Gates, "Implementation of the Recommendations from the Commission on the National Guard and Reserves," p. 1-2, attachment p. 1.

46 "USNORTHCOM Response to the Commission on the National Guard and Reserves (CNGR) Second Report," NORAD/NORTHCOM PowerPoint presentation, November 20, 2007, p. 9; Memorandum for the Record (MFR), Commission site visit to U.S. Northern Command, Peterson Air Force Base, CO, November 20, 2007.

the review within one year of the enactment of the NDAA. Within 90 days of that submission, the Secretary is to submit the results of that review and any recommended changes to Congress.[47]

While the Commission is pleased with §1821 and considers it to be progress, we continue to recommend that a majority of U.S. Northern Command's billets, including those for its service components, should be filled by leaders and staff with reserve qualifications and credentials. Job descriptions for senior leaders and other key positions at U.S. Northern Command should contain the requirement of significant Reserve or National Guard experience or service. In both cases, mere exposure to reserve issues alone should not qualify.

Delaware Governor Minner at June 2007 hearing.

Second, the Commission recommended that "[e]ither the officer serving in the position of the commander or the officer serving in the position of deputy commander of U.S. Northern Command should be a National Guard or Reserve officer at all times."[48] The Secretary of Defense disagreed with this recommendation and recommended instead that procedures be established to ensure that National Guard and Reserve officers are considered for the most senior command and leadership positions, consistent with their qualifications.[49]

Section 1824(b) of the 2008 National Defense Authorization Act mandates that unless the commander of NORTHCOM is a national guardsman, "at least one deputy commander" must be.[50] While the Commission considers this section to be a step forward, it has two important objections. First, §1824(b) fails to recognize that the Title 10 reserve components—such as the Army Reserve and the Air Force Reserve—have important roles in homeland defense and civil support, and therefore should receive the same consideration as the National Guard when a commander or deputy commander is selected. And second, §1824(b) opens the door to the creation of multiple deputies at NORTHCOM, which the Commission opposed in our March 1 report and continues to oppose. The Commission investigated whether providing multiple deputy commanders was advisable, and found that having more than one deputy would be unnecessary and a hindrance to effective command of NORTHCOM.[51] The Commission also wishes to make clear that this section, as it is currently written, should not be used as an excuse not to appoint a national guardsman or reservist as commander.

Finally, the Commission recommended that NORTHCOM develop plans for consequence management and support to civil authorities that account for state-level activities and incorporate the use of National Guard and Reserve forces as first military responders.[52] The Secretary of Defense agreed

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47 House Report 110-477, accompanying H.R. 1585, NDAA for FY 2008, §1821.

48 Recommendation #17 in *Strengthening America's Defenses in the New Security Environment*, p. 81.

49 Secretary Gates, "Implementation of the Recommendations from the Commission on the National Guard and Reserves," p. 1-2, attachment p. 3.

50 House Report 110-477, accompanying H.R. 1585, NDAA for FY 2008, §1824.

51 See Recommendation #18 in *Strengthening America's Defenses in the New Security Environment*, p. 82, with discussion there.

52 *Strengthening America's Defenses in the New Security Environment*, p. 82.

with this recommendation, adding a modification to include active and reserve military responders and a requirement that the combatant commanders be familiar with state plans and resources.[53]

Nevertheless, the ultimate resolution of this issue, too, is still in doubt. NORTHCOM states that two of its civil support plans, Concept Plan 3501: Defense Support of Civil Authorities and Concept Plan 3500: CBRNE Consequence Management, take into account National Guard forces from the affected state as well as capabilities leveraged from neighboring states. It also maintains that it is working closely with states on developing their civil support planning further.[54] In addition, §1814 of the 2008 National Defense Authorization Act contains a provision that would require the Secretary of Defense to prepare a plan for coordinating the National Guard and other members of the armed forces in responding to natural disasters and terrorist events, such as those in the Homeland Security Council's National Planning Scenarios. This proposed plan would include input from NORTHCOM's commander and the Chief of the National Guard Bureau.[55] While the Commission believes this plan to be an important step forward, it does not believe sufficient progress has been made to date in implementing our March recommendation.

Finding: U.S. Northern Command still does not adequately consider and utilize all military components—active and reserve, including the National Guard—in planning, training, and exercising and in the conduct of military operations while in support of a governor, in support of another lead federal agency, or in the defense of America.

In addition, the National Guard and Reserves are also well-positioned to respond to events at the regional level, which historically has been overlooked in national response activities. Analysts at institutions such as the Rand Corporation and the Center for Strategic and International Studies have put forward two models for how regional response forces could be organized. Rand has proposed establishing regional response forces made up of National Guard units dedicated to and trained for homeland security and capable of rapid response. These units would also be organized around the 10 FEMA regions.[56] CSIS has proposed creating civil support forces, with the National Guard as their foundation but incorporating other reserve components, in each FEMA region. These units, drawn from dual-capable military forces, would have two main responsibilities. First, they would "lead National Guard planning, training, and exercising for civil support missions at the regional level. [Second, they would] provide a sizable operational response force that could deploy to an event within 12 to 24 hours; establish an initial command, control, and communications capability; provide initial reception, staging, onward movement, and integration services; and augment state and local first responders who are performing consequence management tasks."[57]

Finding: As DOD begins to program and budget for civil support, it should take into account regional efforts at preparedness and response and should consider taking steps to keep pace with developments in other agencies.

The National Guard and the other reserve components are the most important elements of the Department of Defense for protecting the homeland. While DOD and other policy documents generally recognize this fact, they have not sufficienrly clarified the role that the reserve components

53 Secretary Gates, "Implementation of the Recommendations from the Commission on the National Guard and Reserves," p. 1-2, attachment p. 1.

54 "USNORTHCOM Response to the CNGR Second Report," November 20, 2007.

55 House Report 110-477, accompanying H.R. 1585, NDAA for FY 2008, §1814. While §1814 refers to "the National Guard and members of the Armed Forces on active duty," the Commission expects that planning will include capabilities residing in all the reserve components, not just the National Guard.

56 Davis et al., *Hurricane Katrina: Lessons for Army Planning and Operations,* pp. 54–55, 57.

57 Wormuth et al., *The Future of the National Guard and Reserves,* p. 74.

currently play and should play in the future. DOD needs to overcome its historic reluctance to put the National Guard and Reserves "in charge," believing that the active components should control everything. Recognizing the role that the reserve components should play in the homeland will require DOD to augment the reserve components' current capabilities for homeland missions and to assign them a leadership role in the homeland.

DOD needs to overcome its historic reluctance to put the National Guard and Reserves "in charge," believing that the active components should control everything.

As DOD makes civil support a core function and begins to budget and program for civil support, NORTHCOM must elevate civil support's priority so that both it and homeland defense become core missions of the command. To that end, more must be done to integrate the reserve components into NORTHCOM.

NORTHCOM must incorporate personnel who have greater knowledge of National Guard and Reserve capabilities, strengths, and constraints and must assemble a cadre of experts on the intricacies of state and local government, law enforcement, and emergency response. Such knowledge currently resides in the National Guard and Reserves and, despite the Commission's earlier recommendations, remains untapped and unintegrated, in disparate commands. A larger percentage of reservists on the staff and in key leadership positions, including in the position of commander or deputy commander, would provide NORTHCOM with greater insight into the unique skills and strengths available in the reserve forces. Increasing the numbers of members of the National Guard and Reserves within the service components of NORTHCOM would ensure that those preparing and coordinating homeland missions will consider the unique contributions of the reserve component.

Recommendation:

4. **A majority of U.S. Northern Command's billets, including those for its service component commands, should be filled by leaders and staff with reserve qualifications and credentials. Job descriptions for senior leaders and other key positions at NORTHCOM should contain the requirement of significant Reserve or National Guard experience or service. In addition, either the officer serving in the position of the commander or the officer serving in the position of deputy commander of NORTHCOM should be a National Guard or Reserve officer at all times.**

C. BUDGETING AND PROGRAMMING FOR CIVIL SUPPORT

As discussed earlier in this chapter, the Department of Defense has historically viewed civil support differently from its core warfighting mission, of which homeland defense is a part. DOD leads homeland defense missions, but provides civil support to other agencies leading homeland security or other similar missions. The Department of Defense views these civil support missions not as a core function but as "lesser included" missions—missions that are derivative of other functions, such as warfighting. As a result of this approach, with few exceptions DOD has not programmed or budgeted for civil support missions. Instead, it has performed them using units manned, trained, and equipped for core missions, such as combat.

The consequences of this approach have long been felt in how the Department of Defense has treated its responsibility to support other agencies and states in their homeland security mission.[58] Under current policy, DOD has not openly budgeted or programmed for this responsibility. In fact, Department of Defense Directive 3025.1 explicitly prohibits DOD from procuring or maintaining supplies, materiel, or equipment for providing support in civil emergencies.[59] To perform civil support missions, DOD has instead utilized equipment procured and personnel trained for warfighting-related missions.

A lack of a formal budgeting and programming process for civil support does not mean that DOD has done no preparation for its civil support missions. For instance, the National Guard Bureau (NGB) has attempted to ensure that the National Guard is prepared to perform its civil support responsibilities by identifying the "essential 10" warfighting capabilities inherent in National Guard units for Title 10 missions, and also essential for missions on the homeland.[60] DOD has used the 15 National Planning Scenarios prepared by the President's Homeland Security Council—which contemplate natural and man-made catastrophes with high loss of life—to develop an understanding of which capabilities will be required to respond to the disasters.[61] U.S. Northern Command has "developed 25 pre-scripted mission assignments to respond to specific predetermined requests for assistance from designated lead agencies," such as FEMA.[62] Congress authorized the creation of chemical, biological, radiological, nuclear, and high-yield explosives consequence management (CBRNE-CM) response forces, such as the weapons of mass destruction civil support teams (WMD-CSTs).[63] And DOD has created force packages to respond to domestic CBRNE events, such as the CBRNE Consequence Management Response Forces (CCMRFs) and, led by the NGB, CBRNE enhanced response force packages (CERFPs).[64]

. . . the lack of a formal budgeting and programming process for civil support signals the absence of any comprehensive assessment of the Department's requirements for civil support.

Despite this activity, the lack of a formal budgeting and programming process for civil support signals the absence of any comprehensive assessment of the Department's requirements for civil support and how they should be balanced against its other priorities. In fact, as the Commission

58 See, e.g., *National Strategy for Homeland Security* (2007), p. 50; *National Response Framework (Draft)*, p. 37; and *National Response Plan* (2004), p. ESF-v.

59 Department of Defense Directive 3025.1, "Military Support to Civil Authorities," January 15, 1993, §4.4.8.2 ("The DoD Components shall not procure or maintain any supplies, materiel, or equipment exclusively for providing MSCA in civil emergencies, unless otherwise directed by the Secretary of Defense").

60 National Guard Bureau, Office of Legislative Liaison, "National Guard Equipment Requirements: 'Essential 10' Equipment Requirements for the Global War on Terror," February 26, 2007.

61 *National Planning Scenarios* ([Washington, DC: Homeland Security Council], 2005), p. ii. In its recent report on the Guard and Reserves, CSIS noted that DOD has not developed official civil support requirements reflecting the operational challenges posed by these scenarios (Wormuth et al., *The Future of the National Guard and Reserves*, p. 69).

62 General Renuart, prepared statement, p. 5.

63 Peter Verga, Acting Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs, Department of Defense, prepared statement before the Senate Committee on Homeland Security and Governmental Affairs, Hearing on the Military's Role in Disaster Response, 110th Cong., 1st sess., July 19, 2007, pp. 3–4.

64 Assistant Secretary Verga, prepared statement, pp. 4–6.

reported in March, there currently exists no process to generate civil support requirements.[65] The failure to take this critical first step in the budgeting and programming process is a major flaw in how DOD prepares for its civil support mission.[66] This judgment of the Commission should in no way be used as an excuse to delay or set back current efforts at funding and enhancing DOD civil support capabilities. The recommended changes should instead serve to build on those efforts currently under way.

Rather than viewing civil support as a derivative mission, the Commission recommended that DOD should begin to explicitly budget and program for it, just as it does for homeland defense.[67] In his May 10 response, Secretary Gates agreed with the Commission's recommendation and tasked the Department with drafting appropriate policy to put this recommendation into effect.[68]

Finding: The Department of Defense has historically viewed civil support as a derivative or "lesser included" mission and has not explicitly budgeted or programmed for it. The Department has now apparently changed its view and has demonstrated a willingness to change this approach.

Another defect in budgeting and programming for civil support is the lack of adequate interagency participation. This is demonstrated by the three major homeland security and civil support assessments that are currently under way.[69] First, DHS has drawn on the National Preparedness System (NPS) and Target Capabilities List (TCL) to develop an assessment system evaluating the preparedness of the state and federal government.[70] Such preparedness efforts are designed to maximize the nation's ability to respond under the National Response Plan and the successor to this emergency response plan, the National Response Framework.[71] Second, the National Guard Bureau is developing the Joint Capabilities Database, which will give each state "the ability to provide near-real-time input on unit status and availability [of its National Guard] in each [emergency response] capability area."[72] Finally, NORTHCOM is leading a "homeland defense and civil support capabilities based assessment [that will] provide detailed information on gaps in DOD's [homeland defense and civil support capabilities in order] to influence and inform decisions on managing risk and allocating resources."[73] The DHS, NGB, and NORTHCOM assessments are all at varying levels of maturity;

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65 CNGR staff interview with George Foresman, Under Secretary for Preparedness, Department of Homeland Security, November 17, 2006. Later, in response to a question from Chairman Punaro asking who is responsible for establishing requirements for civil support, Under Secretary Foresman stated that the "overall requirements in terms of the national preparedness goal and in terms of our national preparedness structure is a responsibility that's assigned to the Secretary of Homeland Security. But having said that, there are component pieces, such as military support to civil authorities—what we're going to [be] doing [in] the law enforcement arena, the public health arena—that are the domain of the relevant federal agencies who work with their counterparts [in DHS]" (testimony before the CNGR, Hearing on the Proposed Changes to the National Guard, transcript of December 13, 2006, hearing [www.cngr.gov/hearing121314/1213cngr-panel1.pdf], p. 54).

66 For a complete discussion of the DOD budgeting and programming process for civil support, see "The Defense Department's Role in the Homeland," section III.A of *Strengthening America's Defenses in the New Security Environment*, pp. 39–54.

67 *Strengthening America's Defenses in the New Security Environment*, p. 52.

68 Secretary Gates, "Implementation of the Recommendations from the Commission on the National Guard and Reserves," p. 1-2, attachment p. 4.

69 MFR, Commission site visit to U.S. Northern Command, November 20, 2007.

70 6 U.S.C. §744.

71 Homeland Security Presidential Directive 8 (December 17, 2003), §3; Homeland Security Presidential Directive 5 (February 28, 2003); *National Response Framework (Draft)*.

72 "National Guard 2008 Posture Statement: Joint Staff Overview," National Guard Bureau Web site (www.ngb.army.mil/features/2008PostureStatement/scherling.html).

73 "USNORTHCOM Response to the CNGR Second Report," p. 9.

none is yet complete.[74] Moreover, although the three studies should provide useful information, there appears to be no overarching strategy for translating these assessments into requirements.

While the NGB and NORTHCOM have critical roles in homeland security, the Department of Homeland Security, not DOD, is the lead agency in that area. As such, the Secretary of Homeland Security, acting through the Federal Emergency Management Agency, is the federal official tasked with the responsibility of coordinating national preparedness efforts.[75] A significant portion of this task lies in reconciling these assessments to prepare for and respond to emergencies, identifying the gaps between federal and state capabilities, and recommending programs and activities that could address such gaps.[76] This responsibility is assigned to the Secretary of DHS in Homeland Security Presidential Directive 8 (HSPD-8) and the Homeland Security Act of 2002, although legislation in 2006 transferred it to the newly reconfigured FEMA, an agency placed under DHS in 2002.[77]

As a result of its centrality in national preparedness efforts, DHS is the federal agency with the most comprehensive national perspective on the response capabilities present in federal, state, and local government. Therefore, it is the agency with the expertise and the responsibility to inform DOD of which capabilities the Department will be expected to provide in response to a catastrophe. DHS is in the best position to generate civil support requirements. Although DOD and DHS have worked together on planning, exercising, and other efforts such as NORTHCOM's pre-scripted mission assignments, DHS has not provided DOD with requirements for civil support.[78]

Finding: The Department of Homeland Security is responsible for generating civil support requirements. To date, it has not done so.

In its March 1 report, the Commission issued five recommendations regarding the Department of Defense's role in the homeland. Secretary Gates indicated in his May 10 response that he agreed with all five of the Commission's recommendations, some with modifications.[79] Since Secretary Gates issued his response, DOD's implementation of these recommendations has continued to evolve.

First, the Commission recommended:

> The Secretary of Homeland Security, with the assistance of the Secretary of Defense, should generate civil support requirements, which the Department of Defense will be responsible for validating as appropriate. The Department of Defense should include civil support requirements in its programming and budgeting. In a new advisory role, the Chief of the National Guard Bureau should advise the U.S. Northern Command commander, the Secretaries of the Air Force and Army, and, through the Chairman of the Joint Chiefs of Staff, the Secretary of Defense regarding gaps between federal and state emergency response capabilities.[80]

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74 MFR, Commission site visit to U.S. Northern Command, November 20, 2007.

75 6 U.S.C. §313. While current law designates FEMA as leading national preparedness efforts, it is a component of DHS. For that reason, this report will refer to DHS—the parent agency—rather than to its component FEMA as leading national preparedness efforts.

76 6 U.S.C. §741, et seq.

77 Homeland Security Presidential Directive 8; Public Law 107-296, *Homeland Security Act*, November 25, 2002; Public Law 109-295, *Department of Homeland Security Appropriations Act for Fiscal Year 2007*, October 4, 2006, §611; 6 U.S.C. §314.

78 Vice Admiral Richard Rufe, USCG (ret.), Director, Office of Operations Coordination, Department of Homeland Security, prepared statement before the Senate Committee on Homeland Security and Governmental Affairs, Hearing on the Military's Role in Disaster Response, 110th Cong., 1st sess., July 19, 2007, pp. 2–4.

79 Secretary Gates, "Implementation of the Recommendations from the Commission on the National Guard and Reserves," p. 1-2.

80 Recommendation #1 in *Strengthening America's Defenses in the New Security Environment*, p. 52.

The Commission also recommended that

> The budget information for National Guard training and equipment for military assistance to civil authorities and other domestic operations should be included in appropriate sections of the Department of the Army and Department of the Air Force budget documents, respectively. There should not be separate budget documents for National Guard training and equipment for military assistance to civil authorities and other domestic operations.[81]

DOD concurs that civil support is a mission for which it must explicitly budget and program and that this process must be coordinated with DHS.[82]

Section 1815 of the 2008 National Defense Authorization Act tasks the Secretary of Defense, in consultation with the Secretary of Homeland Security, with determining the "military-unique capabilities" DOD will be expected to provide in support of civil authorities. It also tasks the Secretary of Defense with developing and implementing a plan for providing the funds and resources to maintain those and any additional capabilities needed for homeland defense and civil support.[83] The Commission believes that §1815 reflects the change proposed in the two March recommendations quoted above. We continue to emphasize that the Chief of the National Guard Bureau, in his new advisory role, should advise the Secretary of Defense, through the Chairman of the Joint Chiefs of Staff, and other participants in the process on the gaps between federal and state emergency response capabilities.[84]

Third, the Commission recommended that

> The Department of Defense (including combatant commands and the National Guard Bureau) and Department of Homeland Security Headquarters should exchange representatives to improve the knowledge of National Guard and Reserve capabilities; to improve planning, training, and exercising; and to assist the Secretary of Homeland Security with generating requirements for military civil support missions. The Commission recommends that a plan to exchange personnel be developed and implemented by the Secretary of Defense and the Secretary of Homeland Security within 180 days. The Commission notes the urgency of this recommendation.[85]

In response, Secretary Gates stated that the Department will revise its memorandum of agreement with DHS on the exchange of personnel to enhance the two departments' coordination on National Guard and Reserve matters. Among other things, the exchanged personnel would assist in validating requirements for federal civil support missions.[86]

As of the date of this report, the above recommendation remains to be implemented, despite its urgency: DOD and DHS have yet to revise their memorandum of understanding on the exchange of personnel it proposes.[87] The Commission continues to believe that DHS would benefit if it were to acquire more staff from the NGB and NORTHCOM (and other appropriate combatant commands). By enhancing DHS's insight into the capabilities that DOD can bring to support DHS's mission,

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81 Recommendation #5 in *Strengthening America's Defenses in the New Security Environment*, p. 54.

82 "Commission on the National Guard and Reserves: DOD Implementation Plans in Response to SecDef Direction May 10, 2007," Department of Defense, August 7, 2007, p. 1.

83 House Report 110-477, accompanying H.R. 1585, NDAA for FY 2008, §1815.

84 *Strengthening America's Defenses in the New Security Environment*, p. 52.

85 Recommendation #2 in *Strengthening America's Defenses in the New Security Environment*, pp. 52–53.

86 Secretary Gates, "Implementation of the Recommendations from the Commission on the National Guard and Reserves," p. 1-2, attachment p. 5.

87 "Commission on the National Guard and Reserves: DOD Implementation Plans," p. 2; MFR, CNGR staff meeting with staff of OASD-HD&ASA, December 3, 2007.

such staff would greatly improve the federal government's capacity for preparedness and response. This perspective would be especially valuable in assisting DHS in its generation of civil support requirements for DOD. Similarly, assigning more DHS personnel to DOD would provide DOD with valuable information on what will be expected of it during civil support missions.

Fourth, the Commission recommended that

> The Secretary of Defense and Secretary of Homeland Security should jointly submit an annual report to Congress on those civil support requirements generated by the Secretary of Homeland Security and those validated as well as funded by the Secretary of Defense, and the Chief of the National Guard Bureau should play a role in the preparation of that report as directed by the Secretary of Defense.[88]

Secretary Gates responded by agreeing that the Department of Defense and the Department of Homeland Security will submit an annual report describing those civil support requirements generated by the Secretary of Homeland Security and those validated and executed by the military departments. Secretary Gates also directed that this reporting be undertaken as a matter of policy, rather than waiting for Congress to establish it.[89] DOD and DHS intend to submit the first report to Congress in accordance with this recommendation by February 2008.[90]

Finally, the Commission recommended that

> The commander of U.S. Northern Command should advocate for civil support requirements in the Department of Defense's capabilities development, requirements generation and validation, and programming systems. The military services should ensure that civil support requirements are included in their respective budget processes.[91]

Commissioners Stockton and Stump at December 2007 hearing.

In Secretary Gates's response, the Chairman of the Joint Chiefs of Staff—in coordination with the Under Secretary of Defense for Policy, the commander of U.S. Northern Command (and the commanders of Pacific and Southern Commands, as appropriate), and the Chief of the National Guard Bureau—was directed to immediately begin implementing a policy to advocate, through the Joint Requirements Oversight Council, for validated civil support requirements in DOD's capabilities development, requirements generation and validation, and programming systems.[92]

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88 Recommendation #3 in *Strengthening America's Defenses in the New Security Environment*, p. 53.

89 Secretary Gates, "Implementation of the Recommendations from the Commission on the National Guard and Reserves," p. 1-2, attachment p. 5.

90 "Commission on the National Guard and Reserves: DOD Implementation Plans," p. 1; MFR, meeting with OASD-HD&ASA, December 3, 2007.

91 Recommendation #4 in *Strengthening America's Defenses in the New Security Environment*, p. 54.

92 Secretary Gates, "Implementation of the Recommendations from the Commission on the National Guard and Reserves," p. 1-2, attachment p. 1.

Although no formal civil support generation process has thus far been created, NORTHCOM has agreed to advocate for civil support requirements and has taken some limited steps to that end. The command has initiated an assessment of available homeland defense and civil support capabilities. It it also hosted a conference to develop a coordinated resourcing and investment strategy to address future requirements for the reserve component's homeland defense and civil support missions.[93]

Defending the United States requires a "concerted national effort" that engages not only the federal government but states; localities; private, nonprofit entities; and individual citizens. In that effort, all elements of national power must be used.[94] Thus, to defend the United States, the Department of Homeland Security and the Department of Defense, as well as other agencies, must effectively coordinate their undertakings. A significant part of this coordination necessarily focuses on national preparedness.

The Commission believes that the responsibility for coordinating national preparedness should remain in the Department of Homeland Security. As part of this process, DHS should identify the specific gaps in preparedness that can best be filled by Defense Department civil support activities. It can define these gaps as requirements and submit them to DOD, which would then have the responsibility to validate those requirements it deems appropriate and feed them into its own programming and budgeting process.[95]

. . . DOD has historically resisted accepting civil support as a mission for which it must program and budget, and DHS has thus far failed to sufficiently engage DOD in preparedness planning.

This proposal would ensure that DHS retains its position as the federal agency responsible for coordinating national preparedness. It would also take advantage of DHS's nationwide perspective on preparedness. In addition, the proposal would make DHS responsible for identifying gaps in capabilities that can best be filled by DOD civil support, while giving DOD the responsibility to determine the best way to fill those gaps once the appropriate requirements have been validated. Thus DOD would have the flexibility to respond to DHS's requirements in a way that prioritizes them appropriately with DOD's other missions.

The Commission helieves that the change that will be enacted by §1815 of the 2008 National Defense Authorization Act is fully consistent with its recommendations. The Commission wishes to emphasize, however, that DOD has historically resisted accepting civil support as a mission for which it must program and budget, and DHS has thus far failed to sufficiently engage DOD in preparedness planning. Moreover, this shift will require deep interagency cooperation between DOD, DHS, and other relevant agencies—and such cooperation has heretofore been extremely limited. For this new process to function effectively and improve the nation's preparedness and response capabilities, the Secretaries of Defense and Homeland Security in particular will need to demonstrate a continuing

93 "USNORTHCOM Response to the CNGR Second Report," p. 9.

94 See, e.g., *National Strategy for Homeland Security* (2007), p. 13: "The United States, through a concerted national effort that galvanizes the strengths and capabilities of Federal, State, local, and Tribal governments; the private and non-profit sectors; and regions, communities, and individual citizens—along with our partners in the international community—will work to achieve a secure Homeland that sustains our way of life as a free, prosperous, and welcoming America. In order to realize this vision, the United States will use all instruments of national power and influence—diplomatic, information, military, economic, financial, intelligence, and law enforcement—to achieve our goals to prevent and disrupt terrorist attacks; protect the American people, critical infrastructure, and key resources; and respond to and recover from incidents that do occur."

95 The Commission believes that this reallocation of responsibilities will necessitate the revision of DOD Directive 3025.1, "Military Support to Civil Authorities."

commitment to its successful implementation. Furthermore, the House and Senate committees of jurisdiction for the armed services, homeland security, and the interagency process must carefully monitor the performance of the departments in carrying out these new missions.

The Commission believes that ensuring that DOD is prepared to take on its civil support mission should go beyond just budgeting and programming. There are many capabilities currently present in the services that could be useful for civil support. In a 2003 memorandum titled "Rebalancing Forces," Secretary of Defense Rumsfeld directed the armed forces to "promote the judicious and prudent use of the Reserve components." Furthermore, in an effort to ease the burden placed on the Guard and the Reserves, the Secretary instructed the services to implement rebalancing initiatives in order to create a total force—a unified military integrating the active and reserve components—that is responsive to today's high operational tempo.[96]

Programming and budgeting for civil support is more than just a matter of adding resources: it also entails using more efficiently what DOD already has. As part of the requirements process, DOD should assess the capabilities present in the various components of the armed services and determine which could be used to fulfill civil support requirements. Once that determination is made, it should shift capabilities useful for state-controlled response to domestic emergencies to the National Guard, and shift capabilities in the National Guard that are not required for its state missions but are required for its federal missions either to the federal reserve components or to the active duty military. This rebalancing should be done without compromising the other responsibilities of the reserve components. It would ensure that civil support capabilities are, to the maximum extent possible, in the National Guard and that those capabilities mainly useful for federal missions are located in the Title 10 military.

Recommendation:

5. **In accordance with §1815 of the 2008 National Defense Authorization Act, the Secretary of Homeland Security, with the assistance of the Secretary of Defense, should generate civil support requirements, which the Department of Defense will be responsible for validating as appropriate. DOD should include civil support requirements in its programming and budgeting. As part of this effort, DOD should determine existing capabilities from all components that could fulfill civil support requirements and rebalance them where appropriate (consistent with their other obligations), shifting capabilities determined to be required for state-controlled response to domestic emergencies to the National Guard, and shifting capabilities currently resident in the National Guard that are not required for its state missions but are required for its federal missions either to the federal reserve components or to the active duty military, as appropriate.**

Should a catastrophic event occur, DOD will be expected to respond rapidly and massively. It therefore must be manned, trained, and equipped to do so. This effort should include ensuring that all forces assigned to domestic CBRNE consequence management are fully budgeted for, sourced, manned, trained, and equipped. Because the nation has not adequately resourced its forces designated for response to weapons of mass destruction, it does not have sufficient trained, ready forces available. This is an appalling gap, which puts the nation and its citizens at greater risk.

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96 Secretary of Defense Donald Rumsfeld, "Rebalancing Forces," memorandum for Secretaries of the Military Departments, Chairman of the Joint Chiefs of Staff and the Under Secretaries of Defense, July 9, 2003; on Web site of the Assistant to the Chairman for National Guard and Reserve Matters (https://ca.dtic.mil/jcs/ngrm/tfp/SecRumsfeld-MemoonRebal.pdf).

In accordance with Recommendation #5 and Recommendations #29 and #31 in Chapter IV, the Secretary of Defense should ensure that forces identified as rapid responders to domestic catastrophes are manned, trained, and equipped to the highest levels of readiness. In emphasizing this point, the Commission reiterates that the Department of Defense is a key element in responding to catastrophes.

Because the nation has not adequately resourced its forces designated for response to weapons of mass destruction, it does not have sufficient trained, ready forces available. This is an appalling gap.

Recommendation:

6. **The Secretary of Defense should ensure that forces identified as rapid responders to domestic catastrophes are manned, trained, and equipped to the highest levels of readiness.**

D. PROVIDING GOVERNORS THE AUTHORITY TO DIRECT ALL MILITARY FORCES WITHIN THEIR STATE

As chief executives, governors bear the primary responsibility of protecting life and property within their state. Each also serves as the commander in chief of his or her state National Guard when it is not in federal service.[97] This authority originates in the Constitution and is consistent with current U.S. law and policy, which establishes that domestic incidents are managed at the lowest jurisdictional level possible and that lower jurisdictional levels are supported by additional response capabilities when necessary.[98]

Governors command their state's National Guard and frequently deploy it in response to domestic incidents, such as natural disasters or civil unrest. The President may also deploy federal or Title 10 military forces to a state as part of disaster response. Such a civil support operation is likely to be undertaken as part of a larger operation coordinated by DHS and its component FEMA.

Under existing procedures, if a major crisis occurs in a state where both federal and nonfederal (National Guard under state control) forces provide civil support, military assistance is coordinated in two ways. NORTHCOM controls the movement of Title 10 active and reserve forces into the state and maintains command and control over them through a joint task force. Simultaneously, the National Guard Bureau coordinates the movement of National Guard forces in Title 32 status; once they are in a state, they are commanded by the governor as if they were National Guard forces of

97 "Congress shall have the power . . . to provide for organizing, arming, and disciplining the militia, and for governing such part of them as may be employed in the service of the United States, reserving to the states respectively, the appointment of the officers, and the authority of training the militia according to the discipline prescribed by Congress" (U.S. Const. art. I, §8, cl. 16). See, e.g., *National Response Framework (Draft)*, p. 18: "As a State's chief executive, the Governor is responsible for the public safety and welfare of the people of his or her State."

98 See, e.g., 42 U.S.C. §5170. See also *National Response Framework (Draft)*, p. 9: "Incidents must be managed at the lowest possible jurisdictional level and supported by additional response capabilities when needed. . . . Most incidents begin and end locally and are wholly managed at the community level. Many incidents require additional resources or support from across the community, and some require additional support from neighboring communities or the State. A few require Federal support. National response protocols recognize this and are structured to provide additional, tiered levels of support when there is a need for additional resources or capabilities to support and sustain the response and initial recovery. During large-scale events, all levels will take proactive actions to respond, anticipating resources that may be required."

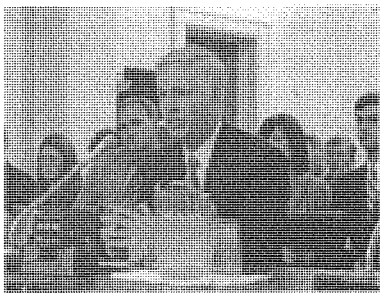
that state.[99] This dual coordination leads to two separate chains of command for military forces in the state. One chain of command leads from Title 10 forces through NORTHCOM to the President, while another leads to the governor. Although the governor may request assistance from Title 10 military forces within the state, he or she does not have the authority to direct them.

Finding: There is no established process whereby governors can gain operational control over federal military assets within a state to respond to emergencies.

In our March 1 report, the Commission recommended that DOD should develop protocols that allow governors to direct the efforts of federal military assets responding to an emergency such as a natural disaster, and the grounds for endorsing such authority have not changed.[100] The Commission wishes to reemphasize the importance of this recommendation for several reasons.

First, allowing governors to direct the efforts of federal military forces responding to a disaster is consistent with the nation's approach to emergency management—that domestic incidents should be managed at the lowest level possible—and will promote unity of command.[101] Under the current approach, National Guard responders will be directed by the governor, while federal military forces within the state will be directed by the President through NORTHCOM through a joint task force. Allowing the governor to direct the efforts of all military forces within his or her state will prevent the confusion and error possible when two separate chains of command are present in the same operation. Unity of command, by which we mean the direction of the efforts of all military forces by one government official, is a time-honored principle of military doctrine.[102]

When federal military capabilities are needed to respond to an emergency, their involvement should not alter the fundamental approach to emergency management. That a particular capability needed for the response resides in a federal active duty or reserve unit should not impede its use to preserve life or property. In most instances, such federal military forces should operate under the direction of state officials.



North Carolina Governor Easley at June 2007 hearing.

Second, this reform can be accomplished with the expenditure of relatively little effort. As DOD develops its plans for civil support and consequence management, it can negotiate protocols with states that allow for the direction of Title 10 military forces by governors. These protocols

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99 "National Guard Bureau Joint Staff Manual" [Draft] ([Arlington, VA: National Guard Bureau], 2004), p. M-8. States would also be able to use the Emergency Management Assistance Compact (EMAC) to obtain National Guardsmen from other states. But as the response to Katrina showed, the EMAC process is unworkable for the large-scale movement of troops; states therefore would be likely to rely instead on the NGB to coordinate the movement of troops (Senate Committee on Homeland Security and Governmental Affairs, *Hurricane Katrina: A Nation Still Unprepared*, pp. 507–8).

100 For a complete discussion of this issue, see "The Role of States and Their Governors," section III.B of *Strengthening America's Defenses in the New Security Environment*, pp. 55–65.

101 See note 98, above.

102 "Unity of command" is recognized as one of the nine "principles of war," the "enduring bedrock of Army doctrine" (Department of the Army, "Operations," Field Manual 100-5, June 14, 1993, pp. 2-4 to 2-6).

would include policies and procedures regarding the nature of the command relationship under which the troops will operate during particular contingencies. Procedures would be formalized before a crisis rather than devised in an ad hoc manner while lives and property are at stake—as happened after Hurricane Katrina. In addition, the Commission anticipates that these agreements will come into play only in extreme circumstances. Moreover, federal forces under the control of a governor would still be subject to constraints normally placed on the Title 10 military, such as Posse Comitatus restrictions on law enforcement.

Third, the development and use of these protocols are fully consistent with law and precedent. The President always exercises ultimate federal command authority over federal troops;[103] Title 10 forces cannot be formally turned over to a governor in all respects. However, there are established command relationships that would allow a National Guard officer to "command" Title 10 troops with the consent of both the President and the governor. With the agreement of the President, or of the President's designee, an order would be issued placing the Title 10 forces under the operational or tactical control of the governor.[104] The President, as commander in chief, can assign a task force of active duty forces as a supporting command to a state military joint task force while retaining ultimate command authority over the federal forces.

If governors can be trusted to direct National Guard soldiers from their own state or from other states, then they can be trusted under similar circumstances to direct federal active and reserve component forces as well.

In a disaster response, a military organization could be temporarily attached to another organization for operational or tactical purposes, with administrative control, including disciplinary authority, being retained by the parent organization. Such divisions between operational, tactical, and administrative control are commonplace in the military operating environment. If a Title 32 commander were exercising control over Title 10 forces, this division of authority would avoid the problem of requiring the Title 32 commander to exercise disciplinary (Uniform Code of Military Justice) authority over his or her Title 10 subordinates.

One way to accomplish such an operation is through the use of dual-hatted commanders, who simultaneously hold ranks in the state National Guard and the federal, Title 10 military. They are therefore able to command both federal and state forces simultaneously.[105] The Commission finds that dual-hatting has been a useful tool in coordinating federal and state civil support missions and believes it should be expanded for use in appropriate circumstances.

Current military doctrine explicitly allows members of the United States armed forces to serve under the operational control of foreign commanders, with the President retaining ultimate command over U.S. forces.[106] If the command relationship with the President can be maintained while American troops are operating under the control of foreign commanders, we see no convincing reason that it cannot be maintained while troops are under the control of a state governor acting through the adjutant general.

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103 Joint Chiefs of Staff, "Unified Action Armed Forces (UNAAF)," Joint Publication 0-2, July 10, 2001, p. xv.

104 3 U.S.C. §301.

105 Joint Chiefs of Staff, "Homeland Security," p. II-9.

106 "In all multinational operations, even when operating under the operational control (OPCON) of a foreign commander, US commanders will maintain the capability to report separately to higher US military authorities in addition to foreign commanders" (Joint Chiefs of Staff, "Joint Operations," Joint Publication 3-0, September 16, 2006, p. II-5).

Analysts from the Rand Corporation discussed this issue in a 2007 report, *Hurricane Katrina: Lessons for Army Planning and Operations.* They noted,

> When U.S. forces conduct multilateral operations that are led by foreign commanders, they are placed under the operational control of that commander. This issue was examined thoroughly in 1993 during the drafting of Presidential Decision Directive 25, Reforming Multilateral Peacekeeping Operations. During this deliberative process, each of the services, the joint staff, and the Office of the Secretary of Defense agreed that this type of arrangement preserved the federal chain of command and, therefore, was not a violation of existing federal statutes or military practices. Using the logic and rationale employed in PDD-25, there is no legal reason why federal forces could not be temporarily placed under the tactical control of individual states for a specific time, place, and mission.[107]

Governors routinely command National Guard troops from other states in disaster response. If governors can be trusted to direct National Guard soldiers from their own state or from other states, then they can be trusted under similar circumstances to direct federal active and reserve component forces as well. Nor is the assignment of active duty personnel to Title 32 National Guard commands novel. Federal law specifically authorizes that both enlisted members and commissioned officers may be detailed for duty with a state National Guard. In fact, Title 10 officers detailed in this fashion may accept a commission in the National Guard.[108]

Finally, while the Department of Defense has rejected this Commission proposal, it has not proposed a viable substitute.[109] The alternative currently under consideration by DOD involves authorizing "Combatant Commanders, when requested by a state governor and when conducting [Secretary of Defense]-directed missions under the [National Response Framework] and the Stafford Act, to provide direct assistance to the state authorities. It will also task various parties, including USNORTHCOM, with actions designed to institutionalize protocols regarding federal military assistance to state emergency responders" (emphasis in the original).[110] This proposal, still under development, may represent a step forward, but it does not solve the problem of having two separate chains of command operating within a state.

The 2008 National Defense Authorization Act does not explicitly endorse DOD's developing protocols allowing governors to direct the efforts of federal military assets responding to emergencies, such as natural disasters.[111] In their Joint Explanatory Statement, however, the conferees approved of this recommendation, urging "the Secretary of Defense, as part of the response planning required by this provision, to address the nature of command relationships under which troops will operate during particular contingencies and ensure, as recommended by the Commission on the National Guard and Reserves, that necessary agreements are entered into as soon as practicable."[112]

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107 Davis et al., *Hurricane Katrina: Lessons for Army Planning and Operations,* p. 66.

108 32 U.S.C. §315.

109 *Strengthening America's Defenses in the New Security Environment,* p. 63; Secretary Gates, "Implementation of the Recommendations from the Commission on the National Guard and Reserves," p. 1-2, attachment pp. 5–6.

110 "General Summary of Stakeholder Positions on Recommendations Made by the Commission on the National Guard and Reserves," U.S. Northern Command, received December 3, 2007; MFR, meeting with OASD-HD&ASA, December 3, 2007.

111 See *Strengthening America's Defenses in the New Security Environment,* p. 63.

112 Joint Explanatory Statement to Conference Report 110-477, on H.R. 1585, NDAA for FY 2008, p. 326.

Recommendation:

7. As part of its efforts to develop plans for consequence management and support to civil authorities, DOD should develop protocols that allow governors to direct the efforts of federal military assets responding to an emergency such as a natural disaster. This direction may be accomplished through the governor's use of a dual-hatted military commander.

Until 2002, 10 U.S.C. §12304 expressly restricted the Secretary of Defense from mobilizing the federal reserve components to execute the Insurrection statutes or "to provide assistance to either the Federal Government or a State in time of a serious natural or man-made disaster, accident, or catastrophe." This restriction has subsequently been narrowed, allowing the Secretary of Defense to order a Title 10 reserve unit or member to active duty to provide assistance in responding to an emergency involving the use or threatened use of a weapon of mass destruction or "a terrorist attack or threatened terrorist attack in the United States that results, or could result, in significant loss of life or property."[113] Using this authority, the President or Secretary of Defense can mobilize forces for an extended period of time.

The Commission believes that current mobilization authorities for federal reserve forces to respond to emergencies are insufficient and should be expanded. We further believe that the mobilization authorities for the Coast Guard Reserve present a good model. In his testimony before the Commission, Rear Admiral Kenneth T. Venuto of the Coast Guard testified that this authority increases the availability and accessibility of reservists to respond to domestic crises, especially when disaster is imminent.[114] Similar authorities should be adopted to provide service Secretaries the authority to involuntarily mobilize federal reserve components for up to 60 days in a four-month period and up to 120 days in a two-year period during or in response to imminent natural or man-made disasters.[115]

Recommendation:

8. Congress should amend the mobilization statutes to provide service Secretaries the authority to involuntarily mobilize federal reserve components for up to 60 days in a four-month period and up to 120 days in a two-year period during or in response to imminent natural or man-made disasters, similar to that employed to mobilize the Coast Guard Reserve under 14 U.S.C. §712.

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113 10 U.S.C. §12304. See Cecchine et al., *Triage for Civil Support*, p. 34.

114 Rear Admiral Venuto, prepared witness statement before the CNGR, Hearing on Homeland Defense/Homeland Security, May 3, 2007 (www.cngr.gov/hearing503-4/Venuto.pdf), pp. 2–3.

115 14 U.S.C. §712.

APPENDIX 2. HOMELAND SECURITY AND THE RESERVE COMPONENTS

In addition to their responsibilities in backing up the active component mission overseas, the reserve components play a vital operational role on the homeland. Department of Defense operations in the homeland contribute to homeland security in two ways: by performing homeland defense missions and by providing civil support.[1] Homeland defense is the military defense of the homeland, while civil support is DOD support to other agencies in the performance of their mission. Civil support missions are often performed in support of homeland security operations, which are generally led by the Department of Homeland Security and the Federal Emergency Management Agency. "Homeland security" is not synonymous with "homeland defense"; rather, homeland security refers both to protecting the homeland against terrorism and to performing other non-terrorism-related DHS functions.[2]

Homeland Defense, Homeland Security, and Civil Support

In order to understand how the federal government protects the homeland, it is important to have a clear definition of homeland defense, homeland security, and civil support.

- **Homeland defense** is defined as "the protection of U.S. sovereignty, territory, domestic population, and critical defense infrastructure against external threats or aggression, or other threats as directed by the President."[3]
- **Homeland security** is defined as "a concerted national effort to prevent terrorist attacks within the United States, reduce America's vulnerability to terrorism, and minimize the damage and recover from attacks that do occur."[4] The statutory definition of homeland security also includes the "carry[ing] out [of] all functions of entities transferred to the Department [of Homeland Security], including by acting as a focal point regarding natural and manmade crises and emergency planning."[5]
- **Civil support** is defined as "DoD support, including the use of Federal military forces, the Department's career civilian and contractor personnel, and DoD agency and component assets, for domestic emergencies and for designated law enforcement and other activities."[6]

A key responsibility of the reserve components, particularly the National Guard, is supporting civil authorities. While "civil support" encompasses a variety of potential missions, such as support to law enforcement and emergency response, the most important homeland mission of National Guard and Reserve units is saving lives and protecting property following a disaster. Their role in this area is indispensable, but it is important to remember that they represent only one part of the nation's capacity to prepare for and respond to disasters and emergencies.

State and local government, including the National Guard, plays a critical, frontline role in managing the response to natural disasters, terrorist attacks, and other domestic incidents. Should the

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1 *National Strategy for Homeland Security* ([Washington, DC: Office of Homeland Security], 2002), p. 13.

2 *Strategy for Homeland Defense and Civil Support* ([Washington, DC: Department of Defense], 2005), pp. 5–6.

3 *Strategy for Homeland Defense and Civil Support*, p. 5.

4 *National Strategy for Homeland Security* ([Wasington, DC: Office of Homeland Security], 2007), p. 2.

5 6 U.S.C. §111(b)(1)(D).

6 *Strategy for Homeland Defense and Civil Support*, pp. 5–6.

response to a disaster require additional assistance, an array of players are available to assist. But for purposes of discussing the reserve components' role in emergency response, several of these players are key.

State and local government will provide a substantial portion of the response capabilities. These governments will operate under the state's emergency plan and in their response will bring to bear the full resources under their power. Among these resources are law enforcement, fire departments, public health services, public works, and environmental agencies. The state can also be expected to use its National Guard, which plays a leading role in state emergency response and is commanded by the state's governor unless federalized.[7] In addition, National Guard resources from other states and territories may be used through the employment of an Emergency Management Assistance Compact (EMAC).[8]

National Guard personnel may operate under three different statuses: state status, state control and funding; Title 32 status, state control and federal funding; and Title 10 status, federal control and funding. While in state or Title 32 status, the National Guard operates under the command and control of the governor in accordance with state laws. The National Guard operating in state status is generally the "first military responder" to domestic incidents. As the DOD *Strategy for Homeland Defense and Civil Support* notes, the National Guard is particularly well-suited to this role. It is "forward deployed" in 3,200 communities across the country, is readily accessible to state authorities, routinely exercises with law enforcement and first responders, and is "experienced in supporting [local] communities in times of crisis."[9] When National Guard units are placed in Title 10 status, they, like other Title 10 forces, are restricted by the Posse Comitatus Act.[10] The National Guard, acting in state or Title 32 status, represented approximately 50,000 of the 72,000 troops that deployed in response to Hurricane Katrina.[11]

The **National Guard Bureau** (NGB) is neither a reserve component nor an operational command. Instead, it coordinates between DOD and the several states and territories on matters pertaining to the National Guard. It also prescribes the discipline and training requirements for the Army National Guard (ARNG) and the Air National Guard (ANG); ensures that units and members of the ARNG and ANG are trained by the states in accordance with programs, policies, and guidance from the Secretaries of the Army and Air Force and the Chief of the National Guard Bureau; and facilitates and supports the training of members and units of the National Guard to meet state requirements.[12] Since the terrorist attacks of 9/11, the NGB has taken on the responsibility of coordinating the movement of National Guard forces in Title 32 status; once in state, they are commanded by the governor.[13]

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7 *National Response Plan* ([Washington, DC: Department of Homeland Security], 2004), p. 8.

8 GAO, "Emergency Management Assistance Compact: Enhancing EMAC's Collaborative and Administrative Capacity Should Improve National Disaster Response," GAO-07-854 (Report to the Committee on Homeland Security and Governmental Affairs), June 2007, p. 1.

9 *Strategy for Homeland Defense and Civil Support*, p. 35.

10 Joint Chiefs of Staff, "Homeland Security," Joint Publication 3-26, August 2, 2005, p. II-13.

11 Senate Committee on Homeland Security and Governmental Affairs, *Hurricane Katrina: A Nation Still Unprepared*, 109th Cong., 2nd sess., May 2006, p. 476.

12 10 U.S.C. §10503; see also Joint Chiefs of Staff, "Homeland Security," p. II-13.

13 "National Guard Bureau Joint Staff Manual" [Draft] ([Arlington, VA: National Guard Bureau], 2004), p. M-8. As noted, states may use the Emergency Management Assistance Compact (EMAC) to obtain National Guardsmen from other states. But as the response to Katrina showed, the EMAC process is unworkable for the large-scale movement of troops; states therefore would be likely to rely instead on the NGB to coordinate the movement of troops (Senate Committee on Homeland Security and Governmental Affairs, *Hurricane Katrina: A Nation Still Unprepared*, pp. 507–8).

The Department of Homeland Security (DHS) is the lead federal agency for homeland security. Homeland security is defined as "a concerted national effort to prevent terrorist attacks within the United States, reduce America's vulnerability to terrorism, and minimize the damage and recover from attacks that do occur."[14] The statutory definition of homeland security also includes the "carry[ing] out [of] all functions of entities transferred to the Department [of Homeland Security], including by acting as a focal point regarding natural and man-made crises and emergency planning."[15]

The Federal Emergency Management Agency (FEMA) is the component agency of the Department of Homeland Security designated to coordinate the federal response to domestic incidents. In accordance with the Post-Katrina Emergency Management Reform Act of 2006, which enacted changes to the Homeland Security Act, FEMA is now tasked with leading the nation's emergency management efforts.[16]

DHS and FEMA manage domestic incidents through the **National Response Plan (NRP)**, which constitutes the national approach to domestic incident management. In the event of a catastrophic disaster, the NRP is the architecture around which the federal response (including the response by the reserve components) is organized. Its base plan, along with its various annexes and appendixes, describes the structure and processes of the nation's approach to domestic incident management; it is designed to integrate the responses of federal, state, and local governments across the nation in response to domestic incidents.[17] The NRP recognizes that incidents are generally managed at the lowest possible jurisdictional level.[18] Therefore state and local chief executives, including governors and mayors, are "responsible for coordinating . . . resources to address the full spectrum of actions to prevent, prepare for, respond to, and recover from [domestic] incidents[.]"[19] The NRP is currently being revised by DHS and FEMA and will be replaced by the **National Response Framework**, which is in draft form as of the date of this report.[20]

The **Coast Guard** is a military service located in the Department of Homeland Security. The Coast Guard protects the U.S. maritime domain and conducts emergency response operations.[21]

Federal agencies may play coordinating, primary, or supporting roles, as determined by their authorities and capabilities and by the nature of the specific domestic incident. Federal interagency assistance is coordinated through the 15 Emergency Support Functions (ESFs) of the National Response Plan, which are organized by subject area (e.g., Transportation, Communications, Resource Support).[22] In ESF-1, Transportation, for instance, the Department of Transportation, as coordinating agency, integrates emergency management of the transportation system during an emergency. In addition, DOT is the primary agency for ESF-1 and, in that capacity, manages the provision of federal and civil transportation services in support of federal, state, and local governments. ESF-1 also has 10 supporting agencies that assist the operations of the ESF using their own capabilities. For example, the General Services Administration supports ESF-1 by assisting in the contracting of government

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14 *National Strategy for Homeland Security* (2007), p. 3.

15 6 U.S.C. §111(b)(1)(D).

16 6 U.S.C. §313 (b)(1). There are some exceptions to this tasking that are beyond the scope of this discussion.

17 *National Response Plan* (2004), p. xi.

18 *National Response Plan* (2004), p. 4.

19 *National Response Plan* (2004), p. 8.

20 *National Response Framework (Draft)* ([Washington, DC: Department of Homeland Security], 2007).

21 Joint Chiefs of Staff, "Homeland Security," p. II-13.

22 *National Response Plan* (2004), pp. 10, ESF-i to ESF-iv. As of this writing, the *National Response Framework*, the successor to the *Emergency Response Plan*, is still in draft form; see "Introducing: National Response Framework," Department of Homeland Security Web site, September, 2007 (www.fema.gov/pdf/emergency/nrf/about_nrf.pdf).

services.[23] The draft National Response Framework also organizes federal interagency support through Emergency Support Functions.[24]

The Department of Defense provides defense support of civil authorities (DSCA) to federal agencies and to state and local governments in response to requests for assistance during domestic incidents.[25] DSCA, also referred to more generically as "civil support," is "DoD support, including [the use of] Federal military forces, the Department's career civilian and contractor personnel, and DoD agency and component assets, for domestic emergencies and for designated law enforcement and other activities."[26]

The Department of Defense, as the NRP notes, has "significant resources" that may be available to support the response to a domestic incident.[27] Reflecting its vital role, DOD is a supporting agency to all 15 ESFs in the NRP and to 14 of the 15 ESFs in the draft NRF.[28] In addition, although disaster support is the most visible type of civil support, there are a number of other situations in which DOD may be called on to provide support, such as counterterrorism operations and support to law enforcement.[29]

For defense support of civil authorities, the **Secretary of Defense** has the authority to approve the use of military personnel, units, supplies, and equipment. The Secretary also is responsible for providing overall policy and oversight for DSCA in the event of a domestic incident. Within the Office of the Secretary of Defense, the **Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs (ASD-HD&ASA)** provides overall supervision for DSCA.[30]

U.S. **Northern Command (NORTHCOM)** is the combatant command responsible for defense support of civil authorities throughout the continental United States, Canada, and Mexico.[31] NORTHCOM has few forces permanently assigned to it and provides DSCA primarily through its subordinate and service-specific commands, such as Joint Task Force Civil Support, Army North, and Air Force North.[32] Title 10 forces for civil support missions are provided by U.S. **Joint Forces Command (JFCOM)** in the same way that it provides forces for other combatant commands.[33]

Reserve component forces are an "essential part of the [homeland security] operational force."[34] The **National Guard** is obviously a key component of emergency response; the other reserve components

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23 "Emergency Support Function #1—Transportation Annex," in *National Response Plan* (2004), pp. ESF #1-1 to ESF #1-5.

24 *National Response Framework (Draft)*, p. ESF-i.

25 *National Response Plan* (2004), p. 41.

26 *Strategy for Homeland Defense and Civil Support*, pp. 5–6.

27 *National Response Plan* (2004), p. 10; *National Response Framework (Draft)*, Glossary and Acronyms, p. 4.

28 *National Response Plan* (2004), p. ESF-v. An important side note is "immediate response authority," under which local commanders can act to save lives, prevent human suffering, or mitigate great property damage (Joint Chiefs of Staff, "Homeland Security," p. IV-1; *National Response Framework (Draft)*, p. ESF-v).

29 Joint Chiefs of Staff, "Homeland Security," pp. IV-4 to IV-7.

30 Joint Chiefs of Staff, "Homeland Security," p. II-5.

31 Joint Chiefs of Staff, "Homeland Security," p. II-7. U.S. Pacific Command (PACCOM) and U.S. Southern Command (SOUTHCOM) perform analogous roles for U.S. territory within their areas of responsibility (Joint Chiefs of Staff, "Homeland Security," pp. II-9 to II-11).

32 General Victor E. Renuart, Jr., U.S. Air Force, Commander North American Air Defense Command and US Northern Command, prepared statement before the Senate Committee on Homeland Security and Governmental Affairs, Hearing on the Military's Role in Disaster Response, 110th Cong., 1st sess., July 19, 2007, p. 2; "About USNORTHCOM," U.S. Northern Command Web site (www.northcom.mil/About/index.html).

33 Joint Chiefs of Staff, "Homeland Security," p. II-11.

34 Joint Chiefs of Staff, "Homeland Security," p. II-11.

also provide vital capabilities, including military police, medical expertise, and chemical decontamination, to civil support missions.[35]

The Defense Department's "Active, Layered Defense" for the Homeland

The Department of Defense's approach to homeland defense and civil support is guided by the concept of an "active, layered defense." The strategy focuses on four strata: the forward regions, the approaches, the global commons, and the homeland. DOD's objective in the *forward regions*—foreign lands, airspace, and waters—consists of deterring and preventing attacks. Its objective for the *approaches*—the means of access from the forward regions to the homeland, including Canadian and Mexican territory and those waters and airspace contiguous to the homeland—consists of detecting, deterring, and defeating threats en route to the United States. For the *global commons*—international waters and airspace, space beyond Earth's atmosphere, and cyberspace—DOD's objective is to continue to be able to operate effectively within it. Finally, in the *homeland* DOD focuses on deterring and defeating direct attacks on the United States, supporting civilian law enforcement and counterterrorism activities, and supporting civil authorities by providing critical chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) consequence management capabilities.[36]

The homeland and its approaches are the realm of homeland defense and civil support, while more traditional military strategy centers on the forward regions and the global commons. According to DOD's *Strategy for Homeland Defense and Civil Support,* the Department has five objectives in the homeland and its approaches. In order of priority, they are

- Achieve Maximum Awareness of Threats.
- Deter, Intercept, and Defeat Threats at a Safe Distance.
- Achieve Mission Assurance.
- Support Consequence Management for CBRNE Mass Casualty Attacks.
- Improve National and International Capabilities for Homeland Defense and Homeland Security.[37]

The first three objectives represent more traditional military missions that fall under the homeland defense umbrella, in which DOD acts as the lead agency.[38] In fulfilling the final objective, DOD plans to improve interagency planning and interoperability, as well as its ability to function alongside federal, state, and local partners to improve its capacity to provide defense support to civil authorities. This objective also involves strengthening security cooperation with other countries.[39] While the objective emphasizes the importance of cooperation with civil authorities, much of what constitutes civil support appears to fall outside of it.[40]

Chemical, biological, radiological, nuclear, and high-yield explosives consequence management is a key civil support responsibility for DOD. The Joint Staff defines CBRNE consequence manage-

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35 *Strategy for Homeland Defense and Civil Support,* p. 35. In 2006, a Center for Strategic and International Studies report noted that "although the [strategy] outlines a number of areas where National Guard and Reserve forces could contribute to the protection of the homeland, it provides neither a detailed nor a definitive statement of how" (Christine E. Wormuth, Michèle A. Flournoy, Patrick T. Henry, and Clark A. Murdock, *The Future of the National Guard and Reserves: The Beyond Goldwater-Nichols Phase III Report* [Washington, DC: Center for Strategic and International Studies, 2006], p. 63).

36 *Strategy for Homeland Defense and Civil Support,* pp. 10–13.

37 *Strategy for Homeland Defense and Civil Support,* p. 15.

38 *Strategy for Homeland Defense and Civil Support,* p. 14.

39 *Strategy for Homeland Defense and Civil Support,* pp. 32–34.

40 *Strategy for Homeland Defense and Civil Support,* pp. 32–33.

ment in the homeland as "those actions taken to maintain or restore essential services and manage and mitigate problems resulting from disasters and catastrophes, including natural, manmade, or terrorist incidents. CBRNE-CM may include measures to restore essential government services, protect public health and safety, and provide emergency relief to affected governments, businesses, and individuals."[41] In the event of a catastrophic CBRNE incident, DOD can be expected to assist in responding to the massive disruption of the "production and delivery of essential goods and services." Potential missions are diverse and may include providing public safety and security, supporting public health, and responding to terrain and infrastructure contamination.[42] While not all CBRNE incidents will require a federal response, those that do will be coordinated through the National Response Plan, with DOD acting as or assisting the lead federal agency.[43] In addition, the affected state can be expected to respond massively, with the National Guard playing a major role. Many of the capabilities necessary to perform this role can be found in the National Guard Bureau's "Essential 10" warfighting capabilities needed for every state that are inherent in National Guard units for Title 10 missions, but also essential for missions on the homeland.[44]

As stated in DOD's *Strategy for Homeland Defense and Civil Support,* consequence management for CBRNE mass casualty attacks is the Department's most important civil support objective.[45] This designation is reflected in DOD's effort to ensure that appropriate units and force packages are available for the CBRNE domestic consequence management mission. The U.S. military organizes, trains, and equips forces primarily to conduct combat operations and considers the capability to conduct civil support missions inherent within its combat capabilities.[46] CBRNE-CM generally follows this policy, but does employ some dedicated civil support units.

DOD's CBRNE consequence management units have been established throughout the country and continue to be made more robust. They consist of JTF-CS and *55* National Guard WMD-CSTs.[47]

- NORTHCOM's **Joint Task Force Civil Support (JTF-CS)** is a standing joint task force, staffed by 160 personnel and commanded by a two-star Army National Guard general in Title 10 status, that plans and integrates DOD support for domestic CBRNE consequence management.[48] In the event of a domestic CBRNE incident, JTF-CS will deploy to the incident site to exercise command and control over federal military forces.[49]
- **National Guard Weapons of Mass Destruction Civil Support Teams (WMD-CSTs)** are 22-member National Guard units operating in Title 32 status. WMD-CSTs are tasked with identifying CBRNE agents or substances, assessing the consequences of the event,

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41 Joint Chiefs of Staff, "Chemical, Biological, Radiological, Nuclear, and High-Yield Explosives Consequence Management," Joint Publication 3-41, October 2, 2006, p. I-2.

42 Joint Chiefs of Staff, "CBRNE Consequence Management," pp. I-10 to I-11.

43 *Strategy for Homeland Defense and Civil Support,* p. 31. Some CBRNE incidents may not qualify as major disasters or catastrophes and will thus be able to be handled by state and local authorities; for those that do qualify, DHS, with DOD assistance, can be expected to lead the response (Peter Verga, Acting Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs, Department of Defense, prepared statement before the Senate Committee on Homeland Security and Governmental Affairs, Hearing on the Military's Role in Disaster Response, 110th Cong., 1st sess., July 19, 2007, p. 2).

44 National Guard Bureau, Office of Legislative Liaison, "National Guard Equipment Requirements: 'Essential 10' Equipment Requirements for the Global War on Terror," March 16, 2006.

45 *Strategy for Homeland Defense and Civil Support,* pp. 18–19.

46 Joint Chiefs of Staff, "Homeland Security," p. IV-2.

47 *Strategy for Homeland Defense and Civil Support* (2005), pp. 31–32; Assistant Secretary Verga, prepared statement, p. 3.

48 "Mission of JTF-CS," Joint Task Force Civil Support Web site (www.jtfcs.northcom.mil/pages/mission.html); Wormuth et al., *The Future of the National Guard and Reserves,* p. 70.

49 Assistant Secretary Verga, prepared statement, pp. 4–5.

advising on response measures, and assisting with requests for state and federal support. Congress has authorized 55 WMD-CSTs—one for every state and territory.[50]

There are also force packages and dual-missioned units manned, trained, and equipped for CBRNE-CM. These include the CERFPs, the CCMRFs, and the CBIRF.[51]

- **National Guard CBRNE Enhanced Response Force Packages (CERFPs)** are National Guard force packages created to assist local, state, and federal authorities in CBRNE consequence management and to fill the anticipated 6- to 72-hour gap between the first response and the federal response to a catastrophic incident. CERFPs combine four elements from existing National Guard units: search and extraction, decontamination, medical, and command and control.[52] They operate in state or Title 32 status, but may be federalized under "extraordinary circumstances." There are 17 CERFPs, 12 of which are assigned to the 10 FEMA regions.[53]
- **CBRNE Consequence Management Response Forces (CCMRFs)** are three Title 10 force packages consisting of several thousand joint personnel from separate units identified and organized to perform CBRNE consequence management missions, with capabilities including medical, decontamination, communications, logistics, transportation, and public affairs.[54] The National Guard is currently designated to provide much of the manpower associated with the CCMRFs.[55]
- **Explosive Ordinance Disposal Teams** are Title 10 forces able to neutralize unexploded explosive devices such as improvised explosive devices (IEDs) and CBRNE weapons.[56] These units often make up parts of the CCMRFs.
- **U.S. Army Technical Escort Units** are Title 10 forces that specialize in removing, storing, and neutralizing ordinance, "chemical, biological, and other hazardous material."[57] Some of these units make up parts of the CCMRFs.
- **U.S. Marine Corps Chemical-Biological Incident Response Force (CBIRF)** is a Title 10 unit consisting of several hundred personnel capable of "providing capabilities for agent detection and identification, casualty search and rescue, personnel decontamination, emergency medical care, and stabilization of contaminated personnel."[58]

The remainder of the military can be used to provide support in a national crisis when called on. These forces are organized for combat, but many are deployable and would constitute a vital asset if a CBRNE incident should take place on the homeland.[59]

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50 Assistant Secretary Verga, prepared statement, pp. 3–4.

51 Assistant Secretary Verga, prepared statement, pp. 4–6; *Strategy for Homeland Defense and Civil Support*, pp. 31–32; and William Matthews, "Over Tasked?" *National Guard*, November 2006.

52 The Honorable Paul McHale, Assistant Secretary of Defense for Homeland Defense, prepared witness statement before the CNGR, Hearing on Homeland Defense/Homeland Security, May 3, 2006 (www.cngr.gov/hearing503-4/McHale.pdf), p. 7.

53 Assistant Secretary Verga, prepared statement, p. 4.

54 General Renuart, prepared statement, p. 10; Wormuth et al., *The Future of the National Guard and Reserves*, p. 70.

55 Memorandum for the Record (MFR), Commission site visit to U.S. Northern Command, Peterson Air Force Base, CO, November 20, 2007.

56 Assistant Secretary Verga, prepared statement, p. 5.

57 Assistant Secretary Verga, prepared statement, p. 5.

58 Assistant Secretary Verga, prepared statement, p. 5.

59 *Strategy for Homeland Defense and Civil Support*, pp. 31–32.

Statement for the Record

of

Charles E. Allen
Under Secretary for Intelligence and Analysis
U.S. Department of Homeland Security

Before the

Committee on Homeland Security and Governmental Affairs
United States Senate

April 2, 2008

Chairman Lieberman, Ranking Member Collins, Members of the Committee, thank you for calling this hearing today and focusing on the vital issue of our Nation's preparedness for a nuclear terrorism attack in the United States. Within the Department's strategic goals of protecting the Nation from dangerous materials and people, one of our gravest concerns is the entry of a nuclear device or materials into the United States. Our Department's intelligence enterprise therefore, is focused on providing tailored intelligence and analysis to Department policymakers and operators to support the range of prevention, preparedness, and response activities that require intelligence.

Today I will first describe the unique role of DHS Intelligence and how we support our customers on nuclear terrorism matters and ensure that this threat information is properly utilized by our Federal, State, local, and private sector partners. I then will provide the Department of Homeland Security's assessment of the nuclear terrorist threat facing the United States today.

DHS Intelligence

The mission of DHS' Office of Intelligence and Analysis (I&A) is to provide homeland security intelligence to the Secretary, our operating components and headquarters offices as well as our State, local, tribal, and private sector partners. I&A, a member of the Intelligence Community, ensures that any information related to protecting the homeland is collected, processed, analyzed, and disseminated to the full spectrum of domestic customers. It provides threat warning, estimative, and alternative analysis. In addition, it also provides intelligence support to infrastructure protection and vulnerability studies. I&A works closely with DHS component intelligence organizations to ensure non-traditional streams of domestic information are fused with traditional sources of information from other members of the Intelligence Community to give a complete picture of potential threats to the nation.

Collaboration with the Nuclear Intelligence Community

As a member of the Intelligence Community, DHS has an important role to play on nuclear terrorism issues, but we cannot do it alone. Our colleagues who focus on foreign nuclear intelligence—especially the Department of Energy's Office of Intelligence and Counterintelligence, the National Counterterrorism Center, and the Central Intelligence Agency—provide us with the basis to conduct Homeland-specific assessments of nuclear terrorism matters. We work with our partners to understand issues such as global nuclear materials smuggling, nuclear weapons and material security, and terrorist nuclear plots, among others.

My office produces timely threat information to our customers about:

- Materials: analysis of characteristics of nuclear materials and devices of concern; their accessibility, security, and distribution worldwide; and our ability to identify and detect them;

- People: analysis of motivation and operational intent of terrorists seeking a nuclear device; behavior and nexus between state actors and terrorist groups, smugglers, illicit traffickers and individuals who may play a technical or operational role in nuclear device development and delivery; and

- Capability/Tactics: analysis of the technical feasibility of nuclear attacks on the Homeland based on expertise and operational tactics of extremist groups, and the ability to develop, transport, and use a nuclear device inside the United States.

I&A also sponsors specialized technical analysis at the Department of Energy's National Laboratories on topics such as technical requirements for an improvised nuclear device, potential terrorist nuclear targets, and terrorist command and control of nuclear devices. Additionally, DHS' Nuclear Assessment Program, managed by the Domestic Nuclear Detection Office (DNDO), provides rapid assessments of illicit nuclear trafficking events and assesses the credibility of communicated nuclear threats, which are provided to the diplomatic, intelligence, and law enforcement communities.

I&A represents the Department in a number of Intelligence Community forums on nuclear terrorism and ensures that Homeland equities are addressed. It participates in the DNI's Joint Atomic Energy Intelligence Committee—the National Intelligence Council technical analysis and production element—as well as the Interagency Nuclear Materials Information Program, which consolidates information on worldwide nuclear material holdings and security status.

Intelligence Support to Homeland Security Policy, Programs, and Operations

I&A's primary Departmental customer for nuclear intelligence is the DNDO. DNDO, in partnership with DOE and other agencies, is responsible for the development of the Global Nuclear Detection Architecture (GNDA) and implementation of the domestic portion of that architecture as well as integrating U.S. Government efforts on technical nuclear forensics—two activities that require tailored intelligence support.

I&A works with our Intelligence Community colleagues to provide the threat-basis for the GNDA by collecting and analyzing all intelligence reporting on terrorist nuclear efforts, including aspects of materials sought, types of devices considered, methods for entry into the United States, command and control issues, and required expertise. DNDO uses this information in the context of known vulnerabilities, and provides expert judgment and assessments to prioritize the type and location of detectors in the GNDA. Although our information, by definition, is always incomplete and is dynamic, we are able to provide the best judgment of the Intelligence Community to inform this high-priority Departmental program and ensure decisions and investments are made consistent with the assessed threat.

I&A also is the Departmental lead in nuclear event attribution and ensures that, after a nuclear event, all available technical nuclear forensics information, intelligence,

and DHS law enforcement/operational information is brought to bear on the interagency attribution assessment process.

Beyond DNDO, I&A supports Departmental components on nuclear-related threat programs. It leads an Intelligence Community senior working group to provide the threat and intelligence input to the Science and Technology Directorate's biannual integrated Chemical, Biological, and Radiological/Nuclear risk assessment. This assessment—mandated by Homeland Security Presidential Directive 18— integrates the findings of the intelligence and law enforcement communities with input from the scientific, medical, and public health communities. One component of this integrated assessment evaluates the probability and consequences of nuclear and radiological attacks to prioritize the development and acquisition of countermeasures to such attacks across the U.S. Government. I&A supports this process by assembling senior intelligence analysts from CIA, DoD, DOE, FBI, DOS, and NCTC who follow radiological and nuclear terrorism and eliciting their expert judgments for use in the risk models.

Although unrelated to a nuclear device, DHS is concerned about threats to nuclear power plants in the United States that could result in large-scale radiation exposure. Therefore, I&A's Critical Infrastructure Threat Analysis Division works with the Department of Energy, Nuclear Regulatory Commission, and the private sector to assess suspicious activity at nuclear sites, evaluate and mitigate vulnerabilities, and provide threat warning information to these partners.

I&A also is responsible for ensuring that DHS' preparedness and response planners have an appropriate understanding of the nuclear terrorist threat. It is important for these planners and response officials to understand that there is a range of yields and impacts that can be caused by a nuclear device—from a fizzle to significant yield. Based on our understanding of adversary capabilities, we ensure that the range of planning scenarios is commensurate with threat assessments. Using I&A-provided intelligence and threat input, the Office of Health Affairs assesses medical impacts which inform strategic and operational planning activities for DHS. The Federal Emergency Management Agency's Deputy Administrator for National Preparedness uses I&A input to develop its strategic response guidance and incident management plans under the National Response Framework.

Intelligence Support to State, Local, and Tribal Partners

DHS has a lead role in providing threat information, situational awareness, and context on nuclear threats to our State, local, tribal and private sector partners. Given the technical nature of nuclear devices and the broad customer base, DHS is providing baseline information on how a field officer might identify components of a nuclear device, differentiate radiological from nuclear devices, training on the potential effects of a nuclear device, and ensuring that our partners understand the range of impacts from a nuclear device. DHS provides this information via unclassified and classified products, as well as secure video teleconferences and in-person threat briefings at State and Local Fusion Centers.

The Nuclear Terrorism Threat to the Homeland

Although we have an understanding of terrorist's intent to acquire nuclear weapons, we are less certain about terrorists' capability to acquire or develop a nuclear device. Substantial intent to develop weapons of mass destruction is well documented in the media. Through publicly released recordings, interviews, and Internet postings, some terrorists have told us that they are interested in such weapons.

- Usama bin Laden in a 1999 interview discussed his religious duty to acquire chemical and nuclear weapons. Also, in 2003, extremist cleric Nasir bin Hamd al-Fahd issued a *fatwa* in which he declares that Islamic law permits the use of weapons of mass destruction for jihad.

As you can appreciate however, there are non-trivial challenges to developing a nuclear device—primarily the acquisition of sufficient weapons-usable nuclear material. This is the biggest obstacle; without sufficient amounts of weapons-usable nuclear material, a terrorist cannot develop a nuclear weapon. Additional obstacles include devising a feasible nuclear design, device fabrication, and avoiding detection during delivery to target. However, the acquisition of material remains the biggest challenge. If a terrorist group obtains sufficient quantity and quality of nuclear material, the challenges of developing a nuclear device would be extraordinarily complex but not be insurmountable. Therefore, securing nuclear material and combating smuggling of weapons-usable nuclear materials is critical to preventing terrorists from acquiring a nuclear device. Protecting weapons-usable nuclear material worldwide is one of the best actions to protect the Homeland. However, we need to ensure that we have a layered defense against the potential threat, since we cannot guarantee success across any one layer of the GNDA.

Theft and smuggling of nuclear material is of deep concern as the International Atomic Energy Agency (IAEA) has documented 15 incidents of theft and smuggling of small amounts of separated plutonium or highly enriched uranium confirmed by the nations involved. To date, most cases involve traffickers with materials or access to materials, but no identified buyers. Moreover, in some of these cases the traffickers' attempts to find buyers caught the attention of authorities, leading to the detection and recovery of the material. This suggests, however, that an organized trafficker with access to both materials and qualified buyers might escape detection.

With respect to nuclear design, terrorist training documents and materials posted on the Internet do not demonstrate a sophisticated or detailed understanding of nuclear principles and technologies. This information is crude and demonstrates a lack of understanding of physics, chemistry, and other fields relevant to nuclear device design. However, any viable terrorist nuclear capability likely would be held tightly among a very select group of key operatives, and may not be advertised. Based on this information, I do not believe that any terrorist organization currently has developed a nuclear device.

I recognize, however, that the terrorist threat is dynamic and constantly evolving. A terrorist's capability to develop a nuclear weapon could change drastically with the successful recruitment of people with knowledge of nuclear materials and designs. In what may be recognition of the need for skilled technicians, al-Qa'ida-in-Iraq leader Abu Ayyub al-Masri issued a public call in September 2006 for "people of distinguished skills and high levels of expertise... particularly... nuclear scientists and explosives engineers" to work with al-Qa'ida-in-Iraq.

If a terrorist eventually develops a nuclear device, I should note that it probably will look quite different from so-called "stockpile" nuclear weapons developed by countries such as the United States or Russia. Such weapons are often manufactured in quantity and designed to sit for long periods of time in stockpiles; however, an improvised nuclear device will lack the sophistication of a state-developed weapon, might be produced one at a time, with simple or no safety or controls. In addition, unlike a state nuclear weapon, a terrorist device may not have a known nuclear yield.

This is not to say that such a device should be considered less of a weapon of mass destruction. A nuclear device of any yield could produce thousands of casualties, significant damage to the infrastructure, and render large areas uninhabitable, at least in the near term, because of radiation contamination. It would, moreover, cause major psychological damage to our Nation.

In addition, we are also watching with close attention the growing influence of nuclear energy across the globe. While most of the programs are focused on developing nuclear energy for peaceful means, we also know of the potential for the technology or material to be used for nefarious means or acquired by terrorists.

Conclusion

The Department of Homeland Security, working closely with our Intelligence Community colleagues, is making progress in countering the threat of nuclear terrorism. DHS Intelligence will continue to provide actionable and tailored assessments to ensure that Departmental operations—especially border detection—are prepared to counter the threat of a nuclear device entering the United States. We also will remain vigilant in working with State, local, tribal and private sector partners to ensure they maintain situational awareness and have the necessary information to recognize and thwart nuclear-related activity in the Homeland.

Thank you. I would be happy to answer any questions you may have for me at this time.

STATEMENT OF

ROLF MOWATT-LARSSEN

DIRECTOR OF THE OFFICE OF INTELLIGENCE AND COUNTERINTELLIGENCE

UNITED STATES DEPARTMENT OF ENERGY

BEFORE THE

HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS COMMITTEE

UNITED STATES SENATE

APRIL 2, 2008

Chairman Lieberman, Ranking Member Collins, distinguished members of the committee, thank you for the invitation to appear before you on a subject of critical importance: "The Threat of Nuclear Terrorism." I am addressing you today as the Director of the Department of Energy's (DOE) Office of Intelligence and Counterintelligence.

The 20th century was defined by a nuclear arms race between states but it is the view of the Department of Energy's Office of Intelligence and Counterintelligence that the 21st century will be defined first by the desire and then by the ability of non-states to procure or develop crude nuclear weapons. In the early years of the 21st century, we will likely be tested in our ability to prevent non-state efforts to develop and detonate a nuclear weapon.

Prior to the attacks of 9/11, we had only limited information on al-Qa'ida's long term strategic plan, and it was not clear at that time that al-Qa'ida had serious nuclear ambitions. The threat of non-state use of a nuclear weapon was viewed by the intelligence community in the context of the non-governmental organization Umma Tameer-e-Nau, which was run by two nuclear scientists, and where it could have intersected with al-Qa'ida or the now-dismantled nuclear technology network built by A.Q. Khan.

The intelligence community prior to 9/11 remained concerned about the security of former Soviet nuclear weapons and nuclear materials, but there was no coherent look at the idea of terrorist use of weapons of mass destruction. Many people in the intelligence community believed that it was too hard for terrorists to develop a nuclear bomb. There was an assumption within the intelligence community that nuclear material was too hard to acquire and that even if they had material, nuclear weapons are too sophisticated to be built without an industrial complex supporting the effort.

We should not, however, assume that the technology of a nuclear weapon is beyond the capability of a terrorist group. There are several differences between a state nuclear weapons program and one that a terrorist group might pursue. A state would want a regular supply of uranium or plutonium that it controls. A state would want a reliable weapon that would detonate only where and when the state chooses. A terrorist group does not need the kind of surety and consistency that a state desires. A terrorist group needs only to produce a nuclear yield once to change history.

The post - 9/11 successes against the Taliban in Afghanistan yielded volumes of information that completely changed our view of al-Qa'ida's nuclear program. We learned that al-Qa'ida wants weapons to use, not a program to sustain and build a stockpile, as most states would. The nuclear threats that surfaced in June 2002 and continued through the fall of 2003 demonstrated that al-Qa'ida's desire for a nuclear capability may have survived their removal from their Afghanistan safehaven.

Today, al-Qa'ida's nuclear intent remains clear. Al-Qa'ida obtained a fatwa in May 2003 that approved of the use of weapons of mass destruction. Al-Qa'ida spokesman Suleyman abu Ghayth said in 2003 that it is al-Qa'ida's right to kill 4 million Americans in retaliation for Muslim deaths that al-Qa'ida blames on the United States. Usama bin Laden said in 1998 that it was an Islamic duty to acquire weapons of mass destruction. In 2006, bin Laden reiterated his statement that al-Qa'ida will return to the United States. Al-Qa'ida has a track record of returning to finish the job they started. They failed at the World Trade Center in 1993. They came back in 2001. Al-Qa'ida canceled plans for chemical attacks in the United States in 2003. We do not yet know when and where they intend to strike us next, but past experience strongly suggests that they are seeking an attack more spectacular than 9/11.

At any given moment, al-Qa'ida probably has attack plans in development. 9/11 was being planned when the USS Cole was attacked in Yemen and when our embassies in Dar es Salaam and Tanzania were attacked in Africa. An al-Qa'ida nuclear attack would be in the planning stages at the same time as several other plots, and only al-Qa'ida's most senior leadership will know which plot will be approved. In keeping with al-Qa'ida's normal management structures, such as the role of Khalid Shaykh Muhammad in the 9/11 attacks, there is probably a single individual in charge, overseeing the effort to obtain materials and expertise. Some experts may have joined al-Qa'ida years ago, long before the world began paying attention to the proliferation of the kinds of technology that could yield a terrorist nuclear weapon.

The 9/11 plot was operationally very straight-forward. It had a very small footprint and was highly compartmented. Al-Qa'ida's nuclear effort would be just as compartmented and probably would not require the involvement of more than the number of operatives who carried out 9/11. A prototypical al-Qa'ida nuclear attack plot would have the following components:

- Approval and oversight from al-Qa'ida's senior leadership, with possible assistance from other groups;

- The planner responsible for organizing the material, expertise, and fabrication of the device;
- The operational support facilitator, responsible for arranging travel, money, documents, food and other necessities for the cell;
- Assets in the United States or within range of other Western targets to case locations for the attack and then help move the attack team into place;
- The attack team itself.

The task for the Intelligence Community is not easy. We must find something that is tactical in size but strategic in potential impact. We must find a plot with its networks that cut across traditional lines of counterterrorism and counterproliferation. We must stop something from happening that we have never seen before. Beyond the basics I have outlined here, we do not know what a terrorist nuclear plot might look like.

There is, however, a chokepoint in a terrorist effort to develop a nuclear capability. It is impossible to build a nuclear weapon without fissile material. A state has the time and resources to build the large infrastructure required to make its own nuclear material. A terrorist group needs to steal it or buy it. Nearly every month there is a new instance of someone trying to smuggle real or purported nuclear or radioactive materials. Although many of these incidents do not involve weapons-usable nuclear materials, the continuing occurrence of incidents means that we collectively have not done enough to suppress trafficking and ensure the security of all nuclear materials worldwide.

Along with the other members of the U.S. Intelligence Community, DOE's Office of Intelligence and Counterintelligence recognizes the urgency of the nuclear terrorism threat. A terrorist organization's acquisition of an improvised nuclear device would be an event of unprecedented significance. It would give them a weapon genuinely capable of producing mass casualties. Our office has made preventing nuclear terrorism our top priority and we have reallocated resources to increase support for our key nuclear counterterrorism initiatives.

On August 28, 2006, the national-level Nuclear Materials Information Program (NMIP) was established via National and Homeland Security Presidential Directive (NSPD-48/HSPD-17). NMIP is an interagency effort managed by the Department of Energy's Office of Intelligence and Counterintelligence, in close coordination with the Departments of State, Defense, Homeland Security, Justice, the Nuclear Regulatory Commission, and agencies under the Director of National Intelligence.

While the specifics of NMIP are classified, the goal of NMIP is to consolidate information from all sources pertaining to worldwide nuclear materials holdings and their security status into an integrated and continuously updated information management system. This will help us understand the gaps in our current knowledge and ensure that such information is available to support all appropriate Federal departments' and agencies' nonproliferation, counterproliferation and counterterrorism efforts. NMIP also is developing a national registry for identifying and tracking nuclear material samples

that are held throughout the U.S. to support the information needs of the United Stated Government.

DOE's work to combat the threat of nuclear terrorism is not limited to the Office of Intelligence and Counterintelligence. Several offices within the National Nuclear Security Administration dedicate significant effort and resources to understanding the improvised nuclear device threat; to securing nuclear materials and eliminating excess stockpiles worldwide; to deterring, detecting, and interdicting illicit trafficking of nuclear materials, and should the unthinkable happen, to ensuring that we stand ready to disarm a nuclear device, manage the consequences of an event, and to conduct forensic analysis to identify those responsible.

Working through the Nuclear Counterterrorism Division in the Office of Emergency Operations, DOE uses its nuclear weapons expertise to understand possible technical paths a terrorist group might pursue. This technical analysis supports DOE's intelligence assessments, nuclear detector development, security enhancements at nuclear facilities, and nuclear render-safe operations.

One of the largest programs in the National Nuclear Security Administration's Office of Defense Nuclear Nonproliferation, the Material Protection, Control, and Accounting (MPC&A) program, works to upgrade security at nuclear sites, particularly those in Russia and other states of the Former Soviet Union (FSU). In line with our view that preventing terrorist access to nuclear materials remains the most effective way of preventing nuclear terrorism, we continue to give very high priority to these efforts to bolster nuclear security. Throughout its nearly 15 year history, the MPC&A program worked with Russian and other FSU counterparts to secure nuclear material through upgrades to physical protection as well as material accounting methods. In addition to work at 50 nuclear material sites in Russia and other FSU countries, DOE has also helped upgrade security at all 39 Russian Navy sites, all 25 Strategic Rocket Forces Nuclear Weapons sites, and has begun upgrading nine 12th Main Directorate nuclear weapons sites. Work to secure nuclear material was accelerated after 9/11, and in 2005, the United States and Russia agreed under their Bratislava initiative to further accelerate those efforts. Work is complete on 85 percent of the Bratislava sites, and is underway at the balance of those sites, to be completed by the end of 2008.

In 2004, the National Nuclear Security Administration began the Global Threat Reduction Initiative to accelerate efforts to address the dangers posed by nuclear and radiological materials located at civilian sites worldwide through conversion of research reactors from highly enriched uranium to low enriched fuel, removal of excess nuclear and radiological materials, and protection of at-risk nuclear and radiological materials from theft and sabotage.

Other efforts focus on bolstering border security overseas through the Second Line of Defense program, which installs radiation detection equipment at fixed borders on land, sea, and in airports as well as equips major shipment ports with detection equipment via the Megaports Initiative. SLD and Megaports also are training border guards and

customs officials to use this equipment. These efforts build upon a necessary solid foundation of strong policies and best practices worldwide to prevent nuclear proliferation. We are working with foreign government partners to strengthen standards for physical protection of nuclear material and nuclear facilities, with the Nuclear Suppliers Group to strengthen export controls, and with the International Atomic Energy Agency to strengthen safeguards on nuclear material worldwide. NNSA's International Nonproliferation Export Control Program conducts additional training in dual-use commodity identification to further enhance our efforts in this area. Various parts of NNSA also play key roles in international efforts and contribute to the Proliferation Security Initiative and the Global Initiative to Combat Nuclear Terrorism.

In closing, we must get nuclear materials off the black market and take every possible step to stop global trafficking in these materials. It must be a global effort incorporating police, intelligence services, militaries, government agencies and ministries, and dedicated citizens across the world. In addition, we need broad information sharing across every front—between government and private sector, and among foreign partners, including those who previously were our adversaries. Al-Qa'ida thinks and plans dynamically and they rarely follow straight-forward, linear paths to their targets. We need to be just as flexible and dynamic in our efforts to stop them.

Thank you. I would be pleased to answer any questions that you may have.

THE RISK OF NUCLEAR TERRORISM – AND NEXT STEPS TO REDUCE THE DANGER

TESTIMONY OF
MATTHEW BUNN
FOR THE
COMMITTEE ON HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

APRIL 2, 2008

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE: It is an honor to be here today to talk about what I believe is among the most urgent threats to America's security – the threat of nuclear terrorism. My message to you today is simple: the danger is real, but there are specific steps we can and must take that would greatly reduce the risk.

The Lessons of Pelindaba

On the night of November 8, 2007, two teams of armed men attacked the Pelindaba nuclear facility in South Africa, where hundreds of kilograms of weapon-grade highly enriched uranium (HEU) are stored. While one of the teams was chased off by site security forces, the other team of four armed men disabled the detection systems at the site perimeter, entered without setting off any alarm, and went to the emergency control center and shot a worker there in the chest. He then raised an alarm for the first time. This team spent 45 minutes inside the secured perimeter without ever being engaged by site security forces, and then disappeared through the same hole they had cut in the fence. No one on either team was shot or captured. South African officials later arrested three individuals, but soon released them without charge.[1] The South African government has not released important details of its investigation of the attack and refused earlier U.S. offers to remove the HEU at Pelindaba or to help improve security at the facility.

While we do not know that these attackers were after the HEU, this incident is nevertheless a potent reminder that inadequately secured nuclear material is a global problem, not one limited to the former Soviet Union. It is also a reminder that political heavy lifting will be needed to overcome the obstacles to sensitive nuclear security cooperation around the world. We urgently need a global campaign to ensure that every nuclear weapon and every cache of potential nuclear bomb material worldwide is secured against the kinds of threats terrorists and criminals have demonstrated they can pose – including two teams of armed attackers, possibly with cooperation from an insider.

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[1] Micah Zenko, "A Nuclear Site is Breached: South African Attack Should Sound Alarms," *Washington Post,* 20 December 2007. See also Rob Adam, "Media Briefing: Security Breach at Necsa on 08 November 2007," Nuclear Energy Corporation of South Africa, 13 November 2007; Graeme Hosken, "Officer Shot as Gunmen Attack Pelindaba," *Pretoria News,* 9 November 2007; Hosken, "Two Gangs of Armed Men Breach Pelindaba Nuclear Facility," *Pretoria News,* 14 November 2007; Joel Avni, Gertrude Makhafola, and Sibongile Mashaba, "Raid on Site Planned," *The Sowetan,* 14 November 2007.

Nuclear Terrorism Risks: The Bad News

Several basic questions can give us an understanding of the risk of nuclear terrorism.

Do terrorists want nuclear weapons? For a small set of terrorists, the answer is clearly "yes." Osama bin Laden has called the acquisition of nuclear weapons or other weapons of mass destruction a "religious duty."[2] Al Qaeda operatives have made repeated attempts to buy nuclear material for a nuclear bomb, or to recruit nuclear expertise – including the two extremist Pakistani nuclear weapon scientists who met with bin Laden and Ayman al-Zawahiri to discuss nuclear weapons. Before al Qaeda, the Japanese terror cult Aum Shinrikyo also made a concerted effort to get nuclear weapons. With at least two groups going down this path in the last 15 years, we must expect that others will in the future.

Is it plausible that a sophisticated terrorist group could make a crude nuclear bomb if they got HEU or separated plutonium? The answer here is also "yes." Making at least a crude nuclear bomb might well be within the capabilities of a sophisticated group, though a nuclear bomb effort would be the most technically challenging operation any terrorist group has ever accomplished. One study by the now-defunct congressional Office of Technology Assessment summarized the threat: "A small group of people, none of whom have ever had access to the classified literature, could possibly design and build a crude nuclear explosive device... Only modest machine-shop facilities that could be contracted for without arousing suspicion would be required."[3] Indeed, even before the revelations from Afghanistan, U.S. intelligence concluded that "fabrication of at least a 'crude' nuclear device was within al-Qa'ida's capabilities, if it could obtain fissile material."[4]

A terrorist cell of relatively modest size, with no large fixed facilities that would draw attention, might well be able to pull off such an effort – and the world might never know until it was too late.[5]

Could a terrorist group plausibly get the material needed for a nuclear bomb? Unfortunately, the answer here is also "yes." Nuclear weapons or their essential ingredients exist in hundreds of buildings in dozens of countries, with security measures that range from excellent to appalling – in some cases, no more than a night watchman and a chain-link fence. No specific and binding global standards for how these stockpiles should be secured exist.

Remarkably, another thing that does not exist is a comprehensive, prioritized list of which nuclear stockpiles around the world pose the highest risks of nuclear theft – though the Nuclear

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[2] Rahimullah Yusufzai, "Interview with Bin Laden: World's Most Wanted Terrorist" (ABC News, 1999; available at http://www.islamistwatch.org/blogger/localstories/05-06-03/ABCInterview.html as of 27 March 2008).

[3] U.S. Congress, Office of Technology Assessment, *Nuclear Proliferation and Safeguards* (Washington, D.C.: OTA, 1977; available at http://www.princeton.edu/~ota/disk3/1977/7705/7705.PDF as of 27 March 2008), p. 140.

[4] Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, *Report to the President* (Washington, D.C.: WMD Commission, 2005; available at http://www.wmd.gov/report/ as of 28 March 2008), p. 276.

[5] For discussions of official assessments of the complexity of the operation and the number of people required, see Matthew Bunn and Anthony Wier, "Terrorist Nuclear Weapon Construction: How Difficult?" *Annals of the American Academy of Political and Social Science* 607 (September 2006). For a particular scenario involving a cell of 19 people working for roughly a year (probably more than is actually required for some types of crude bomb), see Peter D. Zimmerman and Jeffrey G. Lewis, "The Bomb in the Backyard," *Foreign Policy*, no. 157 (November/December 2006), pp. 32-39.

Material Information Program (NMIP), led by one of your earlier witnesses, Rolf Mowatt-Larsen, is working to create one. Based on the information we do have in the public domain, I believe the highest risks of nuclear theft today are in the former Soviet Union, in Pakistan, and at HEU-fueled research reactors around the world.

Nuclear security in Russia and the former Soviet Union has improved dramatically in the past 15 years; at many sites, the difference between the security in place today and the security in place in 1994 is like night and day. But Russia has the world's largest stockpiles of nuclear weapons and materials, scattered in the world's largest number of buildings and bunkers; some serious security weaknesses still remain, ranging from poorly trained, sometimes suicidal guards to gross under-funding of nuclear security; and the upgraded security systems must face huge threats, from insider theft conspiracies which are cropping up everywhere in Russia to large-scale outsider attacks. Within Russia, terrorist reconnaissance teams have been scoping secret nuclear weapon storage sites; a Russian businessman has been offering $750,000 for stolen weapon-grade plutonium; and the Beslan school massacre reconfirms the terrorists' ability to strike in force, without warning or mercy. As just one indicator of the insider threat, in 2006 President Putin fired Major General Sergey Shlyapuzhnikov, deputy chairman of the section of the MVD responsible for guarding the closed nuclear cities and other close territories, because (according to the Russian state newspaper), he was helping to organize smuggling in and out of these closed territories – in particular, giving out passes that allowed people to go in and out without being checked.[6]

Pakistan's nuclear stockpile is small, stored at a small number of sites, and is thought to be heavily guarded, with substantial security upgrades in recent years, in part with U.S. help. The recent unrest in Pakistan does not appear to have substantially increased the risks of theft, as it does not appear to have undermined the cohesion of the military and the security services. But Pakistani security systems face immense threats, from nuclear insiders with a demonstrated willingness to sell practically anything to practically anybody to armed attack potentially by scores or hundreds of jihadis. In at least two cases, serving Pakistani military officers working with al Qaeda came within a hair's breadth of assassinating Musharraf; if the military officers guarding the President cannot be trusted, how much confidence can we have in the military officers guarding the nuclear weapons?

HEU-fueled research reactors typically have comparatively modest stockpiles of material – but they have some of the world's weakest security measures for those stocks. And it is important to remember that much of the irradiated fuel from research reactors is still HEU, and is not radioactive enough to pose any significant deterrent to theft by suicidal terrorists. Some 130 research reactors around the world still use HEU as their fuel.[7]

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[6] "The President Issued a Decree To Dismiss Deputy Chairman of the MVD Department in Charge of Law and Order in Closed Territories and Sensitive Sites, Major General Sergey Shlyapuzhnikov," *Rossiyskaya Gazeta*, 2 June 2006 [translated by Anatoly Dianov].

[7] Tons of HEU exist at research, often – though not always – in forms that would require some chemical processing to use in a bomb. But any group that could pull off the difficult job of making a nuclear bomb from HEU metal would have a good chance of mastering the simpler job of getting HEU metal out of research reactor fuel. And many of these facilities have only the most minimal security measures in place.

While these are the highest-risk categories, virtually every country where these materials exist – including the United States – has more to do to ensure that these stocks are effectively protected against the kinds of threats that terrorists and criminals have shown they can pose.[8]

Theft of HEU and plutonium is not a hypothetical worry, it is an ongoing reality. Most recently, in February 2006, Russian citizen Oleg Khinsagov was arrested in Georgia (along with three Georgian accomplices) with some 100 grams of 89% enriched HEU, claiming that he had kilograms more available for sale.[9] What we do not know, of course, is how many thefts may have occurred that were never detected; it is a sobering fact that nearly all of the stolen HEU and plutonium that has been seized over the years had never been missed before it was seized. [10]

The amounts required for a bomb are small. The Nagasaki bomb included some 6 kilograms of plutonium, which would fit easily in a soda can. A similar HEU bomb would require three times as much.[11] For a simpler but less-efficient gun-type design, roughly 50

[8] For an overview of security for nuclear weapons and materials around the world, see Matthew Bunn, *Securing the Bomb 2007* (Cambridge, Mass.: Project on Managing the Atom, Harvard University, and Nuclear Threat Initiative, 2007; available at http://www.nti.org/securingthebomb as of 28 March 2008).

[9] For a useful summary of this case, see Elena Sokova, William C. Potter, and Cristina Chuen, "Recent Weapons Grade Uranium Smuggling Case: Nuclear Materials Are Still on the Loose" (Monterey, Calif.: Center for Nonproliferation Studies, Monterey Institute of International Studies, 26 January 2007; available at http://cns.miis.edu/pubs/week/070126.htm as of 28 March 2008). For the International Atomic Energy Agency's most recent list of incidents confirmed by the states concerned, see *Incidents Involving HEU and Pu Confirmed to the ITDB, 1993-2006* (Vienna: IAEA, 2007, available as of 28 March 2008 at http://www.iaea.org/NewsCenter/Focus/NuclearSecurity/pdf/heu-pu_1993-2006.pdf). There are 18 total incidents on this list, but three of them appear to involve inadvertent losses rather than thefts. Some incidents that were previously on the list have been removed: one plutonium incident involved such a small amount of material it was reclassified as a radioactive source incident, and one incident previously tracked as an HEU case was confirmed to be LEU. (Personal communication from Richard Hoskins, IAEA Office of Nuclear Security, October 2006.) Other incidents are known to have occurred – the thieves were captured, tried, and convicted – but have nevertheless not been confirmed by the states concerned.

[10] The U.S. National Intelligence Council continues to assess that "it is likely that undetected smuggling has occurred, and we are concerned about the total amount of material that could have been diverted over the last 15 years." U.S. National Intelligence Council, *Annual Report to Congress on the Safety and Security of Russian Nuclear Facilities and Military Forces* (Washington, D.C.: Central Intelligence Agency, April 2006; available at http://www.fas.org/irp/nic/russia0406.html as of 28 March 2008). Former CIA Director Porter Goss testified to Congress that sufficient material was unaccounted for that he could not provide assurances that enough material for a bomb had not already been stolen. See testimony in Select Committee on Intelligence, *Current and Projected National Security Threats to the United States*, U.S. Senate, 109th Congress, 16 February 2005 (available at http://www.fas.org/irp/congress/2005_hr/shrg109-61.pdf as of 28 March 2008). Goss was not saying that the CIA had definite information that enough material for a bomb was missing, only that the accounting uncertainties are large enough that he could not confirm that was not the case. The same is true in the United States; some two tons of U.S. plutonium, for example, enough for hundreds of nuclear bombs, is officially considered "material unaccounted for." See U.S. Department of Energy, *Plutonium: The First 50 Years: United States Plutonium Production, Acquisition, and Utilization from 1944 through 1994* (Washington, D.C.: DOE, 1996; available at http://www.fas.org/sgp/othergov/doe/pu50y.html as of 28 March 2007).

[11] The Department of Energy has officially declassified the fact that 4 kilograms of plutonium is in principle sufficient to make a nuclear weapon. U.S. Department of Energy, *Restricted Data Declassification Decisions 1946 to the Present (RDD-7)* (Washington, D.C.: DOE, 2001; available at http://www.fas.org/sgp/othergov/doe/rdd-7.html as of 27 March 2008). The amount of plutonium in the first nuclear bomb, at Trinity, was 6.1 kilograms. See Gen. Leslie R. Groves, Memorandum to the Secretary of War, 18 July 1945, reprinted as Appendix P in Martin Sherwin, *A World Destroyed* (New York: Knopf, 1975). The bare-sphere critical mass for 93% HEU metal is roughly three times the bare-sphere critical mass for delta-phase weapon-grade plutonium.

kilograms of HEU would be needed – roughly the size of a six-pack. The world stockpiles of HEU and separated plutonium are enough to make roughly 200,000 nuclear weapons;[12] a tiny fraction of one percent of these stockpiles going missing could cause a global catastrophe.

Could a terrorist group likely deliver a bomb to Washington, New York, or other major cities around the world? Here, too, unfortunately, the answer is "yes." If stolen or built abroad, a nuclear bomb might be delivered to the United States, intact or in ready-to-assemble pieces, by boat or aircraft or truck. The length of the border, the diversity of means of transport, the vast scale of legitimate traffic across national borders, and the ease of shielding the radiation from plutonium or especially from HEU all operate in favor of the terrorists. Building the overall system of legal infrastructure, intelligence, law enforcement, border and customs forces, and radiation detectors needed to find and recover stolen nuclear weapons or materials, or to interdict these as they cross national borders, is an extraordinarily difficult challenge.

What would happen if terrorists set off a nuclear bomb in a U.S. city? Here, the answers are nothing short of terrifying. A bomb with the explosive power of 10,000 tons of TNT (that is, 10 "kilotons," somewhat smaller than the bomb that obliterated Hiroshima), if set off in midtown Manhattan on a typical workday, could kill half a million people and cause roughly $1 trillion in direct economic damage.[13] Terrorists – either those who committed the attack or others – certainly claim they had more bombs already hidden in U.S. cities (whether they did nor not), and the fear that this might be true could lead to panicked evacuations of major U.S. cities, creating widespread havoc and economic disruption. If the bomb went off in Washington DC, large fractions of the federal government would be destroyed, and effective governance of the country would be very much in doubt. Devastating economic aftershocks would reverberate

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[12] The world stockpile of separated plutonium is roughly 500 metric tons (roughly half civilian and half military); the world stockpile of HEU is in the range of 1,400-2,000 tons (all but a few percent of which is military). See International Panel on Fissile Materials, *Global Fissile Material Report 2007* (Princeton: IPFM, 2007, available as of 28 March 2008 at http://www.fissilematerials.org/ipfm/site_down/gfmr07.pdf). The separated plutonium total includes both weapon-grade and reactor-grade plutonium. Reactor-grade plutonium is also weapons-usable. For a detailed unclassified official statement on this point see U.S. Department of Energy, Office of Arms Control and Nonproliferation, *Nonproliferation and Arms Control Assessment of Weapons-Usable Fissile Material Storage and Excess Plutonium Disposition Alternatives*, DOE/NN-0007 (Washington, D.C.: DOE, 1997; available at http://www.osti.gov/bridge/servlets/purl/425259-CXr7Qn/webviewable/425259.pdf as of 27 March 2008), pp. 37-39.

[13] See Matthew Bunn, Anthony Wier, and John Holdren, *Controlling Nuclear Warheads and Materials: A Report Card and Action Plan* (Cambridge, Mass., and Washington, D.C.: Project on Managing the Atom, Harvard University, and Nuclear Threat Initiative, 2003; available at http://www.nti.org/e_research/cnwm/cnwm.pdf as of 28 March 2008), pp. 15-19. This was a rough estimate based on a relatively crude analysis. A number of more detailed analyses of the effects of a terrorist nuclear weapon in a U.S. city are available, though a surprising number of them either envision a bomb going off in an area with much lower population density than mid-town Manhattan, or envision the bomb being detonated at night (when the populations at the center of most cities are far lower, but easier to get information about from the U.S. census). For a recent official government analysis of such an event in Washington D.C., see, for example, U.S. Homeland Security Council, *National Planning Scenarios: Version 20.1 Draft* (Washington, D.C.: U.S. Homeland Security Council, 2005; available at http://media.washingtonpost.com/wp-srv/nation/nationalsecurity/earlywarning/NationalPlanningScenariosApril2005.pdf as of 28 March 2008). Recent detailed non-government analyses include Ira Helfand, Lachlan Forrow, and Jaya Tiwari, "Nuclear Terrorism," *British Medical Journal* 324 (9 February 2002; available at http://www.bmj.com/cgi/reprint/324/7333/356.pdf as of 28 March 2008); Charles Meade and Roger C. Molander, *Considering the Effects of a Catastrophic Terrorist Attack* (Washington, D.C.: RAND, 2006; available at http://www.rand.org/pubs/technical_reports/2006/RAND_TR391.pdf as of 28 March 2008).

throughout the country and the world – global effects that in 2005 then-UN Secretary-General, Kofi Annan warned would push "tens of millions of people into dire poverty," creating "a second death toll throughout the developing world."[14] America and the world would be transformed forever – and not for the better.[15]

Nuclear Terrorism Risks: The Good News

Fortunately, there is good news in this story as well. First, there is no convincing evidence that any terrorist group has yet gotten a nuclear weapon or the materials needed to make one – or that al Qaeda has yet put together the expertise that would be needed to make a bomb. Indeed, there is some evidence of confusion and lack of nuclear knowledge by some senior al Qaeda operatives.[16]

Second, making and delivering even a crude nuclear bomb would be the most technically challenging and complex operation any terrorist group has ever carried out. There would be many chances for the effort to fail, and the obstacles may seem daunting even to determined terrorists, leading them to focus more of their efforts on conventional tools of terror – as al Qaeda appears to have done.[17] Both al Qaeda and Aum Shinrikyo appear to have encountered a variety of difficulties, demonstrating that getting a nuclear bomb is a difficult challenge, even for large and well-financed terrorist groups with ample technical resources.[18]

Third, the overthrow of the Taliban and the disruption of al Qaeda's old central command structure certainly reduced al Qaeda's chances of pulling off such a complex operation – though that capability may be growing again, as al Qaeda reconstitutes in the mountains of Pakistan.[19]

Fourth, nuclear security is improving. While there is a great deal yet to be done, the fact is that at scores of sites in Russia, the former Soviet Union, and elsewhere, security is dramatically better than it was fifteen years ago. Security upgrades are scheduled to be completed for most Russian nuclear warhead and nuclear material sites by the end of this calendar year. HEU is being removed from sites all around the world, permanently eliminating the risk of nuclear theft at those sites. An alphabet soup of programs and initiatives –

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[14] Kofi Annan, "A Global Strategy for Fighting Terrorism: Keynote Address to the Closing Plenary," in *The International Summit on Democracy, Terrorism and Security* (Madrid: Club de Madrid, 2005; available at http://english.safe-democracy.org/keynotes/a-global-strategy-for-fighting-terrorism.html as of 28 March 2008).

[15] For a recent meditation arguing that such an attack would lead the very notion of the sovereignty of nation-states in tatters, see Stephen D Krasner, "The Day After," *Foreign Policy*, no. 146 (January/February 2005), pp. 68-70.

[16] In particular, both Khalid Sheikh Mohammed and Abu Zubaydah are reported to have believed that uranium, which is only weakly radioactive, would be a good material for a dirty bomb – and there have been other al Qaeda operatives arrested for seeking uranium for dirty bombs as well. See discussion and sources in Matthew Bunn and Anthony Wier, with Joshua Friedman, "The Demand for Black Market Fissile Material," in *Nuclear Threat Initiative Research Library: Securing the Bomb* (Cambridge, Mass.: Project on Managing the Atom, Harvard University, and Nuclear Threat Initiative, 2005; available at http://www.nti.org/e_research/cnwm/threat/demand.asp as of 27 March 2008).

[17] For the most comprehensive available account of this argument, seeMichael Levi, *On Nuclear Terrorism* (Cambridge, Mass.: Harvard University Press, 2007).

[18] Bunn and Wier, "The Demand for Black Market Fissile Material."

[19] See, for example, discussion in Hearing of the Senate Armed Services Committee, "Annual Threat Assessment," U.S. Senate, 110th Congress, February 27, 2007 available at http://www.dni.gov/testimonies/20070227_transcript.pdf as of 28 March 2007).

Cooperative Threat Reduction (CTR), the Materials Protection, Control, and Accounting (MPC&A) program, the Global Threat Reduction Initiative (GTRI), the Global Initiative to Combat Nuclear Terrorism (GI), the International Atomic Energy Agency's Office of Nuclear Security, the Domestic Nuclear Detection Office (DNDO), and many more – are each making real contributions.[20] There can be no doubt that America and the world face a far lower risk of nuclear terrorism today than they would have had these efforts never been begun. These programs are excellent investments in U.S. and world security, deserving strong support; Americans and the world owe a substantial debt of gratitude to the dedicated U.S., Russian, and international experts who have been carrying them out. Securing the world's stockpiles of nuclear weapons and the materials needed to make them is a big job, and a complex job, but it is a doable one, as the progress already made demonstrates.

Fifth, hostile states are highly unlikely to consciously choose to provide nuclear weapons or the materials needed to make them to terrorist groups. Such a decision would mean transferring the most awesome military power the state had ever acquired to a group over which it had little control, and potentially opening the regime to overwhelming retaliation – a particularly unlikely step for dictators or oligarchs obsessed with controlling their states and maintaining power.

All of this good news comes with a crucial caveat: "as far as we know." The gaps in our knowledge remain wide. Some intelligence analysts argue that the lack of hard evidence of an extensive current al Qaeda nuclear effort simply reflects al Qaeda's success in compartmentalizing the work and keeping it secret. It is a sobering thought that a nuclear effort might not require a conspiracy larger than the one which perpetrated the 9/11 attacks and succeeded in remaining secret – and that Aum Shinrikyo was simply not on the radar of any of the world's intelligence agencies until *after* they perpetrated their nerve gas attack in the Tokyo subways.

Nuclear Terrorism: What is the Probability?

So, taking the good news with the bad, what are the chances of a terrorist nuclear attack? The short answer is that nobody knows. Former Secretary of Defense William Perry and former Assistant Secretary of Defense Graham Allison are among those who have estimated that chance at more than 50% over the next ten years.[21] In 2006, I published a mathematical model that provides a structured, step-by-step way of thinking through the problem. A set of plausible illustrative values for the input parameters resulted in a 29% 10-year probability estimate – by coincidence, the same as the median estimate of the 10-year probability of a nuclear attack on the United States in a survey of national security experts by Senator Lugar's office some years ago. Since there are large uncertainties in each of those inputs, however, the real probability could well be either higher or lower. But if these estimates are even within a factor of 3-5 of being correct, and if, as I believe, there is a large chance that such an attack would be directed at Manhattan or Washington D.C., then the danger of nuclear terrorism is high enough to have a

[20] See Bunn, *Securing the Bomb 2007*.
[21] See, for example, Graham T. Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe*, 1st ed. (New York: Times Books/Henry Holt, 2004).

significant effect on the life expectancy of everyone who lives and works in downtown Washington or midtown Manhattan.

Even a 1% chance over the next ten years would be enough to justify substantial action to reduce the risk, given the scale of the consequences. No one in their right mind would operate a nuclear power plant upwind of a major city that had a 1% chance over ten years of blowing sky-high – the risk would be understood by all to be too great. But that, in effect, is what we are doing – or worse – by managing the world's nuclear stockpiles as we do today.

Next Steps to Reduce the Risk

In my view, these facts lead to an inescapable conclusion: we must do everything within our power to ensure that *all* caches of nuclear weapons and the materials needed to make them wherever they may be in the world, are secured and accounted for, to *standards* sufficient to ensure that they are defended against the threats that terrorists and thieves have demonstrated they can pose, in ways that will *work,* and will *last.* Improving nuclear security is the one step we can take that will most reduce the overall risk of nuclear terrorism – for once a nuclear weapon or nuclear material has left the facility where it is supposed to be, it could be anywhere, and all the subsequent layers of defense are variations on looking for needles in haystacks.

All the caches

Today, security upgrades in Russia are nearing completion, and there's significant progress in Pakistan, but the promising nuclear security dialogue with China does not yet appear to have led to major improvements in nuclear security there, and India has so far rejected offers of nuclear security cooperation. U.S. programs largely ignore caches in wealthy developed countries, though some of these, too, are dangerously insecure. Under current plans, GTRI will remove only about 2 tons of what it estimates are 15.9 tons of U.S.-origin HEU abroad. While GTRI is working to convert research reactors to use proliferation-resistant low-enriched uranium (LEU), scores of HEU-fueled reactors are not covered by that effort, and there is no program to give unneeded reactors incentives to shut down (an approach which may be cheaper and quicker, especially for difficult-to-convert reactors). There is currently no U.S. program to limit the production, use, and stockpiling of weapons-usable separated civilian plutonium. U.S. programs should focus on the total problem, eliminating these gaps.

In particular, we need to work with countries on drastically reducing the number of sites where nuclear weapons and the materials to make them exist, achieving higher security at lower cost. Our goal should be to remove all nuclear material from the world's most vulnerable sites and ensure effective security wherever material must remain within four years or less. Over time, the United States should seek an end to all civil use of HEU. And we should not encourage commercial reprocessing and recycling of plutonium, as proposed in the Global Nuclear Energy Partnership (GNEP); even the proposed GNEP processes that do not separate "pure plutonium" would tend to increase, rather than decreasing, nuclear theft and nuclear proliferation risks compared to not reprocessing this fuel.[22] We should also work to reduce the total stockpiles of

[22] See discussion in Matthew Bunn, "Risks of GNEP's Focus on Near-Term Reprocessing," testimony before the Committee on Energy and National Resources, U.S. Senate, 14 November 2007, available as of 28 March 2008 at

weapons and materials that must be guarded; if properly managed, serious pursuit of the steps toward a nuclear weapon free world advocated by Secretaries Shultz, Kissinger, and Perry and Senator Nunn could make a significant long-term contribution to reducing nuclear terrorism risks.[23]

While these programs must look beyond Russia to the world, Russia and the United States, with some 95% of the world's nuclear weapons and more than 80% of its stocks of weapons-usable nuclear material, clearly bear a special responsibility for nuclear security and have special experience. We should shift from a donor-recipient relationship to a true nuclear security partnership with Russia, including establishing joint teams that would help other states around the world upgrade security. The GI, co-led by the United States and Russia, is an important step in the right direction, as is President Bush's recent effort to work out a strategic framework to guide U.S.-Russian relations. But as the President and Congress consider actions which strongly affect Russian interests, from missile defense in Europe to the expansion of NATO to Russia's borders, they need to consider the potential impact on the prospects for effective nuclear security partnership as well.

Effective standards

As nuclear security is only as strong as its weakest link, the world urgently needs effective global nuclear security standards that will ensure that all nuclear weapons and weapons-usable materials are protected against the kinds of threats terrorists and criminals have shown they can pose – at a bare minimum, against two small teams of well-trained, well-armed attackers, possibly with inside help, as occurred at Pelindaba. (In some countries, protection against even more capable threats is required.) UN Security Council Resolution 1540 legally requires all countries to provide "appropriate effective" security and accounting for all their nuclear stockpiles. The time has come to build on that requirement by reaching a political-level agreement with other leading states on what the essential elements of appropriate effective security and accounting systems are, and then working to ensure that all states put those essential elements in place. Ultimately, effective security and accounting for weapons-usable nuclear material should become part of the "price of admission" for doing business in the international nuclear market.

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http://belfercenter.ksg.harvard.edu/files/bunn-GNEP-testimony-07.pdf. The radioactivity of the plutonium-bearing materials that would be recovered in proposed GNEP processes is not remotely enough to deter theft by determined terrorists. See Jungmin Kang and Frank Von Hippel, "Limited Proliferation-Resistance Benefits from Recycling Unseparated Transuranics and Lanthanides from Light-Water Reactor Spent Fuel," *Science and Global Security* 13, no. 3 (2005).

[23] See George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, "Toward a Nuclear-Free World," *Wall Street Journal,* 15 January 2008, and Matthew Bunn, "Securing Nuclear Stockpiles Worldwide," in *Reykjavik Revisited: Steps Toward a World Free of Nuclear Weapons* (Palo Alto: Hoover Institution, forthcoming). For recent discussions of steps to reduce existing stockpiles of HEU and separated plutonium, see Matthew Bunn and Anatoli Diakov, "Disposition of Excess Highly Enriched Uranium," and "Disposition of Excess Plutonium," in *Global Fissile Materials Report 2007* (Princeton, NJ: International Panel on Fissile Materials, October 2007, available as of 28 March 2008 at http://www.fissilematerials.org), pp. 24-32 and 33-42.

Security that works, and that lasts

If the upgraded security equipment the United States is helping countries put in place is all broken and unused in five years, U.S. security objectives will not be accomplished. The Department of Energy (DOE) is working closely with Russia to try to ensure that Russia puts in place the resources, incentives, and organizations needed to sustain high levels of security for the long haul, and to build security cultures that will put an end to guards patrolling without ammunition or staff propping open security doors for convenience. But there is a long row yet to hoe, and similar efforts need to be undertaken wherever nuclear weapons and the materials to make them exist. As most nuclear managers only invest in expensive security measures when the government tells them they have to, effective regulation is essential to effective and lasting security, and there is far more to do to get effective nuclear security and accounting regulations in place around the world.

Beyond nuclear security

While securing nuclear weapons and materials at their source is the most effective tool to reduce the risk, we cannot expect it to be perfect. Most of the past successes in seizing stolen nuclear material have come from conspirators informing on each other and from good police and intelligence work, not from radiation detectors. We urgently need a substantially stepped-up effort to build police and intelligence cooperation focused on stopping nuclear smuggling in countries around the world, including additional sting operations and well-publicized incentives for informers to report on such plots, to make it even more difficult for potential nuclear thieves and those who would like to buy stolen material to connect. The United States should also work with key states around the world to ensure that they put in place laws making any participation in real or attempted theft or smuggling of nuclear weapons or weapons-usable materials, or nuclear terrorism, crimes with penalties comparable to those for murder or treason.

We also need an intense international focus on stopping the other elements of a nuclear plot – the recruiting, fundraising, equipment purchases, and more that would inevitably be required. Because of the complexity of a nuclear effort, these would offer a bigger and more detectable profile than many other terrorist conspiracies. The best chances to stop such a plot lie not in exotic new detection technologies but in traditional counter-terrorism – including addressing the anti-American hatred that makes recruiting and fund-raising easier, and makes it more difficult for governments to cooperate with us.

Steps within the United States

Homeland security begins abroad – it begins wherever there is a vulnerable cache of plutonium or HEU. I encourage the committee to hold joint hearings with the Armed Services or Foreign Relations committees to explore those critical issues. But there is much more than can and should be done within the United States itself as well. The incident last year in which six nuclear weapons were flown to Barksdale without anyone knowing it makes clear that there is more to be done even with respect to nuclear weapons themselves; Secretary of Defense Gate's recent direction to carry out a detailed inventory of weapons and related materials is commendable, but it seems clear that steps to strengthen organizational security culture are also

needed.[24] We need to remember that convincing foreign countries to reduce and consolidate nuclear stockpiles, to put stringent nuclear security measures in place, or to convert their research reactors from HEU fuel to proliferation-resistant low-enriched uranium (LEU) will be far more difficult if we are not doing the same at home.

- **Converting U.S. HEU-fueled reactors and upgrading their security.** DOE should be commended for its decision, after years of delay, to provide funding to convert U.S. research reactors to LEU, and Congress should provide adequate funding for this effort and insist it moves forward as rapidly as practicable.[25] At the same time, Congress should direct the Nuclear Regulatory Commission (NRC) to phase out the exemption from most security rules for HEU that research reactors now enjoy, and provide funding for DOE to help these reactors pay the costs of effective security.[26] Congress should also insist that NRC revise its rule exempting HEU emitting more than one Sievert per hour at one meter from almost all security requirements, as recent studies make clear that this level of radiation would pose little deterrent to theft by determined terrorists.[27]
- **Providing incentives to convert HEU medical isotope production.** Congress took a step in the wrong direction, in my view, when it modified the legislation limiting U.S. exports of HEU for medical isotope production. The revised law gives producers very little incentive to focus on the goal of converting to LEU for making these isotopes. Congress should use market forces to accomplish this objective, by imposing a roughly 30% tax on all medical isotopes made with HEU, with the funds used to help producers convert to LEU. This would give producers a strong financial incentive to convert, and since the isotopes are a tiny fraction of the costs of the medical procedures that use them, would not significantly affect the costs or availability of these life-saving procedures.

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[24] For a useful discussion, see Defense Science Board Permanent Task Force on Nuclear Weapons Surety, *Report on the Unauthorized Movement of Nuclear Weapons* (Washington, DC: Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics, February 2008).

[25] U.S. Congress, Government Accountability Office, *Nuclear Nonproliferation: DOE Needs to Take Action to Further Reduce the Use of Weapons-Usable Uranium in Civilian Research Reactors*, GAO-04-807 (Washington, D.C.: GAO, 2004; available at http://www.gao.gov/new.items/d04807.pdf as of 10 July 2007).

[26] For a recent discussion of security rules at U.S. research reactors, focusing primarily on the sabotage threat, see U.S. Congress, Government Accountability Office, *Nuclear Security: Action May be Needed to Reassess the Security of NRC-Licensed Research Reactors,* GAO-08-403 (Washington, D.C.: January 2008). GTRI currently has a pilot program helping a few reactors voluntarily take security measures not required by the NRC; Congress should increase the budget for this effort, so that adequate upgrades can be made rapidly pending putting in place more stringent security rules.

[27] A recent Oak Ridge National Laboratory study concluded that a radiation level of 100 Sv/hr at one meter would be required to physically disable nuclear material thieves during the course of their theft. C.W. Coates et al., "Radiation Effects on Personnel Performance Capability and a Summary of Dose Levels for Spent Research Reactor Fuels," in *Proceedings of the 47th Annual Meeting of the Institute for Nuclear Materials Management, Nashville, Tenn., 16-20 July* (Northbrook, Ill.: INMM, 2006). An earlier Los Alamos study concluded that thieves stealing HEU fuel emitting 1 Sv/hr from a research reactor by picking it up with their bare hands and carrying it out to a waiting truck would not get a big enough dose even to make them feel immediately ill, though their long-term risk of cancer would be increased. J.J. Koelling and E.W. Barts, *Special Nuclear Material Self-Protection Criteria Investigation: Phases I and II*, vol. LA-9213-MS, NUREG/CR-2492 (Washington, D.C.: U.S. Nuclear Regulatory Commission, 1982; available at http://www.sciencemadness.org/lanl1_a/lib-www/la-pubs/00307470.pdf as of 28 March 2008).

- **Closing the DOE-NRC security gap.** Currently, while there are still security issues to be addressed at DOE,[28] DOE sites with Category I nuclear materials – the most sensitive category – are required to put in place security systems capable of protecting against a very substantial design basis threat (DBT), while NRC-regulated sites that possess identical material are required to defend against much less. These can't both be the right answer, and Congress should act to close this gap.[29] Congress should also reverse NRC's position that reactors using plutonium fuels need no more security than other reactors do.[30]
- **Security against nuclear sabotage.** In this testimony, I have focused on terrorist use of actual nuclear explosives; although this would be the most difficult type of nuclear terrorism for terrorists to accomplish, and is therefore the least probable, its consequences would be so catastrophic that I believe it poses the highest risk.[31] Nevertheless, there are strong arguments that security requirements for U.S. nuclear power plants should be more stringent than they are, given the potentially large consequences of a successful sabotage.[32] Moreover, as a "security Chernobyl" anywhere could doom prospects for global nuclear growth to help respond to climate change, the U.S. government should work to ensure that countries around the world take adequate measures to protect against catastrophic nuclear sabotage.
- **Security for radiological materials.** There are also strong arguments for more stringent security arrangements for the most dangerous radiological sources that might be used in a "dirty bomb," taking not only the potential public health and safety impact but also the likely economic disruption and cleanup costs into account. Transports of the most dangerous sources are a particular concern, and regulations should require background checks for drivers, locks and barriers that would make removal of the source very difficult, and at least one armed guard. Here, too, GTRI is helping upgrade security for a few large sources beyond regulatory requirements, but with limited funding and authority. Congress should act to ensure that some government agency has the mission and funding to help domestic licensees that may have inadequate resources and expertise with providing security for dangerous sources. Most importantly, the Department of Homeland Security and the Nuclear Regulatory Commission must work closely with users of radiation sources to promote a

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[28] For a particularly recent discussion from a critical non-government organization, for example, see Project on Government Oversight, *U.S. Nuclear Weapons Complex: Livermore Homes and Plutonium Make Bad Neighbors* (Washington, DC: POGO, 17 March 2008, available as of 28 March 2008 at http://www.pogo.org/p/homeland/ho-080317-livermore.html).

[29] See U.S. Congress, General Accounting Office, *Nuclear Security: DOE and NRC Have Different Security Requirements for Protecting Weapons-Grade Material From Terrorist Attacks,* GAO-07-1197R (Washington, DC: September 2007, available as of 28 March 2008 at http://www.gao.gov/new.items/d071197r.pdf).

[30] See discussion and sources in Matthew Bunn and Anthony Wier, *Securing the Bomb 2006* (Cambridge, Mass.: Project on Managing the Atom, Harvard University, and Nuclear Threat Initiative, 2006; available at http://www.nti.org/securingthebomb as of 28 March 2008), p. 137.

[31] For a useful discussion of the full spectrum of nuclear and radiological terrorist threats, see Charles D. Ferguson and William C. Potter, with Amy Sands, Leonard S. Spector, and Fred L. Wehling, *The Four Faces of Nuclear Terrorism*, ed. Amy Sands, Leonard S. Spector, and Fred L. Wehling (Monterey, Cal.: Center for Nonproliferation Studies, Monterey Institute of International Studies, 2004; available at http://www.nti.org/c_press/analysis_4faces.pdf as of 28 March 2008).

[32] For a recent critical assessment of NRC's rules for protecting power reactors from sabotage, see Lisbeth Gronlund, David Lochbaum, and Edwin Lyman, *Nuclear Power in a Warming World: Assessing the Risks, Addressing the Challenges* (Cambridge, MA: Union of Concerned Scientists, December 2007).

change in thinking about security and raise awareness that these materials are a potential target for terrorists.[33]

- **A strengthened nuclear forensics effort.** Congress should also act to strengthen U.S. and international efforts in nuclear forensics (the science of examining characteristics of seized nuclear material or nuclear material collected after a nuclear blast for clues to where it came from). This should include both increased funding for R&D (currently so much of the funding is staying at the Department of Homeland Security that U.S. laboratories working on forensics of seized materials have had to lay off some of their staff) and expanded efforts to put together an international database of material characteristics. Congress should understand, however, that nuclear material has no DNA that can provide an absolute match: nuclear forensics will provide a useful but limited source of information to combine with other police and intelligence information, but will rarely allow us to know where material came from by itself.[34]
- **A modified approach to cargo scanning.** Congress should act to strengthen the approach to radiation scanning of cargo containers approved last year. By requiring 100% of containers coming into the United States to be scanned (an extraordinarily difficult target to meet), offering the possibility of a waiver, and setting no requirements for the quality of the scanning or for what should be done with the information from the scans, Congress may have inadvertently created a situation where the requirement will repeatedly be waived and the scanning put in place will be of low quality and lead to little action. Congress should approve a revised approach in which 100% of the containers would have a high *chance* of being scanned; the scans were done with the best available scanning technology; and the scans would be linked to immediate further search and other action in the event of unexplained detections. This would do more to keep terrorists from using containers to smuggle nuclear weapons and materials.
- **Stopping smuggling beyond official points of entry.** The countless pathways into the United States between official points of entry – from the hundreds of kilometers of unmarked forest between the United States and Canada to the thousands of fishing boats which return from the open ocean each day and could easily have loaded something into their cargo holds while at sea – pose a major nuclear smuggling vulnerability. This vulnerability will be extraordinarily difficult to address. In these cases, radiation detection is not likely to be central to the answer: we are more likely to catch the smugglers than to detect their nuclear materials. Congress should insist that the Department of Homeland Security provide a detailed assessment of this vulnerability and options for addressing it. Congress should also mandate an independent assessment of the cost-effectiveness of large investments in radiation detection at official points of entry when intelligent adversaries have options for going around them.[35]

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[33] For a brief discussion of these radiological issues, see Matthew Bunn and Tom Bielefeld, "Reducing Nuclear and Radiological Terrorism Threats," in *Proceedings of the Institute for Nuclear Materials Management 48th Annual Meeting*, Tucson, Arizona, 8-12 July 2007 (Northbrook, IL: INMM, 2007).

[34] See Nuclear Forensics Working Group (Michael May, chair), *Nuclear Forensics: Role, State of the Art, Program Needs* (Washington, DC: American Physical Society and American Association for the Advancement of Science, February 2008).

[35] For a more optimistic view on this part of the problem, see Levi, *On Nuclear Terrorism*, pp. 87-96.

- **Improved preparedness for the aftermath of an attack.** While some steps have been taken to prepare for the ghastly aftermath of a terrorist nuclear attack, we need a comprehensive plan and approach. We need a rapid ability to assess which people are in the greatest danger and to tell them what they can do to protect themselves. We need better capabilities to communicate to everyone, when TV, radio, and cell phones in the affected area may not be functioning properly, and we need much better public communication plans for the critical minutes and hours after such an awful attack. We need to do a much better job encouraging and helping people to take simple steps to get ready for an emergency. We also need a better ability – including making use of the military's capabilities – to treat many thousands of injured people. We need much better plans to keep our government and economy functioning while taking all the steps that will be needed to prevent another attack. (In particular, Congress has not yet acted to put a plan in place for reconstituting itself should most members of Congress be killed in a nuclear attack.[36]) Many of these steps would help us respond to any catastrophe, natural or man-made, and would pay off even if our efforts to prevent a terrorist nuclear attack succeeded.[37]

Leadership and commitment

None of these steps will be easy. They cut across multiple cabinet departments, and require cooperation in highly sensitive areas with countries across the globe. They will require sustained leadership, day-in and day-out, from the highest levels of the U.S. government – and other governments. Yet today, there is no one in the U.S. government with full-time responsibility for all of the disparate efforts to prevent nuclear terrorism. Last year, Congress acted to create a senior, full-time position in the White House solely focused on weapons of mass destruction nonproliferation and terrorism. Unfortunately, President Bush has not filled this position. The president who takes office in January 2009 should appoint some one who has the president's ear whose sole responsibility will be to see that everything that must be done to prevent a nuclear terrorist attack is being done, keeping these issues on the front burner at the White House every day. Congress should finally appoint the members of the WMD Commission it created in the same legislation, so the commission can make its recommendations in time for the next President to act.

Finally, the fundamental key to the success of such a global effort is to convince political leaders and nuclear managers around the world that nuclear terrorism is a real and urgent threat to *their* countries' security, worthy of a substantial investment of their time and money. If we succeed in building that sense of urgency, they will take the needed actions; if we fail, they will not. The United States and other countries should take several steps to build the needed sense of urgency and commitment, including:

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[36] For a discussion of the importance of a Congressional ability to reconstitute after a major attack, and specific recommendations, see Continuity of Government Commission, *Preserving Our Institutions: The Continuity of Congress* (Washington: American Enterprise Institute and Brookings Institution, May 2003).

[37] For an especially useful recent discussion, see Ashton B. Carter, Michael M. May, and William J. Perry, *The Day After: Action in the 24 Hours Following a Nuclear Blast in an American City* (Cambridge, MA: Preventive Defense Project, Harvard and Stanford Universities, May 2007, available as of 28 March 2008 at http://belfercenter.ksg.harvard.edu/files/dayafterworkshopreport_may2007.pdf)

- **Joint threat briefings.** Upcoming summits with political leaders of key countries should include detailed briefings for both leaders on the nuclear terrorism threat, given jointly by U.S. experts and experts from the country concerned. These would outline both the very real possibility that terrorists could get nuclear material and make a nuclear bomb, and the global economic and political effects of a terrorist nuclear attack.
- **Nuclear terrorism exercises and war games.** The United States and other leading countries should organize a series of exercises and war games with senior policymakers from key states, with scenarios tailored to the circumstances of each country or region where the exercises take place. Participating in such a war game can reach officials emotionally in a way that briefings and policy memos cannot.
- **Fast-paced nuclear security reviews.** The United States and other leading countries should encourage leaders of key states to pick teams of security experts they trust to conduct fast-paced reviews of nuclear security in their countries, assessing whether facilities are adequately protected against a set of clearly-defined threats. (In the United States, such fast-paced reviews after major incidents such as 9/11 have often revealed a wide range of vulnerabilities that needed to be fixed.)
- **Realistic testing of nuclear security performance.** The United States and other leading countries should work with key states around the world to implement programs to conduct realistic tests of nuclear security systems' ability to defeat either insiders or outsiders. (Failures in such tests can be powerful evidence to senior policymakers that nuclear security needs improvement.)
- **Shared databases of threats and incidents.** The United States and other key countries should collaborate to create shared databases of unclassified information on actual security incidents (both at nuclear sites and at non-nuclear guarded facilities) that offer lessons for policymakers and facility managers to consider in deciding on nuclear security levels and particular threats to defend against.

Congress has a responsibility and an opportunity to exercise in-depth and informed oversight of these efforts, through hearings such as this one and legislation. Congress should give the administration the funding and authority to get the job done, while holding the administration responsible for demonstrable results. In this year in particular, Congress should focus on laying the foundation of policy and authority that will allow the next President to hit the ground running. With a sensible strategy, adequate resources, and sustained leadership, the risk of nuclear terrorism can be dramatically reduced during the next president's first term. American security demands no less.

START National Consortium for the Study of Terrorism and Responses to Terrorism

A CENTER OF EXCELLENCE OF THE U.S. DEPARTMENT OF HOMELAND SECURITY BASED AT THE UNIVERSITY OF MARYLAND

United States Senate Committee on Homeland Security and Governmental Affairs
Hearing on "Nuclear Terrorism: Assessing the Threat to the Homeland"

April 2, 2008

Testimony of Gary Anthony Ackerman, Research Director, National Consortium for the Study of Terrorism and Responses to Terrorism (START)[1]

"For man does not even know his hour: like fish caught in a fatal net, like birds seized in a snare, so are men caught in the moment of disaster when it falls upon them suddenly."

Ecclesiastes 9:12

Chairman Lieberman, Ranking Member Collins and esteemed Members of the Committee, I would like to thank you for inviting me to speak today on the threat of nuclear terrorism. While it may not currently constitute the most likely threat to U.S. security from non-state actors, the prospect of terrorists detonating a nuclear device on American soil sometime within the next quarter century is real and growing. Such a calamitous attack on the homeland would represent a "game-changing" event far exceeding the impact of 9/11 on the nation. Besides the obvious physical devastation and catastrophic loss of life, a successful act of nuclear terrorism would forever change the way the world conceives of security and undermine many of the tenets upon which our democracy is based. It would represent the apogee of individual destructive capacity, and in a sense the "consumerization" of the ultimate military power.

For thousands of years the harm potential of a single act by an individual or small group unrelated to a broader political entity was limited to the range of a sword, spear or bow.[2] The invention of gunpowder and then TNT expanded the scale of destruction to the hundreds and recently the insidious use of our own infrastructures against us on September 11, 2001 boosted the harm capacity even further. Yet at no time in human history has there been the ability for a cabal of hateful fanatics, unfettered from the constraints of a state, to destroy cities or kill hundreds of thousands in a single cataclysmic act. And this eventuality is far from a sideline in the nuclear weapons debate – a survey conducted by Senator Richard Lugar in 2005[3] and supported by recent work of

[1] I would like to thank Erin McNerney and Matthew Rhodes for their invaluable assistance in gathering materials for my testimony and also Charles Blair, Cheryl Loeb and Gary Lafree who were gracious enough to provide feedback on short notice. Nonetheless, any errors or omissions are my own. Furthermore, my statement today represents my personal opinions and not those of the National Consortium for the Study of Terrorism and Responses to Terrorism, the University of Maryland, or the U.S. Department of homeland Security.

[2] Poisoning or contamination were fairly common tactics in antediluvian warfare, but their efficacy was usually limited to a single food or water source, and even then often relied on a fair amount of luck or the assistance of pathogenic microorganisms.

[3] Richard J. Lugar, *The Lugar Survey On Proliferation Threats and Responses* (June 2005). Accessed from <http://lugar.senate.gov/reports/NPSurvey.pdf> on March 18, 2008.

my own showed that 79% of the experts who responded believed that terrorists as opposed to governments would be the most likely perpetrators if nuclear weapons were to be used before 2015. For all these reasons, we cannot afford to wait for the first nuclear terrorist attack to occur before we act against the threat, and I commend the Committee for being proactive in this regard.

While there are many dimensions of nuclear terrorism, today I will focus on the so-called "demand side" of the threat, which includes the identities, motives and capabilities of potential perpetrators of a nuclear attack. I will not delve into the vulnerability of fissile materials or the consequences of a nuclear attack, except insofar as they inform the decisions and actions of the perpetrators themselves. I will also restrict my comments to the detonation of a fission or fusion explosive in the American homeland, leaving other types of related but qualitatively different events, including radiological terrorism or the potential for terrorists to instigate inter-state nuclear war through deception, aside for the moment. Furthermore, in the interest of discouraging entrenched patterns of thinking, during the course of my remarks I will also refer to several "Black Swan" events,[4] a term used to describe those events, which although highly improbable, would have the effect of completely upsetting existing trends and expectations.

The Threat Today

When considering nuclear terrorism, the question of "why" precedes the question of "who", since only a small subset of terrorists would even consider using such devastating weapons. In order to determine who the most likely perpetrators of nuclear weapons terrorism are, we therefore need to understand the motivational incentives and disincentives for non-state actors to aequire and use nuclear weapons, a subject that has often been overshadowed by assessments of terrorist capabilities.[5] This is a complex subject that has been discussed previously by several experts in congressional testimony going back to that of Brian Jenkins in 1975. I will not engage in a lengthy discussion of basic issues of intent, but there are a few points about terrorist motivations that are worth reiterating.

1. While the kinetic and thermal effects of nuclear weapons are capable of inflicting unrivalled carnage, making nuclear bombs the consummate mass-casualty weapon, the majority of terrorist attacks are carried out for a multiplicity of motives, so one should not assume that the desire to inflict mass casualties is

[4] Nicholas Taleb, *The Black Swan: How the improbable rules the world and why we don't know it* (New York, NY: Random House, 2007).

[5] Jerrold Post maintains that, "absent a clear understanding of the adversary's intentions, the strategies and tactics developed [to counter them] are based primarily on knowledge of terrorists [sic] technological capabilities and give insufficient weight to psychological motivations" - Jerrold Post, "Prospects for Nuclear Terrorism: Psychological Motivations and Constraints" in P. Levanthal and Y. Alexander, *Preventing Nuclear Terrorism* (Lexington, MA.: Lexington Books, 1987), p. 91. Gavin Cameron has even asserted that "the real driving force behind the heightened danger of nuclear terrorism lies not with the increased opportunities for micro-proliferation, but rather with the changing nature of political violence and the psychological and organizational characteristics of terrorism itself" – Gavin Cameron, *Nuclear Terrorism: A Threat Assessment for the 21st Century* (New York: St. Martin's Press, Inc., 1999), p. 152.

necessarily the sole, or even predominant, motive for resorting to the nuclear option. Motives that can be equally important, depending on the circumstances, include: a) the inordinate psychological impact such an attack would have on the American public; b) the enormous economic, political and social instability that would follow an attack; c) the unrivalled physical destruction of our infrastructure and contamination of vital areas; and d) the state-like prestige that the perpetrators might expect to obtain from demonstrating a nuclear capability. There may also be non-instrumental reasons for using nuclear weapons, such as a fetishistic predisposition for things nuclear or radiological, or even an extreme form of defensive aggression wherein a group perceives its own imminent destruction (or that of those it purports to represent) and thus resorts to the most violent measures imaginable as a "swan song."

2. There are a number of factors that do not directly portend the use of nuclear weapons in particular, but might exacerbate any existing imperatives. For example, there is the notion that in order for a terrorist group to remain relevant to its various audiences and ensure attention for its cause, terrorist decision makers may feel compelled to outdo the destruction wrought by previous attacks. Especially in the wake of such attacks as those of September 11, 2001, these escalatory pressures imply operations of considerable magnitude. It has also been suggested that groups exhibiting certain structural characteristics might be more likely to engage in acts of violence as extreme as nuclear terrorism. Some of these allegedly pernicious traits include: control by megalomaniacal or sadistic, but nonetheless charismatic and authoritarian, leaders; isolation from the broader society, with little display of concern for outgroups; an intentional focus on recruiting technical or scientifically skilled members; and a record of innovation and excessive risk-taking.[6]

3. Besides any disincentives on the supply side that might arise from difficulties in obtaining and successfully deploying a nuclear weapon, many experts have alleged that the use of weapons as destructive and reviled as nuclear weapons would alienate the supporters and perceived constituency of any terrorist group. The argument therefore becomes: those groups motivated by religion, which are focused on cosmic as opposed to mortal concerns, would be far more willing to engage in attacks involving mass casualties and hence would be more prone to use nuclear weapons or other means of mass destruction.[7] The situation, however,

[6] These factors are drawn from a combination of Jonathan B. Tucker, "Lessons from the Case Studies," in *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons*, ed. by idem (Cambridge, MA: M.I.T., 2000), pp. 255-63; J. K. Campbell, "On Not Understanding the Problem, in Hype or Reality?: The "New Terrorism" and Mass Casualty Attacks", ed. Brad Roberts (Alexandria, VA.: Chemical and Biological Arms Control Institute, 2000) pp., 35-39; and Brian Jackson, "Technology Acquisition by Terrorist Groups," *Studies in Conflict and Terrorism*, 24:3 (2001), p. 203. Many of these factors are related to a group's capabilities for engaging in nuclear terrorism, leading to the obvious observation that, as well as motives driving capabilities, on occasion capabilities can reciprocally influence a terrorist's intentions.

[7] Bruce Hoffman, *Inside Terrorism* (New York: Columbia University, 1998), p. 94; Gavin Cameron, "WMD Terrorism in the United States," *Nonproliferation Review*, 7:1 (2000), pp. 169-70; Nadine Gurr and

is more complex. Not all religious terrorists are equally likely to pursue mass destruction—many religiously motivated terrorist organizations have political components, represent constituencies that are well-defined geographically (and thus are subject to retribution), or depend on financial or logistical support from parties whose views may not be quite as radical as their own. Moreover, it is the theological and cultural content of the particular strand of religious belief which is of greatest significance,[8] rather than the mere fact that a group has a religious bent. Ideologies most conducive to the pursuit of catastrophic violence are those that reflect an apocalyptic millenarian character, in which an irremediably corrupt world must be purged to make way for a utopian future, as well as those that simultaneously emphasize the capacity for purification from sins through sacrificial acts of violence.[9] One must bear in mind, however, that possessing an ideology with a religious or apocalyptic character may at most be a contributing factor to any desire to engage in nuclear terrorism, and is certainly not determinative.

4. On the one hand, we should all realize that what constitutes success for a state-level nuclear weapons program is not necessarily the same for non-state actors. For example, terrorists might regard a partial nuclear "fizzle" as a sufficient result for their needs, since it would still have more explosive power than almost any conceivable conventional attack. On the other hand, the possession of nuclear weapons might lead terrorists to behave more like states than we would expect, especially when their particular constellation of motives are more suited to pursuing nuclear weapons not for use, but in the hope of deterring, blackmailing or coercing their enemies.

Once we understand the motives associated with the possession and use of nuclear weapons, we can then combine these with capability factors to create a profile of the most likely perpetrators. Even if a terrorist group was to overcome the primary obstacle of obtaining an intact nuclear weapon or sufficient amounts of fissile material, they would still require substantial technical expertise, fairly large financial resources and a secure and developed logistical network to successfully deploy a nuclear weapon, capabilities possessed by only a relatively small number of groups. In fact, recent work conducted by Victor Asal, Karl Rethemeyer and me,[10] has yielded through statistical analysis the important indicator that the more highly-networked a terrorist group is (including the number and nature of its alliances with other terrorist groups), the more likely it is to pursue the use of CBRN weapons.

Benjamin Cole, *The New Face of Terrorism: Threats from Weapons of Mass Destruction* (London: I. B. Tauris, 2002).

[8] Daniel S. Gressang IV, "Audience and Message: Assessing Terrorist WMD Potential" *Terrorism and Political Violence*, 13:3 (2001), pp. 83-106.

[9] Gary A. Ackerman and Jeffrey M. Bale, *How Serious is the "WMD Terrorism" Threat?: Terrorist Motivations and Capabilities for Using Chemical, Biological, Radiological, and Nuclear (CBRN) Weapons*. Report for Los Alamos National Laboratory (2004), pp. 29-30; Cameron 1999 op. cit. p. 80-3.

[10] Victor Asal, Gary Ackerman and Karl Rethemeyer. *Connections Can Be Toxic: Terrorist Organizational Factors and the Pursuit and Use of CBRN Terrorism*. (2008). Submitted for publication.

At present, the universe of non-state actors seeking to acquire and use nuclear weapons appears to be confined to violent jihadists, a movement exemplified by the al-Qa'ida network, and one that is growing in size and scope and spawning a host of radical offshoots and followers. In a survey I recently conducted,[11] almost three-quarters of the experts polled ranked Sunni jihadists as the most likely of 13 types of actors to successfully perpetrate a catastrophic WMD attack within the next ten years. Al-Qa'ida, for one, has hardly been shy about its nuclear ambitions. Since the late 1990s, at least ten statements advocating the possession or use of nuclear weapons have emanated from this quarter, ranging from Usama Bin Ladin's 1998 announcement that the possession of nuclear weapons is a "religious duty"[12] to counter the infidels, through the lengthy 2003 fatwa by a radical Saudi cleric legitimizing the use of WMD against the West,[13] to the impassioned call by Abu Hamza al-Muhajir (Zarqawi's successor as leader of al-Qa'ida in Iraq) in October 2006 for nuclear scientists and explosives experts to join him in his jihad.[14] This has not all been bluster and propaganda – there have been at least a dozen reports of jihadist attempts to acquire nuclear weapons, fissile material or technical knowledge extending back to the early 1990s.[15] While only a handful of these have been confirmed (the most striking of which is the 2001 testimony of Jamal Ahmed al-Fadl), when taken together with the strategic and religious justifications and the production of online technical manuals, there is evidence of a prolonged and enduring interest in nuclear weapons by jihadists. As far as their capabilities are concerned, the Presidential Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction reported in March 2005 that by October 2001 the U.S. intelligence community assessed al-Qa'ida as being capable of producing at least a "crude" improvised nuclear device (IND) if it secured access to highly enriched uranium (HEU) or plutonium.[16] We should also bear in mind that there is a precedent for a small group of skilled technicians to have success once they possessed the requisite fissile material – more than 30 years ago (using 1970s technology) the South African government managed to produce a working nuclear weapon using only a few dozen personnel (if one counts those who worked on the weapon as opposed to enrichment).[17]

Although in the short-term at least, the most likely perpetrators of nuclear violence will stem from operationally sophisticated members of the Sunni or Shi'i jihadist milieu, in the longer-term, they may be joined by other groups of extremists who limn the

[11] Gary Ackerman. *Delphi Exercise on Jihadists and WMD*. Conducted January-March 2008.
[12] "Transcript of interview with Usama bin Ladin," *Time* (December 24, 1998).
[13] Nasir bin Hamd al-Fahd, *A Treatise on the Legal Status of Using Weapons of Mass Destruction Against Infidels* (May 2003), accessed from <http://www.carnegieendowment.org/static/npp/fatwa.pdf>.
[14] Middle East Media Research Institute, "Abu Hamza Al-Muhajir: American Military Bases are an Ideal Environment for Trying Out Biological and Dirty Bombs," *MEMRI Special Dispatch Series, No. 1309* (October 6, 2006).
[15] This includes four reports that al-Qa'ida actually succeeded in obtaining one or more weapons, although none of these have been corroborated and are discredited by most experts. See *Chart: Al-Qa'ida's WMD Activities*, WMD Terrorism Research Program, James Martin Center for Nonproliferation Studies (2005), accessed at <http://cns.miis.edu/pubs/other/sjm_cht.htm> on March 30, 2008.
[16] Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, *Report to the President* (Washington, DC: WMD Commission, 2005), pp. 267, 71, 92.
[17] Roy E. Horton III, "Out of (South) Africa: Pretoria's Nuclear Weapons Experience," *USAF Institute for National Security Studies, Occasional Paper #27* (August 1999).

ideological and structural arcs I have associated with nuclear terrorism, including perhaps radical right-wing groups (especially those components espousing extremist Christian beliefs),[18] or even conceivably a vengeance-seeking group representing a heavily brutalized ethnic community.

There are at least two Black Swans in this regard. The first is the appearance of an as-yet-unidentified unorthodox religious cult with apocalyptic tendencies, such as Aum Shinrikyo, the Covenant, the Sword, and the Arm of the Lord or R.I.S.E., since one can conceive of an affinity between the "the relentless impulse toward world-rejecting purification"[19] displayed by such groups and the levels of "cathartic" destruction only achievable using nuclear weapons. The trouble is that it is incredibly diffieult to proactively detect the one or two true threats amongst the literally thousands of obscure religious groups operating worldwide today. For example, take the Japanese doomsday cult Aum Shinrikyo, the only terrorist group besides al-Qa'ida about which we have concrete evidence of the pursuit of nuclear weapons. It has been stated before this committee that at the time of its March 1995 sarin attack on the Tokyo subway, its activities were completely unknown to U.S. intelligence agencies.[20] While our intelligence capabilities have undoubtedly improved since then, as non-traditional religious groups proliferate, the decreasing signal to noise ratio of the truly dangerous to the merely quirky fringe groups will continue to complicate early detection.

A second Black Swan relating to the demand side of the threat which exists today is the bugbear of opportunism. A terrorist group who would not otherwise be interested in pursuing nuclear weapons may be propelled to consider the nuclear option more seriously by happenstanee. For example, governmental collapse in a nuclear weapons state, or stumbling across a willing insider could provide increased scope for a terrorist group's procurement of intact nuclear weapons and thus might precipitate for the first time the consideration of using, or at least possessing, a nuclear device.

Evolution of the Threat

Nuelear weapons will not be the first choice (or perhaps even the twentieth) of most terrorists, and even for the few who do proceed down this path, many technical, supply-side and even strategic hurdles persist, making it easier and more 'cost effective' for terrorists to resort to alternative means. The chances of al-Qa'ida or any other terrorist group detonating a nuclear weapon on the National Mall tomorrow morning may be greater than zero, but not much greater, indeed they are far lower than almost any other type of attack our terrorist enemies could unleash. But what about next year, or in five

[18] For instance, *The Turner Diaries,* a novel written by the former leader of the National Alliance, William Pierce and which has had considerable influence on many right-wingers, describes racist "patriots" destroying cities and other targets with nuclear weapons - Andrew Macdonald [pseudonym for Pierce], *The Turner Diaries: A Novel* (Hillsboro, W.V.: National Vanguard, 1999; originally published 1980).
[19] Robert J. Lifton, *Destroying the World to Save It: Aum Shinrikyo, Apocalyptic Violence, and the New Global Terrorism.* (New York: Metropolitan Books, 1999), p. 204.
[20] U.S. Congress, Senate Committee on Governmental Affairs, Permanent Subcommittee on Investigations. *Staff Statement, Hearings on Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo* (October 31, 1995).

years time? History is replete with cautionary tales warning against basing threat assessments on static analyses of an opponent's motivations and capabilities. After all, if their actions over the past decade have taught us anything, it is that terrorists are audaciously nimble operators who can adapt through reinvention and are prepared to persevere to attain their goals. At the same time, the global system in which they operate is not standing still – the political, social and, perhaps most importantly, technological landscape is continually reshaping itself into novel and unexpected topologies that can present both obstacles and opportunities for would-be nuclear terrorists. I will now offer a few thoughts on how the threat of nuclear terrorism is evolving and how it might respond to global dynamics.

1. The first of these concerns the terrorist learning curve. While knowledge of the precise specifications and tricks of the trade involved in nuclear weapons production can (and should) continue to be kept secret, the diffusion of broader knowledge and skill sets relevant to nuclear weapons (such as metallurgy, explosives engineering and precision machining) is inevitable. The information revolution has crossed the entire globe and disaffected youths in even the most underdeveloped countries can take technical courses online. Not to mention the increasing radicalization occurring within the developed world, where the latest technology and institutions of higher learning are widely available. Moreover, even the most closely-guarded nuclear technologies can slip out of state control, as the AQ Khan network amply demonstrated. Following the dictum of "where there's a will, there's a way," what all of this means is that a lot more of the terrorists of tomorrow are likely to be more technically proficient than those of today, allowing for the accumulation (even if through trial-and-error) of nuclear knowledge and skills amongst radicals. Finding gainful employment for the former weapons scientists of nuclear-armed states may no longer be nearly as effective as it is today, or at least it is unlikely to be sufficient. As an initial indicator of this trend, one needs look no further than the online materials produced and disseminated by the purveyors of jihad. While there are thousands of jihadist websites, only a small number deal with operational issues and there are but a handful of manuals and other documents that deal explicitly with nuclear weapons. An analysis of these texts by Sammy Salama[21] has, however, revealed significant advances in the understanding of nuclear issues within the general jihadist community. Although even the most comprehensive of such texts, the 2005 "Nuclear Preparation Encyclopedia,"[22] is riddled with technical errors and provides insufficient detail for the construction of a viable weapon, it evidences a significant improvement in quality over earlier texts that appeared in 2003-2004. So, while the average jihadi might not yet be able to access the knowledge

[21] Sammy Salama and Lydia Hansell, "Does Intent Equal Capability? Al Qa'ida and Weapons of Mass Destruction," *Nonproliferation Review* 12:3 (November 2005).
[22] This manual first appeared on the *al-Firdaws* jihadi website in 2005 and consists of 287 pages divided into 14 chapters. The author is a jihadist calling himself Layth al-Islam (Lion of Islam) who claims to have spent two years surveying the open sources for information on nuclear physics - Layth al-Islam, "Nuclear Preparation Encyclopedia," *al-Firdaws* (October 6, 2005).

required to build a bomb, he now knows a lot more about critical mass and nuclear warhead design than he did a few short years ago.

2. Several commentators have astutely argued that although al-Qa'ida ideologues and leaders are willing to launch a nuclear attack, they would demur for pragmatic reasons since they realize that such a horrendous act might drive away less radical members of the Ummah,[23] at a time when the number of supporters of the jihad is growing. They support this "they won't fix it if it ain't broke" analogy by emphasizing the non-monolithic nature of the contemporary jihad, by pointing towards the relatively small number of jihadist statements on WMD and by highlighting the fact that jihadists feel they need to justify the use of WMD in the first place. However, there is a different, less sanguine view of events. From this alternate perspective, the progression of jihadist statements described above represents the erosion, whether intentional or organic, of existing Islamic norms against mass killing on the scale that would result from a nuclear weapon. Evidence to support this view can be found in the distinct change of tone from characterizing nuclear weapons as defensive in nature in Usama bin Ladin's early statements to portraying them as offensive weapons necessary for the jihad to make "the crusader enemy beg on his knee that he does not want more strikes."[24] The upper limits on allowable casualties proclaimed by jihadists also seem to be on the rise. In 2002, Sulaiman Abu Ghaith, Usama bin Laden's former official press spokesman, claimed the right for jihadis "to kill four million Americans,"[25] but only one year later, in his fatwa declaring the use of WMD obligatory, Nasir al-Fahd put the number of Americans that it is permissible to kill without further debate at 10 million.[26] The jihadist community continues to discuss both sides of this issue, as shown by the April 2007 debate on an al-Qa'ida-linked website,[27] but my point is that one cannot assume that jihadist planners will feel constrained by a nuclear weapon's potentially alienating effects. After all, there is every indication that support for al-Qa'ida continues to grow despite the fact that the September 11 attacks killed thousands of people (including women and Muslims).

3. The most prominent Black Swan related to the evolution of nuclear terrorism would be technological. At present the one insurmountable obstacle for a would-be nuclear terrorist is the production of fissile material, which makes it necessary to acquire either weapons usable material or an intact weapon from a state source. While I am currently aware of no viable technology which would allow even the

[23] Jerry Mark Long. *Strategic Culture, Al-Qaida, and Weapons of Mass Destruction*. Science Applications International Corporation report prepared for Defense Threat Reduction Agency (November 2006), pp.24.
[24] Al-Qa'ida member Abu Muhammad al-Ablaj, quoted in James J. F. Forest. "The Final Act: Ideologies of Catastrophic Terror," *Threat Convergence Plenary Paper*, Fund for Peace (November 2006), p.6.
[25] Middle East Media Research Institute. "'Why we fight America: Al-Qa'ida Spokesman Explains September 11 and Declares Intentions to Kill 4 Million Americans with Weapons of Mass Destruction" *MEMRI Special Dispatch Series No. 388*. (June 12, 2002).
[26] al-Fahd, *op. cit.*, p.8.
[27] The exchange occurred on the Islamist website *al-Firdaws*. See Middle East Media Research Institute "Is it Legitimate to Use Nuclear Weapons Against the West? A Debate on an Islamist Forum" *MEMRI Special Dispatch Series, No. 1538* (April 12, 2007).

most sophisticated of terrorists to enrich their own uranium without detection, there is always the slim possibility that a technological breakthrough sometime in the next decade or two might make indigenous enrichment feasible. If so, this could change many groups' calculations with respect to the efficacy of nuclear weapons. If nuclear weapons in this context act either as what a so-called disruptive or revolutionary technology as opposed to a sustaining technology,[28] (which *prima facie* indications suggest) then changes in terrorist behavior can be both swift and comprehensive, i.e., the transition to using or acquiring nuclear weapons as the strategic weapon of choice can be both sudden and permanent. Another Black Swan to consider, albeit a welcome one, would be a rapid decrease in the threat brought about by a moderation of the jihadist movement globally or the elimination of the ideological and operational leaders of this movement without the emergence of competent replacements.

Recommendations for Effective Public Policy Measures to Counter the Demand Side of the Threat

Within any society, there will always be some people dissatisfied with the status quo. A very small subset of these angry and alienated individuals may embark on violent, terrorist campaigns for change, in some cases aiming globally. An even tinier subset of these non-state actors with specific ideological, structural, and operational attributes may seek nuclear weapons.[29] The first line of defense on the demand side of the threat is therefore to identify our adversaries and detect their intentions to use nuclear weapons long before their plans can have any chance of success. For this we must rely on the services of our intelligence and law enforcement agencies. More than enough has been said about intelligence reform in recent years and I will not dwell on this topic except to say that while efforts to keep nuclear weapons and materials out of the hands of terrorists should continue, it is also worthwhile to pay more attention to the identity and behavior of the potential perpetrators themselves, as well as the web of active and passive facilitators who would be necessary for the success of any nuclear endeavor. Efforts throughout the government have been initiated to perform this task, but these often receive far less attention and resources than the latest technologies for detecting radioactive materials. A dedicated program of net assessment (using standardized threat assessment methods) to detect those groups and individuals of greatest concern would enable us to avoid the nasty surprise of a homegrown Aum Shinrikyo delivering a lethal package. Moreover, successful efforts in this regard will require much greater international collaboration in intelligence sharing, law enforcement, and prosecution – developments more likely to occur if global perceptions of nuclear terrorism threats converge.

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[28] For more information, see, for example, Joseph L. Bower and Clayton M. Christensen. "Disruptive Technologies: Catching the Wave" *Harvard Business Review* (January-February 1995).

[29] Perhaps the most frightening possibility would be the development of technology or the dissolution of state power in a region to the point where a single disgruntled individual would be able to produce or acquire a working nuclear weapon. Since there are far more hateful, delusional and solipsistic individuals than organized groups in this world, the latter situation would indeed be deserving of the label of a nuclear nightmare.

A topic that has received no small amount of attention in recent years is the extent to which we can deter terrorist behavior.[30] In this regard, it is far from certain that those terrorists willing to resort to nuclear weapons could be deterred from using them by the threat of retribution.[31] Yet the one saving grace is that terrorists cannot produce their own fissile material. This means that, except in the case of a direct assault on nuclear storage sites, those pursuing a nuclear weapon capability must rely on the assistance of others, whether these be government leaders, insiders at a nuclear facility, or illicit traffickers. It is these potential facilitators of nuclear terrorism whose actions we can deter. We must ensure that they continue to have sufficiently powerful disincentives that they refrain from actively assisting terrorists to acquire weapons, weapons-usable material or detailed technical knowledge. The most obvious way to do this is to credibly demonstrate that their participation in any part of the nuclear chain will be identified (which relates to my previous point) and that retribution will be swift and certain.[32] This effort includes the United States maintaining high standards of nuclear forensics and attribution.

However, this approach is not the only side of the equation to which we must pay attention – we need to be cognizant that political and other actions by the United States and its allies can influence the calculations of potential facilitators, especially those who have an existing ideological affinity for the terrorist cause, but are not active participants. Bolstering international nonproliferation norms and taboos against the use of nuclear weapons and internationally vilifying terrorists who have attempted to obtain nuclear weapons may have little impact directly on the behavior of the terrorists themselves, but might go some way towards encouraging others (including criminals, states and scientists) to refrain from making it easier for terrorists to acquire nuclear weapons.[33] Also, before engaging in major new foreign policy interventions it would be worthwhile, as part of our considerations, to gauge their likely effects on the facilitator population. For instance we might seek to avoid or reorient those actions which would be likely to galvanize large numbers of Muslim facilitators into feeling that they are obligated to take a more active role in the jihad. As an example of the type of facilitation we want to prevent, we have reports of at least two Pakistani nuclear scientists who met with bin Ladin during his time in Afghanistan (prior to 9/11) to advise him about nuclear weapons. We should calibrate our actions where possible to ensure that such behavior remains the exception rather than the rule.

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[30] For a detailed explanation see Lewis A. Dunn, "Can al Qaeda Be Deterred from Using Nuclear Weapons?" *Center for the Study of Weapons of Mass Destruction Occasional Paper 3* (Washington, DC: National Defense University Press, 2005) and Brad Roberts, "Deterrence and WMD Terrorism: Calibrating its Potential Contributions to Risk Reduction" *Institute for Defense Analysis Paper P-4231* (June 2007).
[31] They may be deterrable by denial, in other words convinced that a nuclear attack would not succeed or would not yield the consequences they seek. See Roberts, op. cit.
[32] It is interesting to note that sentences for those who have already been apprehended for illicit smuggling of nuclear or radiological materials have been rather modest, less than ten years for even egregious traffickers. Moreover, AQ Khan and his cohorts do not seem to have suffered any serious repurcussions.
[33] One can argue that public awareness of nuclear weapons issues, especially among the younger generation, declined after the end of the Cold War.

Now I turn to recommendations that challenge us to expand our perspectives with regards to nuclear terrorism. In addition to remaining open to the possibility of Black Swans, including those already mentioned, we must unfortunately reacquaint ourselves with the Cold War notion of "thinking about the unthinkable." The analytical and policy focus at the moment rests almost exclusively on the questions of whether terrorists will succeed in acquiring a nuclear weapons capability and how to prevent them from doing so. These are obviously key issues, but they should not distract us from considering additional important questions. For example, if a nuclear weapon is obtained by a particular set of terrorists, would they automatically detonate it or seek to employ it for non-explosive (i.e. coercive or deterrent) purposes? Also, what kind of precedent would a successful (or unsuccessful) nuclear attack set for future behavior by other groups? Another worthwhile issue to consider, suggested by Charles Blair,[34] is that if jihadists do eventually succeed in acquiring nuclear weapons, they would face many of the same command and control dilemmas as a state would, including the decision whether to predelegate to field operatives the authorization to detonate or, alternatively, whether to maintain centralized control (for example, by keeping key components with the leadership until shortly before detonation). The decisions of terrorists in this regard might play out very differently to those of states and could have vital implications for our policy response. For example, if we were to find out that al-Qa'ida has a nuclear weapon, should we immediately launch a preemptive strike to decapitate its leadership in the Federally Administered Tribal Areas of Pakistan (a logical option if their central command retains operational control of the weapon)? Or would such an action merely ensure the immediate use of the weapon by operational commanders with predelegated detonation authority, who might otherwise have delayed their attack and thereby given our security forces more time to interdict them? The answer might differ depending on exactly which group of jihadists obtains a weapon, but the point is that we should consider and analyze such issues and our options far in advance of the President receiving the news that terrorists have the bomb and we find ourselves in the midst of a crisis.

At a more fundamental level, we (quite thankfully) have little empirical evidence to guide us in dealing with a nuclear-armed non-state opponent – in social science speak we have a sample size of zero for variation in the dependent variable of nuclear terrorism. This means that we are essentially in the dark about the actual behavior a nuclear terrorist would exhibit and we have to resort to informed speculation based on what we know about how terrorists make decisions in general or how state actors have constructed nuclear policies in the past. However, it is possible that elements of the nuclear terrorism problem may not even be amenable to this kind of analysis. They may lie either in the domain of complex systems,[35] in which patterns can emerge and be perceived in retrospect but cannot be predicted, or the domain of chaotic systems, in which cause and

[34] Charles Blair. *Islamist Command and Control of Nuclear Weapons*. Center for Terrorism and Intelligence Studies. Unpublished report (2007).

[35] For an application of these concepts to the realm of terrorism, see Nancy K. Hayden, "The Complexity of Terrorism: Social and Behavioral Understanding Trends for the Future" in Magnus Ranstorp (ed.) *Mapping Terrorism Research: State of the Art, Gaps and Future Direction* (New York: Routledge, 2007).

effect cannot be discerned.[36] If a threat or potential threat like nuclear terrorism is situated in the complex domain, the better strategy is not to attempt to predict the specifics of an outcome, but rather to acquire information about the threat through a process of probing[37] or "spoofing" the system. Similarly, if aspects of the nuclear terrorism issue are part of a chaotic system (such as the possibility of a terrorist group stumbling upon a "loose nuke"), the best response may be to act proactively in order to restructure the environment so that dealing with the threat becomes more tractable.[38] We need to incorporate these ideas into our strategies for countering nuclear terrorism, beginning with an investigation into which aspects of the problem are amenable to traditional intelligence analysis and which aspects require novel, non-linear approaches.

Conclusion

Several commentators have produced somewhat startling estimates of the likelihood of nuclear terrorism (some suggest more than a 50% probability within ten years),[39] while others have been more conservative.[40] A significant portion of the likelihood of a successful use of a nuclear weapon by terrorists is obviously determined by supply side factors (access to intact weapons or weapons-usable material) upon which I will defer to my colleagues with greater expertise. So, although I will not offer a numerical estimate of the overall threat today, I will state my belief that, at least amongst certain of the more fanatic subsets of our terrorist adversaries, the motivation to use nuclear weapons against the United States certainly exists and shows no signs of diminishing within the coming decades. It can therefore be expected that, barring some dramatic change in either radical ideologies or the amount of fissile material worldwide, we will see additional attempts by terrorists to acquire and perhaps even use nuclear weapons on American soil.

I would like to thank the Committee once again for giving me the opportunity to share some of my thoughts with you today and I am happy to make myself available to discuss any of these issues in greater detail.

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[36] At least since the work of Kurt Gödel, philosophers and mathematicians have known that truth in some systems cannot be attained. Such concepts have only recently, however, begun to enter the social sciences and policy community, with notions of formal complexity and "wicked" problems.

[37] Akin to the echolocation of a bat, "probing" involves taking positive action within a system with the express purpose of observing the reactions of other elements of the system and thus of gaining information which is not otherwise obtainable. An example within the realm of our discussion would be to covertly "leak" or inject a non-genuine, yet plausible and easy-to-make recipe for creating a nerve agent into jihadist circles. It could be constructed so as to provide specific signatures (such as a peculiar ingredient or process) that could be observed in the broader system. Counterterrorism authorities could then trace the movement of the recipe through jihadist virtual and physical networks, thus increasing their information about the dissemination of this CBRN knowledge, and also identify any would-be CBRN terrorists who might try to follow the recipe. Similar probes might be constructed to investigate nuclear terrorism.

[38] For an excellent summary of these dynamics, see C.F. Kurtz and D.J. Snowden, "The new dynamics of strategy: sense-making in a complex and complicated world" *IBM Systems Journal*, 42:3 (2003).

[39] Graham Allison, *Nuclear Terrorism: the Ultimate Preventable Catastrophe* (New York: Henry Holt, 2004).

[40] Matthew Bunn has placed the danger at 5% and David Albright at 1%. See J. Sterngold. "Assessing the Risk on Nuclear Terrorism; Experts Differ on Likelihood of 'Dirty Bomb' Attack" *San Francisco Chronicle* (April 18, 2004). The experts participating in the Lugar Survey, on average view the prospects of nuclear terrorism by 2010 as less than 17% and by 2015 as less than 30% - Lugar, op. cit., pp. 13-15.

Testimony Before
The Committee on Homeland Security and Governmental Affairs
United States Senate
Tuesday, April 15, 2008

ACTIONS NOW FOR THE DAY AFTER: FINDINGS OF THE PREVENTIVE DEFENSE DAY AFTER PROJECT

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Chairman Lieberman, Senator Collins, and members of the Committee, thank you for inviting me to testify before you on actions that would be necessary in the 24 hours following a nuclear detonation in an American city – presenting some of the results of what I and my collaborators call The Day After Project.

I applaud you for holding hearings on this terrible prospect, but I regret that you must do so. For while the probability of a nuclear weapon one day going off in a U.S. city cannot be calculated, it is almost surely greater than it was five years ago. North Korea now has the bomb, reflecting the greatest failure of U.S. nonproliferation policy in a generation. Iran could well follow. Pakistan's nuclear technology, already put on the market once by Abdul Qadeer Kahn, could go to terrorists if Pakistan grows unstable. Russia's arsenal remains incompletely secured, some17 years after the end of the Cold War. And enrichment and reprocessing, the essential processes for producing highly enriched uranium and plutonium, respectively, could proliferate with the spread of nuclear power to generate carbon-free electricity.

Meanwhile, in the same five years, terrorism has surged into a global movement. More nuclear materials that can be lost or stolen plus more terrorists aspiring to mass destruction equals a greater probability of nuclear terrorism.

Former Senator Sam Nunn in 2005 framed the need for Washington to do better at changing this math with a provocative question: "On the day after a nuclear weapon goes off in an American city," he asked, "what would we wish we had done to prevent it?"

But in view of the increased risk in recent years, I and my collaborators – former Secretary of Defense William Perry and former Lawrence Livermore National Laboratory Director Michael May – decided we needed to ask a follow-on question to Nunn's: "What should we actually do on the Day After? What steps can our government take now to prepare for

that awful contingency?" Accordingly, we convened a workshop in Washington of leading government and non-government experts to consider this question under the auspices of the Harvard-Stanford Preventive Defense Project which Dr. Perry and I co-direct. My testimony summarizes the findings of the workshop, co-authored by May, Perry, and me. The workshop was off-the-record, and none of its participants, listed at the end of my written testimony, is responsible for the report's content. The work was sponsored by the generosity of several foundations and received no government funds.[1] I should also mention that recently I co-chaired, with Ambassador Robert Joseph, a review for the Department of Defense of the programs of the Defense Threat Reduction Agency (DTRA), which would contribute critical technical capabilities to the national effort on the Day After; that report will be available after it passes security review.

Nothing I can tell you from our report would make the Day After anything less than the worst in the history of the Republic. No greater failure of our government's duty to national security could occur than to let this catastrophic event befall our people. Yet it turns out that much could be done to save lives, reduce the cost to the country as a whole, and ensure that our nation, and civilization more broadly, endures. After all, the underlying dynamic would remain a few terrorists acting against the rest of us.

I will summarize our findings in five points.

But first I should make a "zeroth" point: A consideration of the realities of the Day After makes it such that our strongest recommendation to a president who finds himself or herself in this position is: "If I were in your shoes, I wouldn't be in your shoes." Terrorism probably cannot ever be entirely eradicated, since it has so many potential sources in the aberrant motivations of small groups of people or even individuals. But nuclear terrorism can be eradicated. The reason for this is a fortunate blessing of nature: making a nuclear bomb requires highly enriched uranium (HEU) or plutonium, and neither of these metals occurs in nature. They must be man-made. Nature's second gift was to make it comparatively difficult to make either one. Enrichment and reprocessing are beyond the capabilities of even the most sophisticated terrorist group. A terrorist group must obtain HEU or plutonium from the comparatively few governments – you can almost count them with two hands – that have invested the time and treasure to accomplish enrichment or reprocessing. If these governments fully safeguard their materials, there can be no nuclear terrorism. But after that, the laws of nature grow unkind: It is not beyond the ken of a competent terrorist group to make a bomb once it gets the material, especially if it is uranium. It is very difficult to detect these metals in transit, since neither is highly radioactive. And no vaccine can protect against the blast and radiation from a detonation. There is, therefore, no more important national security imperative than to prevent "loose nukes" at the source.

My co-authors and I have long worked on preventing nuclear danger. Perry and May made major contributions to nuclear deterrence and arms control during the Cold War. Perry led efforts to denuclearize Ukraine, Kazakstan, and Belarus while he was Secretary of Defense. I

[1] The foundations that support the work of the Preventive Defense Project are: The Carnegie Corporation of New York, the John D. and Catherine T. MacArthur Foundation, the Richard Lounsbery Foundation, and the Herbert S. Winokur Fund.

was privileged to run the historic Nunn-Lugar program in the Pentagon as Assistant Secretary of Defense during that period and to participate in these and other successful efforts to secure the Soviet nuclear legacy. Perry and I also participated in the 1994 North Korean nuclear crisis and then I served under him when he was North Korea Policy Coordinator later in the Clinton administration. It was therefore with great regret that we three felt compelled to initiate the Day After Project.

Our five principal findings refer to the detonation of a 10 kiloton weapon at ground level or in a building of a major American city. This is the same yield range as the Hiroshima and Nagasaki weapons and would represent a successful design effort by the perpetrators – North Korea, it appears, did not do as well in its underground test in 2007. The effects would be very different from the World War II bombings, however, since the Hiroshima and Nagasaki bombs were detonated high in the air over Japan and resulted in far less fallout.

1. Our first finding might seem obvious, but it is still not fully reflected in government planning: The scale of this disaster would quickly overwhelm even the most prepared city and state governments. To avoid repeating the Katrina fiasco on a much larger scale, Washington should not pretend that in the instance of nuclear terrorism its role can be defined as supporting state and local responders. And state and local governments – even though their actions to save lives and prevent panic in the first hours would be essential – must abandon the pretense that they could remain "in charge" and in control. The federal government, led by the Department of Homeland Security, should have plans that foresee stepping in quickly, taking full responsibility, and devoting all the resources of the federal government. Related to this finding is that the assets of the Department of Defense will be required in the federal response, including for law enforcement. It was understandable in the early years after 9/11 that DOD showed reticence to involve itself in homeland security response – it had, after all, conflicts in Afghanistan and then Iraq on its hands and feared a raid on the defense budget for homeland security. But that period has passed, and DOD should re-engage on the homeland security front.

2. Our second set of findings has to do with the immediate effects of the detonation. Within a circle about two miles in diameter – the length of the Mall here in Washington – the devastation from the blast would be near total. Then just downwind of that circle, in a cigar-shaped area a few miles long, the fallout would be severe enough to submit people who lived there to lethal doses of radiation even if they took modest shelter (for example, in a basement). If these people knew who they were (on a clear day they could just look in the sky and see the dust cloud coming their way, somewhat akin to the long plume of yellow dust from the Twin Towers wafting towards New Jersey on 9/11), they would have to evacuate quickly to avoid lethal exposure. Elsewhere in the city, where most of the inhabitants would in fact be working or sleeping, people would have more choices that emergency planners would need to manage. People upwind would not need to take any action. Downwind, but outside of the "hot" cigar, the best move for many people would be not to move at all, but to seek moderate shelter (somewhere where either mass shields them or distance attenuates the radiation reaching them). The worst thing for people to do in much of the downwind area would be to take to the highways at the same time, allowing the dust to settle on them when they were unsheltered and stuck in traffic. The radiation dose rate would drop off roughly in inverse proportion to the passage of time, so that after three days one could take three times as long to evacuate. Sheltering for this period of

time would not be difficult and should not be compared to the Dr. Strangelove mineshaft-type civil defense fallout shelters of the 1950s. Managing the optimal mix of evacuation and sheltering would be the responsibility of the government, which would need to be able to quickly predict the path of the plume, advise citizens, close some roads, and so on.

3. Our third set of findings deals with the long-term effects of the detonation, which are dominated by the problem of radiation. Radiation is unique to nuclear terrorism and uniquely frightening to most people. People far enough downwind that the radiation did not present an immediate danger could leave their homes or stay, leave for a while and come back, come back briefly to recover a pet or valuables, or never live in the area again. Their choices would be determined by the dose of radiation they would be willing to absorb. The doses far downwind would not make people die or even get sick. Instead, these "low" doses would only raise their statistical chance of getting cancer later in life and dying from it – raising it from 20 percent, which is the chance we all have on average – to something higher: 21 percent, 22 percent, up to 30 percent at the maximum survivable exposure. For the great majority of people downwind, the chance would be small enough (20.1 percent, let's say), that they would not notice it themselves but the public health authorities would notice, years later, a greater cancer death rate in this population.

A critical matter related to low- and moderate-dose exposure has to do with the choices for first responders and troops sent to the stricken city. Few would choose to have their chance of dying of cancer rise from 20 percent to 30 percent. But in the case of small probabilities – 20.1 percent, for example, a first responder might be willing to go into the radiation zone for a short time. Protocols already exist that provide for higher permitted doses for workers in nuclear industries than for the public at large. These choices can ultimately only be made by individuals, but the protocols they follow must give them the best chance to know which areas are hotter than others and how long they can stay in the zone to accomplish their duties. Once a first responder had absorbed the permitted dose, he or she could no longer serve in the zone. All this obviously has huge implications for the competence of the response, for how it is planned, and for how many personnel must be rotated in and out of the zone.

4. Our fourth finding is perhaps the most important of all. It is the unpleasant fact that the first detonation probably won't be the last…or at least it won't feel that way. Let me explain. If terrorists manage to find enough material for a bomb, or to steal or buy a bomb, who's to say they didn't get two, or three, or four from the same source? There is no technical or operational reason why nuclear terrorism should come one-at-a-time. What is absolutely clear is that terrorists will claim to have more after they detonate the first one – after all, their intent is to sow terror. Public officials will therefore have to behave as though there are more. The public surely will. Said differently, nuclear terrorism will not seem like an incident, but instead like a syndrome or campaign of terror. So people in other cities than the one struck will want to evacuate or at least move their children out of the cities, as the British did in World War II.

To prevent a second, third, and fourth detonation, the U.S. government – by now itself relocated out of Washington – will be desperately trying to find the terrorists and trace the source of the bombs. We know that the investigation must and surely will (aided by radiochemical

forensics[2]) ultimately lead to a government somewhere – Pakistan, North Korea, Russia, or any one of a dozen or so governments that operate hundreds of facilities where bombs or fissile material are stored – since the terrorists surely did not make the HEU or plutonium but instead stole, bought, or otherwise obtained it from a government facility. It has become something of a fad to say that the U.S. will retaliate against any government found to be the source of a bomb detonated on the U.S. And of course that would be a reasonable thing to consider if the government involved was in any way witting in the plot. But on the Day After, our national interest will take us in another direction – one of cooperation, not threats – since we will desperately need the help of those governments to track down the remaining bombs and put the campaign of nuclear terrorism to an end.

5. Our fifth and last set of findings has to do with the effects of the outbreak of nuclear terrorism on our society and government. I believe that the U.S. government itself, in a form recognizable to the citizenry as constitutional, would survive even if the first bomb struck Washington. On my first job in the Pentagon working for Caspar Weinberger, I had some involvement with the continuity of government effort to deal with the far more daunting task of "surviving the national command authority" under a rain of 3000 equivalent megatons of Soviet missile warheads. Then again in the Clinton administration after the Cold War ended, I saw this effort adapted to contingencies like nuclear terrorism. I am not current on these efforts, but I would be very surprised – especially after 9/11 – if they were not robust and well thought-out.

A bigger issue is survival of governance itself – of the people's sense of well-being and safety…that their institutions were competent to respond to the emergency and protect them…that important things had been thought through in advance…that they were given good advice about how to act on the Day After…ultimately, that they could raise their children in big urban settlements. This is another reason, besides saving lives and property on the Day After, for us to think now about our response. It is also important that we anticipate now our natural impulse on the Day After to over-react. We should resolve now that any extraordinary measures taken on the Day After have a sunset clause, and that they undergo a total review periodically to see if they continue to strike the right balance between responding to nuclear terrorism and other objectives that constitute the good life in civil society.

This is also an appropriate note on which to close. The more competent and capable our government is on the Day After, and the more quickly and surely it can bring the campaign of nuclear terror to an end and make sure its recurrence is much less likely than it is now, and the less it is prone to panic and over-reaction, the less this awful event needs to lead to a change in our way of life. That is why it is important for the Congress and this Committee to address the Day After.

Thank you for inviting me to be with you.

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[2] See *Nuclear Forensics: Role, State of the Art, Program Needs*, Report of a Joint Working Group of the American Physical Society and the American Association for the Advancement of Science, Michael M. May, chair, at http://cstsp.aaas.org/content.html?contentid=1546.

PREVENTIVE DEFENSE PROJECT

A RESEARCH COLLABORATION OF STANFORD & HARVARD UNIVERSITIES
WILLIAM J. PERRY & ASHTON B. CARTER, CO-DIRECTORS

The Day After: Action in the 24 Hours Following a Nuclear Blast in a U.S. City

A Workshop of the Preventive Defense Project
Thursday, April 19, 2007

- Attendees -

General John Abizaid, USA
Former Commander, U.S. Central Command

Dr. David M. Abshire
President, Center for the Study of the Presidency and President, Richard Lounsbery Foundation

Dr. Michael R. Anastasio
Director, Los Alamos National Laboratory

Dr. Deana Arsenian
Senior Program Officer, International Peace & Security, Carnegie Corporation of New York

Ambassador Linton F. Brooks
Former Administrator, National Nuclear Security Administration, U.S. Department of Energy

Dr. Matthew Bunn
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Dr. Ashton B. Carter
Co-Director, Preventive Defense Project, Harvard University, Kennedy School of Government

General James E. Cartwright, USMC
Commander, U.S. Strategic Command

Mr. Charles B. Curtis
President & Chief Operating Officer, Nuclear Threat Initiative

Mr. William Daitch, SES
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Dr. Steve Fetter
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Dr. Robert L. Gallucci
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Dr. Richard L. Garwin
IBM Fellow Emeritus, IBM Thomas J. Watson Research Center

Mr. Shane Harris
Intelligence & Homeland Security Correspondent, The National Journal

The Honorable Jane Lakes Harman
Congresswoman, U.S. House of Representatives

Dr. John Harvey
Director, Policy Planning Staff, National Nuclear Security Administration, U.S. Department of Energy

Mr. Spencer S. Hsu
Homeland Security Correspondent, The Washington Post

The Honorable Fred C. Iklé
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Dr. Robert A. Mikelskas
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Dr. George Miller
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Dr. Gordon Oehler
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The Day After

Action in the 24 Hours Following a Nuclear Blast in an American City

Ashton B. Carter, Michael M. May, and William J. Perry

A Report Based on a Workshop
Hosted by

The Preventive Defense Project
Harvard and Stanford Universities
Ashton B. Carter and William J. Perry, Co-Directors

Full text of report available at:
http://belfercenter.ksg.harvard.edu/files/dayafterworkshopreport_may2007.pdf

The New York Times
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OP-ED CONTRIBUTOR

After the Bomb

By WILLIAM J. PERRY, ASHTON B. CARTER and MICHAEL M. MAY

THE probability of a nuclear weapon one day going off in an American city cannot be calculated, but it is larger than it was five years ago. Potential sources of bombs or the fissile materials to make them have proliferated in North Korea and Iran. Russia's arsenal remains incompletely secured 15 years after the end of the Soviet Union. And Pakistan's nuclear technology, already put on the market once by Abdul Qadeer Khan, could go to terrorists if the president, Gen. Pervez Musharraf, cannot control radicals in that country.

In the same period, terrorism has surged into a mass global movement and seems to gather strength daily as extremism spills out of Iraq into the rest of the Middle East, Asia, Europe and even the Americas. More nuclear materials that can be lost or stolen plus more terrorists aspiring to mass destruction equals a greater chance of nuclear terrorism.

Former Senator Sam Nunn in 2005 framed the need for Washington to do better at changing this math with a provocative question: On the day after a nuclear weapon goes off in an American city, "what would we wish we had done to prevent it?" But in view of the increased risk we now face, it is time to add a second question to Mr. Nunn's: What will we actually do on the day after? That is, what actions should our government take?

It turns out that much could be done to save lives and ensure that civilization endures in such terrible circumstances. After all, the underlying equation would remain a few terrorists acting against all the rest of us, and even nuclear weapons need not undermine our strong societies if we prepare to act together sensibly. Sadly, it is time to consider such contingency planning.

First and foremost, the scale of disaster would quickly overwhelm even the most prepared city and state governments. To avoid repeating the Hurricane Katrina fiasco on

a much larger scale, Washington must stop pretending that its role would be to support local responders. State and local governments — though their actions to save lives and avoid panic in the first hours would be essential — must abandon the pretense that they could remain in charge. The federal government, led by the Department of Homeland Security, should plan to quickly step in and take full responsibility and devote all its resources, including those of the Department of Defense, to the crisis.

Only the federal government could help the country deal rationally with the problem of radiation, which is unique to nuclear terrorism and uniquely frightening to most people. For those within a two-mile-wide circle around a Hiroshima-sized detonation (in Washington, that diameter is the length of the Mall; in New York, three-fourths the length of Central Park; in most cities, the downtown area) or just downwind, little could be done. People in this zone who were not killed by the blast itself, perhaps hundreds of thousands of them, would get radiation sickness, and many would die.

But most of a city's residents, being farther away, would have more choices. What should they do as they watch a cloud of radioactive debris rise and float downwind like the dust from the twin towers on 9/11? Those lucky enough to be upwind could remain in their homes if they knew which way the fallout plume was blowing. (The federal government has the ability to determine that and to quickly broadcast the information.) But for those downwind and more than a few miles from ground zero, the best move would be to shelter in a basement for three days or so and only then leave the area.

This is a hard truth to absorb, since we all would have a strong instinct to flee. But walking toward the suburbs or sitting in long traffic jams would directly expose people to radiation, which would be the most intense on the day after the bomb went off. After that, the amount would drop off day by day (one-third as strong after three days, one-fifth as strong after five days, and so on), because of the natural decay of the radioactive components of the fallout.

More tough decisions would arise later. People downwind could leave their homes or stay, leave for a while and then come back or leave and come back briefly to retrieve valuables. The choices would be determined by the dose of radiation they were willing to absorb. Except in the hot zone around the blast and a few miles downwind, even unsheltered people would not be exposed to enough radiation to make them die or even become sick. It would be enough only to raise their statistical chance of getting cancer

later in life from 20 percent (the average chance we all have) to something greater — 21 percent, 22 percent, up to 30 percent at the maximum survivable exposure.

Similar choices would face first responders and troops sent to the stricken area: how close to ground zero could they go, and for how long? Few would choose to have their risk of death from cancer go up to 30 percent. But in cases of smaller probabilities — an increase to 20.1 percent, for example — a first responder might be willing to go into the radiation zone, or a resident might want to return to pick up a beloved pet. These questions could be answered only by the individuals themselves, based on information about the explosion.

Next comes the unpleasant fact that the first nuclear bomb may well not be the last. If terrorists manage to obtain a weapon, or the fissile material to make one (which fits into a small suitcase), who's to say they wouldn't have two or three more? And even if they had no more weapons, the terrorists would most likely claim that they did. So people in other cities would want to evacuate on the day after, or at least move their children to the countryside, as happened in England during World War II.

The United States government, probably convened somewhere outside Washington by the day after, would be urgently trying to trace the source of the bombs. No doubt, the trail would lead back to some government — Russia, Pakistan, North Korea or other countries with nuclear arsenals or advanced nuclear power programs — because even the most sophisticated terrorist groups cannot make plutonium or enrich their own uranium; they would need to get their weapons or fissile materials from a government.

The temptation would be to retaliate against that government. But that state might not even be aware that its bombs were stolen or sold, let alone have deliberately provided them to terrorists. Retaliating against Russia or Pakistan would therefore be counterproductive. Their cooperation would be needed to find out who got the bombs and how many there were, and to put an end to the campaign of nuclear terrorism. It is important to continue to develop the ability to trace any bomb by analyzing its residues. Any government that did not cooperate in the search should, of course, face possible retaliation.

Finally, as buildings and lives were destroyed, so would the sense of safety and well-being of survivors, and this in turn could lead to panic. Contingency plans for the day after a nuclear blast should demonstrate to Americans that all three branches of

government can work in unison and under the Constitution to respond to the crisis and prevent further destruction.

A council of, say, the president, the vice president, the speaker of the House and the majority leader of the Senate, with the chief justice of the Supreme Court present as an observer, could consider certain aspects of the government's response, like increased surveillance. Any emergency measures instituted on the day after should be temporary, to be reviewed and curtailed as soon as the crisis ends.

Forceful efforts to prevent a nuclear attack — more forceful than we have seen in recent years — may keep the day from coming. But as long as there is no way to be sure it will not, it is important to formulate contingency plans that can save thousands of lives and billions of dollars, prevent panic and promote recovery. They can also help us preserve our constitutional government, something that terrorists, even if armed with nuclear weapons, should never be allowed to take away.

William J. Perry, a professor at Stanford, and Ashton B. Carter, a professor at Harvard, were, respectively, the secretary and an assistant secretary of defense in the Clinton administration. Michael M. May, also a professor at Stanford, is a former director of the Lawrence Livermore National Laboratory.

Impact of Small Nuclear Weapons on Washington, DC: Outcomes and Emergency Response Recommendations

Dr. Cham E. Dallas, Professor and Director, Institute for Health Management and Mass Destruction Defense, College of Public Health, University of Georgia

Written Statement to Accompany Testimony at the United States Senate Hearing for the Committee on Homeland Security and Governmental Affairs, titled "Nuclear Terrorism: Confronting the Challenges of the Day After" April 15, 2008

Abstract: The threat posed by the use of weapons of mass destruction (WMD), including nuclear weapons, within the United States has grown significantly in recent years, focusing attention on the medical and public health disaster capabilities of the nation in a large scale crisis. The expected initial use of nuclear weapons will be with the relatively smaller devices, from 1 to 10 Kt in explosive yield (comparable to 1,000 to 10,000 tons of TNT), with New York and Washington, DC as the most likely targets. The simulation of the detonation of either a 1 Kt or a 10 Kt nuclear device near the White House is presented in order to demonstrate the relative impacts on health outcomes, and recommendations made for emergency response to this threat. There are many limitations on the resources needed for mass casualty management, such as access to sufficient hospital beds including specialized beds for burn victims, respiration and supportive therapy, pharmaceutical intervention, and mass decontamination. Among the consequences of this outcome would be the probable loss of command-and-control, mass casualties that will now have to be treated in an unorganized response in hospitals on the periphery, as well as the other expected chaotic outcomes from inadequate administration in a crisis. Vigorous, creative, and accelerated training and coordination among the federal agencies tasked for WMD response, military resources, academic institutions, and local responders will be critical for large-scale WMD events involving mass casualties.

Note: This written statement is based on the following peer-reviewed scientific publications by this author on this topic, which contain these concepts in further detail.

Bell, W.C. and Dallas, C.E. Vulnerability of populations and the urban health care systems to nuclear weapon attack – examples from four American cities. International Journal of Health Geographics 6:5 pp1-33 (2007). **This publication is currently the 32nd most accessed biomedical paper worldwide of all time (out of 170 journals on biomedcentral, over 37,000 accesses), see: www.biomedcentral.com/mostviewed (click on most viewed articles of all time).**

Dallas, C.E. and Bell, W.C. Prediction Modeling to Determine Medical Response to Urban Nuclear Attack. Disaster Medicine and Public Health Preparedness, a journal of the American Medical Association Vol 1(2):80-89, (2007).

A. Utilization of Casualty Estimates in Nuclear Emergency Response

Without the directed use of accurate casualty distribution estimates, it is likely that past failures in mass casualty planning in large-scale medical disasters will be repeated. During the Sarin attack on Tokyo, hospitals became part of the problem when 23% of the healthcare workers became ill by unintentionally spreading the nerve agent to hospital and emergency staff workers. During the SARS epidemic in China, hospitals in Beijing and Hong Kong became "Super Seeders" of the *cornavirus* and dramatically accelerated contagion up to 250 individuals per day. A study by the American College of Emergency Physicians (ACEP) Task Force found that "little or no WMD-based expertise" existed among medical staff workers in hospitals [1]

Based on information from the National Commission on Terrorist Attacks upon the United States (9-11 Commission)[2] public hearings on the initial response show a terrible confusion among first responders that resulted in the addition of a "Catastrophic Incident Annex" to the second draft version of the National Response Plan (NRP) [3]. First responders during 9/11 suffered from an inability to communicate information concerning the scale and magnitude of the disaster, and thereby released conflicting public service information during the crisis that resulted in additional loss of life. The findings of these hearings show a critical need for a "National Strategy" for medical response to catastrophic incidents. The requirements of the Catastrophic Incident Annex exceed the CDC and HRSA benchmarks of 500 hospital beds for a population of one million needed for natural disasters. For an effective response, delineating the geographic zones in which different types of injuries are likely to be found, and delineating zones in which victims are likely to sustain multiple injuries, is critical. In the case of a nuclear explosion, thermal effects will produce very large numbers of burn casualties—a dramatic medical and security challenge that differs from routine medical emergencies or non-nuclear WMD events. Multiple trauma injuries will accompany the injuries inflicted by thermal radiation. These will be somewhat similar qualitatively to current trauma protocols, with the exception of fallout contamination, but will differ drastically on the quantitative level. Additionally, certain regions will experience the unique casualties from prompt and fallout radiation. Multiple effects make for sicker patients, slower recoveries, and greater danger of severe sickness or death—especially among the old, the young, and the infirm.

Weather and climate has a significant effect on impacts resulting from a nuclear detonation [4]. Wind is one major factor, as wind carries the resultant fallout cloud downwind. Atmospheric stability affects the height of the typical mushroom cloud and behavior of the fallout plume, and the amount, thickness and height of clouds impact the scattering, reflection and absorption of radiation. Atmospheric conditions affect the quantity of energy absorbed, reflected and scattered, with a highly significant impact on casualty distributions. Near surface bursts create craters and large amounts of dust and solids from the ground or buildings are thrown into the air. Wind speed and direction have a tremendous impact on where fallout radiation is deposited.

B. Impact of Small Nuclear Weapons on Washington, DC: Outcomes

Casualty Impacts in Washington Relative to Other Urban Centers

From the 10Kt device detonated near the White House, it could be expected that there would be at least 150,000 serious injuries, and that at least 70% of these could involve fatalities. Depending on the resources made available at the time, it is likely that there would be an attempt to evacuate as many as 500,000 people from the area, though the efficacy of such an attempt is questionable. At least 100,000 people would need decontamination by current standards, though once again it is dubious that adequate decontamination would be feasible in a timely fashion. By comparison, in more densely populated urban areas, the number of injuries could be up to 4 and 8 times higher in New York and Chicago, respectively. While this significant ratio difference is likely to be reflected in the radiation fallout induced injuries, blast and thermal injury differences between the more densely populated cities and Washington will be somewhat less. In categories such as thermal injuries, for instance, the difference is likely to be smaller, with approximately 2 and 4 times higher thermal injuries in New York and Chicago, respectively, relative to those in Washington. This will be due to a variety of interactive factors such as population density and building size/proximity.

Protection offered by Buildings and Vehicles

Buildings provide various degrees of protection from radiation according to the type of construction and location. The level of protection offered typically varies between 10% and 80%. Some of the factors which affect protection include whether the building is in an urban or rural area, the roof and wall type and thickness, number of floors and location of office or home relative to other floors e.g., single story, multistory, basement, top floors, middle floors and lower floors and whether glass is shattered by blast [5, 6]. Blast damage greatly reduces the protection factors through the blowing in of doors, loss of roof integrity, and breaking of windows. At Hiroshima, windows were broken at a radius of 15 km by overpressures of only a fraction of a pound per square inch and in exceptional cases were broken up to 27 km away [6]. Injury thresholds for window glass are considered to be about 0.6 pounds per square inch (psi) [7] or 6 km for 20 Kt and 18 km for 550 Kt detonations from fig 2.29 [8]. Recent research [9, 10, 11] has shown that buildings, even in their best condition, fail to provide good filtration from radioactive particles in the 1-10 micron range, where the greatest health threat exists.

The highest impacts of radiation generally occur when people are caught in the open, or, are tied up in traffic jams trying to escape in vehicles, which provide little protection against fallout. Based on evidence from recent natural disasters in Louisiana and Florida it is likely that major exit arteries after a nuclear event will be completely impassable during the time period when fallout is at a maximum exposing fleeing population to high levels of fallout. It is also expected that due to lack of information getting to the public, many people will try to flee by car or on foot, often in the wrong direction, again exposing themselves to high levels of radiation, as vehicles provide virtually no protection. Shelter in place options are poorly understood, and, without

effective communications and well thought out and prepared plans by both authorities and potential victims, could prove equally disastrous.

Buildings also protect against thermal effects by blocking a direct line of sight to the detonation. The number, size and orientation of windows; presence or absence of intact windows after the blast; size, number of panes and tinting of glass, presence or absence of bug screens, and height, spacing and orientation of buildings all affect the effectiveness of thermal effects. Window coverings and type of furniture and furnishings will respond differently to the increased thermal surge, with some materials being more susceptible to burning than others.

Thermal Effects – Fires and Burns

Absorption of thermal energy can cause fires in the vicinity of the detonation point and burns to individuals, either directly from flash burns or indirectly from the mass fires themselves. Binninger et al [8] have conducted work for DTRA on fire prediction modeling. In urban environments, a large number of variables can affect the intensity and impact of the thermal pulse. These include the weapon yield, the fraction of the total yield emitted as thermal radiation, the distance between the weapon and point of interest, and the thermal radiation transmission through the immediate atmosphere.

It is recognized that casualties resulting from fires, and burns in nuclear attack would be of major impact for civil defense [12] and emergency health care. Major fires can occur when thermal fluences exceed 10 calories (cals) /cm^2 and are very common with fluences over 25 cals/cm^2 although this varies with the type of construction, building contents, and morphology of the city [8, 12]. Fires will start much easier when windows are blown out as glass greatly reduces the thermal fluence inside a room. Skin burns are generally classified into first (like very bad sunburn), second (produce blisters that lead to infection if untreated, and permanent scars) and third degree burns (which destroy skin and underlying tissue) and are dependent upon the intensity of the radiant exposure and the size of the explosive device. The entire US has specialized facilities to treat roughly 1,500 burn victims, and most of these beds are already occupied, which is far less than the burn casualties produced by one single small nuclear explosion. Even a small nuclear event will totally overwhelm our hospitals' ability to take care of resulting burn casualties.

Blast Damage

Most damage to buildings in cities comes from explosive blast. The blast drives air away from the explosion causing objects to be crushed and high winds that can knock objects down, such as people or trees. Four pounds per square inch (4psi) is usually enough to destroy most residential dwellings. Most blast deaths occur from the collapse of occupied buildings, or from people being blown into objects or objects impacting people. Typically about half the people whose low rise buildings collapse on them survive the collapse.

Source Region Electro-magnetic Pulse [SREMP]

Electrical and electronic equipment, both plugged-in and some unplugged, will be severely impacted in areas affected by Source Region Electro-magnetic Pulse [SREMP]. SREMP is produced by low-altitude nuclear bursts and will affect areas of from 3-8 km radius from the detonation point depending upon yield [33], with National Planning Scenarios assuming 4 kms for a 10 Kt device. This is roughly the same region likely to be affected by blast and shock. For hospitals this means power and any connected backup power sources will be lost, and most equipment connected using a plug to access power will likely have been destroyed by SREMP. Equipment that is unplugged may or may not be affected. SREMP affected areas extend up to the 1psi blast contour for small blasts (<10 Kt).

Prompt Radiation

Prompt radiation occurs from fission products in the first second after a nuclear explosion. In general, radiation doses closer to ground zero are very high with a rapid fall off in dose as one proceeds outward. Within the inner zone near ground zero fatalities are generally 100% for those exposed in the open, and, even for those in buildings, mortality will be high except for those in basements.

Fallout Radiation

The conical-shaped plumes of casualties generated by radioactive fallout account for the largest geographic distribution of effect from most nuclear weapon detonations. Most of the radioactive particles generated by the blast will fall within 24 hours on areas extending out from ground zero in the direction of prevailing winds, and is referred to as early fallout. These early fallout areas will have very high fatality rates in limited areas, with the appearance of radiation syndromes over the next several days. A major issue is the contrast between high toxicity in early fallout areas and relatively low or no toxicity in later fallout areas. Indeed, there will be a very great difference in risk between the early fallout induced fatalities and the much wider dispersion of fallout that would occur over the ensuing days. A major problem in risk communication will be the likely severe overestimation of risk from this later fallout, and the subsequent unnecessary dispersion of resources and fear/terror in areas which actually will have relatively little or no risk from the low levels of fallout there.

C. Impact of Small Nuclear Weapons on Washington, DC: Emergency Response Recommendations

Expansion of nuclear attack emergency response personnel

As there is little doubt that a nuclear weapon event will exceed the emergency response system capacity, particularly in the first hours of the event, it is obvious that an expansion of properly trained personnel to meet this glaring deficiency needs to be considered. There are a number of professional groups that have extensive health care training, but are not typically employed in emergency medicine due to the extensive additional training currently (and justifiably) required. Pharmacists, dentists, and veterinarians, for instance, take many of the same core health care courses as do physicians, nurses, and may even exceed the basic health care curricula of most paramedics and emergency medical technicians. It is worth consideration that with a certain level of additional training, these ancillary health care workers could be incorporated into an all-hazards emergency health care paradigm, especially with mass casualty burn care. The mobilization of health care workers from adjoining regions will be needed, as well as legislative remedies to allow for these personnel to function under a different standard of care in the event of overwhelming surge capacity [14].

The gap between resources and mass casualty surge is so significant that we can expect that there will still not be enough health care workers even with Herculean efforts to train and mobilize large numbers of ancillary health care personnel. Particularly problematic is the issue of the security support that this enlarged health care community will require under the unfavorable conditions surrounding the production of mass casualties.

The latent period that will certainly extend for many hours before substantial regional and federal resources arrive dictates local personnel dependence, whether health- and/or security-trained or not [15]. As the overwhelming majority of these victims would not be expected to survive until the regional and federal medical support could arrive, a maximal effort locally would be required in order to reach at least a portion of the patients that would be survivable with minimal care. Survival rates could be significantly increased if ancillary health personnel and properly trained citizens in support roles were trained in limited but strategic roles such as burn triage, debridement of wounds and administration of ameliorative short-term care. Infection is a major problem in the treatment of burn victims as well as other communicable diseases that would proliferate after nuclear attack [16,17,18]. The expansion of the proper debridement of wounds enabled by medical personnel expansion, followed by the appropriate pharmaceutical intervention to prevent subsequent infection would significantly increase mass burn victim survivability. A security support role for these personnel would include protection of patients and marking of the burn victim treatment site with a distinctive flag for further treatment later as additional resources become available. Emergency community clinics with their pharmaceuticals will need appropriately trained staff and protected by local volunteer law enforcement personnel, such as Volunteers in Police Service [19].

We need to estimate numbers and varieties of occupational groups in the Medical Reserve Corps (MRCs) [20] that would constitute the most effective health care and security cooperation in nuclear events, which would also have similar utility in all large-scale CBRNE mass casualty scenarios. The high degree of combined injuries in a nuclear attack will require a particularly broad range of occupational groups, as well as dramatically increased numbers of personnel. One example would be how these ratios should change for community health facilities operating in a mainly burn environment from a nuclear explosion for those areas where it was mainly radiation poisoning. It will be important to recruit as many medical personnel as possible with radiation training. There are a number of physicians with some training in radiation detection and effects in professional organizations, such as the American College of Radiology, the Society of Nuclear Medicine, and American Society of Therapeutic Radiology and Oncology [21].

Supervisor training, cross-training in health care and security procedures, and hands-on exercises are all research questions to be answered for recruiting citizens into health and security support roles. Recruitment of ancillary health care and security support for potentially hazardous service in high consequence events has obvious obstacles. Indeed, in most such events most individuals can be expected to look out for their own enlightened self interest, and for that of their families and valued relationships. As incentives to train and serve away from their families and increase the participation rate in these difficult times, one viable alternative is to look at making medical care available to volunteers' families and friends, special insurance for their homes, and access to special secure zones for their families and friends during such incidents. As the relative success with each approach is determined, additional incentives need to be evaluated, until successful recruitment goals are achieved in the most vulnerable urban target areas.

Critical need for public information campaigns for mass casualty response

Media training also provides considerable opportunities to reach a large number of potential health care and security providers for potential recruitment into high consequence medical support. Indeed, a "marketing" approach to reaching potential populations for recruits would be expedited by mass informational screening such as videos targeted for specific occupational or cultural populations. One viable approach would be to develop specific videos tailored to help recruit specific occupational groups to join the emergency health care providers and security support individuals. These information campaigns could be utilized to establish partnerships between community leaders, emergency responders, and the recruitment of "ancillary emergency responders" to facilitate two-way communication during mass casualty crises. Emergency responders will be able to make effective recommendations and monitor the responses of community members to the recommendations. It is important for the health care workers to know that the likelihood of significant radiation exposure to staff under most circumstances is actually small [22]. Community leaders are gatekeepers to provide access to those community members who could be the most profitable recruits to assisting in local mass casualty management.

Monitoring of nuclear attack patients as part of internally displaced populations

Among the issues related to all mass casualty medical care in the event of a major catastrophe are the thousands of internally displaced citizens (IDCs) who are displaced from their homes for lengthy periods. These people will need to be sheltered, fed, given potable water, non-food items, and basic health care such as immunizations or medicine. Security will be to be provided in adequate numbers to protect them from theft and from sexual assault, both of which reach alarming rates during crises situations all over the world.

It is essential that all IDCs be monitored to ensure that appropriate medical care is delivered to those in priority sequence, and to ensure that black-market activities are suppressed and that security, especially of women and children, is rigidly enforced. Security is always a major factor wherever there are large numbers of IDCs, especially as would occur in conjunction with mass casualties. Indeed, profound effects can be expected with the staff of burn units in these crises with both the surge in patients as well as security concerns [23]. Many people are threatened and prevented from reaching medical care. Monitoring of IDCs requires registration and a data base to keep track of all assistance and population movements.

The need for mass casualty care needs to be estimated carefully for mass burn care needs and in an all-hazards context in close relationship to the registration for IDCs, and appropriate training given. Ratios then need to be established for numbers of IDCs in different situations per security staff member and for IDCs per overall mass casualty patients, as well as subcategories such as IDCs per burn patients. Numerous other details would also be quantified for these categories, such as, for example, safety at toilets, which would depend upon numbers of supplemental toilets, location of toilets relative to perimeter, security of perimeter, location of men's relative to women's toilets and access routes, and lighting of toilets. Principles for laying out camps in great detail have been worked out by UNHCR, Norwegian Refugee Council and others, whether from scratch or extending existing facilities [24,25,26]. Protocols can be set in place in order to allow for high volumes of burn patients to be triaged and treated without a verified burn unit [27]. Systems to track large numbers of IDCs and refugees exist in many countries overseas and are administered by United Nations agencies such as OCHA and UNHCR. These systems need to be adapted and be made ready for use in urban nuclear attack.

Adaptations of pharmaceutical stockpile properties to mass casualty care

The pre-positioning of stockpiles of narcotics for use in mass burn care and the training of community workers will aid in the treatment of thousands of victims that would result from an urban nuclear attack, who otherwise would not receive these critically-needed medications (especially for burn treatment) until much later. In the anticipated target areas, it will be necessary to develop a plan for housing and securing a stockpile of narcotics for use in the event of a nuclear attack on a major city. Narcotics will have to be stored at military bases, police stations and jails. These places have 24 hour security and are easy to locate. The narcotics will have to be stored in a secure

facility and monitored monthly for inventory by a pharmacist. One way to test the security of the facilities in advance of a crisis would be to make up sham morphine vials and place them in such a facility and monitor for theft.

Preparation for a nuclear event would require the development of a procedure for dispensing narcotics in the most efficient manner to serve mass burn casualties under crisis conditions. It will also be necessary to address laws concerning record-keeping, access to medications and HIPPA regulations. In most states the governor has the authority to suspend dispensing laws in an emergency. Well in advance of these mass casualty crises, a general policy would have to be developed and distributed to all State Boards of Pharmacy for lobbying their legislatures for the necessary changes in the law to allow these doctrines to be enacted by law. Training programs for community preparedness to enact these changes in pharmaceutical interventions would include first aid courses, CPR, pain assessment, medication administration, incident command and radio communications. The effectiveness of these training programs would have to be evaluated through simulation testing and table-top exercises.

Rapid mobilization of medical resources and personnel for nuclear attack mass casualty care

As most high consequence events are likely to both occur in urban areas and overwhelm (and derange) the available medical response there, the ability to rapidly and safely transfer medical personnel and equipment from surrounding areas is indispensable [28]. In most high consequence events, and especially in a nuclear detonation, medical personnel ingress and patient egress from the affected areas in urban environments will be severely constrained along land routes by panic evacuation, hazardous chemical, biological, or radiological conditions, building and road rubble distortions, and security and/or quarantine restrictions. The need to get medical personnel from outside areas into the affected urban areas would be severely constrained, especially in the first hours and days after an event when the medical care is needed the most, especially for burn care. Certain categories of equipment, such as ventilators, will also be in very short supply [29,30]. Many of these difficulties could be overcome with the utilization of air transport and medical evacuation capabilities, if adequate landing and response areas could be established where they were needed, and in a timely manner. In these areas, specific locations where airstrips could be rapidly constructed could be identified in advance of a crisis. Medical air evacuation, when quickly rendered feasible, can be the most feasible means of getting large numbers of patients that were seriously in need of medical care to distant medical facilities. The U.S. has the most extensive large airplane transport fleet in the world, which demands its incorporation into a credible urban medical transport response in high consequence events.

For each of the high consequence attack scenarios envisioned in an urban area, the optimal operational locations could be identified for health care response based on air transport intervention potential. In these predetermined regions, landscape features that could permit a minimum of a 3,500' straight, level runway with the least effort would be identified. This is the smallest airstrip that is normally considered by the military as

acceptable for the workhorse airplane of their transport fleet, the C-130. For the most part, this will involve straight sections of wide freeways, although other large areas might be incorporated. These sections could be identified at various intervals in the health care response regions that could be reasonably be predicted from simulations of the most likely regions to have treatable thermal injuries. Obviously, for the protection of the health care workers, planes would not be sent into the "wedge" of radiation victims, but only in the "horseshoe" areas of thermal affected populations. In this way, the limited resources could be concentrated by air transport into the areas where the most treatable patients are, and yet protect the health care workers. Plans for prepositioned equipment and pretrained local crews could be established to turn these planned areas into airstrips in the first hours after a high consequence event. Items such as bulldozers and sweeper trucks could be placed in warehouses in between nearby airstrip prospect areas, with the crews that would use them living and working in the immediate area. A certain number of supplies could be expected to get the medical response started with the arrival of the first personnel by air. In all of these considerations, a key element is the protection of the responding personnel, where every effort should be made to keep effective doses below 500 mSv (50rem), whole body doses below 1,000 mSv, and equivalent doses to the skin below 5,000 mSv [31].

Decision-making would be a key aspect of this air transport plan, as incorporated into the training and mobilization plan utilized for the medical and security crews involved in the effort. The ratio of security to medical personnel would need to be established over the course of air transport process. Depending on the security of the site, a higher number of security personnel may be needed if communications from the site indicate instability exists. Issues related to body disposal and removal will also require enhanced security personnel ratios with the expanded medical presence, though appropriate training for the security personnel is essential to preclude a rapid decline in performance under the stressful conditions [32,33]. The ratio of personnel versus supplies would be another issue – a high ratio of personnel: supplies would be expected in the first flights since some initial supplies were prepositioned, unless communication establishes that supplies have been lost by interdiction or attack. Research should be instituted into the decision making process to establish the progressive ratio change of more supplies and less personnel. Still another complicating factor is the prolonged nature of burn treatment, which will tie up very limited hospital resources in competition with other injury treatment (i.e. trauma) with a higher turnover rate which many will consider a more "efficient" use of these resources.

Conversion of Military Vessels to Civilian Emergency Response Platforms for Nuclear Attack Emergency Response

Historically, emergency response/relief efforts for disasters in coastal zones have consisted primarily of the mobilization of land based operations and assets, supplemented by available Navy and Coast Guard vessels. The unusually heavy 2004 and 2005 hurricane seasons exposed enormous weaknesses in the current land based coastal disaster response operations and dramatically illustrated the need for a more balanced

approach in managing large-scale coastal disaster response with flexible maritime resource assistance.

One solution to this need would be to convert military vessels slated for removal from military service to a new role as civilian emergency response vessels dedicated to responding to large scale disasters in the coastal zones of the U.S. At present there exists an overwhelming need to provide specialized emergency response platforms and response teams that are comprehensive in nature and able to quickly overcome a number of possible disaster response shortcomings with solutions that help to further integrate local, state, federal, military, and civilian disaster relief efforts. In order to maintain cost effectiveness, these platforms should be privately built and operated, while being deployed and supervised at the federal level so as to not adversely affect current disaster planning and operational preparedness.

The flexibility and multitasking capabilities of this approach are based upon the use of obsolete, non-retention equipment and ships currently in the possession of the federal government. The use of these ships and equipment will relieve government disposal dilemmas and save millions in tax dollars while providing chemical, biological, nuclear (CBN) protected, self-sufficient and hardened emergency response platforms and logistical centers for "on scene" emergency response support for coastal disasters. This will enable emergency response personnel to carry out a more efficient and effective response during a mass casualty event or other large-scale disaster. This could provide a modern maritime emergency response platform that is capable of responding and providing disaster response and recovery to a coastal area of more than 15,000 square miles—that can integrate and enhance the effectiveness of both civilian and military disaster response teams and assets. These ships could address a number of problems inherent in the areas of mass casualty/emergency response, including: providing improvements in response capability and care of casualties, consumables provision/distribution, fuel distribution, transportation, safety, and overall disaster site command and control. With more than 60% of American citizens living in coastal counties, the use of these ships will provide much needed and unprecedented support for a number of important laws pertaining to national security such as: P.L. 109-417/The Pandemic and All Hazards Preparedness Act, Homeland Security Presidential Directive #18, and #20, National Security Presidential Directive #51, and the National Communications System Directive #3-10.

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References

1. American College of Emergency Physicians. **SARS-SP Task Force 2004,**. [http://www.frontlinesmed.org/SARS-SP]

2. National Commission of Terrorist Attacks Upon the United States: **9-11 Commission Report** [http://www.9-11commission.gov/report/911report.pdf]

3. Department of Homeland Security: National Response Plan. [http://www.dhs.gov/xlibrary/assets/NRPbaseplan.pdf].

4. Eisenbud M: **Environmental radioactivity from natural, industrial and military sources.** 3rd Edition, Academic Press; 1987

5. Glasstone S, Dolan PJ: **Thermal Radiation and Its Effects, chapter 7 in the effects of nuclear weapons United States Department of Defense and the Energy Research and Development Administration.** 3rd Edition. 1997.

6. British Medical Association: **The medical effects of nuclear war.** British Medical Association 1983.

7. **Infosource Group, Toronto, Canada American Directory of Hospitals**. 2004.

8. Binniger G, Hodge JK, Wright S, Holl S: **Development of a fire prediction model for use within HPAC.** Unpublished report. L3 Titan Corp. San Diego, CA; 2003

9. Thatcher TL, Layton DW: **Deposition, resuspension and penetration of particles within a residence.** *Atmospheric Environment* 1995 29(13): 1487-1497.

10. Wallace L: **Indoor particles: a review.** *J of the Air and Waste Management Association* 1996 **46**:98-126

11. Chao CY, Tung TC: **An empirical model for outdoor contaminant transmission into residential buildings and experimental verification.** *Atmospheric Environment* 2001, **35**: 1585-1596

12. Lynn E. *Whole World on Fire.* Ithaca, NY: Cornell University Press; 2004..

13. Brode HL. *Fire Targeting Methodology Improvements and Automation.* Alexandria, VA: Defense Special Weapons Agency: Technical Report DNA TR; 1996:94-100.

14. Parker MM. **Critical Care and Disaster Management**. *Critical Care Medicine.* 2006;34:3:S52-S55.

15. Hick JL, Hanfling D, Burstein JL, et al.. **Health care facility and community strategies for patient care surge capacity.** *Annals of Emergency Medicine.* 2004;44:253-261.

16. Abrams HL, von Kaenel WE. **Medical survivors of nuclear war: infection and the spread of communicable disease.** *N. Eng. J. Med.* 1981;305:1226-1232.

17. McIrvine AJ, O'Mahony JB, Saporoschetz I. **Depressed immune response in burn patients.** *Ann. of Surg.* 1982;196:297-304.

18. Munster AM. **Immunologic response to trauma and burns: Overview.** *Am. J. Med.* 1984; 176:142-145.

19. Volunteers in Police Service [FEMA web site]. Available at: http://www.citizencorps.gov/programs/vips.shtm. Accessed July 12th, 2007.

20. Medical Reserve Corps [Medical Reserve Corps web site]. July 13th, 2007. Available at: http://www.medicalreservecorps.gov/. Accessed July 10th,2007.

21. Mettler FA. **Medical resources and requirements for responding to radiological terrorism.** *Health Physics Society.* 2005;89:5:488-493.

22. Bushberg JT, Kroger LA, Hartman MB, et al. **Nuclear/radiological terrorism: emergency department of management of radiation casualties.** *The Journal of Emergency Medicine.* 2007;32:1:71-85.

23. Powers PS, Maher M., Helm MD, et al. **The impact of a disaster on a burn unit.** *Psychosomatics.* 1986;27:553.

24. UNHCR. *Handbook for Emergencies.* Geneva: UNHCR; 1982.

25. Kent Harding D. *Camp planning.* [Draft]. Geneva: UNHCR; 1987.

26. Norwegian Refugee Council Camp Management [*NRC* web site]. Available at: http://www.nrc.no/NRC/eng/frames/camp.htm. Accessed July 10th, 2007.

27. Leslie CL, Cushman M, McDonald GS, et al. **Management of multiple burn casualties in a high volume ED without verified burn unit.** *Division of Trauma/General Surgery.* 2001;469-473.

28. Abrams HL **Medical resources after nuclear war: availability vs. need.** *J. Am. Med. Assn.* 1984;252:653-658.

29. Kumar P, Jagetia GC. **A review of triage and management of burns victims following a nuclear disaster.** *Burns.* 1994; 20:5:307-402.

30. Rivara FP, Nathens AB, Jurkovich GJ, et al. **Do trauma centers have the capacity to respond to disasters?. Injury, infection and critical care.** *The Journal of Trauma.* 2006;61:949-953.

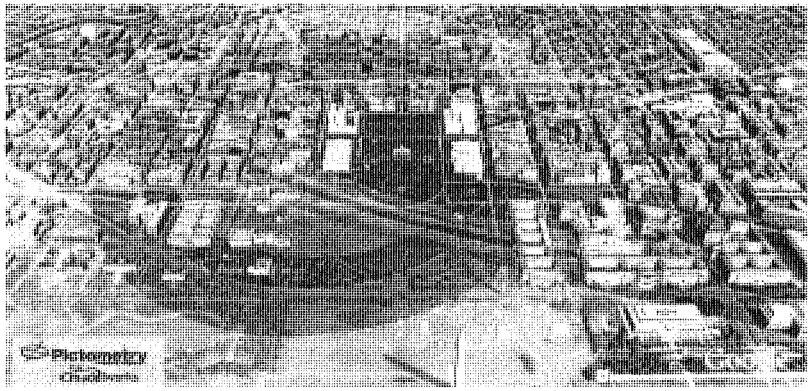
31. Gonzalez AJ. **Radiation protection in the aftermath of a terrorist attack involving exposure to ionizing radiation.** *Health Physics Society.* 2005;89:5:418-446.

32. Alexander DA, Wells A. **Reactions of police officers to body-handling after major disaster.** *Br. J. Psychiatry.* 1991;159:547.

33. Taylor AJW, Frazer AG. **The stress of post-disaster body handling and victim identification work.** *Journal of Human Stress.* 1982;12:4-12.

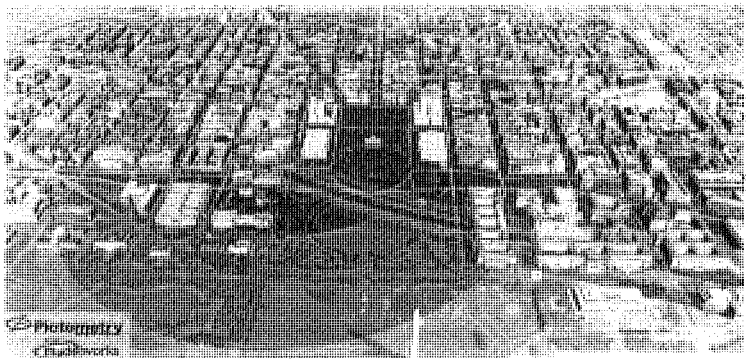
Blast and Thermal Effects of a Ten Kiloton Terrorist Nuclear Weapon Near the White House

IHMD



COLLEGE OF PUBLIC HEALTH
The University of Georgia

Thermal Effects 10Kt
- 1st Degree Burns
- 2nd Degree Burns
- 3rd Degree Burns
- Mass Fires 50% Probable
- Mass Fires 90% Probable



Radiation Fallout 10Kt (REM)

>830	150 - 300
530 - 830	75 - 150
300 - 530	<75

Blast Effects 10Kt

Glass Injury	1 psi
10% Casualties	3.8 psi
50% Casualties	4.9 psi
10% Fatalities	7.1 psi
50% Fatalities	8.1 psi
Almost all Buildings Destroyed	12 psi

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The RAND Corporation

Perspectives on the Threat of Nuclear Terrorism[2]

Before the Committee on Homeland Security and Governmental Affairs
United States Senate

April 15, 2008

Introduction

Mr. Chairman, Senator Collins, and members of the Committee, thank you for the opportunity to address the Committee on the important subject of confronting the prospects of a nuclear terrorist attack. I am a Senior Policy Researcher at the RAND Corporation and my remarks will draw on several sources, notably:

- A 2004 exercise-based RAND research effort supported by the Undersecretary of Information Analysis & Infrastructure Protection and the Private Sector Office of the U.S. Department of Homeland Security (DHS) that addressed the impact of a nuclear terrorism attack on the Port of Long Beach. Participants in this exercise included senior government officials as well as senior representatives from private-sector emergency-response organizations and the owners and operators of critical national infrastructures.

- A 2006 RAND publication, *Considering the Effects of a Catastrophic Terrorist Attack*, which built on the 2004 study and further explored the economic impact of a nuclear terrorism attack on a key U.S. port.

- A 2003 RAND analysis of how individuals should prepare for and respond to nuclear detonation, entitled *Individual Preparedness and Response to Chemical, Radiological, Nuclear and Biological Terrorist Attacks.*

- Several other exercise-based RAND studies that examined various dimensions of U.S. preparedness and response in the event of catastrophic incidents, to include bioterrorism attacks, dirty bomb attacks, and Category 4/5 hurricanes.

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[1] The opinions and conclusions expressed in this testimony are the author's alone and should not be interpreted as representing those of RAND or any of the sponsors of its research. This product is part of the RAND Corporation testimony series. RAND testimonies record testimony presented by RAND associates to federal, state, or local legislative committees; government-appointed commissions and panels; and private review and oversight bodies. The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors.
[2] This testimony is available for free download at http://www.rand.org/pubs/testimonies/CT304/.

- The advantages of a nuclear engineering doctorate and four decades of involvement with all aspects of the acquisition, use, and effects of nuclear weapons in the Cold War and subsequently.

Much of what I have to say on this general subject will focus on:

- Characteristics of nuclear terrorist attacks that warrant special emphasis;
- The extent, character, and modalities of potential private sector assistance in order to meet needs both inside and outside the impacted area; and
- The broader economic and commercial implications for the region and the nation as a whole, and the relationship of those economic effects to private sector actions.

In the realm of terrorism, few challenges are more demanding, as your hearings will vividly illuminate, than the challenge posed by a nuclear terrorist attack on one or more major American cities. Any major nuclear or other mass effect terrorist incident will likely have both prompt and prolonged impacts that would severely challenge local, regional, and national response and recovery resources. In advance of such events, plans to properly integrate private (and possibly unique) expertise and resources into national responses and decision-making are consequently of fundamental importance.

The Nuclear Terrorism Threat

In addressing the challenges posed by nuclear terrorism, it is important to recognize the profound uncertainties in any assessment of the current or future threat. In our report, "Considering the Effects of a Catastrophic Terrorist Attack," we postulated a single nuclear device exploding in the Long Beach, California harbor followed by deep uncertainty as to whether another device was already inside the United States, in another U.S. harbor, or in transit. This inescapable uncertainty will play a significant role in any response to a nuclear terrorism event. The nature of the many potential routes by which a terrorist group might acquire a nuclear weapon, and the unlikelihood that this would result from the gradual collection of small quantities of fissile material, emphasize the reality that a terrorist group that acquires one nuclear weapon is more likely than not to possess more. As the efforts supported by the Nunn-Lugar Cooperative Threat Reduction Program have emphasized, there may be nuclear weapons and fissile material from the former Soviet Union states that may never be accounted for, and legitimate fears that either materials or weapons from that or other sources may be available to interested buyers in an emerging nuclear black market.

A Terrorist Nuclear Attack

In addressing the challenges posed by nuclear terrorism, it is important to recognize the uncertainties in any assessment of the current or future threat. As a result, planning and analysis efforts frequently use individual scenarios to provide a way to explore potential future events, their effects, and their implications for response and recovery planning. The centerpiece of RAND's 2004 DHS-supported study featured an exercise that addressed the impact of a nuclear terrorism attack on the Port of Long Beach in California. In the exercise scenario, terrorists conceal a 10-kiloton (Hiroshima-size) nuclear bomb in a shipping container that explodes shortly after being unloaded to a pier in the Port of Long Beach.

We used this attack scenario because analysts consider it feasible, it is highly likely to have a catastrophic effect, and the target is both a key part of the U.S. economic infrastructure and a critical global shipping center. Here I want to emphasize that we did not select this scenario and target because we viewed it as the most likely target of a terrorist attack, but rather an attack (such as that against a financial center like New York or a government center like Washington, DC) that would have a profound strategic impact on the United States because of the immediate impact and the cascading economic and other effects that it would likely produce.

In preparing the scenario, we developed models of the effects of the blast and subsequent radioactive plume overlaid on detailed geographical, infrastructural, meteorological, economic and demographic information about the region. RAND weapons effects experts, psychologists, physicians, economists and others then analyzed the likely effects on critical infrastructures, people and the economy that would unfold immediately following the blast, and in the period immediately thereafter. This analysis was presented to the exercise participants as input to the exercise.

Specifically, participants were informed that as a result of the nuclear explosion there is widespread death, injury and destruction extending two to three kilometers from the blast center. There is widespread damage and fires in the harbor but because of the low yield of the weapon there is relatively little physical damage to the city of Long Beach. People within one to two kilometers of the blast center who were not shielded quickly absorb dangerously high doses of radiation. Those who are several kilometers from the blast center but were not shielded by structures suffer flash burns.

Within ten minutes the mushroom cloud from the detonation reaches its maximum height of 20,000 feet and begins to spread out. Highly radioactive local fallout begins to be deposited immediately but the path of the fallout will initially be uncertain, depending on prevailing winds.

People see or quickly learn about the attack and begin to evacuate from the city. There is likely to be initial misinformation and confusion about the effects of the detonation, the location and consequences of the likely local fallout, and what actions are most appropriate for people in different areas. News program experts will be pervasive but are not likely to agree about the extent of the fallout zone and who should evacuate.

In this context the President and his national security and homeland security advisors will be deeply concerned about the risk of other weapons in other ports or weapons already within the United States. The President can be expected to close all ports for an indefinite period and order the immediate inspection of all rail and truck traffic carrying containers away from U.S. ports.

As models of the possible fallout pattern using current weather data are run, it becomes clear that there will be a serious fallout region many miles wide and extending 20 to 30 kilometers downwind from Long Beach.

Panic can be expected to spread across the Los Angeles area as large numbers of residents attempt to evacuate the city. Gridlock quickly ensues on almost all freeways and major surface streets as cars run short on gas, gas stations are exhausted, and traffic jams shut down the outflow of Los Angeles residents.

The initial effects of the bomb on the population will likely include more than 5,000 fatalities and tens of thousands of injuries, including several thousand serious burn victims. The heavy local fallout presents the prospect of tens of thousands of additional deaths. In excess of 100,000 people are likely to have been exposed to enough radiation to get sick, but the great majority should survive with lingering chronic effects from their exposure to radiation.

Fallout is likely to seriously contaminate at least half of the 10 petroleum refineries in the Los Angeles basin (which represent 40 percent of the capacity that supplies southern California, Nevada, and much of Arizona) with the remainder in the evacuation zone. While some of the refineries in light fallout zones could in principle be reoccupied, it seems clear that personnel safety issues will delay restarting those facilities as well. Because no pipelines flow into the region from other parts of the country, this situation will produce a sustained acute gasoline shortage for the region, a major impact on response and recovery activities, and a government response program that quickly produces gasoline shortages nationwide.

We expect that within three to four days after the attack, most critical infrastructures, including water, sanitation, and electricity, outside of the fallout and blast zone and the heavy fallout zone could begin to be restored. At this point we could expect that the fallout zone will be carefully

mapped with electric utilities, for example, sending repair workers into the cooler parts of the fallout zone for short periods.

The area of radiation contamination (approximately 500 square km) that will require long-term relocation of people and businesses (according to the Environmental Protection Agency's relocation guidelines) is home to an estimated two million people. These people must be moved within a few days and will not be able to take most of their possessions because of the threat of contamination.

Private Sector Involvement in Response and Recovery Assistance

This scenario was designed to foster deliberation among public and private sector exercise participants about their mutual responsibilities, likely actions and constraints on effective action in the wake of an incident of nuclear terrorism. The exercise featured crisis-driven deliberations in which parallel groups of government and private-sector representatives sought consensus on courses of action on a set of key issues and an overall course of action in very challenging evolving circumstances.

We ran this exercise on several occasions in 2004, with senior participants from government and industry representing all of the major critical infrastructures industries (electric power, telecommunications, oil and gas, transportation, medical care, water, etc.).

The exercise focused on the broad private sector involvement in response and recovery assistance to the *affected area* that is directly impacted by the terrorist attack (especially the people therein or those evacuated from the area), and the potential state, regional, and national level critical *infrastructure*-related consequences that emerge as a result of the terrorist attack.

Exercise participants were challenged to address actions to be taken at two points in time:

- 24 hours after the event in terms of *immediate* response and contingency planning/action in the face of substantial uncertainty about effects.

- 72 hours after the event in terms of response activities now working with more information on the extent of the damage and its implications; and planning with a horizon that now extended several weeks or months into the future.

The results of the exercise identified potential private sector roles and contributions in the event of such an attack as well as barriers to private involvement in response and recovery activities. We

will discuss those results in three areas, private sector roles in: (1) providing assistance to affected areas, (2) addressing the infrastructure impacts of a nuclear incident, and (3) the broader economic impacts of such an event.

Assistance to Affected Areas

The exercise succeeded in identifying many key issues in government-private sector coordination in response/recovery assistance to the affected area.

Logistics problems will be huge. The business community, in possession of extraordinary logistics capabilities, will be crucially concerned with who at the federal or state level is in charge of coordinating help from business.

Effective medical care will present the most immediate challenges. Private sector actors, in hospitals and other parts of the medical system, have direct roles in addressing this need. Availability of air transport assets to move the injured will be a problem. Radiation burn patients must have surgery urgently to avoid infection. Burn victims should not be moved much in first 24-48 hours, so medical care just outside of the plume zone will be important.

The strategic response to support area hospitals will need to be coordinated, especially logistics and supplies between hospitals and shelters. All hospitals have just-in-time inventories and will run out supplies quickly, putting a premium on addressing the gasoline problem and getting transport assets for moving medical supplies up-and-running quickly.

Within a few days, replacement of exhausted medical staff will be necessary. Credentialing medical care personnel from outside the area and establishing ad hoc medical facilities also may face problems in terms of liability protection. Ad hoc facilities (e.g., hotels) may also face problems of reimbursement for care.

Long-term sheltering will loom as a difficult problem. The pre-fabricated home industry and large construction companies could surge but only with Defense Production Act authority.

The availability of water, particularly for people in the desert areas, would be a key problem. Private sector organizations would have obvious roles in providing both food and water to affected populations, though coordination with government to ensure such efforts can occur – and can do so effectively – would be needed.

Decontamination will be a huge task and encounter increasingly frustrating delays due to lack of both assessment and decontamination capabilities.

The federal government will need to put a higher priority on long-term effects. A key issue will be a government-private sector framework for mitigating the spillover effect of a destroyed Los Angeles economy on the rest of the nation.

Addressing Infrastructure Impacts

Government-private sector coordination also will be critical to address potential state-, regional-, and national-level critical infrastructure-related impacts.

Companies will be making business decisions based on the information they have, but will be looking for additional information from the government that may influence their decisions, such as when ports will reopen. Information will be needed immediately from the government on staging areas where shipping containers already in the country and in the hands of the private sector may be relocated and inspected. The government will want to know from business what goods are in containers in transit, and what transportation capacity exists in different areas. These examples highlight the need for effective government-private sector communications in the immediate post-attack period.

An early assessment of damage to the ports and critical infrastructures (like electricity) that were directly affected by the attack will be urgently needed. An initial shutdown of much of the commercial transportation network (ports, rail, trucking, and aircraft) is an imperative, but pressures will emerge to lift the shutdown because of the pain it would cause for the entire United States.

Reopening of the U.S. ports and trade lanes would also be crucial to guaranteeing the flow of relief material. A global effort would be needed to redirect U.S. container traffic to other ports and establish delivery priorities. However, operations at other U.S. ports may face problems since most other ports are not as deep as the ports of Long Beach and Los Angeles, making them unusable for larger ships.

The refinery shutdowns in Los Angeles and the temporary halt of all crude imports through other ports will create a major energy crisis throughout California, Nevada and Arizona - with very serious implications for U.S. energy infrastructure and distribution networks. Within seven days, the Alaska pipeline would have to be shut down because there would be no destination for the fuel because of diminished refinery capacity. It could take months to get to the point at which the markets will settle. Without government guidance during this time, companies would be optimizing

for profits with the threat of severe price gouging, which in principle only the government could prevent (e.g., through quickly negotiated voluntary agreements to allocate and transport fuel to the affected region).

The effects on the region's commerce would be just as significant. The just-in-time nature of commerce today also means that businesses and other facilities (e.g., water treatment plants and hospitals) carry small stocks so that a disruption in their supplies can shut them down in a few days. The resulting tenuous viability of many companies (e.g., as a result of the huge loss of infrastructure in Los Angeles) will cause great uncertainty within commercial markets.

Finally, there will be a need to allocate critical relief resources that are in the hands of the private sector (such as food, ice, water, and gasoline – as proven in the aftermath of Katrina) that will require guidance from the federal government about priorities and a relaxation of anti-trust regulations. In such circumstances, industry would likely prefer to enter into a voluntary agreement (e.g., under the Defense Production Act), where if appropriate regulatory rules were relaxed (in particular the length of the review periods currently mandated), individual corporations could more effectively plan for and contribute to a relief effort.

Long-Term Economic Implications

In RAND's 2006 study, *Considering the Effects of a Catastrophic Terrorist Attack*, we addressed the prospect that the economic effects of the catastrophe would likely spread far beyond the initial attack, reaching a national and even international scale. Decision makers would face two particularly difficult challenges: keeping the global shipping supply chain operating and restoring orderly economic relationships.

In the aftermath of the attack, different stakeholder groups affected might have differing interests. Consequently, their decisions might often be at odds. How to contend with such conflicting interests is the key challenge for policymakers. In terms of global shipping, the main tension might be between the political aim of preventing a future attack and the business interest in seeing that U.S. ports and the global shipping supply chain continue to operate.

While the business community would want unaffected U.S. ports to reopen as early as possible (or maybe even stay open), harsh realities facing the financial and real estate communities might prove a barrier. The Long Beach attack might cripple an insurance industry struggling to absorb massive losses from claims. Insurance would be in tremendously short supply—particularly for terrorist and nuclear risks. Without it, ports and related infrastructure could not operate, raising concerns of a sustained closure of U.S. ports, or a period of substantially reduced port activity.

The attack will also threaten the financial industry as many loans and mortgages in Southern California threaten to default without government assistance and the nation's largest insurance companies face severe financial demands. In addition, investors in some of the largest financial markets might be unable to meet contract obligations for futures and derivatives.

Although the exact outcomes are difficult to predict, these hypothetical consequences suggest important vulnerabilities. Restoring normalcy to economic relations would be daunting, as would meeting the sweeping demands to compensate all of the losses.

Conclusions

In closing, I would like to leave you with the following salient points.

The Long Beach exercise described above highlighted many of the horrors and challenges that could be expected after a nuclear detonation in a strategically important U.S. port city like Long Beach. Through this exercise, we sought to elicit the interest and engagement of senior private and public sector decisionmakers to understand the capabilities they could bring to the pre-attack planning process and to the post-attack emergency response and longer term recovery efforts - and the constraints that could undermine such efforts.

In each of our exercises, there was clear indication that private sector owners and operators of critical infrastructure resources stand ready to offer their services selflessly and to the fullest extent of their capabilities. At the same time, however, fears were expressed that there may be insufficient channels of communication between government disaster managers and private sector managers to ensure that available private sector resources can be quickly and effectively marshaled for the recovery effort.

The good news here is the possibility that the United States can improve preparedness for such a major incident by drawing on available private sector capabilities, provided that mechanisms are in place to do so effectively and barriers that might otherwise prevent it are identified and removed. Such prevention efforts would benefit the country not only in the extreme case of nuclear terrorism, but would also be broadly applicable to the preparation for and response to other catastrophes such as major earthquakes and floods that could require mass evacuations for months or even years of contaminate regions.

Thank you again for this opportunity to address the committee and discuss RAND's work in this important area.

John R. Gibb
Director - New York State Emergency Management Office

Testimony
Before the

Senate Committee on Homeland Security and Government Affairs

On

"Nuclear Terrorism: Confronting the Challenges of the Day After"

The United State Senate

April 15, 2008

Introduction

Thank you Chairman Lieberman, Ranking Member Collins and members of the Committee for the opportunity to appear before you today and for your leadership in recognizing, and being willing to discuss one of the true catastrophic terrorist scenarios that our country faces. My name is John Gibb, and I am Director of the New York State Emergency Management Office. I have served as Director of SEMO since December, 2005, and I have 26 years of experience in emergency management at the state and local level. Interestingly, my first experience in emergency planning was associated with the development of crisis relocation plans in the early 1980's, which were very detailed plans focused on evacuating major cities in the face of escalating international tensions which could result in nuclear conflict.

While the ten kiloton yield improvised nuclear device proposed by National Planning Scenario Number One is only a fraction of the size of the nuclear weapons that

were historically aimed at our nation, the consequences of the detonation of a ten kiloton, or even a one kiloton improvised device would present devastating, catastrophic and overwhelming challenges to the response community. My comments address only a few of the response challenges and how New York would address these issues with our current plans and resources.

Command and Control

A nuclear incident would generate an immediate, large scale federal response and local, state and federal emergency plans need to accurately anticipate how we will tie together response assets as well as command and control across all levels of government. The Incident Command System (ICS) component of the National Incident Management System (NIMS) has given the response community a platform from which to build the large response organizations necessary to respond to an event of this scope.

In New York State, we have used ICS as our state disaster management system since 1996 and Governor Paterson has continued this requirement for state agencies. New York City's development and use of CIMS, the Citywide Incident Management System is another best practice for having in place a scalable, unified management system that will give the response organization the best chance to integrate the local, state, regional and national resources that would be required to respond to a nuclear incident. The basic tenets of ICS including chain of command, unity of command / effort / outcomes, and efficient span of control will each be a key to the response.

In New York State we are now focusing our ICS training efforts on developing deployable incident management teams to build additional command and control support resources for impacted communities. Federal NIMS implementation guidance should

evolve beyond requirements for training numbers and recognize this need. Our state would benefit from a deployable, state based - national cadre of incident management teams that could be immediately integrated into response operations to augment our state system.

Assessment and Evaluation

Local, state and national operations centers recognize the absolute necessity to have a "common operational picture" – processes and communications in place so that all involved see the incident and its implications in an accurate and similar way. In a nuclear event life saving decisions will need to be based on accurate assessments of radiation levels and downwind projections. If there is a detonation, how quickly will we know it was a nuclear device? Who / what agency can look at an incident scene and make an accurate assessment of the yield of the device and the amount of radioactive material that was involved and potential downwind exposures? Short of that how will we collect and analyze radiological date from the scene and determine downwind impacts?

In New York we have three commercial nuclear power plant sites. Our planning for potential emergencies at these sites has allowed us to develop processes to collect and analyze radiological information and make projections of downwind exposure levels and impacts.

We are also fortunate to host a well-trained and practiced National Guard Civil Support Team (CST). The team is an immediately deployable state asset that can greatly assist on-scene / near scene assessment and evaluation efforts for incidents large and small. The CST is a unique and critical resource in our State and a key component of our

response to WMD incidents. It is critical that the proposed second CST team to pemanently cover New York City be authorized by the Senate.

Post 9/11 investments of homeland security funding in our state has resulted in the purchase and deployment of new radiological detection equipment and more responders trained to utilize it. The federal government also has radiological monitoring resources that need to be integrated into the response as well. Our plans need to better address how this assessment and evaluation effort will be unified and integrated. The public will quickly lose confidence if we have conflicting assessments of the magnitude of the event. We need to ensure that our operations can de-conflict different model results and agency analysis of data. A commitment to and use of common national assessment models would help to alleviate this problem. Next year, New York State is planning a full-scale exercise with Federal Radiological Monitoring and Assessment Center (FRMAC) to test our respective capabilities. We will need to leverage this federal / state partnership not only for response but for re-entry, return and recovery efforts as well. The post-blast reclamation efforts will be driven by radiological assessments and the potential area contaminated could be several thousand square miles.

Equally important is the integration of pre-detonation and real time threat information (post-blast) into the emergency community. The Intelligence Sharing Environment recently created is greatly enhancing the movement of intelligence in the law enforcement and intelligence communities, but there is still work to be done in getting this information from the state fusion centers into the non-law enforcement community in a productive, real-time way to ensure that everyone has the most current information and common operating picture.

Protective Actions

A key to saving lives in hours following a nuclear detonation will be giving members of the public clear direction on what they need to do to protect themselves. The population in high exposure areas will not immediately sense that they are in danger, and yet every minute that evacuation is delayed is potentially life threatening. How will people receive emergency information?

In New York State we have NY-ALERT which is a web-based, all-hazards alert and notification system developed by the State Emergency Management Office. This system, designed and built by a small but visionary Information Technology staff at SEMO, allows public officials to simultaneously broadcast emergency information through series of gateways including the Emergency Alert System; email; blast faxes; text messages to cell phones; posting to the NY-ALERT site; RSS (real simple syndicate) feeds; and voice messages to landline and cell phones. We have been implementing NY-ALERT statewide over the past ten months and it is currently the alert and warning system for 55 of our State University campuses, 25 City University campuses and many counties with additional coming on board each week. We have more that 1.3 million subscriber records already accessible through NY-ALERT. The system has been built using state resources and Governor Paterson has made a significant commitment of $5.4 million, in our state budget passed just last week to further enhance and support the system. It has been frustrating to have available Hazard Mitigation Grant Program dollars and proposed investments in NY-ALERT be not allowed. Federal guidance on the use of mitigation funding should be revisited to ensure that investments in capabilities

that directly mitigate the consequences of catastrophic disasters be allowed. We need to look at how we can best enhance national warning capabilities as technology provides us new opportunities.

Emergency Worker Exposure Control.

We have a fundamental responsibility to protect our emergency workers and New York State has well defined protocols to limit emergency worker exposures during radiological incidents. The exposures that could be expected from a nuclear detonation are projected to be at levels that greatly exceed any that we currently plan for. As an example, we train state responders that we would not expect them to be subject to an exposure of more than 5 REM for an emergency. Yet for a nuclear detonation scenario, we will have life saving and security related missions to perform in areas where exposures could be hundreds of REMs if projection models are accurate.

Dosimetry stockpiles are limited and in some cases we are relying on cold war era instrumentation that is more than 50 years old. Our first responders are the finest in the world, and they will take action in the early hours of an incident of this type to rescue, evacuate and decontaminate the injured and provide evacuation support for people to get out of harms way. We need to re-examine and provide guidance and alternative approaches to federal, state and local emergency planners that will allow us to address this issue.

Victim Care

A nuclear detonation in a densely populated area could cause hundreds of thousands of casualties. On-scene decisions regarding rescue of people who have already

been exposed to lethal doses of radiation, or sending responders into areas where they could be subject to lethal exposures is beyond current training and planning guidance. There is no ready system in place or planned for that would result in the victims of this type of event receiving pre-hospital or definitive care in any reasonable time frame. The National Disaster Medical System (NDMS) should be realistically assessed to determine the gap that exists in their abilities to respond adequately to this type of scenario.

Other Issues

Decontamination and sheltering of evacuees, fatality management, critical infrastructure maintenance and operation, integration of response resources from across the nation, long term denial of entry into impacted areas, business and economic continuity, and short and long term recovery efforts beginning the second day after are all equally problematic and likely beyond the scope of our state level plans in New York.

A Need for Continued Planning and Investment

The Urban Area Security Initiative (UASI) program and the Urban Area Work Groups and Regional Transportation Security Work Groups that have been formed over the past five years are likely the most appropriate places for continued planning work in this area. The Secure the Cities Program (and an earlier Radiological Pilot Program), while focused on prevention, is providing equipment, basic training and data sharing protocols and processes that will be adaptable and critical to the post-blast response.

Commissioner Joe Bruno from the New York City Office of Emergency Management has organized an ambitious regional planning effort for this year's newly announced Regional Catastrophic Planning Grant Program which will be addressing no

fewer than eight projects aimed at closing catastrophic planning gaps including: development of a regional catastrophic planning and operating system; evacuation and sheltering coordination plans; interim and long-term housing operations plans; critical infrastructure protection and restoration plans; a northeast mortuary operations plan, and regional continuity of operations plans. The RCPGP, while presenting administrative challenges, offers hope that there can be sustained funding to support regional, multi-state planning efforts that will focus on catastrophic emergencies of all types including the nuclear scenario.

Federal catastrophic planning efforts need to be transparent as possible to the response community including the development of "playbooks", operational and tactical plans for a nuclear scenario. Federal plans will work best if they are developed jointly with state and local planners. The scale of an event of this nature is huge and any meaningful planning effort needs to be sized to the task with a commitment to dedicate the resources, training, and exercises to provide the reasonable assurance that the plan can be executed.

Existing federal response stockpiles including the Strategic National Stockpile, the Pre-positioned Equipment Program, and FEMA commodity distribution centers should be measured against the local and state gaps that would be created by the nuclear detonation scenario so that we have a clear picture of what portion of the response can be supported.

Thank you again for the Committee's examination of this issue and the opportunity to speak to you today.

"Survival in the Nuclear Gray Zone:

Why We Have Not Addressed Response Planning for Nuclear Terrorism – and Why We Must"

Testimony before the U.S. Senate Committee on Homeland Security and Government Affairs
15 May, 2008

Joe Lieberman, Chair
Susan Collins, Ranking Member

By:

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Since the terror attacks of September 11, 2001, the United States has faced an Anthrax bioterrorism attack, the 2002 Smallpox scare, an enormous northeast regional blackout, a sustained concern for possible pandemic influenza, the devastation of Hurricanes Katrina and Rita, the related flooding of New Orleans and last year's Minneapolis bridge collapse. And we have also witnessed global catastrophes, two this week alone in Myranmar and China, that have reinforced the necessity for any nation to optimize its capacity to prevent, respond to, mitigate and recover from megadisasters.

To that end, beginning with the creation of the Department of Homeland Security, the federal government organized and paid for one of the largest expansions of federal bureaucracy in U.S. history – and did so in record time. Concurrently, agencies at all levels of government, from states and local jurisdictions to federal, have incorporated disaster planning as a core responsibility. Furthermore, many private sector entities and non-profit organizations have also incorporated disaster planning into mainstream operations. Citizens, as well, have been encouraged to appreciate the importance of individuals and families preparing for disasters.

Whether or not the nation has been successful – or is truly on the right track - in this complex process of "getting prepared" remains a debatable point, although no one doubts that the size and scope of this endeavor is formidable. Still, nearly seven years after 9/11, enormous challenges remain. Hospitals and the health care systems remain by and large unprepared, accountability for billions spent on all aspects of preparedness are far from transparent, some of the biggest preparedness challenges, like pandemic flu planning remain grossly underfunded, and so forth.

But among the most concerning realities of our disaster planning agenda has been the apparent failure to grasp, organize or implement plans to mitigate and respond to a terrorist attack based on detonating a nuclear device. This is in spite of the fact that the detonation of 10Kt improvised nuclear device is one of 15 planning scenarios developed in 2004 by the White House Homeland Security Council. Of further interest is the fact that since 2001 the Department of Defense has permitted the engagement of military personnel in homeland defense issues and, under classified conditions, DoD planners have developed training modules and exercises for civilian applications.

These factors not withstanding, few –if any – major U.S. urban centers have taken on the admittedly daunting challenge of planning for a meaningful public health response to a nuclear detonation. This aversion is evident even in cities where planning for other types of natural and terror-related disasters is relatively sophisticated. Complicating matters is a serious level of confusion among federal agencies, including the DoD, with respect to how, when and with what resources the federal government engages in the response to a nuclear attack.

This Committee has previously heard testimony from panels addressing the consequences of nuclear terrorism, so there is no need for these concerns to be reiterated here. What I want to focus on are (a) the principles of survivability and (b) understanding the

impediments that currently inhibit rational response planning for the nuclear threat, even as we acknowledge that this would be a particularly horrific form of terrorism.

Put another way, it is critical that we dispel the myths of nuclear terrorism and get to the business of planning for this potential catastrophe, much as we do for the possibility of a major earthquake in the heart of a city, a major meltdown of a nuclear power plant or a 1918 style pandemic influenza. Planning for all of these megadisasters has long been underway in most states and local jurisdictions; planning for the "nuclear scenario" has essentially not been on the table.

I believe that one important reason we've neglected nuclear terrorism is consequent to the persistence of long-held misconceptions regarding nuclear threats in the age of terrorism. Let's call them the "three principle myths" of nuclear terrorism:

#1 The Myth of Extreme Improbability

This issue was presented in detail in previous hearings of this Committee. And, from my perspective, we commonly hear emergency planners say something on the order of "nuclear terrorism is highly improbable; we want to focus on those disasters that are more likely to occur." But, unfortunately, like other terror threats there is simply no objective means of determining probability with respect to when or if a terrorist might detonate a nuclear weapon in a location that might be seen as a high value target. There is simply no known objective method for comparing relative risks of nuclear terrorism in New York, Los Angeles or Washington against other large-scale disasters.

And as previously discussed here, the reality of "loose nukes", the relative availability of plutonium and highly enriched uranium, porous borders, unchecked cargo containers and air cargo, and an unending pipeline of terrorists who are increasingly well educated and determined make it impossible to ignore the nuclear threat.

#2 The Myth of Planning Futility

Unique among potential disaster scenarios, radiological events – especially nuclear explosions - are shrouded in a special level of dread that have captured the imagination of disaster planners, as well as the general public. There are widespread beliefs that such catastrophes are simply not survivable, that any efforts to save people would be futile and that disaster response planners should concentrate on events that are both more likely and inherently thought to be more survivable.

In our view, the principle reason that such perspectives are so deeply ingrained has to do with images developed – quite appropriately – during the Cold War and its most dangerous manifestation, i.e., the creation of vast arsenals of megaton level nuclear weapons between the Soviet Union and its allies on the one side and the U.S. and its allies on the other.

At its peak, more than 60,000 warheads were in the combined arsenals; and an attack or perceived attack by one would trigger a counter-attack by the other. Thousands of very high yield nuclear weapons would obliterate the two major antagonists and many other countries, as well. This vision of Armageddon has been sustained well beyond the end of the Cold war to the point where it has permeated the public consciousness and impaired planners and citizens from taking steps to ensure maximum survival in the event of nuclear terrorism. It is a nearly intractable set of beliefs that we seem unable to shake, in effect a perception that inhibits the possibility of rational planning.

The central point is that all-out nuclear war with the Soviets would *not* have been survivable in any meaningful way; but nuclear terrorism with a single, relatively low-yield smuggled or crudely constructed bomb - while fatal for many to be sure – would be survivable by many more with appropriate information, planning and response.

#3 The Myth of Federal Rescue: the Cavalry Is Not On Its Way

It is clear that the public at large harbors entirely unreasonable expectations regarding the rapidity and efficiency of disaster response systems. A study conducted last year by my own program, The National Center for Disaster Preparedness at the Columbia University Mailman School of Public Health, showed that more than one in three Americans believe that in the event of a catastrophic disaster, help would arrive within one hour (37%). Interestingly, this belief was even more prominent among big city residents; 45% expecting to see help arrive within the one-hour window. And overall, two-thirds of Americans believe that help will arrive "within several hours". These beliefs persist in spite of information from FEMA, the American Red Cross and others that help may not be on scene for more than a day under a variety of disaster scenarios; and in some cases the public is asked to be prepared to survive and self-care for 72 hours or more. The fact is that in a megadisaster, the public represents the true "first responders".

On another level, unrealistic expectations may also be seen among professional disaster planners. While data does not yet exist to support this notion, it is my impression from conversations with state and local disaster planners throughout the U.S., that federal teams will somehow be immediately available to assist local efforts in managing the consequences of nuclear terrorism.

It is true that federal response teams from a range of agencies, including the DoD, do exist, many operating in the capacity of law enforcement, counter-terrorism and military response, but few assets can be expected to provide large-scale medical triage, hospital care and so forth. The National Guard's WMD – Civil Support Teams are available for rapid assessment, technical advice and general support – but not to appreciably add to actual medical response capacity. And on the civilian side, National Medical Response Team, consisting of 60 highly trained medical and technical specialists is available and trained to enter hot zones for decontamination of affected patients.

Still, in last month's testimony before this Committee, John Gibb, director of New York State's emergency Management Office stated, "There is no ready system in place or planned for that would result in victims from this type of event receiving pre-hospital or definitive care in any reasonable time frame". New York, like most other states, has, on some level realized that substantial response capacity to nuclear terrorism is not available within their borders – and the only hope is to count on federal resources. But this latter concept is, at best, a work in progress.

Perhaps the most serious issue affecting the nation's ability to respond to nuclear terrorism is a complex state of confusion with respect to the role of the federal government around planning for and response to a nuclear detonation. No state, region of locality has the necessary resources to respond effectively to a 10Kt nuclear explosion.

How and when federal resources – DoD and Civilian - are deployed and under what legal authorities is part of the problem. The other key issue, however, has to do with the operational capacity - in terms of personnel, expertise, medical counter-measures and medical facilities – that is actually available to the federal government for rapid deployment to an area that has experienced large-scale nuclear terrorism. We have every reason to believe that even if the total federal capacity was coordinated, it would be insufficient to meet the needs of potentially hundreds of thousands of nuclear survivors with trauma, burns and radiation injuries.

In sum, the federal cavalry is, at this point simply may not ready for the level of response required to meet the needs of nuclear terror in any American city. States and localities should not be dependent upon a sufficient federal rescue, although it is conceivable that this situation could be reversed with sufficient resources and redefining how and when the federal response can be activated.

Surviving in the Gray Zone

This is a straightforward concept that should be guiding preparedness efforts for nuclear terrorism. As was made abundantly clear from the testimonies heard in previous expert panels, the detonation of a 10 KT nuclear weapon during a workday in downtown Washington, DC or New York City would immediately kill between 100,000 and several hundred thousand people who were within a radius of approximately two miles. But accepting the fact that actual consequences will depend on many conditional factors, including precise location and yield of the explosion; structural configurations, wind conditions and so forth, think of the following basic description:

- Radius of .5 mile from ground zero – vaporization; lethal zone
- .5 mile to 2 miles, extraordinary fatality rate and life-threatening, complex injuries
- 2 miles to 8 miles, plus the fallout plume: *"The Nuclear Gray Zone"*
- 8 miles – 10 miles and beyond, very minimal immediate fatalities

The fact is that survival in the gray zone, while by no means assured, will be highly dependent on effective pre-event planning and citizen awareness. And significantly higher numbers of people will be located in the gray zone than in the lethal zone, optimal survival is made possible by a range of planned strategies, including:

- An informed emergency response system, including official agencies and voluntary organizations
- An appropriately stocked shelter system
- Pre-positioned medical countermeasures
- Well understood contingency relationships with state, regional and federal resources that have been clarified and exercised by key planners on all levels
- An informed citizenry, i.e., basic information about what behaviors are likely to improve the odds of survival

Conclusion:

Planning for nuclear terrorism must be a high priority for all levels of government. While prevention of catastrophic terrorism through sophisticated intelligence gathering, counter-terrorism measures and detection, is the most desirable concept, this is not always possible. Short of the eventual abolition of all nuclear weapons, the nation needs to understand that the importation of an illegally obtained nuclear device or the building of one here on U.S. shores remains challenging, but not overwhelmingly so for appropriately educated, highly dedicated and well-funded terrorists aiming to do harm to America.

In the meantime, Congress should consider expanded funding to:

(1) enhance our understanding of the barriers to nuclear preparedness planning;

(2) support more research on critical workforce needs and resiliency;

(3) provide states and at risk urban areas with greatly enhanced stock-piling and distribution capacity for medical counter-measures, as well as contingency systems needed to assure availability of emergency care for injured survivors; and

(4) substantially bolster the capacity and clarify the authority of the federal government to deploy massive resources in the event of a nuclear terror attack anywhere in the nation.

- end -

Testimony Presented to the Senate Committee on Homeland Security

Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath

Ira Helfand, MD, Physicians for Social Responsibility
May 15, 2008

Good morning, Chairman Lieberman and members of the Committee. Thank you for the opportunity to speak with you this morning to share both my concerns about our country's lack of preparation for a nuclear terrorist attack and several suggestions for improving our preparedness.

My name is Ira Helfand and I have practiced emergency medicine in western Massachusetts for 25 years. In addition I am a member of the Board of Directors of Physicians for Social Responsibility (PSR). I would like to submit as part of my testimony our 2006 report, The US and Nuclear Terrorism.

The Threat

The danger of nuclear terrorism has been clear for some time. Before September 11, in early 2001, a Department of Energy task force warned that "the most urgent unmet national security threat to the United States today is the danger that weapons of mass destruction or weapons useable material in Russia could be stolen and sold to terrorists or hostile nation states and used against American troops abroad or citizens at home"

The attacks of September 11 clearly confirmed that there are terrorists willing to kill large numbers of innocent civilians to further their agenda, and two years later in December 2003 President Bush issued Homeland Security Presidential Directive Eight, which called for the establishment of adequate "policies to strengthen the preparedness of the United States to prevent and respond to threatened or actual domestic terrorist attacks."

Two years after that, in 2005, the Department of Homeland Security prepared two documents, the *National Planning Scenarios,* which detailed a number of the possible terrorist attacks we might need to deal with, and the *National Preparedness Goal* which set forth goals for dealing with these threats but which had no clear plan or timeline for implementing these goals.

And in September 2005 the disastrous response to Hurricane Katrina made it absolutely clear that we did not have a strategy for dealing even with a major natural disaster, let alone a nuclear attack on one of our cities.

Now, three years later we still are not prepared to deal with a nuclear terrorist attack.

A Scenario

In October of 2001 the British Medical Journal asked me and several of my colleagues at PSR to prepare a description of the medical effects of a nuclear terrorist attack, which they published in February of 2002. The scenario assumes that terrorists ship a Hiroshima sized bomb in a cargo container and detonate it in the Harbor of New York. This is not a worst case scenario, as much of the blast effect occurs over the Hudson River. Nonetheless our model estimates that the 52,000 people would be killed by the blast and heat, another 238,000 would be exposed to radiation emanating directly from the explosion, of which 44,000 would suffer radiation sickness and 10,000 would die. These acute casualties would occur no matter what we had done to prepare. .

But, several thousand would suffer burns and mechanical injuries and with prompt medical attention and support they might survive. In addition, another one and a half million people would be exposed to radiation fallout blowing east across Manhattan, Queens and Long Island. As many as 200,000 of these people would also die **if they were not safely evacuated or sheltered**. If protected they would survive. This is crux of the issue: as catastrophic as a nuclear terrorist attack would be, we can save many lives if we prepare adequately .

Minimizing Casualties

In terms of the number of potential lives saved, the most important task is to protect people from avoidable radiation exposure. In most situations that would involve getting people in the areas of maximum expected fallout to shelter for a period of 72 to 96 hours in the basement or lowest story of their buildings; but in some cases, depending on local conditions, and particularly on local weather conditions, it might involve evacuating people away from the areas of highest radiation contamination.

We need to have in place a clearly designated central coordinating authority and a clear chain of command to decide whether people should shelter or evacuate, and we need to establish clear criteria to guide this authority in making that decision. We believe that authority needs to be vested in the Secretary of Homeland Security or his or her designee. We need to have in place the resources to manage an evacuation or to support a population sheltering in their basements for several days. Most of these people will not have stockpiles of food or water, and it will be necessary for adequately protected personnel to deliver these supplies on a massive scale. In a city like New York we might be talking about a couple of million people who would need to be

supported. We need to have in place an effective means of communicating an order to evacuate or to shelter to the public, and we need to do enough prior education so that people ordered to shelter in place will be able to understand why this is the best thing to do instead of jumping in their cars and trying to drive as fast as they can away from that terrible mushroom cloud hanging over their city.

Caring For Those Who Are Injured

We also need to plan how to care for the tens of thousands people who would be injured by the blast itself and who might be exposed to fallout despite efforts to protect them.

First, we need to develop an adequate National Disaster Medical System. The Health and Human Services Department maintains some 50 Disaster Medical Assistance Teams of doctors, nurses and other health professionals. The concept is right, but the existing system must be greatly expanded to be able to deal with a disaster on the scale of a terrorist attack. Even if we were able to successfully protect most people from radiation exposure from the expected fallout, we would still have to deal with 44,000 cases of radiation sickness caused by radiation emanating directly from the explosion and several thousand people suffering from mechanical injuries and burns, perhaps 50,000 patients in all in the New York scenario. A Level One DMAT team is supposed to be able to care for 250 patients, which implies that we would need to have as many as 200 DMATs on standby at all times. In addition we need to establish a mechanism for quickly mobilizing existing military medical teams and for rapidly integrating volunteer health professionals, many of whom traveled spontaneously to New Orleans after Katrina but were not put to use.

It is critically important that hospitals not be the site of triage and health care first response. I can tell you from my clinical experience that most hospitals and emergency rooms just do not have "surge" capacity. My emergency room is working at capacity almost around the clock. A flood of injured, contaminated and frantic victims could functionally close down a hospital emergency facility in an urban center.

Rather we need to establish a system of Disaster Medical Care Centers at community sites easily accessible by ambulances, patients and care providers. Convention centers or sports facilities are possible candidates. These centers should be stocked with pre-positioned supplies and equipment to conduct the initial medical response. The goal would be to eliminate crowding and panic, reduce travel, prevent infection and contamination, and maintain the ability of hospitals to offer complex services to their existing patients and to referred disaster patients. Using the British Medical Journal scenario as a model, these Centers would need to be able to triage and provide initial care for tens of thousands of patients until they could be transferred to hospitals. Many of these patients, perhaps the majority would need to go to facilities in other cities as soon as transport could be arranged..

Disaster Medical Care Centers should be established in high risk urban areas such as New York, and Washington. Planning for these centers needs to take account of the fact that a designated Center may be destroyed by the initial explosion or lie within the area of subsequent heavy

radiation contamination. It may be necessary to have several Centers located in different parts of a metropolitan area. In addition we need to establish mobile field hospitals that can be used if the Disaster Medical Care Centers are destroyed or contaminated in the attack, or if terrorists decide to strike a less obvious target, like Oklahoma City, or Portland, or Hartford where Disaster Centers might not have been established. Again, the system of mobile field hospitals would need to have the ability to handle tens of thousands of casualties. They would be a valuable asset, not only in the case of nuclear terrorism, but also in the event of a major natural disaster like Hurricane Katrina, or an earthquake in California

DMAT teams are typically supplied with enough material to care for their patients for 72 hours. Patients with radiation sickness, and burn patients require enormous quantities of medical supplies–IV fluids, antibiotics, pain medication, sterile bandaging, and, in some cases, mechanical ventilators. The currently available DMAT supplies will be quickly exhausted. We need to preposition stockpiles of medical supplies that can be moved quickly to the affected area, understanding that many thousands of patients will need intensive medical care for weeks, and in some cases months. and we need to preposition radiation protection and monitoring equipment as well.

If we believe that the threat of nuclear terrorism is real, and if we are truly committed to doing what is needed to prepare for this possibility, these are some of the specific steps that we need to take, and they will involve a lot of work. They are not rocket science, but they need to be implemented. To that end we would recommend that the Homeland Security Department establish a Working Group that is charged with carrying out these measures in a short and specified time frame - certainly no more than six months.

Prevention

I would like to make two final points. First, even with the best of planning a nuclear terrorist attack would clearly be a catastrophe without precedent in our national history and with consequences we can barely imagine. While we must plan how to deal with the aftermath of such an attack as best we can, it is even more important that we focus on prevention. Specifically we must take steps to limit the availability of nuclear weapons and fissile materials by providing adequate funding to complete security upgrades of all vulnerable sites where nuclear weapons or fissile materials are stored. We have been working on this problem for more than a decade and have made some substantial progress; we need to get the job done.

Second, as serious a threat as nuclear terrorism poses, it is not the greatest nuclear threat we face. Nuclear weapons states still possess more than 20,000 nuclear weapons. Several thousand of these in the US and Russian nuclear arsenals are maintained on hair-trigger alert and can be launched against targets in the other country in 15 minutes. A PSR study published several years ago showed that if only 300 of the warheads that Russia keeps on high alert were targeted and fired upon American cities, up to one hundred million people would die in the first half hour and our country would, for all intent and purpose, cease to exist.

A more recent report that PSR issued last year investigated the global effects of even a very limited nuclear war, such as might occur in South Asia. We found that the climate disruption

caused by that conflict would trigger a world-wide famine that might claim one billion victims during the following several years.

It is urgently in the United States national security interest to eliminate these weapons, and to that end the United States must lead all nuclear weapons states in meeting their legal obligations under Article VI of the Nuclear Nonproliferation Treaty to set a timetable for reducing and ultimately eliminating nuclear arsenals.

Thank you again for this opportunity to speak with you this morning. I would be pleased to answer any questions.

Projected US Casualties and Destruction of US Medical Services From Attacks by Russian Nuclear Forces

Ira Helfand, MD; Lachlan Forrow, MD;
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The number of direct, short term casualties and collateral damage to US medical services were calculated for two thermonuclear attack scenarios: 1) 2,000 Russian warheads believed to be on high alert status today; and 2) a future Russian force of 500 warheads targeted in response to the deployment of a US National Missile Defense (NMD) system. The first scenario would cause 52 million prompt fatalities, 9 million injuries, and massive destruction of US health facilities. The second scenario produces more than 100 million casualties. Even with an effective US NMD system—defined as capable of successfully intercepting more than 100 warheads—nearly 70 million fatalities would occur. M&GS 2002;7:68-76.

Since the early 1960s, the medical community has assumed responsibility for educating the population about the medical consequences of nuclear war.[1-9] With the end of the Cold War, public concern about the threat of nuclear war and the dangers of nuclear weapons has waned. In fact, threats and dangers remain. Although there have been significant reductions in the number of nuclear weapons, there are still some 32,000 nuclear weapons in the world's arsenals.[10] Most disturbingly, approximately 2,000 Russian and 2,500 United States warheads are mounted on missiles on high alert status.[11] After receiving their instructions to fire, US missiles can be launched within 15 minutes, and missile flight times between the Russian and the US land masses are estimated to be 25 minutes.[12] Continued maintenance of these missiles on such hair-trigger alert increases not only the dangers of accidental or unauthorized launch, but also the risks of rapid, intentional initiation of full-scale nuclear war.

In a well-publicized event on January 25, 1995, Russian military radar systems mistook the launch of a weather rocket from Norway for a possible missile attack. President Yeltsin was given five to ten minutes to decide if he should launch a retaliatory attack against the US.[13] Two years later, Russian Defense

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Minister Igor Rodionov asserted, "Russia may soon approach a threshold beyond which its missiles and nuclear systems become uncontrollable."[14] Public debate in the US regarding nuclear policy is occurring in the absence of any published post-Cold War estimate of the expected casualties in the event of the large scale use of these weapons—whether by design or by accident.

The Call for De-Alerting

A 1998 study estimated that a limited accidental attack on the US, involving 64 warheads on a single Russian Delta IV submarine, could cause 6,838,000 prompt fatalities. The study called for the de-alerting of US and Russian nuclear weapons.[15] A number of different steps can be taken to de-alert these missiles, lengthening the time it takes to launch them. For example, the warheads or guidance systems can be physically removed from the missiles.[12] In various forms, de-alerting has been urged by the National Academy of Sciences;[16] the Canberra Commission;[17] General George Lee Butler, commander of the US Strategic Command from 1991 to 1994, and 62 senior military colleagues from 17 nations;[18] and other experts such as Sam Nunn, former chairman of the US Senate Armed Services Committee and Admiral Stansfield Turner, former Director of Central Intelligence.[13,19,20] Numerous state medical associations have called for de-alerting, and in a September 7, 1999 letter to the President of the United States, the American Medical Association, citing the recommendations of General Butler, called on the President to "take the lead in developing such policies to minimize the danger of a nuclear catastrophe." Despite these calls, neither the US nor Russian government has acted to de-alert these weapons.

George W. Bush has called for major reductions in the US and Russian arsenals. Reportedly, after his first briefing as President on US nuclear forces Bush was stunned. "I had no idea we had so many weapons," he said. "What do we need them for?" But even the most ambitious reductions proposed by his administration still leave some 2,000 warheads in each arsenal, and these reductions would not actually occur for up to 10 years even if agreement were reached immediately.

Nuclear Attacks With and Without NMD

In this paper, therefore, the authors first calculate the medical consequences of an attack on the United States by the force of 2,000 Russian nuclear warheads currently believed to be on high alert status, and likely to remain so even with a new arms control agreement. Second, a near-term future scenario is examined involving the anticipated deterioration of Russian strategic nuclear forces over the next decade to a level below 1,000 warheads.[21] In this second scenario, the Russians have targeted a postulated 500 weapons to attack major US population centers in response to the mitigating effects of a US National Missile Defense (NMD) system. The extent to which an NMD system of varying degrees of effectiveness could protect against the consequences of the attack is considered for two reasons.

First, the US government is currently considering whether to deploy a [limited] multi-layered National Missile Defense system (NMD) because of the possibility that a "rogue" state might acquire the ability to launch a limited nuclear attack on the US at some point in the next 5-15 years. Such an attack, it is suggested, would involve fewer than 20 relatively small nuclear warheads.[22] Proponents of NMD concede that even if the currently proposed system were to work it would not be able to protect against a large scale nuclear attack, but they hold out the possibility that future advances in technology might enable it to do so.[23] Public support for NMD appears to be based in part on inflated expectations of what a missile defense system could do. A 1998 poll showed that 54% of Americans thought the US already had the ability to shoot down incoming ballistic missiles.[24] There is no evidence that the US public understands the level of civilian protection that an NMD system would or would not provide.

Reportedly, after his first briefing as President on US nuclear forces Bush was stunned. "I had no idea we had so many weapons," he said. "What do we need them for?"

Second, a US decision to proceed with a missile defense system appears to jeopardize the de-alerting of US and Russian nuclear forces and further deep reductions in the arsenals of the two countries. Speaking to the Duma on the day it approved ratification of the START II treaty, Russian President Vladimir Putin stated that the entire arms control regime could unravel were the US to build a missile defense system that violated the Anti-Ballistic Missile Treaty: "I want to stress that, in this case, we will have the chance and we will withdraw not only from the START II Treaty, but from the whole system of treaties on the limitation and control of strategic and conventional weapons."[25] While the Bush Administration has tried to convince the Russian government to proceed with deep reductions even if the US proceeds with an NMD, it is not clear that they will be

successful. After meeting with Defense Secretary Rumsfeld in August, Defense Minister Ivanov reaffirmed Russian opposition, stating that "The existing, multi-layered system of strategic security that exists in the world today fully meets Russian needs."

In the aftermath of the attack on the World Trade Center, Russian policy remains unclear. At the Asia-Pacific Economic Cooperation (APEC) meeting in Shanghai, President Putin indicated some willingness to accept further development of an NMD in return for cuts in both US and Russian nuclear arsenals. It is not clear if such a deal can be completed, and if it is, the remaining warheads would probably remain on high alert status. Ironically, US officials have encouraged continued high alert status by trying to persuade the Russians that they would not be threatened by an NMD system as long as they retained "large diversified arsenals of strategic offensive weapons," maintained on high alert that permits "launch on warning." Thus the current US position effectively encourages Russia to maintain thousands of warheads on hair-trigger alert.[26]

Methods

The authors employed a multi-component computer program and set of databases developed by the Natural Resources Defense Council (NRDC), the output from which includes the immediate mortality from blast, burn, and ionizing radiation for a given targeting scenario.

US Targets for Russian Nuclear Weapons

The first scenario considers an attack on the continental United States involving 2,000 550-kiloton Russian warheads delivered to their targets by SS-18 and SS-19 interconti-

Description	# Targets	# Warheads (each)	Burst Height (m)	Total Warheads	%Total
ICBM Launch Control Centers: MM-III	50	2	0	100	5.0
ICBM Silos: MM-III	500	2	0	1,000	50.0
ICBM Launch Control Centers: MX	5	4	0	20	1.0
ICBM Silos: MX	50	4	0	200	10.0
Strategic Bomber Bases	5	4	1,840	20	1.0
Other Military Airfields	101	1	1,840	101	5.1
International Airports (Civilian)	60	1	1,840	60	3.0
SLBM Facilities	11	2	1,840	22	1.1
Other Naval Bases and Naval Yards	18	1	1,840	18	0.9
Nuclear Warhead Storage Facilities	10	2	0	20	1.0
Nuclear Weapons Design and Production Facilities	14	1	1,840	14	0.7
Political-Military Leadership and Infrastructure	33	1	1,840	33	1.7
Urban Centers of Commerce and Selected State Capitols	50	1	1,840	50	2.5
Electric Power Plants	342	1	1,840	342	17.1
Totals	**1,249**			**2,000**	**100**

Table 1. Summary information for the 1,249 discrete targets selected for 2,000 Russian nuclear weapons in the first scenario.
Geographic coordinates for these targets have been verified to the nearest minute or better. The 342 electric power plants targeted in this scenario comprise approximately 68% of the current US electric generating capacity. Political-military leadership and infrastructure targeted in the first scenario are: Camp David (Thurmont, MD); Central Intelligence Agency Headquarters (Fairfax, VA); Department of Energy Germantown Office (Germantown, MD); Department of Energy Headquarters (Forrestal Building, Washington, DC); Department of State Main Office Building (Washington, DC); F.E. Warren Air Force Base Headquarters (Cheyenne, WY); National Aeronautical and Space Administration Headquarters (Washington, DC); New Boston Satellite Tracking Ground Station (New Boston, NH); Nuclear Regulatory Commission Headquarters (Rockville, MD); Onizuka Air Force Base Satellite Tracking Ground Station (Sunnyvale, CA); PARCS Radar (Cavalier Air Force Station, Pembina County, ND); PAVE PAWS Radar (Beale Air Force Base, Yuba County, CA); the Pentagon (Arlington, VA); Schriever Air Force Base Satellite Tracking Ground Station (Colorado Springs, CO); the US Capitol Building (Washington, DC); US Courts of Appeal (DC and First-Eleventh Circuits); US Army Missile Command Headquarters (Huntsville, AL); Vandenberg Air Force Base Satellite Tracking Ground Station (Vandenberg, CA); and the White House (Washington, DC). Urban centers of commerce and selected state capitols targeted in the first scenario are: Atlanta, GA; Austin, TX; Birmingham, AL; Boston, MA; Charleston, WV; Cheyenne, WY; Chicago, IL; Columbia, SC; Columbus, OH; Denver, CA; Harrisburg, PA; Hartford, CT; Huntsville, AL; Indianapolis, IN; Jefferson City, MO; Kansas City, MO; Kansas City, MO; Knoxville, TN; Las Vegas, NV; Lincoln, NE; Los Angeles, CA; Madison, WI; Memphis, TN; Miami, FL; Minneapolis, MN; Montgomery, AL; Nashville, TN; New Orleans, LA; Oakland, CA; Oklahoma City, OK; Olympia, WA; Omaha, NE; Philadelphia, PA; Phoenix, AZ; Pittsburgh, PA; Providence, RI; Raleigh, NC; Richmond, VA; Sacramento, CA; Salt Lake City, UT; San Diego, CA; San Francisco, CA; San Jose, CA; Santa Fe, NM; Savannah, GA; Seattle, WA; Springfield, IL; St. Lewis, MO; Trenton, NJ; Wilmington, DE.

nental ballistic missiles (ICBMs).[27] Each warhead is assumed to have a 25% chance of failing to explode on target because of technical problems, but the complex issues of warhead "fratricide" (the failure of a nuclear warhead to detonate due to the effects of nearby explosions) is not addressed, nor are the targeting logistics relating to "footprint size" (the maximum area within which targets could be reached by warheads independently targeted and released during the ballistic phase of the flight of a single ICBM).

Actual Russian nuclear war plans are, of course, highly secret. More is known about the US war plan, the Single Integrated Operational Plan (SIOP). The US SIOP is constructed annually, and current guidance identifies four categories of major attack options (MAOs) which the US must be continuously prepared to execute against Russia. The MAOs range from attacks restricted to Russian military targets with cities excluded, to broader attacks on leadership, economic, and urban-industrial targets.[28] While the targets Russian nuclear war planners might choose cannot be known with certainty, this first scenario assumes a Russian attack similar in target categories to a comprehensive US MAO, with 1,249 discrete targets, some receiving multiple warheads. Summary information on the targeting is given in Table 1.

The Counterforce Scenario

In this first scenario, most of the Russian warheads (66%) are targeted at ICBM missile silos (550 targets) and launch control centers (55 targets) deployed at three bases:

- F.E.Warren (150 Minuteman III and 50 MX missiles distributed over approximately 22,000 square kilometers (km^2) at the intersection of Colorado, Wyoming, and Nebraska);
- Minot (150 Minuteman III missiles distributed over approximately 16,000 km^2 in North Dakota);
- Malmstrom (200 Minuteman III missiles distributed over approximately 30,000 km^2 in Montana).[29]

Because both ICBM launch control centers and silos are designed to resist blast and other effects of a nuclear explosion, this calculation assumed two Russian warheads were detonated on each Minuteman III target and four warheads on each MX. More warheads were assigned to each MX target because these missiles carry up to ten highly accurate warheads each, whereas Minuteman III missiles carry fewer, less accurate warheads each.

The height of burst at which a nuclear explosion occurs determines the nature and degree of its effects. In the first scenario, ground bursts were assigned to targets hardened to resist blast effects, and for less vulnerable targets a height of burst—1,840 meters—was chosen that maximizes the radius of high crushing pressure [10 pounds per square inch (psi)]. At this height no local fallout is predicted to occur, in contrast to the ground bursts where significant fallout is calculated. Sixty of the electrical plants chosen as targets in this scenario contain nuclear reactors, but for this calculation the secondary impact of radioactive contamination from these destroyed plants, which would be substantial, was not assessed.

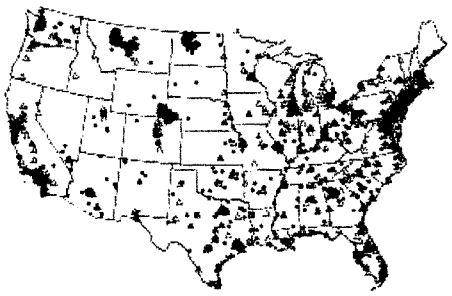

Figure 1: Targets are shown for the 2,000-warhead scenario (filled circles) and for the 500-warhead scenario (open triangles). Map courtesy Natural Resources Defense Council.

The NMD Scenario

The second scenario considers an attack on the continental United States by a Russian force of 500 550-kiloton warheads. The US is assumed to have deployed a missile defense system that can intercept incoming warheads. In response, the Russians have targeted their missiles on US population centers in order to maintain the ability to inflict unacceptable casualties. As with the first scenario, 25% of the 500 warheads are assumed to malfunction and a height of burst of 1,840 meters for all warheads is selected, resulting in no significant local fallout.

The 500 specific population targets for Russian nuclear weapons were selected as follows: a one square-kilometer population grid for the continental United States was computed using 1999 census data;[30] for each one-square kilometer cell in that grid, the population within a 9.6 kilometer circle centered on the cell (i.e., the expected zone of mass fires, as discussed below) was summed; the cells were then rank-ordered according to the summed populations; and, finally, the 500 cells with the largest population sums were selected as targets under the constraint that the 9.6 kilometer circles around the

selected cells did not overlap. The authors then examined the effects of an NMD capable of intercepting 10%, 20%, or 30% of these warheads—an operational capability that greatly exceeds current expectations for this technology. Figure 1 displays the locations of the targets for both the 2,000 warhead and the 500 warhead scenarios.

Casualty Calculations

Immediate fatalities are determined primarily by the area of anticipated fire storms generated by the nuclear explosions. Mass fires are assumed to ignite across the area exposed to 10 or more calories per square centimeter (cal/cm^2), coalescing into giant firestorms with hurricane-force winds and average air temperatures above the boiling point of water. Within this area, the combined effects of superheated wind and toxic smoke would result in a death rate approaching 100%.[31] Assuming 20 kilometers visibility, a 550-kt surface burst would create a thermal flux of 10 cal/cm^2 to a distance of 6.3 kilometers (3.9 miles). An air burst at 1,840 meters would create a thermal flux of 10 cal/cm^2 to a distance of 9.6 kilometers (5.9 miles).[32]

To calculate casualties resulting from this attack at distances beyond the firestorm, a model was employed based on the experiences at Hiroshima and Nagasaki, where injuries and deaths occurred even at relatively far distances from the ground zeroes (primarily as the result of indirect blast injury to persons inside wooden houses at the time of the attack). At Hiroshima, a 24.9% injury rate and a 2.1% fatality rate occurred for people living in the band of terrain exposed to overpressures of between 0.8 to 2.3 psi, and at Nagasaki a 9.5% injury rate and 1.1% fatality rate occurred in areas exposed to 1.0 to 2.7 psi.[33] For a 550-kt explosion at 1,840 meters, overpressures of this magnitude occur in a band extending from 7.9 out to 15.4 kilometers from ground zero.[32] Subtracting out the population living in the zone of 100% lethality due to firestorms, the same census data were used to calculate injuries and deaths based on the averaged probabilities for Hiroshima and Nagasaki. Probabilities for overlapping zones were summed using the formula: (Combined probability of P1...PN) = 1-((1-P1)x(1-P2)x ... x(1-PN)).

Fallout patterns were calculated with the K-Division Defense Nuclear Fallout Code, 3rd Edition, (KDFOC3) developed at Lawrence Livermore National Laboratory.[34] The most probable wind velocities and directions for the continental United States in 2.5-degree latitude by 2.5-degree longitude cells for 15 elevations (from the surface to approximately 30 kilometers in altitude) for each month of the year were used for the fallout calculations.[35] Fallout depends on the fraction of the explosive yield from fission reactions, and calculations were performed for fission fractions of 50% (the most commonly cited value) and 80%.[36] Under the assumption that radioactive products from the explosions decay exponentially with a time constant of 1.2 hours,[32] the dose rates two days after the explosion will be less than 1% of the initial dose rates, therefore health effects were computed for fallout dose rates integrated over the first 48 hours after the explosion. The sheltering factor, a factor by which the instantaneous dose rate is divided to account for the protection against fallout offered by various structure types, was varied between 1 (no sheltering), 4 (an average single-story, residential structure), 7 (an average multistory structure) and 40 (basement environments).[37] Fallout casualties were calculated using probability functions for severe radiation sickness and mortality, choosing a conservative value of 4.5 Sieverts (Si) for the 50%-lethal dose.[38]

In this paper the authors have not attempted to calculate the additional long term and indirect casualties that would be expected. These include deaths from exposure; from epidemic disease with the breakdown of public sanitation and the widespread incidence of radiation induced immunosuppression; from starvation with the disruption of transportation and food distribution networks; from cancers induced by radiation exposure; and from the effects of widespread damage to the ecosystem. Previous studies have suggested that such deaths might exceed the direct casualties discussed in this study, but because they are less subject to precise calculation, they have not been considered further.[1,8,39]

Hospital Data

Damage to the US hospital system was estimated using 1998-1999 data obtained from the American Hospital Association.[40] From this database a total of 5,939 facilities in the continental United States (for which geographic coordinates were provided) were used in the calculation. Information fields included hospital name, city, state, latitude and longitude, beds, intensive care unit beds, burn unit beds, operating rooms, full-time-equivalent personnel, and full-time equivalent physicians and dentists.

Results

From the combined effects of blast, burns, and radiation, the attack by 2,000 warheads would cause 52 ± 2 million deaths and 9 ± 1 million injuries, even though it was primarily directed at military targets in sparsely populated areas. The goal of the first attack,

to recall, was to destroy US military, political, and economic targets. In the 2,000-warhead scenario, there were 660 air bursts, many of which had overlapping zones of mass fires and blast damage because the distances separating some of the targets were less than the diameter of the zones. Because of this overlap, randomly removing 25% of the attacking warheads (due to malfunctions) does not correspondingly reduce the number of casualties by 25%. The standard deviations given above for the total numbers of killed and injured were largely determined by the effect of randomly removing 25% of attacking warheads averaged over multiple computer runs, and were less significantly determined by the input parameter variation for the fallout calculations, discussed below.

Sheltering	Warhead Fission Fraction	Casualties (thousands)	Killed (thousands)	Severe Radiation Sickness (thousands)	Area (10^3 km^2) in which 48-hour Integrated Dose ≥ 4.5 Si
None	50%	2,571 ± 585	1,285 ± 223	1,286 ± 626	319 ± 22
None	80%	3,950 ± 1,479	1,848 ± 348	2,102 ± 1,519	402 ± 33
Residential	50%	666 ± 71	402 ± 27	264 ± 76	143 ± 4
Residential	80%	1,032 ± 185	509 ± 52	523 ± 192	180 ± 7
Multistory	50%	437 ± 44	312 ± 14	125 ± 46	102 ± 2
Multistory	80%	571 ± 57	371 ± 8	200 ± 57	130 ± 4
Basement	50%	129 ± 21	65 ± 2	64 ± 21	15 ± 1
Basement	80%	228 ± 18	87 ± 8	141 ± 20	29 ± 1

Table 2: Statistical results for the fallout resulting from the 2,000-warhead scenario attacks against the 605 US missile silo and launch control center targets.

Percent of Incoming Warheads Intercepted	Number of Incoming Warheads Intercepted	Total Number of Exploding Warheads	Mean Number of Deaths in Mass Fire Zones (thousands)	Maximum Number of Deaths in Mass Fire Zones (thousands)
0%	0	375	97,104 ± 2,714	111,290
10%	37	338	87,394 ± 2,568	111,398
20%	75	300	77,683 ± 3,061	105,853
30%	113	262	67,973 ± 3,180	99,734

Table 3. Statistical results from the 500-warhead scenario assuming that 25% of the warheads malfunction and a US National Missile Defense system is in place. For these calculations, successively greater percentages of the attacking warheads were randomly removed and the resulting mean, standard deviation, and maximum numbers of deaths in mass fire zones determined.

Figure 2 displays the fallout patterns resulting from the nuclear explosions at the 605 US missile silo and launch control center targets (representing two thirds of the targets for the 2,000 warheads) for the most probable wind patterns for the month of August. Fallout calculations were computed for warhead fission fractions of 50% and 80%, for four values of the sheltering factor, and for each month of the year in order to understand the different variables. The standard deviations given in Table 2 are derived from monthly variations in wind speed and direction. Under the maximal assumption of high fission fraction (80%) and no sheltering, the resulting four million fallout casualties represent less than 10% of the total casualties from the 2,000-warhead scenario. The area of fallout zones in which a 50%-lethal dose occurs does not vary substantially by month, and decreases the greater the effective sheltering of the population.

In the second scenario, the US targets for 500 Russian nuclear weapons are chosen to maximize loss of life. If all 500 warheads detonated over their targets, a total of 132 million deaths and 8 million injuries are calculated to occur. Under the assumption that 25% of the warheads malfunction, the attack would produce a total of 97 ± 3 million deaths in mass fire zones, where the standard deviation was determined from the random removal of 125 of the attacking warheads. Figure 3 displays a map of the northeastern United States, showing population targets from the 500 warhead sce-

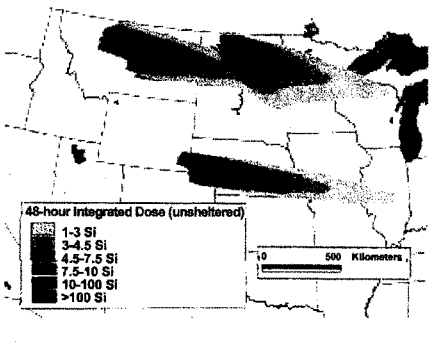

Figure 2: Fallout patterns resulting from the 2,000 warhead scenario attacks against the 605 US missile silo and launch control center targets. The most probable wind patterns for the month of August were used for this calculation. The 48-hour integrated dose to unsheltered individuals is plotted. Figure courtesy Natural Resources Defense Council.

	2,000-warhead scenario			500-warhead scenario with 20% of incoming warheads intercepted by US National Missile Defense	
	Total Before Attack	Average Number in Mass Fire Zones	Average Percent in Mass Fire Zones	Average Number in Mass Fire Zones	Average Percent in Mass Fire Zones
Hospitals	5,939	973 ± 38	16.4%	1,396 ± 57	23.5%
Beds	1,000,617	243,949 ± 10,248	24.4%	354,750 ± 17,884	35.5%
ICU Beds	85,521	24,075 ± 1,160	28.2%	35,525 ± 1,788	41.5%
Burn Beds	1,151	516 ± 31	44.8%	585 ± 55	50.8%
Operating Rooms	23,233	5,909 ± 281	25.4%	8,496 ± 425	36.6%
Total Hospital Full Time Equivalent Employees (FTEs)	4,339,452	1,200,175 ± 51,520	27.7%	1,667,860 ± 87,131	38.4%
Hospital Physician and Dentist FTEs	97,421	27,981 ± 1,526	38.9%	42,222 ± 3,924	43.3%

Table 4: Summary data on impacts of the two nuclear attack scenarios on US medical services.
Standard deviations were determined by the random removal of warheads due to malfunction and, for the 500-warhead scenario, the effect of a US National Missile Defense.

nario with mass fire and blast zones. Somewhat unexpectedly, the mitigating effect of an NMD system does not reduce the number of fatalities by very much, as shown in Table 3. Even if almost one third of the warheads are intercepted, there are still potentially 100 million deaths and, on average, 68 million deaths in mass fire zones.

Table 4 provides summary data on the impact of the two attacks on the US medical infrastructure. High percentages of beds, operating rooms, and personnel are destroyed in both scenarios by being inside the zones of the firestorms. Figure 4 shows the hospitals in the Phoenix, Arizona metropolitan area along with zones of firestorms and outer destruction calculated in the 500-warhead scenario. Six explosions would destroy 37 hospitals, leaving 6 hospitals in a 50-km buffer zone around the area of firestorms with 531 beds to treat the 177,000 injured. A high incidence of severe burns is associated with nuclear explosions, but there would not be any burn beds available to assist the immediate survivors.

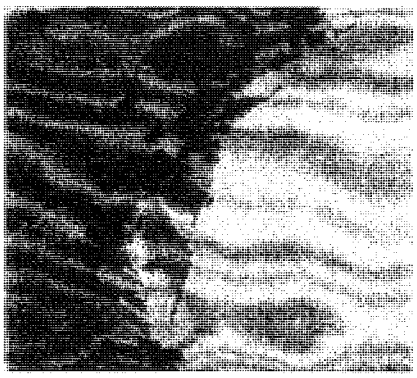

Figure 3: A map of the northeastern United States displaying the population targets for the 500 warhead scenario and the zones of mass fires and blast damage. Mass fire zones are shown in black. Outer zones of blast destruction are shown in dark gray. Figure courtesy Natural Resources Defense Council.

Discussion

Although some progress has been made in reducing the numbers of strategic nuclear weapons since the end of the Cold War, these calculations show that an attack with the remaining nuclear arsenals would still cause death and injury on an unimaginable scale, destroying as well 25-40% of the nation's medical infrastructure. Survivors would have little chance of receiving medical care.

The 2,000 Russian warheads on high alert status pose an immediate and overwhelming threat to the population of the United States. A missile defense capable of successfully intercepting more than 100 attacking warheads—if such a system could be developed—does not protect the American people from these weapons. Only by abolishing nuclear weapons altogether can the danger be eliminated. In the interim, the danger can be reduced substantially and almost immediately by taking Russian and US missiles off high alert status. Construction of an NMD will make it more difficult for this important step to be taken and to significantly reduce the number of nuclear weapons. As has been shown, a force even one fourth the size of the Russian arsenal now on

alert can produce upwards of 100 million fatalities, satisfying any conceivable need for a nuclear deterrent.

References

1. **Ervin FR, Glazier JB, Arnow S, et al.** Human and ecological effects in Massachusetts of an assumed thermonuclear attack on the United States. N Engl J Med 1962;226:1127-37.
2. **Sidel VW, Geiger HJ, Lown B.** The physicians role in the postattack period. N Engl J Med 1962;266:1137-45.
3. **American Medical Association.** Policies 520.999 and 520.997. Chicago: AMA. 1981.
4. **Lown B, Chivian E, Muller J, Abrams H.** The nuclear arms race and the physician. N Engl J Med 1981;304:726-9.
5. **Cassel C, Jameton A.** Medical responsibility and thermonuclear war. Ann Intern Med 1982;97:426-32.
6. **Abrams HL.** Medical resources after nuclear war: availability vs. need. JAMA 1984;252:653-8.
7. **Relman AS.** The physicians role in preventing nuclear war. N Engl J Med 1986;315:889-91.
8. **World Health Organization.** Effects of nuclear war on health and health services. 2nd ed. Geneva: WHO. 1987.
9. **Forrow L, Sidel VW.** Medicine and nuclear war: from Hiroshima to mutual assured destruction to abolition 2000. JAMA 1998;280:456-461.
10. **Norris RS, Arkin WM.** NRDC nuclear notebook: global nuclear stockpiles 1945-2000. Bulletin of the Atomic Scientists. 2000;56:79.
11. **Feiveson HA, Blair BG.** How to lengthen the nuclear fuse. IEEE Spectrum. 2000;37(#3).
12. **Blair BG, Feiveson HA, von Hippel FN.** Taking nuclear weapons off hair-trigger alert. Sci Am 1997;277:74-81.
13. **Hall B.** Overkill is not dead. New York Times Magazine. March 15, 1998.
14. **Feiveson HA (ed).** The nuclear turning point. Washington, DC: Brookings Institute Press. 1999.
15. **Forrow L, Blair BG, Helfand I, et al.** Accidental nuclear war-a post Cold War assessment. N Engl J Med. 1998;338:1326-31.
16. **National Academy of Sciences, Committee on International Security and Arms Control.** The future of US nuclear weapons policy. Washington, DC: National Academy Press. 1997.
17. **Canberra Commission on the Elimination of Nuclear Weapons.** Media release. Canberra and Sydney, Australia: Canberra Commission. August 14, 1996. (Online at www.dfat.gov.au/dfat/cc/cchome.html.)
18. Statement on nuclear weapons by international generals and admirals. Washington, DC: Stimson Center. December 5, 1996.
19. **Nunn S, Blair BG.** From nuclear deterrence to mutual safety. Washington Post. June 22, 1997:C1.
20. **Turner S.** Caging the nuclear genie: an American challenge for global security. Boulder, Colorado: Westview. 1997.
21. **Williams D.** Russia to cut its nuclear stockpile; Putin decides to shift funds to rebuild conventional forces. Washington Post. August 13, 2000:A16.
22. **Ballistic Missile Defense Office.** NMD function summary (unclassified), Sheet 3. US Washington, DC. Department of Defense. 1999.
23. **Spring B, Anderson JH.** Missile defense: ending America's vulnerability. Washington, DC: Heritage Foundation. 2000. Available online at www.heritage.org/issues/chap15.html.
24. **Center for Security Policy.** Missile defense poll. Washington, DC: Center for Security Policy. August 1998.
25. **Associated Press.** Russia lawmakers OK START II. April 14, 2000.
26. **Bulletin of the Atomic Scientists.** The ABM treaty "talking points." Washington, DC: Bulletin of the Atomic Scientists. Available online at www.thebulletin.org/issues/2000/mj00/treaty_doc.html.
27. **Cochran TB, Arkin WM, Norris RS Sands JI.** Nuclear weapons databook, volume IV: Soviet nuclear weapons, New York: Harper and Row. 1989.
28. **Arkin WM, Kristensen H.** The post cold war SIOP and nuclear warfare planning: a glossary, abbreviations, and acronyms. Washington, DC: Natural Resources Defense Council. January 1999.
29. START I Memorandum of Understanding.
30. **Environmental Systems Research Institute.** ESRI data and maps. Tracts - Pop1999. Redlands, CA: ESRI. 1999: Vol. 2.
31. **Postol TA.** Possible fatalities from superfires following nuclear attacks in or near urban areas. In: Solomon F, Marston RQ (eds). The medical

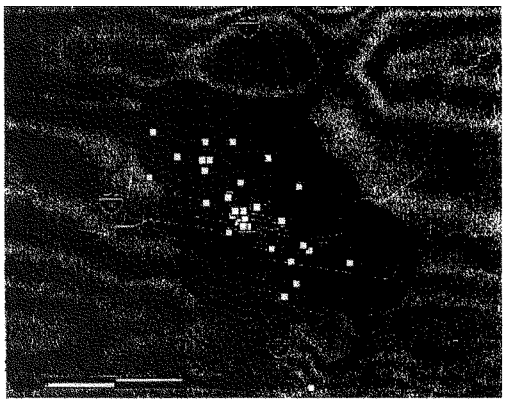

Figure 4: Map of the Phoenix, Arizona metropolitan area with nuclear explosive effects displayed from the 500 warhead scenario. Squares denote hospitals, black areas are mass fire zones and dark gray areas are zones of blast damage. Figure courtesy Natural Resources Defense Council.

implications of nuclear war. Washington, DC: National Academy Press. 1986.
32. **US Defense Nuclear Agency.** Defense Nuclear Agency effects manual number 1: capabilities of nuclear weapons. Headquarters, Defense Nuclear Agency, July 1, 1972 (declassified and released February 13, 1989).
33. **Glasstone S, Dolan PJ.** The effects of nuclear weapons. Washington, DC: US Departments of Defense and Energy. 1977.
34. **Ljung P, Nyren K.** Nuclear fallout simulation using KDFOC3, Foersvarets Forskningsanstalt, UMEA (Sweden). May 1994.
35. **National Climactic Data Center.** Global gridded upper air statistics, 1980-1995, version 1.1. Asheville, North Carolina: NCDC. March 1996.
36. **Cochran TB, Arkin WM, Hoenig MM.** Nuclear weapons databook volume I: US nuclear forces and capabilities. Cambridge, MA: Ballinger. 1984.
37. **Harvey TF, Shapiro CS, Wittler RF.** Local fallout risk after a major nuclear attack on the USA (UCRL-102444). Livermore, CA: Lawrence Livermore National Laboratory. January 1990.
38. **Fujita S, Kato H, Schull WJ.** The LD50 associated with exposure to the atomic bombing of Hiroshima and Nagasaki: a review and reassessment (RERF TR 17-87). Hiroshima: Radiation Effects Research Foundation. 1987.
39. **Abrams HL, Von Kaenel WE.** Medical problems of survivors of nuclear war: infection and the spread of communicable diseases. N Engl J Med 1981;305:1226-32.
40. **Health Forum LLC/American Hospital Association.** AHA annual survey database (FY 1998). Chicago, IL: AHA. 1998.

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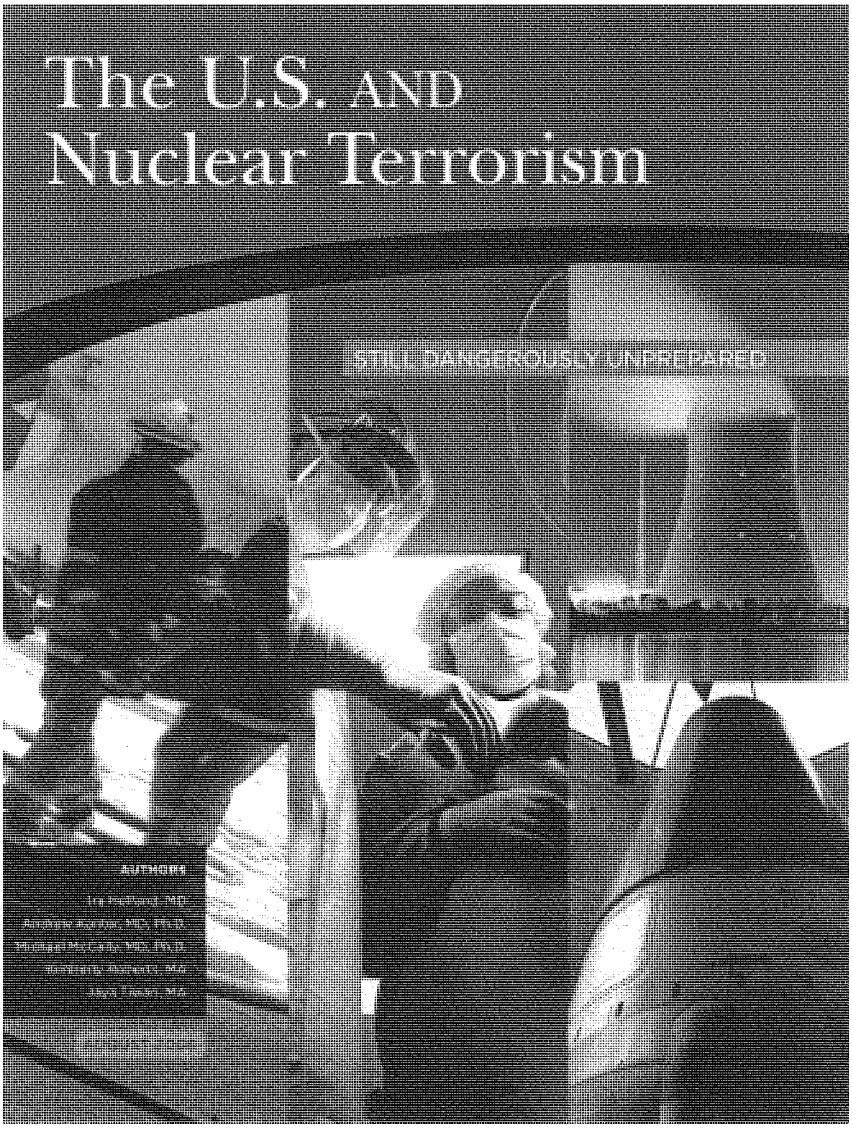

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The U.S. AND Nuclear Terrorism

STILL DANGEROUSLY UNPREPARED

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Executive Summary and Recommendations

Five years after September 11, 2001, the United States remains dangerously unprepared to deal with the aftermath of a terrorist attack involving nuclear weapons, dirty bombs or explosions at nuclear power plants.

This summer America marks two somber anniversaries. On August 29, we were reminded of the death and destruction unleashed on the Gulf Coast by Hurricane Katrina. On September 11, Americans will pause to remember the anniversary of the worst terrorist attack in the history of our country.

As we mourn the victims of these disasters and contemplate the loss of life and property we must ask whether the United States is prepared to protect its citizens from even more devastating disasters.

In early 2001, a bipartisan task force established by the Department of Energy concluded, "The most urgent unmet national security threat to the United States today is the danger that weapons of mass destruction or weapons useable material in Russia could be stolen and sold to terrorists or hostile nation states and used against American troops abroad or citizens at home."

Nuclear terrorism remains a very real threat. Since 1993 the International Atomic Energy Agency has documented 175 cases of nuclear trafficking, 18 of which involved highly enriched uranium or plutonium, the raw material for nuclear explosives.

To assess U.S. preparedness for nuclear terrorism, Physicians for Social Responsibility (PSR) evaluated the medical consequences of three hypothetical nuclear and radiological attack scenarios: a 12.5 kiloton nuclear weapon explosion in New York City, an attack on a nuclear power plant near Chicago, and a dirty bomb explosion in Washington, D.C. PSR then examined the steps that should be taken to try to minimize the deaths and injuries these events would cause.

FINDINGS

- Five years after September 11, 2001, the U.S. government still does not have a workable, public plan to respond to the medical needs of the huge numbers of people who would be injured in a nuclear terrorist attack. Thousands of American civilians injured by a nuclear terrorist attack might survive with careful preparedness planning.

- The government's ability to quickly and effectively evacuate communities or shelter populations downwind will be the single most important factor in minimizing casualties in each of these three scenarios. The United States still does not have a plan for deciding, in response to a specific attack and prevailing weather conditions, whether people should try to evacuate or shelter in place.

- There is no plan for communicating such a decision to the public, for carrying out an evacuation if needed or for supporting populations who

are asked to take shelter in their homes. The response to Hurricane Katrina suggests there is no clearly designated individual or group to make the decision to evacuate or shelter and no clearly defined criteria for making that decision. The failure to make such plans could lead to hundreds of thousands of preventable deaths in the event of a nuclear terrorist attack.

- Each of the nuclear terrorism scenarios generates a need for emergency medical care for hundreds to hundreds of thousands of victims. The U.S. does not have adequate plans for establishing field medical care, for mobilizing medical personnel or deploying additional medical supplies to the site of an attack.

- The 50 Disaster Medical Assistance Teams maintained by the Department of Homeland Security and deployed to the Gulf following Hurricane Katrina were overwhelmed quickly. The failure to develop plans to deploy adequate medical resources could prevent hundreds of thousands of Americans from receiving life saving medical care following a terrorist attack in which even more people are injured.

- The U.S. public health system, which would bear a large burden in responding to nuclear terrorism, is currently under-funded and under-staffed. New sources of funding and other resources are desperately needed to strengthen the existing public health system, so that the U.S. can better respond to a wide range of threats.

- Though an attack on the U.S. with a nuclear weapon or dirty bomb would be a unique disaster, advance planning can significantly reduce the resulting damage. Currently, there is no communication with the public on preparedness for nuclear terrorism and little evidence of serious consideration of potential scenarios by preparedness planners.

- One of the most critical elements of an effective disaster management plan is the identification of a central coordinating authority empowered to immediately step in to direct the response and rescue efforts. No such central coordinating authority has been designated.

- Clear communication with the public is equally critical. Without timely and understandable information from trusted sources the public cannot be expected to take appropriate or directed actions.

- Health care experts have proposed that hospitals in major urban areas not be the site of health care first response in a disaster because they could be quickly jammed with injured, anxious and contaminated victims compromising the ability to deliver care to existing patients. Rather, a system of disaster medical care centers should be prepared with pre-positioned supplies and equipment.

- A comprehensive plan for providing emergency and continuing patient care will be effective only if communities have adequate teams of health professionals available to them and access to essential medical equipment and supplies required for mass treatment. Decision-makers must work to develop creative solutions to this challenge.

- Even with extensive preparedness planning, a nuclear terrorist attack would create human casualties and economic destruction on a scale unprecedented in our national history. The U.S. response to this threat must include more vigorous effort to prevent terrorists from gaining the ability to commit such acts in the first place.

RECOMMENDATIONS

Physicians for Social Responsibility has a three point prescription to address these dangerous deficiencies in planning, organization, and communication. PSR recommends the Department of Homeland Security adopt the following measures:

Planning:

- Designate a central coordinating authority and a clear chain of command that would be activated in the event of a nuclear terrorist attack or natural disaster to direct the response and rescue efforts.
- Establish and communicate clear criteria to guide this authority in deciding whether to evacuate people or shelter them in place. Establish plans for carrying out any evacuations deemed appropriate and for supporting populations instructed to shelter in place.
- Include nuclear scenarios in most regular desk-top and field planning exercises and give the U.S. Weather Service capacity to map and broadcast radiation fallout plumes in real time.

Organization:

- Establish an adequate National Disaster Medical System with significantly increased numbers of Disaster Medical Assistance Teams and establish a mechanism for quickly mobilizing existing military medical teams and integrating volunteer health professionals.
- Pre-position radiation protection and monitoring equipment in areas felt to be high risk potential targets. Pre-position stockpiles of medical supplies that can be moved quickly to the affected areas in response to nuclear terrorism or natural disasters such as hurricanes or floods.
- Train and equip first responders so they can quickly identify a radiological emergency and perform their duties while also ensuring their own safety.
- Establish Disaster Medical Care Centers in high risk urban areas and mobile field hospitals that can be moved quickly to areas where existing medical facilities are overwhelmed.

Communication:

- Establish a plan for communicating evacuation or sheltering decisions to the public and educate the public in advance about these issues so that they will follow instructions in the chaotic aftermath of an attack.
- Ensure that the coordinating authority has access to real time information and can communicate the location and expected spread of radioactive fallout plumes.

A NOTE ON NUCLEAR TERRORISM PREVENTION

While there is much work to be done in the area of preparedness for a nuclear terrorist attack, PSR recognizes that even the best efforts in this area will not be enough to keep our communities safe. Given the potentially devastating consequences of a nuclear terrorist attack, prevention strategies centered on moving the U.S. and other nuclear weapons powers toward the elimination of nuclear weapons are key to our long-term safety.

At the same time, well-funded and rigorously enforced programs aimed at keeping nuclear weapons and materials out of the hands of terrorists, should be considered mainstays of prevention of nuclear terrorism. These should include securing the facilities that house this dangerous material and reducing and ultimately eliminating U.S. reliance on nuclear weapons and nuclear power.

Understanding Nuclear Terrorism

While the magnitude of death and destruction associated with a nuclear terrorist attack is difficult to comprehend, it is not difficult to envision how such an attack might occur. Today, much of the knowledge required to build a crude nuclear device is widely available in open literature and on the internet. The ability to put it all together requires little more than a basic understanding of nuclear physics and engineering. Access to nuclear weapons material is the greatest barrier for terrorist organizations.[1]

However, this barrier is not insurmountable, and more than 55 countries, including Russia and Pakistan, have poorly guarded military and civilian facilities which collectively store hundreds of tons of fissile material.[2] The International Atomic Energy Agency (IAEA), the organization charged with monitoring nuclear materials worldwide, has documented more than 175 cases of nuclear trafficking in the last decade, 18 of which involved highly enriched uranium or plutonium, essential ingredients to make a nuclear bomb.[3]

Moreover, terrorists may choose to use our own technology against us, as they did with jetliners on September 11. Nuclear power plants have previously been identified as the targets for terrorism, and their radioactive cores and waste storage facilities already are in place throughout the country.[4]

UNDERSTANDING CURRENT U.S. POLICY ON NUCLEAR TERRORISM PREPAREDNESS

The federal government has an absolute and clear responsibility to prepare for nuclear terrorist attacks. In 2005, the Department of Homeland Security (DHS) released its *National Preparedness Goal* (NPG) and a series of *National Planning Scenarios* (NPS) that analyze a variety of potential threats and responses, including those involving a nuclear terrorist attack. Despite repeated warnings by high-level government officials and independent experts about the likelihood of a nuclear terrorist attack, the DHS has not developed the comprehensive plans needed to respond to such an attack.[5] In fact, the bipartisan September 11 Commission's

1 Matthew Bunn, Anthony Wier, John P. Holdren, Controlling Nuclear Warheads and Materials: A Report Card and Action Plan; also see Linda Rothstein, Catherine Auer and Jonas Siegel, "Rethinking doomsday" Bulletin of the Atomic Scientists, November/December 2004.

2 Center for American Progress, "Agenda for Security: Controlling the Nuclear Threat" February 2005, page 7. Also see David Albright and Kimberly Kramer, "Fissile Material: Stockpiles Still Growing," Bulletin of the Atomic Scientists, November/December 2004.

3 International Atomic Energy Agency, "Calculating the new global nuclear terrorism threat," IAEA Press Release, November 1, 2001.

4 Ibid.

5 Sam Nunn, William Perry and Eugene Habiger, "Still Missing: A Nuclear Strategy," Washington Post, May 21, 2002.

final report, released on December 5, 2005, gave failing grades to the federal government's efforts to prevent or effectively respond to a large scale terrorist attack. The Commission gave an "F" to the government's efforts to prevent terrorists from acquiring weapons of mass distruction and warned that the United States is woefully unprepared to handle a terrorist attack involving nuclear weapons or material.[6]

The need to review existing infrastructure and to plan and prepare for disasters has been recognized at the highest levels of government for many years. Acknowledging this critical need for improvement in U.S. disaster planning and mitigation efforts, President Bush issued the Homeland Security Presidential Directive 8 (HSPD-8) in December 2003. The stated goal of the HSPD-8 was to establish

> *policies to strengthen the preparedness of the United States to prevent and respond to threatened or actual domestic terrorist attacks, major disasters, and other emergencies by requiring a national domestic all-hazards preparedness goal, establishing mechanisms for improved delivery of Federal preparedness assistance to State and local governments, and outlining actions to strengthen preparedness capabilities of Federal, State, and local entities.*[7]

However, almost three years after HSPD-8 was first issued, movement on disaster preparedness programs has been almost non-existent. To date, the only tangible progress has been the draft of a Department of Homeland Security (DHS) paper titled *National Preparedness Goal* (NPG), which only sets forth goals but has no clear plan or timeline for implementing them.[8]

While DHS has yet to develop a robust plan for disaster preparedness programs, it certainly recognizes the potential threats — including nuclear threats. DHS's own analysis, as reflected in its April 2005 "official use only" report titled *National Planning Scenarios* (NPS), detailed the devastating human, economic, and environmental impacts a nuclear bomb explosion or a terrorist attack with a dirty bomb would have on a U.S. city.[9] Although the NPS report does not describe the impact of a power plant core meltdown resulting from a terrorist attack, it does acknowledge that such an attack would cause significant damage.[10]

The NPS report underscores the urgency of planning for the aftermath of a possible nuclear terrorist attack. According to the report, a terrorist attack with a nuclear weapon or a dirty bomb would require immediate mobilization of federal, state and local authorities, as well as resources on a scale far greater than those required for responding to the terrorist attack on the World Trade Center or to Hurricane Katrina.

However, the intent and the rhetoric of the *NPS* or the *NPG* have not translated into a focused effort on the part of the government to demonstrably improve preparedness. Congressional and Government Accountability Office (GAO) inquiries into the federal government's response to Hurricane Katrina makes it clear that, despite the creation of the DHS and its drafting of the *National Preparedness Goal*, the federal government still has not settled the most basic preparedness questions.

A NUCLEAR EXPLOSION IN A MAJOR URBAN CENTER

The most catastrophic form of nuclear terrorism would be the detonation of a nuclear bomb in a

6 The 9-11 Commission, Final Report Card on the Government's Preparedness Efforts, December 2005, http://www.9-11pdp.org/press/2005-12-05_report.pdf

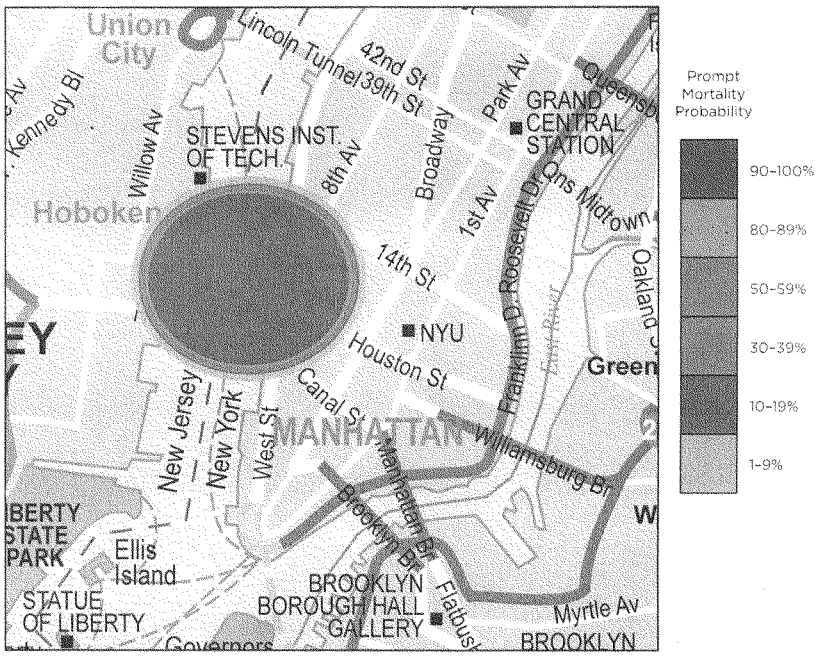
7 The White House, Homeland Security Presidential Directive/Hspd-8, December 17, 2003, http://www.whitehouse.gov/news/releases/2003/12/20031217-6.html

8 http://www.marc.org/emergency/meetings/rhscc-hspd8.pdf

9 DHS, National Planning Scenarios, see scenario # 1 and 11.

10 DHS, National Planning Scenarios, ii

Figure 1: Blast Radius and Prompt Mortality from a 12.5 kiloton Bomb Explosion in New York City



Source: Ira Helfand, Lachlan Farrow and Jaya Tiwari, "Nuclear Terrorism," *British Medical Journal*, Vol. 324, February 9, 2002, 356-359.

densely populated urban area. Terrorists could achieve this by acquiring an intact nuclear weapon or by obtaining highly enriched uranium (HEU) or plutonium (Pu) and building a bomb. This is not just a theoretical possibility, but represents a real danger. To make a simple nuclear bomb (like the one dropped on Hiroshima in August, 1945), less than 120 pounds of HEU would be needed; some more advanced designs using explosives would require as little as 75 pounds of HEU. HEU is highly dense material that is easily transported. For example, 125 pounds of HEU has the equivalent volume of eight soda cans. If terrorists succeeded in acquiring Pu, they would need an even smaller quantity of it than HEU to build a bomb. The plutonium weapon dropped on Nagasaki in August 1945 used approximately 13 pounds of Pu (the approximate size of a grapefruit). Many modern weapon designs require even less Pu.

Terrorists may be able to obtain HEU or Pu from a variety of sources, such as weapons laboratories in nuclear weapon states, civilian research centers, nuclear reactors, and fuel storage facilities. The global HEU stockpile is estimated to be between 1,300 and 2,100 metric tons. More than 100 tons — enough for 20,000 nuclear weapons — of surplus bomb grade Pu is currently stockpiled in unsafe facilities in Russia and remains vulnerable to theft or smuggling.

Even before the September 11 attacks, the likelihood that fissile material or even intact nuclear weapons would end up in the hands of a

non-state group was well recognized. A bipartisan Department of Energy task force warned in its 2001 report that, "The most urgent unmet national security threat to the United States today is the danger that weapons of mass destruction or weapons useable material in Russia could be stolen and sold to terrorists or hostile nation states and used against American troops abroad or citizens at home." In the less bureaucratic language of General Eugene Habiger, former head of the Department of Energy's nuclear anti-terror programs, "It is not a matter of if; it's a matter of when."

The consequences of a nuclear bomb explosion would be death and destruction unprecedented in U.S. history. Shortly after the September 11 attack, PSR published a study in the *British Medical Journal* (*BMJ*) that indicated that a 12.5 kiloton nuclear bomb detonated by terrorists at a dock in lower Manhattan would kill hundreds of thousands of people.[11] The scenario was developed using specialized software, the Hazard Prediction and Assessment Capability (HPAC) provided by the Defense Threat Reduction Agency and the Consequence Assessment Tool Set from FEMA. It contemplated a terrorist attack using a nuclear bomb smuggled by a cargo ship into New York City.

This is not an unlikely scenario. The Port of New York ranks as the largest port complex on the East Coast. With capacity to handle the highest container volume in North America, the Port of New York receives thousands of cargo shipments each day from around the world.[12] Given that less than five percent of cargo containers entering U.S. ports are ever screened, a determined terrorist group has numerous opportunities for transporting a concealed nuclear device.[13]

The *BMJ* case study found that the nuclear bomb blast would decimate much of lower Manhattan. The heat and blast from the explosion would kill an estimated 52,000 people immediately, while as many as 238,000 people would be exposed to direct radiation emanating from the blast. Of those exposed, a projected 44,000 individuals would suffer radiation sickness; and 10,000 of these individuals would receive lethal doses of radiation.

Figure 1 depicts the blast radius and the corresponding casualty rate resulting from a 12.5 kiloton bomb explosion in lower Manhattan.

After the explosion, the area surrounding New York City would experience "nuclear fallout," a phenomenon in which a cloud of radioactive debris is carried by prevailing winds, often traveling hundreds of miles. Depending on wind patterns and other weather conditions, portions of Long Island and other localities would be affected within 24-48 hours.

The *BMJ* case study predicted that another one and a half million people could be exposed to radioactive debris in the few days following a nuclear explosion. Unless the exposed population was evacuated or sheltered; this fallout could kill an additional 200,000 people, and cause several hundred thousand cases of acute radiation sickness.

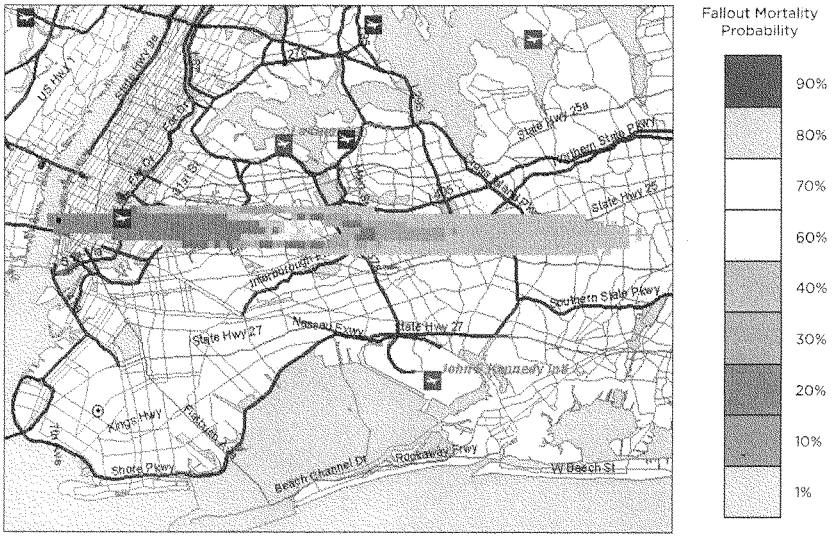
In addition, care facilities would face a major disruption. The *BMJ* case study found that such an attack would destroy 1,000 acute care hospital beds, and another 8,700 acute care beds would need to be abandoned because they would lie in the area of heavy radioactive fallout.[14]

Figure 2 shows the distance the radioactive plume would travel and the corresponding exposures level for the affected population.

More recently, in a March 2005 report, the DHS analyzed a very similar hypothetical scenario detailing an attack in which terrorists explode a 10 kiloton bomb in downtown Washington, D.C., blocks from the White House.[15] In the DHS study, the immediate blast effects from the explosion would kill an estimated 15,000 people and wound 31,000. The report also predicts that there would be 190,000

11 Ira Helfand, Lachlan Forrow, Jaya Tiwari, "Nuclear terrorism," British Medical Journal, February 9, 2002, 356.
12 The Port Authority of New York and New Jersey, Cargo Capabilities, available electronically at http://www.panynj.gov.
13 Michael E. O'Hanlon, "Cargo Security," Congressional Testimony: Senate Governmental Affairs Committee, March 20, 2003.
14 Ira Helfand, Lachlan Farrow, and Jaya Tiwari, "Nuclear Terrorism," British Medical Journal, Vol. 324, February 9, 2002, 356-359.
15 DHS, National Planning Scenarios, Scenario 1.

Figure 2. Radiation Exposure to Population and Fallout Mortality from a 12.5 kiloton Bomb Explosion in New York



Source: Ira Helfand, Lachlan Farrow, and Jaya Tiwari, "Nuclear Terrorism," *British Medical Journal*, Vol. 324, February 9, 2002, 356-359.

prompt, or immediate, deaths and 264,000 injuries from short term radiation exposure in an area 19 miles to the east from the explosion if the population is not adequately sheltered or evacuated. Additionally, the DHS study predicts that there would be chronic radiation exposure in an area 198 miles to the north and east of Washington, D.C., causing 49,000 cases of cancer, of which 25,000 would be fatal.[16] Figure 3 and 4 respectively show the blast radius and the corresponding casualties from a 10 kiloton bomb explosion in downtown Washington, D.C., the distance the radioactive plume would travel and the levels of radioactive exposure likely for the affected population.

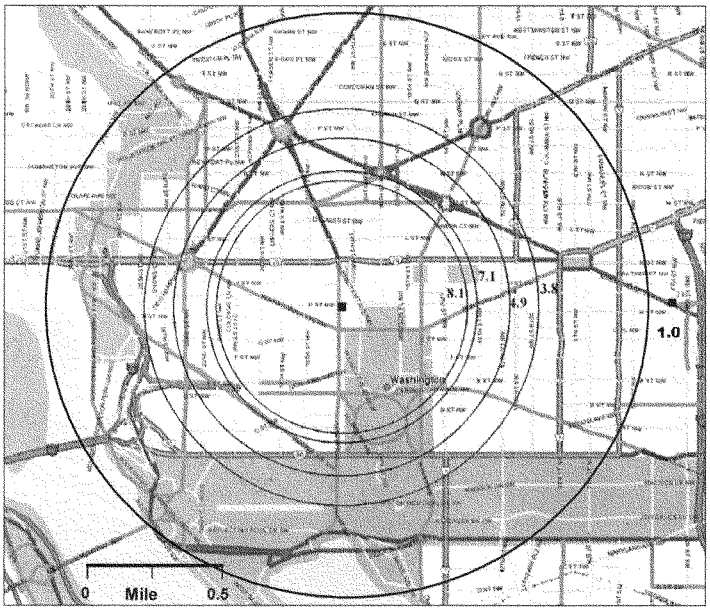
AN ATTACK ON A NUCLEAR POWER PLANT

The United States is home to 104 nuclear power plants and 36 non-power research reactors licensed by the Nuclear Regulatory Commission (NRC).[17,18] These nuclear power plants generate eight percent of the energy consumed in the U.S.[19] An attack against one of these plants has long been considered a serious threat.

As early as 1982, the Argonne National Laboratory conducted a study detailing the likely damage that a commercial jet plane could inflict on the concrete containment walls protecting nuclear reactors. At that time, the concern was that an accidental airline crash could compromise

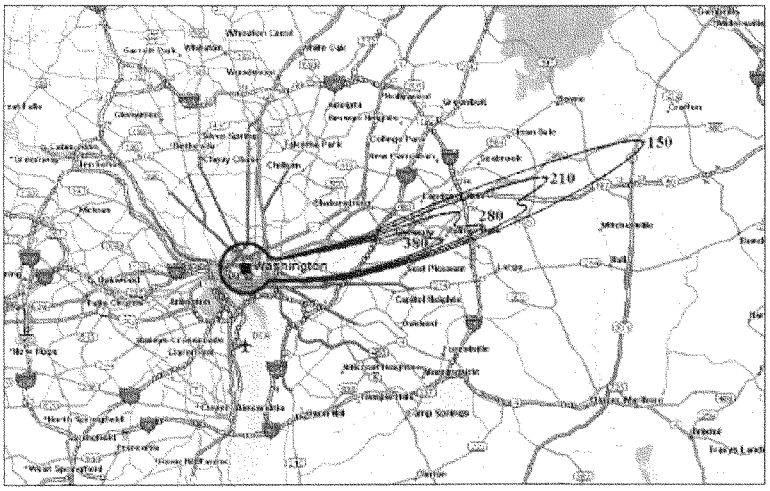
16 DHS, National Planning Scenarios, Scenario 1, Appendix 1-A, pp 1-15 to 1-17.
17 Nuclear Regulatory Commission, "Power Reactors," available electronically at www.nrc.gov/reactors/power.html
18 Nuclear Regulatory Commission, "Non-Power Reactors," available electronically at www.nrc.gov/reactors/non-power.html
19 Amory Lovins, Energy Security Facts: Details and Documentation, Rocky Mountain Institute, June 2, 2003.

Figure 3. Prompt Blast Radius of a 10-kiloton Nuclear Detonation in the Central Business District of Washington, DC



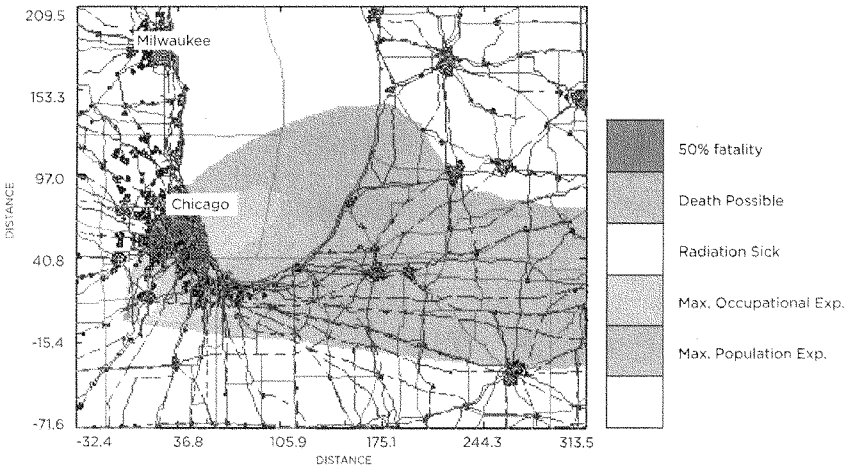
Source: Department of Homeland Security, "National Planning Scenarios," Created for Use in National, Federal, State, and Local Homeland Security Preparedness Activities, Draft Report, April 2005, 1-15.

Figure 4. Countours for Acute (24-hour) Exposure Doses for a 10-kiloton Nuclear Detonation in Washington,DC



Source: Department of Homeland Security, "National Planning Scenarios," Created for Use in National, Federal, State, and Local Homeland Security Preparedness Activities, Draft Report, April 2005, 1-17.

Figure 5: Total Effective Radiation Exposure following Braidwood Nuclear Reactor Meltdown (distance in miles)



a nuclear power plant's primary containment wall and interior structure. The scenario showed that even if only one percent of a jetliner's fuel penetrated the containment and ignited after impact, this would create an explosion equivalent to 1,000 pounds of dynamite inside a reactor building. Such an explosion could create simultaneous failures in key safety measures leading to a loss of reactor coolant that cannot be mitigated and a meltdown of nuclear fuel.[20]

The PSR study considers the effects of a hypothetical attack against the Braidwood Nuclear Power plant[21] located 60 miles southwest of Chicago.[22] Overall, there are eleven operating reactors in Northern Illinois, making Chicago particularly susceptible to a terrorist threat against a nuclear plant. In this scenario, we imagine that a terrorist group hijacks a jet plane and crashes it into the plant.

Braidwood is a pressurized water reactor producing 2500 megawatts (MW) of electricity at full capacity. Pressurized water reactors, like most nuclear power plants, require huge amounts of water to cool the reactor and maintain continuous steam production to power the turbines. A catastrophic loss of coolant, from either a direct attack against the primary coolant system, or from a reactor vessel breach resulting from a commercial jetliner accident, would uncover the core of the reactor, causing it to melt and burn.

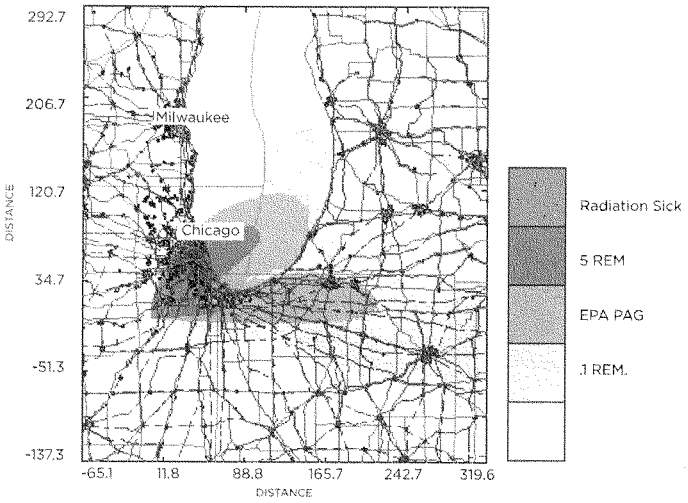
Exposure of the reactor core, a containment breach, would release the reactor's superheated

20 Dr. Ed Lyman, Security of the Nation's 103 Nuclear Reactors, Nuclear Control Institute and Committee to Bridge the Gap News Press Conference, September 25, 2001, transcript available electronically at http://www.nci.org.

21 The Braidwood power plant and its owner, the Exelon Corporation, were recently sued by Illinois Attorney General. The Braidwood unit was found to be leaking tritium that contaminated groundwater and tritium has been found in private wells of nearby property owners. See, Matthew L. Wald, "Nuclear Reactors Found to Be Leaking Radioactive Water," The New York Times, March 17, 2006.

22 Similar to the BMJ Study, the scenario described here was created using specialized software called Hazard Prediction and Assessment Capability (HPAC) provided by the Defense Threat Reduction Agency and the Consequence Assessment Tool Set (CATS) from the FEMA.

Figure 6: Acute Radiation Exposure to Population following Braidwood Nuclear Plant Meltdown (distance in miles)



radioactive fuel into the air. It is important to note that nuclear power plant cores typically contain 20 to 40 times the amount of radioactive materials released in a small nuclear bomb explosion (as the one described in the first hypothetical scenario). In this power plant attack scenario, the Braidwood reactor is presumed to have suffered a catastrophic failure. The resulting plume of radioactive materials would extend north from the reactor itself to the northern edges of metropolitan Chicago, and east into Indiana and Michigan.

Figure 5 shows the distance the radioactive plume would travel.

The population would be exposed to different levels of radiation depending on the distance from the reactor, duration of exposure (for this simulation, it is assumed that the exposure would continue for one week), and the wind pattern.[23] It is estimated that more than 7.5 million people would be exposed to radiation (receiving greater than the maximum allowed annual population dose), of which 4.6 million would receive a dose equivalent of the maximum allowable occupational exposure for one year.[24] More than 200,000 would receive high enough doses to develop radiation sickness and 20,000 might receive a lethal dose (LD 50), according to our projections.

The acute exposure levels shown in Figure 6 below reveal the intensity of radioactivity, the risk to first responders, and the size of the area requiring evacuation. Radiation doses that are high enough to produce acute radiation sickness would affect an area encompassing parts of Kankakee, Will and Grundy counties. The area that would require evacuation or other protective measures is shown as the orange area in Figure 6 identified as EPA

23 These figures are for the total effective dose equivalent which is a combination of external radiation and radiation from internally consumed radioactive particles (primarily inhaled).

24 Population estimates are based on 1990 Census data. Actual numbers are likely to be significantly greater.

PAG (Environmental Protection Agency Population Action Guideline). As shown by the map, this includes the majority of the City of Chicago, extending east to Gary and South Bend, Indiana.

A similar study of a terrorist attack on the Indian Point nuclear power plant (located 35 miles north of New York City) showed an even higher death toll and greater destruction than illustrated in the scenario described above.[25] In this study, conducted by Dr. Edwin Lyman of the Union of Concerned Scientists (UCS), a meltdown at the Indian Point power plant could result in 44,000 people dying from radiation poisoning within a year and 518,000 cancer deaths over time.[26] In this scenario, millions of people in the greater New York City area would have to be permanently relocated because the resulting contamination would leave huge geographic areas uninhabitable for many years or decades. Economic losses from such an attack, according to the UCS study, could top $2 trillion.

THE NUMBER OF ACUTELY ILL PEOPLE in this scenario would overwhelm all available care facilities; about 113 hospitals would fall within the occupational exposure zone (including two Veterans Administration hospitals), affecting more than 32,000 potential beds. Nearly 20,000 physicians in five counties would receive greater exposure than occupational maximums for radiation exposure from the plume.

First responders, including firefighters, would also be injured. The 25 firefighters of Essex Fire Department would likely receive lethal doses, and the 67 firefighters of Braidwood and Herscher departments would suffer from radiation sickness and be unlikely to provide a sustained response to the emergency. Another 10,500 firefighters in 355 other departments would exceed occupational exposures from the plume itself and would be unavailable to respond within the highly contaminated area. Police departments also would be hard hit in Essex, Braidwood and Herscher, with an estimated 38 police officers there receiving potentially lethal doses of radiation.

A DIRTY BOMB EXPLOSION IN AN URBAN CENTER

Although often included in discussions of WMD, radioactive dispersal devices (RDDs, or dirty bombs) do not compare to nuclear weapons in terms of casualties or destruction. Dirty bombs are also easier to build than nuclear weapons since they do not require mastering complex physics processes, and they do not use bomb-grade plutonium and uranium, which are difficult to obtain.

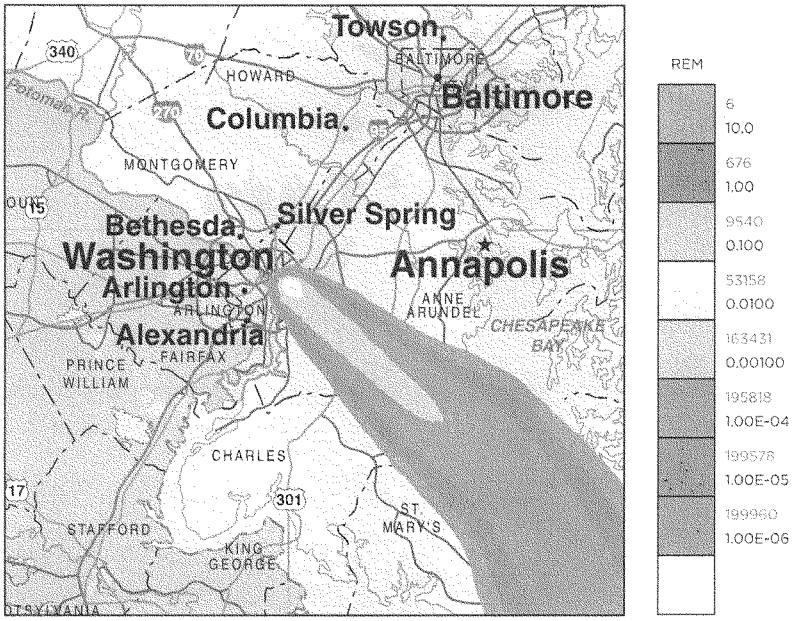
The conventional explosion which occurs in a dirty bomb can cause local injuries and death. However, the major danger is the air-borne dispersal of radioactive materials, as the pulse of heat and the blast aerosolizes the source of radioactive material and sprays it over a wide area.

A dirty bomb is a modified conventional weapon, likely made of either commercial or military explosive or an oil and fertilizer mixture, com-

25 All figures and details of Indian Point nuclear power plant core meltdown study cited hereinafter come from Edwin Lyman, Chernobyl on the Hudson? The Health and Economic Impacts of a Terrorist Attack at the Indian Point Nuclear Plant (Washington, DC: Union of Concerned Scientists, September 2004); also see Mark Thompson and Bruce Crumley, "Are These Towers Safe? Why America's Nuclear Power Plants are Still so Vulnerable to Terrorist Attack–and How to Make them Safer," a special in depth investigation, Time, June 20, 2005, 34.

26 All figures and details of Indian Point nuclear power plant core meltdown study cited hereinafter come from Edwin Lyman, Chernobyl on the Hudson? The Health and Economic Impacts of a Terrorist Attack at the Indian Point Nuclear Plant (Washington, DC: Union of Concerned Scientists, September 2004); also see Mark Thompson and Bruce Crumley, "Are These Towers Safe? Why America's Nuclear Power Plants are Still so Vulnerable to Terrorist Attack–and How to Make them Safer," a special in depth investigation, Time, June 20, 2005, 34.

Figure 7: Dirty Bomb Blast Effect and Radiation Doses to Population in Washington, DC



bined with some form of radioactive material.[27] They are fairly simple to engineer, as they only require readily accessible materials, such as radium or certain cesium isotopes that are used in a variety of medical diagnostics and treatments. Other sources of radioactive material include food or seed irradiation equipment, portable power supplies, and highly radioactive fission products from nuclear power plant waste.[28,29]

Dirty bomb simulations can vary significantly based on the size of the conventional explosive and the source of the radioactive contamination. The following scenario describes the effects of a dirty bomb attack in downtown Washington, D.C.

In this scenario, a terrorist group explodes a moderate size dirty bomb, containing 2000 curies of cesium-137 (Cs-137), in the vicinity of the 15th and H streets, Northwest, D.C (around the corner from the White House). This scenario assumes that only 10 pounds of TNT is used as the explosive and that the bomb could be concealed in a car or another vehicle. The time of the explo-

27 Michael A. Levi and Henry C. Kelly, "Weapons of Mass Disruption" Scientific American, November, 2002.

28 Council on Foreign Relations, "Terrorism: Q&A," Fact Sheet, available electronically at http://www.terrorismanswers.com/weapons/dirtybomb.html

29 Department of Energy, Nuclear Regulatory Commission, Radiological Dispersal Devices: An Initial Study to Identify Radioactive Materials of Greatest Concern and Approaches to Their Tracking, Tagging, and Disposition. Report prepared by the DOE/NRC Interagency Working Group on Radiological Dispersal Devices for the NRC and Secretary of Energy, May 7, 2003, available electronically at http://www.nti.org/e_research/official_docs/doe/DOE052003.pdf

sion is around noon, when the city would be most crowded.

The explosion and local winds would spread radioactive particles over many miles, heavily contaminating the area in the immediate vicinity of the explosion.

Figure 7 shows the blast radius and the corresponding contamination from this dirty bomb explosion.

The scenario also predicts that the fallout would spread across the National Mall area, affecting many of the federal government buildings in the vicinity; depending on weather and wind conditions, fallout would travel over the Anacostia River in Maryland and toward Andrews Air Force Base.

In most scenarios, including the one described above, the conventional explosion would cause the vast majority of acute injuries and deaths. These would likely number in the tens to hundreds. However, the radiation would be spread over a large area and would require substantial effort to decontaminate. Whether one uses the Nuclear Regulatory Commission cutoff of 25 mrem per year, or the EPA maximum of 15 mrem per year, the area required to be decontaminated would include the White House, the National Mall, the House of Representatives office buildings, as well as Fort McNair and the Navy Yard.[30]

The use of a large amount of radioactive material, or material such as nuclear waste (in the form of a spent fuel rod), could significantly increase the adverse health effects from the radiation exposure. Also, the larger the explosive capacity of the bomb, the farther the radioactive contamination would spread. The area in the immediate vicinity of the blast might require long-term evacuation, as the cesium can chemically bind to the windows, roads, and buildings. Farther out, buildings would require intensive washing and even sandblasting. Roads and sidewalks would need to be blasted clean or removed entirely. Topsoil would need to be removed and much of the vegetation would need to be either extensively cut back or removed.[31]

The DHS *National Planning Scenarios* report describes a hypothetical dirty bomb explosion in downtown Washington, D.C. In this study, a terrorist group uses stolen seed irradiators (containing approximately 2,300 curies of Cs-137) in a 3000 pound TNT car bomb. The study predicts that such an attack would kill 180 people from the blast alone and contaminate another 20,000 with radioactive material.[32] The radioactive debris from the explosion would contaminate up to 36 city blocks.

The DHS analysis predicts that, as a consequence of such a dirty bomb attack, an increase in morbidity and mortality related to cancer would also be expected over the longer term. In addition, the study estimates that 5,000-20,000 individuals would require mental health services to help them deal with the psychological impact of such attack.

An additional impact of a dirty bomb attack would be the social disruption associated with the evacuation and clean up. This event would likely require decontamination of tens of square blocks of urban neighborhoods. The DHS' *National Planning Scenarios* document outlines the significant cleanup required, including demolition of buildings, repaving of roads, surface cleaning of sidewalks, re-roof-

30 Because of the damaging health effects associated with radiation exposure, regulatory bodies in the United States, and internationally, set up and enforce radiation protection standards to protect public health. These radiation protection standards are based on the maximum allowable level of radiation doses, or the quantity of radiation or energy, received by the members of the public or workers, as part of their occupational exposure. The basic unit for measuring ionizing radiation received is called rad (radiation absorbed dose). To determine an individual's biological risk and the probability of harmful health effect, rads are converted to rems. The rem reflects tissue dose and takes into account the type of radiation absorbed and the likelihood of damage from the different types of radiation. Because exposures are normally in fractions of a rem, a more commonly used unit of exposure and regulatory enforcement is the millirem (mrem). The Nuclear Regulatory Commission, for example, requires (in accordance with Title 10 of the Code of Federal Regulations under Part 20) that any NRC licensed nuclear facility limit maximum radiation exposure to individual members of the public to 100 mrem per year, and limit occupational radiation exposure to adults working with radioactive material to 5,000 mrem per year. Source: http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bio-effects-radiation.html

31 Michael A. Levi and Henry C. Kelly, "Weapons of Mass Disruption" Scientific American, November, 2002.

32 DHS, National Planning Scenarios, Scenario 11, page (11-1, 11-7)

ing, removal and replacement of all surface soil, decontamination of all exterior building surfaces, decontamination of interiors of buildings, and stripping of all interior materials, in addition to thorough capture and disposal of solid and water waste from the decontamination effort. The cost of decontamination, according to the DHS study, would be in the billions of dollars.[33]

The extent of the damage from a dirty bomb attack would also depend on the location of the explosion. Should such an attack take place in a confined urban area, such as a tunnel or subway station, the number of casualties would be far greater than if it occurred in an open area where the dangerous particles would be more widely dispersed. A dirty bomb explosion would send radioactive dust particles to the very reaches of the dust cloud, leaving every person in the immediate area exposed and making adequate clean-up and decontamination very difficult, if not impossible.

While under most circumstances the initial injury and death toll from a dirty bomb explosion would be roughly the same as from a conventional bomb attack, there would be additional injuries because of acute radiation exposure in the days and weeks following the attack. There will be extensive mental health effects as people worry that they have been exposed to radiation. These "worried well" will flood local health care facilities in a large area around the actually site of the explosion.[34]

The radioactive material also will cause long term effects. As a recent report by a National Academy of Sciences panel recently concluded, there is no dose threshold at which exposure to radiation is safe.[35] One in ten individuals in the exposed population would experience an increased risk of death from cancer if decontamination were not available.[36] In some cases, the cost associated with decontaminating an area for continued human habitation could be so high that the only practical choice might be to abandon it for as long as radioactive hazards persisted.[37] In addition, inhabitants might feel uncomfortable living, working, or doing business in the area, due to fears of radiation sickness. It could be decades before the economic and public health costs associated with a dirty bomb attack are realized. It is also important to note that the potential cleanup cost in the aftermath of a dirty bomb attack remains one of biggest worries for federal officials dealing with such an incident.

RESPONDING TO A NUCLEAR CRISIS: ARE WE PREPARED?

As we have seen, a nuclear bomb explosion or an attack on a nuclear power plant in a large urban area would bring about death and destruction on an unprecedented scale, and a dirty bomb explosion would cause significant casualties and social disruption. Given these realities, the federal government must have in place a well-coordinated response plan that will limit the casualties and injuries in the immediate post-attack period. The following section presents some elements of an effective response to the scenarios described above, compares these best practices with the current U.S. state of preparedness, and identifies weaknesses in existing plans that merit further consideration.

CENTRAL COORDINATION OF DISASTER RESPONSE

An effective response to a nuclear attack on a large U.S. city requires coordination across many

33 Ibid, page 11-1.

34 For example, during the 1995 Sarin gas attack on Tokyo subway by Aum Shinrikyo cult, approximately 80 percent of the casualties, about 4000 people, arriving at local hospitals were "worried well." These individuals did not have actual chemical injuries but believed they were ill or suffering as a result of possible exposure to Sarin gas because of their being in the vicinity of the nerve gas attack and demanded medical attention thereby overwhelming available medical resources. See, National Academy of Sciences, High-Impact Terrorism: Proceedings of a Russian-American Workshop (Washington, DC: NAS, 2002), 129.

35 Health Risks From Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2 June 29, 2005, http://fermat.nap.edu/catalog/11340.html.

36 Michael A. Levi and Henry C. Kelly, "Weapons of Mass Disruption" Scientific American, November, 2002.

37 Ibid.

jurisdictions and from multiple federal, state and local agencies. Consequently, one of the most critical decisions, in the event of such an emergency, would be to establish a clear central coordinating authority that would immediately step in to direct the response and rescue efforts. The lack of such a body has been repeatedly identified as a key weakness in current U.S. disaster preparedness and planning policy. When the DHS was designated the main disaster coordinating government body in 2002, the move was touted as a solution to the range of coordination and communication challenges associated with disaster response. While this consolidation did force a number of domestic agencies to share more information, it did little to establish any one body as the coordinating authority. This was made abundantly clear in the days and weeks following Hurricane Katrina's landfall in New Orleans and the Gulf Coast region. A recent Government Accountability Office (GAO) inquiry into the federal government's response to the hurricane listed the "lack of a clear chain of command" and "unclear leadership" as the biggest factors limiting relief efforts.[38] The report blamed the lack of a central coordinating authority and the unclear command issues at DHS for ensuing internal confusion and an indecisive, slow and haphazard response at the federal level. The report further noted that other federal agencies had an "incomplete understanding of roles and responsibilities" under the DHS' new *National Response Plan*.[39]

"*We need to be able to have somebody who is clearly responsible and accountable to the president, who has the authority of the president to deal with the overall response,*"

— GAO Comptroller General David Walker, on February 1, 2006, presenting the initial GAO report on the failure of the federal government in responding to hurricane Katrina to a Special House Investigative Panel.

EVACUATION AND SHELTERING

In the aftermath of a nuclear explosion or an attack on a nuclear reactor near a population center, the largest number of deaths will result from radiation exposure. The government's ability to quickly and effectively evacuate communities or shelter populations downwind will be the single most important factor in minimizing the casualties and injuries. Unfortunately, current federal preparedness plans do not make clear who would be charged with deciding whether to shelter or evacuate, and these plans do not include clear criteria to assist those charged with making these important decisions. Wind direction and speed and estimates of the isotope content of the fallout cloud will all have an impact on how radiation will be spread, and this information must be communicated in real time to anyone responsible for making evacuation/sheltering decisions. Confusion over evacuation routes and lack of transportation for many underprivileged urban dwellers is likely to compound these problems.

Further there do not appear to be plans in place to effectively communicate an evacuation/shelter decision to the general public, or to carry out an evacuation if that is needed. There is no clear understanding of how to support populations who need to shelter in place for several days, nor is there a program in place to adequately educate the population in advance about this issue so that people will heed instructions they are given. It is important to remember the chaotic circumstances under which these important evacuation and sheltering decisions will be made. Government officials will be forced to respond quickly on the basis of incomplete information and then communicate these decisions both to responsible agencies and to the public. Federal preparedness plans must take into account public fears and misconceptions with regard to the consequences of a nuclear attack. In the event of a nuclear explosion in a city, one's

38 USA Today, "Report: U.S. lacks sufficient prep for catastrophic disasters," available online at http://www.usatoday.com/news/washington/2006-02-01-gao-report_x.htm.

39 USA Today, "Report: U.S. lacks sufficient prep for catastrophic disasters," available online at http://www.usatoday.com/news/washington/2006-02-01-gao-report_x.htm.

instinct will be to flee the area. But, depending on the wind conditions, it may be safer to try to shelter in place for a period of time. In a government analysis of a hypothetical nuclear bomb attack on Washington, D.C., people who tried to evacuate in the first 24 hours received nearly seven times as much radiation as those who sheltered in their basements for 72 hours before trying to evacuate.[10] The federal government must work with states and leaders in the public health community to educate the public about the best strategies to keep their families safe in the event of an attack.

"In the absence of timely and decisive action and clear leadership responsibility and accountability, there were multiple chains of command."

— GAO Comptroller General David Walker, February 1, 2006, presenting the initial GAO report on the failure of the federal government in responding to Hurricane Katrina to a Special House Investigative Panel.

HOSPITAL SURGE CAPACITY

In the event of any major urban disaster, hospitals can expect to see thousands of patients in need of intensive medical care (or hundreds of thousands, if radiation sickness is one of the hazards). In a nuclear attack, many hospitals that lie within the fallout zone of a nuclear explosion may have to be abandoned because they will have been destroyed or contaminated with radiation. Thus, there will be an urgent need for temporary field hospitals. These should be located close enough to the scene for easy evacuation of patients, but far enough to avoid ongoing radiation exposure and contamination. A coordinated system must be in place for transporting patients to field hospitals and making beds available at existing facilities.

No such national system is currently in place. A recent study by the Trust for America's Health warns, "...hospitals in nearly one-third of states... are not sufficiently prepared, through planning or coordination with local health agencies, to care for a surge in extra patients by using non-health facilities, such as community centers sports arenas, or hotels."[11] This assessment is confirmed by an analysis conducted by the American Hospital Association, which concludes that most hospitals, particularly in the major metropolitan areas, have only four to six percent of their total beds available for a potential influx of patients in an emergency situation.[12] Nationally, 62% of all hospitals surveyed reported capacity problems during routine operation.[13] Given increasingly strict criteria for hospital admission, few hospitalized patients can be discharged prematurely without seriously compromising their care. Many hospital emergency rooms, especially in large metropolitan areas, are full of patients awaiting the availability of inpatient treatment rooms, making it unlikely that they can accommodate a sudden influx of new patients.

The DHS *National Preparedness Goal* document emphasizes the urgent need to strengthen U.S. medical surge capacity, because it would play a critical role in determining how to handle effectively large numbers of patients requiring immediate hospitalization following a major terrorist attack.[14] The *NPG* calls for the development of a system where Emergency Medical Service (EMS) "resources are effectively and appropriately dispatched and are able to provide pre-hospital triage, treatment, transport, tracking of patients, and documentation of care appropriate for the incident, while maintaining the capabilities of the EMS system for continued operations."[15] Such a system could be activated in "anticipation of a mass casualty incident

40 DHS, National Planning Scenarios, scenario #1, Appendix 1-A, p 1-29.
41 Trust for America's Health, "Protecting the Public's Health from Disease, Disasters, and Bioterrorism," Washington, D.C., December 2005, page 3.
42 Peter D. Margbella, "Surge Capacity Planning in Health Care Organizations: Hitting the Mark on Enhancing National Preparedness," Homeland Defense Journal, September 2005, page 12.
43 The Lewin Group Analysis of AHA ED and Hospital Capacity Survey, 2002.
44 DHS, National Preparedness Goal, page 20.
45 DHS, National Preparedness Goal, page 11.

that requires supplementing the aggregate surge capacity of local hospitals with an influx of supplemental healthcare assets from mutual-aid partners, the State, and the Federal government."[46] However, no such system has yet been developed.

DISASTER MEDICAL CARE CENTERS

In the case of a major disaster, it would be important that hospitals not be the site of triage and healthcare first response in a disaster. Rather, a system of community sites should be prepared with pre-positioned supplies and equipment to conduct the initial medical response.[47] The goal would be to eliminate crowding, reduce travel, prevent infection and contamination, and maintain the ability of hospitals to offer complex services to their existing and referred disaster patients. One possible solution to the problem of hospital surge capacity is the creation of a system of disaster medical care centers. Disaster medical care centers would be based in existing facilities, such as sports arenas or schools that would be pre-supplied with military-like field equipment, including medical supplies. In addition, a system of mobile field hospitals should also be established to provide coverage for cities without disaster medical care centers and as back-up for those with such centers. These field hospitals also would be useful where there is potential for a natural disaster, such as a major hurricanes, earthquakes, or disease outbreaks.

MOBILIZATION OF KEY RESOURCES: MEDICAL PERSONNEL AND SUPPLIES

In all three scenarios described in this report, local medical personnel would be quickly overwhelmed by the numbers of critically ill patients. Many facilities would not have effective radiation monitoring equipment, decontamination facilities, or personnel to manage them. To adequately address the care and treatment of victims, an immediate mobilization and deployment of trained medical professionals and supplies from outside the affected area would be required.[48]

Recognizing this need, the *National Preparedness Goal* document envisions a public-health system where, in the event of a national emergency, emergency-ready medical personnel, hospitals, and other healthcare facilities would collaborate to handle rapidly a myriad of injuries, including physical and psychic trauma, burns, infections, bone marrow suppression, and other chemical- or radiation-induced injury.[49]

While the *National Preparedness Goal* offers some useful recommendations for addressing the shortage of medical personnel, it does not address the means to quickly deploy additional doctors, nurses, and other health professionals to a disaster zone. The DHS's National Disaster Medical System currently maintains more than 50 Disaster Medical Assistance Teams (DMAT). In the aftermath of Hurricane Katrina, all DMAT were deployed to the Gulf Coast area. It is quite clear that this level of capacity is totally inadequate for dealing with the casualties anticipated in a nuclear terrorist attack. In fact, the DMAT in the New Orleans area were completely overwhelmed by the relatively small number of patients they had to deal with during that crisis.[50]

There is a critical need for the Federal Emergency Management Agency to increase the number of DMAT at its disposal and to establish a system that can quickly mobilize military combat support hospitals and National Guard personnel in an emergency. FEMA also should create a system that will absorb and quickly integrate doctors, nurses, and other health professionals who

46 DHS, National Preparedness Goal, page 20.

47 Ref: Kipnis, K. Overwhelming Casualties: Medical ethics in a time of terror. *In the Wake of Terror: Medicine and Morality in a Time of Terror* J. D. Moreno editor MIT Press Cambridge MA 2004 pp 95-107.

48 DHS, National Preparedness Goal, 20.

49 Ibid.

50 Sarah A Lister, "Hurricane Katrina: The Public Health and Medical Response," Congressional Research Service, Washington, D.C., September 21, 2005, page 13.

volunteer their services. In 2005, many doctors and nurses who volunteered to help and even traveled directly to the areas affected by Hurricane Katrina could not be put to use because there was no system for integrating them into a coherent, functioning, health care team. Many health professionals volunteered by applying on the Department of Health and Human Services (DHHS) website but were never contacted.

Lastly, to best ensure an adequate and continuous flow of critical medical supplies and equipment, the federal government, in cooperation with state and local governments, must develop a strategy for pre-positioning these essential materials and communicating this plan to those who will need the supplies and equipment in their treatment of patients. The *National Preparedness Goal* appropriately designates this as a priority capability building area for an effective response to a terrorist attack or a major natural disaster.[51] There must be adequate stockpiles of bandages, IV solutions and equipment, antibiotics, pain medication, and other common medicines, as well as the ability to mobilize adequate supplies of blood and blood products.

PREPAREDNESS PLANS: NEW YORK, CHICAGO, AND WASHINGTON, D.C.

While the magnitude of a nuclear terrorist attack demands that the federal government assume primary responsibility for this threat, there is an important role as well for local governments. A survey of state and city-specific preparedness planning for the three cities selected in this study indicates that state and local governments have made some improvements in the management of health consequences since the last major terrorist attack on September 11, 2001. However, there remain fundamental problems with the city-specific recommendations and a clear need for a thoughtful and effective plan for preparing communities in the event of a nuclear attack.

New York City

The City of New York has published a preparedness guide that is available on-line at www.nyc.gov/readyny. More than two million copies in eight languages have been distributed to the public, in an attempt to inform New Yorkers of the city's disaster preparedness and evacuation plan. Since the September 11 attacks, the city also has made vast improvements in its ability to communicate with the public by radio and television. In a survey of disaster preparedness for America's fifty largest cities, the American Disaster Preparedness Foundation ranked New York as the second best-prepared city giving it high marks for public education and communication of its disaster planning and first responders training.[52]

The capacity of New York City officials to communicate with each other and among various agencies, however, remains severely limited. Most importantly, four years after the Sept. 11 attacks and one year after Hurricane Katrina, there still is no single plan to evacuate all of New York City.[53] Orderly and safe evacuation for a city of more than eight million people, the majority of whom are without cars, is considered difficult to impossible, even by the officials responsible for carrying out such an evacuation.

According to Joseph F. Bruno, New York City's Emergency Management Commissioner, the city is

51 DHS, National Preparedness Goal, 20.

52 American Disaster Preparedness Foundation, "How Prepared is Your City? A Study of the Preparedness of the Largest Metro Areas in the U.S.," January 2006, page 24. Using data compiled from several sources, including city disaster plans, county disaster plans, meeting records, disaster records, mitigation plans, news reports, census data, government publications, interviews with emergency management and other government employees, non-governmental organization reports, accreditation records, interviews with residents, and other sources, the American Disaster Preparedness Foundation report ranked selected cities' preparedness levels based on a number of criteria. The report used criteria such as a city's disaster preparedness planning, training, public education, general awareness of the city's disaster plan, communication, the city's ability to help its most vulnerable and poor citizens, technology, infrastructure, external support to assign grades of A-F.

53 Sam Roberts, "Planning the Impossible: New York's Evacuation," New York Times, September 11, 2005.

ACUTE RADIATION SYNDROME

One condition that surely will challenge health care workers following a nuclear incident is radiation sickness (acute radiation syndrome (ARS). ARS is a serious illness that occurs when the entire body (or most of it) receives a high dose of radiation, usually over a short period of time. Many survivors of the Hiroshima and Nagasaki atomic bombs in the 1940s, and many of the firefighters who first responded after the Chernobyl Nuclear Power Plant accident in 1986, became ill with ARS.

People exposed to radiation will get ARS only if:

- the radiation dose was high (doses from medical procedures such as chest X-rays are too low to cause ARS; however, doses from radiation therapy to treat cancer may be high enough to cause some ARS symptoms);
- the radiation was penetrating (that is, able to reach internal organs);
- the person's entire body, or most of it, received the dose; and
- the radiation was received in a short time, usually within minutes.

The first symptoms of ARS are typically nausea, vomiting, and diarrhea. These symptoms will begin within minutes to days after the exposure, will last for minutes or up to several days, and may come and go. Then the person usually looks and feels healthy for a short period of time, after which he or she will become sick again, with loss of appetite, fatigue, fever, nausea, vomiting, diarrhea, and possibly even seizures and coma. This seriously ill stage may last from a few hours up to several months.

People with ARS typically also have some skin damage. This damage can start to show within a few hours after exposure and can include swelling, itching, and redness of the skin (like a bad sunburn). There also can be hair loss. As with the other symptoms, the skin may heal for a short time, followed by the return of swelling, itching, and redness days or weeks later. Complete healing of the skin may take from several weeks up to a few years, depending on the radiation dose received by the person's skin.

The chance of survival for people with ARS decreases with increasing radiation doses. Most people who do not recover from ARS will die of exposure within several months. In most cases, the cause of death is the destruction of the person's bone marrow, which results in infections and internal bleeding. For the survivors, the recovery process may last from several weeks to as long as two years. Treatment may include blood transfusions, antibiotics, and the use of hematopoetic stimulating agents. If these fail, bone marrow transplant in specialized units is required."

Excerpted from: The Centers for Disease Control and Prevention, Fact Sheet on Acute Radiation Syndrome (May 20, 2005). Available at http://www.bt.cdc.gov/radiation/ars.asp

only prepared to move from 400,000 to two million people out of the path of a hurricane, a challenge made a little less daunting by advance warning; knowing which flood-prone areas to evacuate; and identifying how many poor, elderly, disabled, and non-English speakers live there.[54] This reflects the enormity of the problem in evacuating the majority of New York City residents following a nuclear attack with little notice. It seems clear that many of News York City's population, if not most, would need to shelter in place in the event of a major nuclear attack, but there is no system to support them with basic necessities like food and water.

"Would it be difficult to move two million people? Absolutely," Mr. Bruno said. "I hope we never have to do it." This means that evacuating eight million would be beyond difficult. "We have plans for area evacuations, and if you take them to their logical conclusion an area could be the entire city of New York," Mr. Bruno said. "Those are doomsday type things, a nuclear attack. We're definitely not throwing our hands up. But it would be a catastrophic event that would be extremely difficult for New York City to have to deal with." How long would it take to virtually empty the city? "I wouldn't even hazard a guess," Mr. Bruno replied.

Chicago

The American Disaster Preparedness Foundation ranked Chicago as one of the fifteen best-prepared cities among the 50 largest cities in the U.S.[55] The study gave Chicago an overall C+, with high marks for technology and first responder training and low scores for uniformity of response, public education, and general awareness of disasters. The study cites poor communication of evacuation plans to the public as the major concern. The study faults Chicago for being one of the most tight-lipped cities in disseminating public information on disaster preparedness. City officials refuse to release disaster-preparedness plans to the public, which makes it difficult to examine the city's strength or weakness in this area.[56]

Chicago's first responders have participated in mock catastrophe exercises, for events ranging from a terrorist attack to a major disease outbreak or a natural disaster. The city is equipped with high-tech devices like emergency notification systems and sensors that could detect the presence of certain biological agents and chemicals. City officials plan to acquire radiological sensors in the near future. However, it appears that Chicago first responders are neither prepared fully nor equipped to quickly distinguish a radiological or nuclear attack from other emergencies.

Since the city government has not communicated adequately with the public, the average resident, and even some involved at a planning level, remain unaware of the details of Chicago's preparedness planning. The official advice in the event of a disaster is to seek shelter and tune in to local radio and TV stations for evacuation information.

"As a resident of Chicago, I know very little of what they are doing. This is the same level of irresponsibility we saw in New Orleans: denial of the problem, reassurance without substance and lack of leadership."

— Charles Baum, Vice-President of Health Affairs for the Alexian Brothers Hospital Network in Arlington Heights and a member of the Cook County Department of Public Health Pandemic Disease Response Task Force

54 Roberts, New York Times.

55 American Disaster Preparedness Foundation, "How Prepared is Your City? A Study of the Preparedness of the Largest Metro Areas in the U.S.," January 2006, page 24.

56 Christina Le Beau, "Thinking the unthinkable," December 2005. Available electronically at http://www.chicagobusiness.com/cgi-bin/mag/article.pl?article_id=25103&postDate=2005-12-31.

Washington, DC

The same American Disaster Preparedness Foundation report cited above ranked Washington, D.C. seventh for its preparedness efforts giving it a B-.[57] City officials have participated in mock WMD terrorist attack response training as part of the Top Officials, or TOPOFF terrorism response exercises.

The D.C. government plans do not spell out the designated authority to make decisions on evacuation. This is critical, as D.C. has no governor to make the necessary decisions. City officials have identified fourteen evacuation routes out of downtown Washington D.C. that commuters could use for an emergency evacuation. The map is provided on the D.C. Department of Transportation website, and the city government has attempted to publicize it through local media and on the public transit system.[58] The official evacuation plan shows evacuation routes extending toward the Capital Beltway.

However, there are no road signs to identify emergency routes. During a major disaster, the D.C. plan calls for traffic signals to be re-timed to allow a maximum number of cars to leave the city and for some traffic signals to operate on four-minute cycles. The evacuation plan provides no specifics about how the District of Columbia would coordinate with surrounding states — Virginia and Maryland — or where the evacuated individuals should go to once they are out of the D.C. city limits. Thus, it is difficult to imagine how the city would manage the safe evacuation of hundreds of thousands of people at once, given the traffic congestion on I-495 during a normal rush hour commute.

NOTE

When one goes to the DC government webpage's emergency information section and selects the link for information on nuclear and radiological emergency, a blank page comes up with the following link: FILE:/eic/LIB/eic/cwp-558855-44723-3-6287-13930.cwp

57 American Disaster Preparedness Foundation, "How Prepared is Your City? A Study of the Preparedness of the Largest Metro Areas in the U.S.," page 24.

58 The map is available at http://ddot.dc.gov/ddot/frames.asp?doc=/ddot/lib/ddot/information/pdf/ddot-event-map-large.pdf&open=|32399|

Recommendations

The threat of a nuclear terrorist attack or other large-scale urban disaster is real, and the potential consequences are disastrous. Five years after September 11, the federal government still has not developed an adequate response to these threats. The DHS's *National Preparedness Goal* and the work that went into developing the *National Planning Scenarios* represent useful preliminary steps, but a fully developed and working plan is critical.

Physicians for Social Responsibility has a three point prescription to address these dangerous deficiencies in planning, organization, and communication. PSR recommends the Department of Homeland Security adopt the following measures:

PLANNING

- **Designate a central coordinating authority** and a clear chain of command that would be activated in the event of a nuclear terrorist attack, or natural disaster, to direct the response and rescue efforts.
- **Establish and communicate clear criteria** to guide this authority in deciding whether to evacuate people or shelter them in place. Establish plans for carrying out any evacuations deemed appropriate and for supporting populations instructed to shelter in place.
- **Include nuclear scenarios** in most regular desk-top and field planning exercises and give the U.S. Weather Service capacity to map and broadcast radiation fallout plumes in real time.

ORGANIZATION

- **Establish an adequate National Disaster Medical System** with significantly increased numbers of Disaster Medical Assistance Teams and establish a mechanism for quickly mobilizing existing military medical teams and integrating volunteer health professionals.
- **Pre-position radiation protection and monitoring equipment** in areas felt to be high risk potential targets. Pre-position stockpiles of medical supplies that can be moved quickly to the affected areas in response to nuclear terrorism or natural disasters such as hurricanes or floods.
- **Train and equip first responders** so they can quickly identify a radiological emergency and perform their duties while also ensuring their own safety.
- **Establish Disaster Medical Care Centers** in high risk urban areas and mobile field hospitals that can be moved quickly to areas where existing medical facilities are overwhelmed.

COMMUNICATION

- **Establish a plan for communicating evacuation** or sheltering decisions to the public and educate the public in advance about these issues so that they will follow instructions in the chaotic aftermath of an attack.
- **Ensure that the coordinating authority has access to real time information** and can communicate the location and expected spread of radioactive fallout plumes.

PSR's study has raised a number of key focus areas for those charged with protecting communities from the threats posed by major disasters. It is important to note that the context in which we are raising these issues. The U.S. public health system, which would bear the burden of respond-

ing to events like these, is currently underfunded and understaffed. Any thoughtful strategy on addressing a nuclear terrorist attack must take this into consideration. Future plans must consider preparations for a nuclear attack in the broader context of competing public health priorities like flu prevention or natural disaster response. We cannot afford to pull funding away from existing public health needs to fund new preparedness initiatives. We must acknowledge that new sources of funding and other resources are needed and must be supplied to strengthen the existing public health system and guarantee that a preparedness system is in place to ensure an effective response to a wide range of threats.

A NOTE ON NUCLEAR TERRORISM PREVENTION

While there is much work to be done in the area of preparedness for a nuclear terrorist attack, we also must recognize that even the best efforts in this area will not be enough to keep our communities safe. Given the potentially devastating consequences of a nuclear terrorist attack, a clearly focused program of prevention strategies centered on having the U.S. and other nuclear weapons powers move toward the elimination of nuclear weapons would be the key to our safety. In tandem with this, well-funded and rigorously enforced programs aimed at keeping nuclear weapons and materials out of the hands of terrorists, including securing the facilities which house this dangerous material and reducing and ultimately eliminating U.S. reliance on nuclear weapons and power in the longer term should be considered mainstays of prevention of nuclear terrorism.

Specifically, PSR recommends that the federal government:

1. Limit the availability of nuclear weapons and materials by:

- Providing adequate funding to complete security upgrades of all vulnerable sites where nuclear weapons or materials are stored
- Promoting and supporting policies that would secure U.S. borders, such as mandating stricter cargo shipment requirements
- Leading all nuclear weapons states in meeting their legal obligation under article VI of the Nuclear Nonproliferation Treaty by pursuing nuclear disarmament in good faith and setting a timetable for reducing and ultimately eliminating nuclear arsenals

2. Protect nuclear power facilities by:

- Working with the nuclear industry to ensure the security of all nuclear reactors in the country against any possible threat, leading to a permanent, nuclear industry-funded and NRC monitored security system
- Strictly enforcing a no fly zone over nuclear power reactors and installing anti-aircraft missiles on guard towers. Serious steps must also be taken prevent the threat of a truck bomb or bomb from surrounding bodies of water
- Mandating the storage of spent nuclear fuel on-site, below ground, in hardened dry cask storage to lessen vulnerability to a terrorist attack, while continuing to develop a long-term storage solution

Ultimately, the only protection from a terrorist threat against nuclear power plants and the considerable radioactive waste they generate is to move the U.S. away from nuclear power and towards renewable and less dangerous energy sources. Nuclear power plants provide enticing targets, and the continued production of fissile materials as waste or as potential bomb-making material threatens the health and safety of our children and future generations. Furthermore, nuclear power plants increase the likelihood of nuclear proliferation and create a double-standard where certain countries have the right to produce nuclear fuel and others do not.

WHO IS PSR?

Guided by the values and expertise of medicine and public health, Physicians for Social Responsibility works to protect human life from the gravest threats to health and survival. PSR is a nonpartisan, nonprofit organization representing 26,000 physicians, public health professionals, and concerned citizens working to eliminate nuclear weapons and address the public health and environmental legacy created by our military and civilian nuclear enterprise, including the testing, production and stockpiling of nuclear weapons. Since its founding forty-five years ago, PSR has dedicated its efforts to educating the medical and public health community, the public, policymakers and the media about the menace of accidental or intentional nuclear war and proliferation of nuclear weapons and materials.

PSR also has a long history of bringing to light the fallacy of U.S. nuclear weapons policy and inadequacy of U.S. public health infrastructure in responding to a full-scale nuclear war scenario. Throughout the Cold War years, PSR physicians published articles and studies in medical journals, such as the *New England Medical Journal* and the *Journal of American Medical Association*, detailing the medical consequences of a nuclear war between the United States and the Soviet Union. Through research, public education and advocacy, PSR, with our international federation the International Physicians for the Prevention of Nuclear War, highlighted the health effects associated with testing, production and stockpiling of nuclear weapons and the nation's continued reliance on nuclear weapons and nuclear power. This work was recognized globally when IPPNW was awarded the Nobel Peace Prize in 1985, in which PSR shared.

Over the last two decades, PSR's work has focused on educating the public and policy makers about the continuing threat of nuclear proliferation and the health legacies of nuclear weapons build-up during the Cold War. PSR continues to advocate for rapid reduction and eventual elimination of U.S. and global nuclear stockpiles — ultimately the only sure way to eliminate the threat of the use of nuclear weapons whether by an adversary state or by a terrorist group.

Recognizing that new dangers now threaten us, PSR in 1992 expanded its mission to include environmental health, addressing issues such as global climate change, proliferation of toxics, and pollution.

American Red Cross

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For more information, contact:
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TESTIMONY OF JOSEPH C. BECKER
SENIOR VICE PRESIDENT, DISASTER SERVICES
AMERICAN NATIONAL RED CROSS

Before the Committee on Homeland Security and Governmental Affairs
United States Senate

Chairman Lieberman, Senator Collins and distinguished Members of the Committee, I am honored to appear here today on behalf of the American Red Cross. My name is Joe Becker, and I lead disaster services for the Red Cross.

As you know, the American Red Cross is the helping hand in times of disasters and emergencies. We shelter, feed, and counsel those impacted by disasters in communities across our country and the world. We supply nearly half of the nation's blood. We teach lifesaving skills. And we support the military and their families. Whether it is hurricane or a heart attack; a call for blood or a call for help, the Red Cross is there.

The issue we are discussing today – the mass care and medical surge needs to respond to a nuclear attack on America – is of utmost importance. While I will share with you what the Red Cross has done to prepare for this type of disaster and other catastrophic events – including a sense of our capabilities to respond – I will spend the majority of my time on recommendations on how we as a nation can be better prepared for these kinds of events. To sum: The country as a whole is not ready to respond to the needs that would be created by a nuclear terrorist attack on a major metropolitan area.

Mr. Chairman, one month ago in your opening statement you noted, "The challenges our country would face in the days after a nuclear attack are massive and unprecedented." Senator Collins, you stated that "planning and response for a terrorist nuclear attack would resemble that for any catastrophic natural disaster." We agree. Mass care needs can be modeled from decades of experience in real world events. What is far less certain is the effect of a nuclear event on the response environment. No amount of modeling can accurately predict the impact of the public's reaction to a traumatic event.

In addition to the anxiety that such an event is likely to generate, there are some other unique challenges. Public information consistency, long term housing needs, worker safety

considerations, and organizational liability are all magnified in a nuclear incident. While we have experienced these challenges in limited scope, we have not seen them on a scale that one could reasonably expect from a nuclear event in a large American city.

Brief Overview of Mass Care and the American Red Cross

In a typical year, the American Red Cross responds to more than 70,000 natural and human-caused disasters, ranging from single family fires to large-scale multi-state events. While every disaster is unique, the response is uniform as the Red Cross meets immediate needs through a nationwide system of disaster planning, readiness, response, and recovery. In the earliest days of a disaster our service priority is mass care, which includes sheltering, feeding, distribution of needed supplies, disaster health services, and disaster mental health services.

Red Cross disaster responses are primarily led and delivered by volunteers. In addition to local volunteers who respond to an average of 200 disasters a day nationwide, a network of more than 70,000 trained volunteers is available for possible travel outside of their home areas to respond to larger events. The American Red Cross also has the capacity to manage large numbers of spontaneous volunteers (more than 230,000 volunteers participated in the 2005 response to hurricanes Katrina, Rita, and Wilma). In addition, key partners such as Southern Baptist Disaster Relief provide an enormous resource for helping those in need. Other key partners like the NAACP, National Disability Rights Network (NRDN) and faith organizations further extend mass care and direct client services capabilities. Our model for disaster services is collaborative; it takes the entire community to delivery an effective response in a large-scale event.

The foundation of the American Red Cross service delivery model is the chapter network. Our more than 700 chapters across the nation routinely respond to events such as single family fires. Under our newly implemented construct, if a disaster creates needs that exceed those a smaller "community" chapter can meet (e.g. flood, tornado or wildfire), the chapter turns to its larger "regional" chapter to coordinate resources and lead the response. Larger responses (about 50 a year) are coordinated nationally. The Red Cross actively engages key community agencies, faith based groups, and the business sector to join in responding to community needs and to ensure an effective and scalable mass care response.

Responding to a Nuclear Terrorist Attack: Are We Ready?

Over the past several years, the Federal government – in concert with state and local governments – has developed scenarios, invested in resources, and conducted exercises for a response to a nuclear event. The models and exercises to date have focused primarily on the immediate aftermath of an event, and have been very effective in clarifying short-term operational needs. We have formulas for projecting near term operational needs such as sheltering, feeding, transportation, and other relatively predictable demands that would approximate those we could expect to encounter in a large-scale disaster regardless of its origin.

Key elements missing in the majority of these models and exercises are the long-term needs and reactions of individuals affected by such an event. The effects on a community's psyche and the national sense of well being will be profound.

According to Federally developed National Scenario #1, a detonation in a major U.S. city such as Washington, D.C., of a 10-kiloton nuclear bomb – similar in size to the bomb dropped on Hiroshima – would cause hundreds of thousands of deaths. These deaths would occur in the area closest to the explosion and would be caused by the cumulative effects of the initial blast, the ensuing fires, and the spread of radiation. Approximately 100,000 will seek shelter in safe areas, and another 250,000 will be encouraged to shelter in place. These demands will require the sheltering of well over 100,000 residents across multiple states, and the provision of over one million meals per day – and this projection is independent of the needs of the residents sheltered in place.

The assets and abilities of the American Red Cross, other voluntary and faith based organizations, and government can meet this demand. The Red Cross has stockpiled over five million shelf stable meals and is prepared to work together with partners to serve hot meals in excess of one million per day. In addition, we have purchased enough cots, blankets, and other essentials to shelter 500,000 disaster survivors. This capacity, however, has traditionally been measured against natural disasters and events such as hurricanes that provide ample notice for pre-positioning and pre-event organization.

As the majority of the resources are stockpiled in key locations, a nuclear or *no notice* event requires some key adaptations, and places a heavy emphasis on sustainability over the long term.

Although resources for special needs or medical sheltering are somewhat limited, the nation does have the resources and supplies on hand to shelter and feed hundreds of thousands in a very basic and congregate setting. However, this does not mean we are ready to respond to a nuclear terrorism event. The needed facilities, supplies, volunteers and infrastructure are not prepared to operate effectively or quickly enough in this environment.

Issues in a Nuclear Terrorism Event

In light of the considerations outlined above, our primary concerns are the need for strong coordination coupled with the dangerous working environment caused by the event. More specifically, the following key issues have emerged specific to nuclear, radiological, chemical, biological disasters and are in need of timely resolution for the nation to mount an effective response to a nuclear attack:

1. **Public Information.** The national capacity to deliver timely, appropriate, and consistent public information in a nuclear scenario is not in place. Exercises have demonstrated an inability to decide on and deliver the right message to the public in a timely manner. In the earliest, most critical minutes and hours, local authorities are "on their own" in assessing the risk and in providing direction to citizens. A lack of cohesion between local and national messages in an event results in increased public confusion and anxiety. This will especially affect those families and individuals most vulnerable in our communities – those with special needs, language issues, and lack of access to mass media.

2. **Decontamination.** A basic premise in community planning during a nuclear event is that an individual should not be allowed into a shelter unless decontaminated, and yet decontamination capabilities vary widely among cities. If there is great fear in the displaced population and the decontamination capability is not readily available, shelters could become focal points of public fear. When citizens are told to move indoors but are not allowed to enter shelters without being decontaminated – and then are told to wait – fear and panic may ensue. In addition, the fear of interaction with state or Federal authorities at these facilities may complicate the safe sheltering of large undocumented populations housed in our cities.

3. **National Housing Strategy.** As Katrina demonstrated, the lack of housing options for displaced populations has significant ramifications. Short-term emergency shelters became home for large numbers of people for entirely too long. The lack of a National Housing Strategy will extend the mass care phase of a nuclear event for months until options can be developed. Mass care, by definition, is the immediate relief provided to those impacted. We must have a plan to care for these individuals in a manner more appropriate for the potential months and years necessary in a nuclear event.

4. **State of Readiness.** It is presumed in America that volunteers will step forward in times of need. But a state of readiness for catastrophic mass care does not happen on its own; it requires large numbers of trained volunteers and not just one-time purchases of supplies and equipment. In light of the costs involved, it is unrealistic to expect public donations to support the capacity needed to deliver services on the scale that can be imagined in a nuclear or other catastrophic event.

5. **Citizen Preparedness.** The true first responders in a catastrophic event are citizens – people helping friends, families, and themselves – and they will be in an unfamiliar and frightening environment. The investment in telling American citizens ahead of time what to do in a nuclear scenario has not been made on the appropriate scale. We need to make it easy for Americans to know – and to have accessible in advance – what steps to take in a nuclear terrorism event. While the content is available, it is not yet in every home and place of work.

Mr. Chairman, we raise these issues to put them on the table and to help stimulate a discussion of how we, as a nation, can address them. We look forward to working with this Committee on solutions.

Mass Care Response to a Radiological Event: Organizational and Sector Requests

Today, we come to this Committee with the experience gained in Hurricane Katrina and with a much deeper understanding of the effects and limitations of a catastrophic event. Moving forward, a number of practical steps can and should be taken to increase readiness and improve mass care capabilities. These recommendations fall into three categories: (1) ensuring effective volunteer protections; (2) ensuring protections for volunteer organizations; and 3) ensuring adequate funding for readiness.

1. Ensuring effective volunteer protections.

The American Red Cross will not knowingly place volunteers in a dangerous environment. While disaster situations always poses some risk to worker safety, weapons of mass destruction and terrorism events involving chemical, biological, radiological, or nuclear agents pose a new level of threat. In the earliest days of such an attack, the need to balance response actions against potential risk is greater than ever. We look to local emergency management to tell us where to operate, and together we balance speed of response with appropriate caution.

Models and exercises cannot predict whether volunteers will actually come forward to serve after a nuclear event – even after authorities have indicated it is safe to do so. Message confusion, requests to shelter-in-place, and concerns about post-event health care could significantly reduce the number of volunteers available to mount a relief effort. If we want our workforce to help in the numbers required, government medical protections for volunteer workers are critical. Mass care and medical volunteers require the same protections as those afforded to Federal government employees. Volunteers need to know that they will not face long-term financial needs along with the potential physical and emotional risks of service after a nuclear event.

2. Ensuring protections for volunteer organizations.

In a pan flu epidemic or chemical or biological event, the nonprofit sector would be asked to respond in dangerous circumstances that could put volunteers and the people they serve at great personal risk. The dangerous circumstances could result in future claims against nonprofit organizations. Nonprofits need protection from such claims so they can supply an effective and adequate force of volunteers in a catastrophic disaster presenting health risks for workers.

3. Ensuring adequate funding for readiness.

In December of 2004, the American Red Cross prepared a report entitled "Mass Care Implementation Requirements for the Catastrophic Incident Supplement of the National Response Plan." This report addressed the needs of responding to catastrophic disasters – what it would take to feed and shelter upwards of 300,000 persons for a 90 day period. In order to be prepared to deliver a response in the 30 Metropolitan Statistical Areas (MSAs) within the 50 Urban Area Security Initiative (UASI) cities, the total costs to the organization in 2004 were estimated at approximately $180 million over the first five years. Given the significant scope and magnitude of a catastrophic disaster, developing and implementing response plans and preparedness measures for such an event was (and remains) an extraordinarily complex and increasingly expensive process.

While the American Red Cross is grateful for the generous support of our donors, most of our disaster funding is received post-event and is designated to support direct service delivery for a specific event. Yet our ability to respond quickly and effectively is the result of preparation and investments that happen before events.

Current funding mechanisms for preparedness for a nuclear or similar event has focused on material assets in local government and within the state emergency management structure.

While these assets are important for prevention and response, such investments do little to build the mass care capacity of the country. The American Red Cross and other NGOs feed, shelter, distribute supplies, provide mental health, and provide medical assistance to those affected by an event. Community agencies providing these services need investment in volunteer training, public education, and inter-agency coordination. More specifically, funding streams should be allocated to ensure participation by the Red Cross, faith-based groups, and community groups in all levels of planning, training, and coordination.

In addition to readiness, there is also a critical need for funding to support American Red Cross functions under the National Response Framework (NRF). As a support agency to several Emergency Support Functions (ESFs) to the NRF, one of the critical roles we play is helping to coordinate state and Federal resources. This role was identified as a major "lesson learned" from Hurricane Katrina – the need for NGOs and government to closely coordinate.

The American Red Cross is obligated under the NRF to have a full-time employee in each FEMA regional office, as well as staff at our national headquarters to support the Federal agencies with which we partner during times of disaster. The cost to coordinate with state and Federal government is $7 million annually. While these positions bring value to the community's response, they were not sustainable under our current budget guidance. We respectfully request that Congress authorize and appropriate funding to cover these critical positions.

Conclusion

Mr. Chairman, Senator Collins and Members of the Committee, tremendous work remains to be done in order to properly prepare our nation for a response to very large-scale disasters, both human-caused and natural. Today, no major metropolitan area is adequately prepared to respond, and we must all take measures to better prepare.

Although the challenges to respond to these types of disasters are enormous, the resilience of the American people and the compassion shown by neighbors helping neighbors is cause for hope. Over the years, we have asked much of our volunteers – and they have consistently been up to the challenge. But that reservoir of good will does not excuse us from the obligation to ensure that they are safe, to ensure that voluntary organizations survive to face the next event, and to ensure that we are making the right pre-event investments to prepare the country.

While it is left to other organizations to prevent or mitigate a nuclear attack on America, we remain intently focused on planning to mitigate human suffering if such an event were to occur. As our nation's largest mass care provider, we stand ready to work with our partners in the nonprofit sector, in the corporate sector and in government to ensure our organization is as prepared as possible to respond.

Thank you, Mr. Chairman, Senator Collins and Members of the Committee, for inviting me here today to discuss this important issue with you. I am happy to answer any questions you may have.

Mass Care Implementation Requirements for the Catastrophic Incident Supplement of the National Response Plan

December 2004

American Red Cross

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I. EXECUTIVE SUMMARY

Overview. This document outlines a three-phased, four year strategy to address catastrophic disaster mass care planning at levels never before attempted in the history of the United States in support of the National Response Plan – Catastrophic Incident Supplement (NRP-CIS). During the first two years or phases I and II of the strategy, the American Red Cross will use its vast expertise in mass care planning and operations coupled with its extensive partnerships, cooperation and coordination with federal, state and local emergency management officials to put in place the necessary mass sheltering and feeding plans in the 30 largest U.S. Metropolitan Statistical Areas (MSAs)--which cover the 50 Urban Area Security Initiative (UASI) cities designated by the Department of Homeland Security. (See Attachment 7) In years 3 and 4 (Phase III) of the strategy, we will initiate the necessary activities to enhance and sustain the systems and measures that were put in place during the first two years. The estimated total cost of this initiative is approximately $179.4 million.

Background. Given the significant scope and magnitude of the likely devastating impacts of a catastrophic disaster, developing and implementing response plans and preparedness measures for such an event is an extraordinarily complex and expensive process. Thus, despite the significant increased risk of such an event, funding for mass care preparedness and response efforts for catastrophic disasters has not been a demonstrated priority for federal, state and local governments. Consequently, no metropolitan area of the United States is adequately prepared to promptly initiate and sustain this level of mass care response. Additionally, this situation is exacerbated by the fact that, according to recent surveys, the American public is not as prepared as they should be for disasters in general--and certainly not on this scale. Therefore, there is an urgent need for metropolitan areas to be ready and equipped to deal with the mass care needs of a catastrophic disaster. Also, by taking these steps and making the necessary preparations before the event, there will be less of a strain on federal resources than would otherwise be required at the time of the event.

Hence, the overarching goal of this proposal is for the American Red Cross to lead the effort to build the capacity of government and Non-governmental organizations (NGOs) to respond to the mass care needs of a catastrophic disaster in the 30 MSAs / 50 UASI cities in the U.S.

The American Red Cross will accomplish this goal by achieving the following objectives:

Objective 1: Develop and test catastrophic disaster mass care response plans, addressing the needs of 300,000 people for 90 days, for the 30 MSAs / 50 UASI cities.

The activities under this objective focus on developing the resiliency of the local community, thereby increasing the probability of survival of local elements and decreasing their dependency on external assistance.

Objective 2: Create and support a nationwide network for mass care planning and response.

The activities under this objective focus on the development of back-up systems to fill the gaps in local response capabilities. It is highly probable that a catastrophic disaster will overwhelm the local response capacity--no matter how well prepared the community. Tools such as the newly developed Coordinated Assistance Network (CAN) and national databases of trained mass care workers and sheltering facilities will assist all of the organizations involved in this endeavor. In addition, this network will provide each of the organizations involved in this project with a common concept of operations, consistent training, and standardized systems across the country.

Conclusion. In short, the need for this project is urgent and its implementation and management complex. It will require the support and involvement of a large number of government and non-government organizations at the federal, state and local levels. However, with our network of 900 chapters across the country and the extensive partnerships we have at the local, state and national level, the American Red Cross is uniquely qualified and positioned to lead this critically important effort.

The American people expect prompt, humane and appropriate assistance by their leaders and institutions following disasters. An effective response to a catastrophic disaster must not only meet critical human needs, but it must also instill an important sense of reassurance and confidence in the American people in their government and institutions. The nation cannot afford to not proceed with this critically important planning and preparedness effort with all deliberate speed. The consequences are simply too great.

II. Organizational Capacity And Past Success

The American Red Cross is the acknowledged leader in the planning and provision of food, clothing, shelter, and emergency first-aid care during times of emergencies. We are both a grassroots and a national organization and have the skills and expertise necessary to respond to the full spectrum of disasters ranging from fires that affect one home—to massive hurricanes that devastate entire communities and multiple states. In recognition of our Congressional charter and our mission, the American Red Cross is the Primary agency for Mass care under the National Response Plan for the expanded Emergency Support Function #6 / Mass Care, Housing, and Human Services in the event of a national disaster. We are the only NGO identified as a primary agency in this plan and we also perform a similar function in some state disaster plans.

Responding to approximately 70,000 disasters annually, the Red Cross continually examines, practices, and evaluates our processes to improve and refine our services and address ever changing needs. For the past two years, our "America's Readiness Campaign" has worked to expand resources, build organizational capacity, increase customer satisfaction and significantly enhance our ability to respond to Weapons of Mass Destruction/Terrorism (WMD/T) events.

Our Disaster Services Human Resources (DSHR) network employs a nationwide network of over 26,000 trained volunteers who respond to current disaster requirements above those experienced at their local chapter. Able to be deployed within hours, these volunteers go

anywhere in the United States and its territories for up to three weeks to deliver services after a disaster.

Our ability to ensure that personnel and equipment are deployed to and out of affected areas has been recognized for its excellence. We also continually reach out to our partner government and non-government partner organizations at the local, state and national levels to coordinate our response planning and preparedness efforts. Attachment 4 lists over 30 relief organizations with which we now have Memorandums of Understanding (MOUs) and Statements of Understanding (SOUs) for the provision of support during a disaster.

With our chapters covering every community throughout the United States and its territories overseas, the Red Cross is the common link connecting local, state, regional and national response entities, both governmental and non-governmental. This grassroots system enables us to serve as America's most dependable and constant partner in helping families and communities to prevent, prepare for, and respond to disasters and other life-threatening emergencies.

In order to accomplish this critically important task for our nation, the Red Cross will establish a special management team at our national headquarters in Washington, D.C. to lead this project. These individuals will work closely with our local chapters in the designated MSAs and their counterparts in local government and non-government organizations. We will also enlist the talents, expertise and staff capabilities in our eight regional Service Areas to ensure smooth coordination between our field units and national headquarters.

III. PROBLEM STATEMENT

The ability to coordinate sheltering and feeding for a large number of individuals affected by a catastrophic disaster requires a new and urgent approach.

At present, the range and scope of mass care planning and preparedness is generally limited to recurring natural disaster events. The largest and most recent experience in the United States was the response to the series of hurricanes that befell Florida in late summer 2004. In these disasters, sheltering and feeding needs were significant, although relatively short-term with most evacuees able to return to their homes quickly. Remaining evacuees, with uninhabitable or destroyed homes, were given priority by relief agencies and placed into available, local temporary housing.

A catastrophic disaster in a densely populated area, however will likely result in a large number of severely damaged or destroyed residential structures and public health and safety concerns, preventing return to the area. This long-term relocation and resettlement of large numbers of individuals will require advance planning and significant human and material resources.

As part of "America's Readiness Campaign," Red Cross chapters recently completed a survey of their community's catastrophic disaster preparedness and response plans. Although the survey results have not been systematically analyzed, a summary assessment revealed that existing

disaster plans are: a) limited to specific local government jurisdictions; b) focus on short-term needs; and c) not broadly coordinated.

Although the ability and capacity of metropolitan areas to conduct massive and long-term sheltering activities varies, **we believe that no metropolitan area today can promptly and effectively initiate long-term sheltering and feeding activities for 300,000 individuals**. Moreover, experience clearly indicates that mass sheltering and feeding of this scope and magnitude cannot be accomplished on an unplanned or ad hoc basis. Developing this capacity will require time and coordination and should be addressed with a keen sense of urgency.

IV. AREA OF INTERVENTION

For this project, Red Cross will focus on supporting state and local government and non-governmental organizations (NGOs) in 30 largest metropolitan areas in the country, in mass care planning and capacity building. The table in Attachment 6 lists the 30 designated MSAs selected as the focus of this project. Again, this list encompasses all 50 Urban Area Security Initiative (UASI) cities. These areas were chosen due to the 250 mile requirement of the NRP-CIS that the Red Cross inventory all government and NGO shelters within that radius. Additionally, our experience has shown us that 250 miles is the limit at which planning and management is best served for provision of mass care services.

V. PROJECT DESIGN

The activities during the first two phases of this project will focus on the development of plans and resources while the activities during the last phase will focus on refinement and maintenance--with additional maintenance anticipated in the outlying years to sustain this new capability. The need for this project is urgent and its implementation and management complex. The development of these planning and response capacities requires the involvement of a large number of government and non-government organizations at the local, state and national levels. The Red Cross will use its network of nearly 900 Chapters to manage this complex web and will build upon its existing relationships at national, state, regional and local levels. This existing network and relationships will facilitate the rapid implementation of project activities in all 30 MSAs / 50 UASI cities. Red Cross Headquarters staff will serve as the liaisons with the Department of Homeland Security--and provide regular financial and narrative reports.

A. Project Description

The overarching goal of this project is to build the capacity of government, NGO's and individuals in 30 MSAs / 50 UASI cities in the US to be able to effectively respond to the mass care needs of the hundreds of thousands of individuals likely to be affected by a large-scale or catastrophic disaster. This goal will be accomplished through two objectives.

Objective 1

Develop and test catastrophic disaster mass care response plans, addressing the needs of 300,000 people for 90 days, for 50 UASI cities reflected in 30 designated metropolitan statistical areas of the United States.

The activities under this objective focus on developing the resiliency of the local community. This will increase the probability of survival of local elements and decrease their dependency on external assistance, especially from the Federal government. The plans will address actions to be taken by the area directly affected by the disaster (impacted area), as well as the adjacent metropolitan areas (host areas) providing evacuation and mass care support.

1. Vulnerability and Capacity Assessments

In order to establish robust mass care response plans for the 30 metropolitan statistical areas, existing risk and vulnerability and capacity assessments will be researched and refined in line with the needs following a catastrophic disaster. Each of these 30 areas has unique physical and social characteristics that impact their planning, response and recovery from a catastrophic disaster. These characteristics will be identified during the assessment phase and will be taken into consideration during the development of the response plan and execution methodologies.

2. Facility Identification

Catastrophic disasters often occur with no advance warning. The individuals affected by these disasters leave their homes for long periods of time, sometimes permanently. The migration of these populations is directed to unaffected areas where adequate shelters can be activated in safe areas. Mass care services are an immediate need following any significant disaster, but even more so in a catastrophic disaster. Therefore the pre-identification of the facilities needed to support these services is critical. In order to support the feeding and sheltering of 300,000 individuals for 90 days, a variety of facilities will need to be identified including: shelters, fixed feeding and food preparation sites, mobilization centers, staging areas and warehousing, receiving and distribution sites.

Through its years of disaster response experience, the Red Cross has developed criteria for identifying appropriate facilities to meet the short-term mass care needs following most recurrent and non-recurrent disasters. Many of these facilities will not be appropriate for catastrophic disaster response due to the potential size of the affected population and the longer duration of the sheltering and feeding needs following this type of disaster.

The Red Cross has criteria for long-term shelter facilities which can accommodate an average of 1,000 individuals per facility for up to 90 days. These criteria will be used to identify, inspect and certify 300 long-term shelter facilities within 250 miles of each of the 30 targeted urban areas. These facilities will be matched against defined long-term shelter facility requirements.

In addition to the challenge of sheltering these individuals, feeding operations will also pose significant challenges. Preparing approximately a million meals per day for a sheltered population of 300,000 displaced persons has never before been planned or attempted. In order to support that magnitude of a mass care response, a variety of options will have to be more fully explored including: the use of USDA surplus commodities; the use of meals ready to eat (MREs); and the use of local commercial food preparation companies.

3. Mass Care Personnel Identification and Training

In order to support the feeding and sheltering needs of a catastrophic disaster, the Red Cross will identify and train a total of 37,500 individuals in the provision of mass care services during the first 2 years of the program, or 1,250 individuals for each metro area. This will ensure a sustained effective level of 30,000 trained individuals and will accommodate a 25% annual attrition rate. The table below details the number of individuals to be trained annually during years one through three.

Phase 1	Phase 2	Phase 3	Total
20,250	17,250	7,500	45,000

Maintenance of this level of preparedness for the life of the project will require training 7,500 additional individuals annually during outlying years. During the first phase of this program, the emphasis will be on recruiting and developing training teams for each targeted metropolitan area. The training of these teams will be a combination of Red Cross developed and tested classroom and on-line courses which are the standard required curriculum for new mass care personnel:

- Mass Care: An Overview (Self Study or Group Led)
- Shelter Operations / Shelter Simulation
- Mass Care Feeding / Safe Food Handling
- WMD/T: An Overview (Self Study or Group Led)
- Basic First Aid / Cardio Pulmonary Resuscitation (CPR)

The principal focus of this training is the provision of the essential technical knowledge, and an understanding of the processes and procedures involved in the operation and management of sheltering and feeding facilities. A secondary focus is on the organization of shelter occupants to assume many of the tasks required for the shelters operation and maintenance. The intent here is not only to appropriately engage the evacuees in their own care, but also to limit the requirement for personnel, external to the disaster affected area, to assume these tasks.

4. Operations Plan

The operations plan will include the following elements:

- Mass evacuation and relocation strategies

- Management and support of long- term shelters to include health services and decontamination planning with appropriate partners
- Affected area logistical support strategies for shelter sites and fixed feeding sites
- Strategies for the establishment of fixed feeding sites, mobile feeding routes and the bulk distribution of food
- On-site coordination systems for food supplies, meal preparation and distribution
- Interim alternative housing strategies
- Disaster Welfare Information to include family reunification

5. Security Assessment and Planning

All mass care personnel operating within a catastrophic disaster affected area will be issued a tamper-proof form of identification. This will be done to provide a reasonable measure of recognition for the shelter residents and to facilitate the on-site security mission of public safety officials.

The identification strategy will consist of two elements:

1. A standard, picture ID badge with a three year expiration date will be issued to all Mass Care personnel. The ID card will contain a hologram embedded image and will be attached and displayed on the individual's outer garments.

2. Mass Care personnel will also be issued a controlled identification vest that can be easily distinguished from normal business or casual attire.

All personnel will receive the picture ID badges upon formal acceptance into the National Mass Care Cadre system. Replacements for expired badges will be provided to members in good standing. The ID vests will be issued at the time of the disaster and will be recovered upon completion of the individual's field assignment. These identification and security measures will be communicated to all appropriate state, local and federal officials in advance of any disaster.

6. Inter-Agency Coordination

The Red Cross will continue to work with its federal partners, such as the Department of Homeland Security/Emergency Planning and Response (FEMA), the Department of Health and Human Services and Department of Transportation, among others, in the development of plans and strategies in response to a catastrophic disaster. However, engaging multiple community organizations and private sector entities in catastrophic disaster mass care planning, exercises and response is also essential for success. Nationally and locally, the Red Cross has established an extensive network of partnerships and cooperative working arrangements with a multitude of non-government organizations and other public sector entities. (Attachment 4)

Many of these organizations have large memberships willing to be trained and available for response to a catastrophic disaster that may affect their community, or facilities that can be used as long-term shelters, fixed feeding sites and food preparation centers. Under this program, the

Red Cross will leverage its partnerships within each of the targeted metropolitan areas to secure the maximum participation of these non government organizations. As appropriate, this program will provide mass care training to the members of these organizations and enlist the organization's facilities as long-term disaster shelter and feeding facilities. In addition, the Red Cross will work with these community organizations to assist them in conducting capacity assessments, identifying gaps and integrating their mass care plans.

Objective 2
Creation of a nationwide network for mass care planning and response

The activities under this objective focus on the development of back-up systems to fill the gaps in local response capabilities. It is highly probable that a catastrophic disaster will overwhelm the local response capacity; no matter how well prepared the community. This type of event will have an impact on the number of people from the local area able to respond. The development of a national network for mass care planning and response will facilitate the provision of support from unaffected areas to fill these gaps. In addition, this network will provide all of the organizations involved in this project with a common concept of operations and with consistent training and systems throughout the country. This network will serve as a tool for all organizations involved in disaster response.

1. National Mass Care Cadre System

Ensuring a workforce of 30,000 mass care specialists is quickly organized, trained, equipped and ready for immediate activation will require a robust and multi-functional system. Therefore, a national Mass Care Cadre System, modeled after the successful and proven methodology of the Red Cross Disaster Services Human Resources (DSHR), will be necessary.

The way the Red Cross system currently operates when a major disaster strikes, teams of staff and volunteers are activated and deployed to provide services—where and when they are needed. The number and type of personnel needed for a disaster varies according to the size and nature of the event. In fact, it is not unusual for the Red Cross to mobilize thousands of volunteers within 48 hours. Volunteers include but are not limited to the following: mass care specialists, nurses, mental health professionals, logistics specialists, child care providers, safety and security specialists, family services specialists, disaster welfare inquiry specialists, as well as national headquarters staff. They are organized in a progressive pyramid of responsibility based on skills, ability and experience.

The Mass Care Cadre System will identify the people and skill sets needed to develop a cadre of 30,000 trained volunteers. The system's primary mission will be to support the mass care response needs of affected areas by having trained, experienced, and readily available personnel who can be alerted and moved either within or to disaster sites quickly and efficiently. The secondary mission will be to ensure that the individual members complete all required training and have the opportunity to participate in exercises designed to increase their knowledge and skills.

The Mass Care Cadre System will operate in a web-based environment that delivers real time information concerning enrollment, training, response operations experience, skill sets, competencies, (personnel inventory) information, availability for assignment and alert readiness status. The information contained in the system will be entered by local metropolitan areas in which the individual resides. The information from the local areas will be tracked regionally and also displayed on the national database. Statistical information regarding the numbers of responders, their skill sets and availability for assignment will be constantly monitored. Activation of Cadre members for a catastrophic incident will generally be initiated locally but depending on the nature of and scope of the incident, could be initiated at the regional or national levels.

Staff members specializing in disaster response staff organization and deployment will be dedicated to this project. The majority of these individuals will be located in or near high risk cities and will be focused on the recruitment of potential participants. A limited number of support staff will be located at the national office. These individuals will be responsible for the development of the systems and materials to organize, train, retain, contact and deploy the required human resources and will put into place a 24/7 operational plan to activate and deploy trained volunteers.

All local and regional activities will be monitored at the national level to ensure readiness and activation levels consistent with preparedness and possible response requirements. Threat levels will consistently be factored into the readiness level of the system.

2. Deployment and support of the Coordinated Assistance Network (CAN) client information sharing system.

Key to meeting the expectations of the American public is the quick reduction of people in mass care shelters and the speedy transition of these people to the recovery phase of the relief effort. Independent or self-recovery of clients creates a sense of control and return to normalcy. Given the likely scope and magnitude of a catastrophic disaster, current systems of recovery assistance, as provided by voluntary agencies as well as state and Federal government agencies, will be rapidly overwhelmed. Coordination among agencies and the ability for participating agencies to act collectively and in coordinated fashion as channels for private and public assistance will be essential.

A lesson learned from the experience of September 11th is that the ability to share client data and service delivery information between voluntary agencies following catastrophic disasters can be of great value. Currently several national organizations such as the National Voluntary Organizations Active in Disaster (NVOAD) agencies, the Salvation Army, the United Way, the Alliance of Information and Referral Agencies and the Red Cross are working together to establish the Coordinated Assistance Network (CAN), a combination of collaborative casework processes supported by cutting edge web-based technology. Such a system scaled to the correct

level can support the extension of relief assistance, relieve the pressure on the emergency shelter system, and promote recovery in an expeditious manner.

As a direct result of CAN, disaster clients will have better access to all services for which they are eligible. Simultaneously, agencies can avoid duplicating efforts. It will speed delivery of services, increase agency efficiency, cover the special needs of non-English speakers, and provide more and better information on available services to clients and their families. All personal data stored in CAN is protected and held to the highest standards of confidentiality. Only agencies essential to the recovery of the client will have access to personal information, and even then only with appropriate client approval. The consortium's goal in developing CAN is to improve coordination.

For clients, the advantage of CAN is that it shortens the time involved, and perhaps trauma of, repeating their vital statistics and their "story" to case workers at multiple agencies. The advantage to service providers is that it saves case workers time, ultimately allowing them to provide service to the client at a faster pace and with greater efficiency. Further, service providers have access to the listing of agencies that have already "touched" the case and can direct clients to other service providers who may be able to add supplemental benefits. The end result is improved client service and satisfaction.

CAN is designed to meet the data sharing needs of all relief agencies, including the ability to:

- Create a client profile that supports their need-based assistance process,
- Verify the client's loss and identity,
- Screen for duplication of benefits and creating a financial audit record, and
- Determine what external resources are available to provide supplementary support within the network of involved agencies.

The Red Cross took the lead in funding the Phase 1 development of the CAN system and is currently funding the Phase 2 testing and pilot deployments of the system. The Red Cross deployed CAN during the Long Term Recovery phase of the California Wildfires 2004 and the recent hurricanes in Florida, with continuing utilization in Florida. Six additional pilot cities have been identified and the Red Cross, Salvation Army, National VOAD, and Safe Horizon will be hiring staff to manage implementation of CAN in their cities. The Red Cross is also hiring program management staff at its national headquarters to oversee future CAN activities. However, developing agency capacity to support the use of the CAN system in the 30 major metropolitan areas will take 2 years and require an additional year of maintenance and support.

3. National Database of Sheltering and Feeding Facilities

In order to facilitate multi-jurisdictional responses to the mass care needs of a catastrophic disaster a National Database of Sheltering and Feeding Facilities will be created. All of the information regarding the 3,000 long-term facilities identified will be entered into this database and local government and non-government organizations will define interagency access and will be trained on the use of this resource.

This Mass Care operating system and database will facilitate rapid identification of appropriate facilities within the affected area and in adjacent metropolitan areas, if the evacuations exceed the capacity of surviving affected area local shelters. This will enable the 30 designated metropolitan areas to not only achieve the capacity to serve their own needs if impacted by a catastrophic disaster, but also to act as a mass care mutual aid partner to neighboring communities.

4. National Coordination

The planning and implementation of a mass care response plan of this significant scope and magnitude requires a high-level of coordination with and cooperation from Federal, state and local government and non-government organizations. This is extremely important as catastrophic mass care response plans will not be limited to a specific local government jurisdiction, but rather will encompass multiple jurisdictions. The Red Cross will coordinate the development of catastrophic disaster mass care response plans in each identified area which will include advanced multi-agency strategies tailored to the projected needs of the specific venue.

In addition to facilitating strong collaboration between non-government organizations, the Red Cross will build on existing relationships with local emergency management as well as link with other entities providing supporting services, such as mass evacuation and relocation strategies and interim alternative housing strategies. Where coordinating entities, such as Voluntary Organizations Active in Disaster (VOAD), exist and are active, the Red Cross will work within them--and where they do not exist, we will work to create or reactivate them.

B. Expected Outcomes

Phase One / Year One

- Establish government, non-government organization and private sector partnerships within each of the targeted 30 metropolitan areas / 50 UASI cities;
- Identify and recruit personnel to create an action plan for mass care planning and capacity building;
- Recruit and train 20,250 local members of the Mass Care Cadre System; enter their information into the database; and issue identification badges
- Survey of potential facilities within 250 miles of each metropolitan area for their suitability as long-term shelters;
- Coordinate and define interagency connections and access to: shelter database, logistical support, materials and resources, and security;
- Coordinate inter-agency and government plans for the response and recovery phases of the operation to include health services and decontamination strategies, transition to temporary housing and utilization of CAN.

Phase Two / Year Two

- Complete inventories of sheltering and feeding facilities and identify shortfalls;
- Establish a national database of long-term sheltering facilities;
- Train an additional 17,250 Mass Care Cadre volunteers; enter their information into the database; and issue identification badges;
- Identify and incorporate additional local partnerships (volunteer organizations and private sector entities);
- Establish and initiate the integrated Mass Care operating system and data base at the national and regional levels and within each metropolitan area;
- Ensure that technology requirements (scalability and capacity) are consistent and that the CAN software system is integrated into the facility/shelter support databases.

Phase Three / Years Three and Four

- Meet targeted membership level of 30,000 volunteers for the Mass Care Cadre System;
- Train and process into system an additional 7, 500 Mass Care Cadre volunteers;
- Secure and enter into the national database all shelter facilities;
- Establish communication and protocols for integrated agency response for mass care in each metropolitan area;
- Complete training exercises for utilization of CAN in all the metropolitan areas.
- Conduct full scale exercises within each metropolitan area including integrated agency response, logistical systems and technology support (facility database and CAN.)

Outlying Years

- Maintain Mass Care Cadre membership at 30,000, adding and training new members to accommodate attrition.
- Based on exercise and operational lessons learned, refine mass care plans, Mass Care Cadre System and CAN Systems;
- Incorporate refinements into the systems

VI. CONCLUSION

The potential for a catastrophic disaster in the United States is an increasingly apparent fact of life. This is due in part to growing population concentrations within major metropolitan areas and high risk areas as well as the increased threat of weapons of mass destruction / terrorist incidents.

In our assessment, no urban or metropolitan area currently has the capacity to effectively initiate and sustain mass care activities for a catastrophic disaster. While it will indeed be very challenging task to develop all of the plans, systems and capacity for metropolitan areas to be able to meet significant and unprecedented food, clothing and shelter needs of those affected by a catastrophic disaster, it is nonetheless an achievable one—and the Red Cross is ready, willing and able to do the job by putting our best minds to work along side our local, state and federal partners.

Our distinguished record of helping millions Americans to prevent, prepare for and cope with disasters and other emergencies, we are unquestionably well qualified and uniquely positioned to lead this critically important effort for our fellow citizens.

VII. ATTACHMENTS

Attachment 1 - Budget
Attachment 2 – Assumptions
Attachment 3 – Program Benchmarks
Attachment 4 – Non-Government Partners
Attachment 5 – Legal Authority of Organization
Attachment 6 – List of MSAs
Attachment 7 – List of UASI Cities

Attachment 1—Budget
American Red Cross Catastrophic Plan
Summary of 4-Year Cost Estimates for Federal Funding Proposal
Revised 11/23/2004 (DRAFT - Subject to Change)

	Activity	Phase 1	Phase 2	Phase 3	Phase 4	Phases 1 - 4
	Direct Cost					
1	Project Management	$ 985,216	$ 1,022,144	$ 1,060,550	$ 1,100,492	4,168,402
2	Mass Care and Client Assistance Network Implementation	12,060,625	6,133,290	1,776,382	1,738,477	21,708,773
3	Mass Care Cadre System	1,987,724	1,606,593	1,680,577	1,739,760	7,014,655
4.a	Mass Care Cadre Planning / Training	11,897,425	11,941,375	11,557,633	12,014,705	47,411,139
4.b	First Aid / CPR Training	1,553,100	771,900	248,000	248,000	2,821,000
5	Mass Care Staff Identification	163,851	61,629	19,970	19,970	265,419
6	Supply Acquisition and Warehousing	43,793,539	1,325,383	23,610,401	1,345,820	70,075,144
	Total Direct Costs	72,441,480	22,862,314	39,953,513	18,207,225	153,464,532
7	Indirect Costs	6,494,895	6,754,691	6,213,678	6,462,225	25,925,489
	Total Costs	$ 78,936,375	$ 29,617,005	$ 46,167,192	$ 24,669,450	$ 179,390,021

Notes:

[a] These cost estimates include both start-up costs and on-going costs. The first two years represent the ramp-up period. The steady state begins in year 3. Long-term funding after year 4 or exit strategies are yet to be determined.

[b] Indirect costs are computed as 50% of direct compensation, per approval by Department of Health and Human Services for 7/1/2003 - 6/30/2005.
Per OMB Circular A-122, indirect costs will cover activities such as facilities (depreciation, operations, maintenance, etc.), and administration (Accounting, human resources, etc.)

[c] **Shutdown costs**: in case of terminations during the first 4 years, there are two categories of shutdown costs:

1. **Severance: approximately $650K - $850K**. This amount should be reimbursed **by the federal government (one-time costs)**.
2. **Supply and Warehousing Costs**
   (i) The federal government generally reimburses unexpired portion of the lease if the ARC shows that it has made all reasonable efforts to terminate, assign, settle, or otherwise reduce the cost of such lease.
   (ii) Supply disposition
   A. Best case: Fed pays for disposition of supplies and equipment. ARC incurs minimal costs.
   B. Worst case: Fed authorizes the ARC to dispose of supplies and equipment. **The ARC will incur approximately $1.3M *annually*** to maintain warehouses

NOTE: While this concept paper is our first assessment of the cost to deliver these services. Further budget consideration will occur as specific government and non-governmental partners are identified and established.

Attachment 2 –Assumptions

- The American people will expect that their fellow citizens, affected by a catastrophic disaster or weapon of mass destruction incident, will receive prompt and effective humanitarian assistance.
- The mass care catastrophic planning initiative will facilitate the ability to provide mass care in all 50 UASI cities via mass care planning and preparedness activities in 30 metropolitan statistical areas for 300,000 people for 30-90 days.
- Due to the need to continue response activities throughout the nation, the Red Cross will need to create a new supply of volunteers and material resources.
- By taking on this planning for individuals affected by a disaster local government officials can focus attention and resources on other pressing issues arising from a catastrophic disaster or weapons of mass destruction incidents.
- This plan is designed to fund the mass care program for catastrophic events up to the event. Operational costs thereafter will be funded in accordance with Memorandums of Understandings and the National Response Plan as with any disaster.
- There are individuals and organizations within each metropolitan area willing to be recruited and trained as shelter managers and for other mass care tasks. Also many of these individuals will be willing to serve when requested for disaster incidents affecting other metropolitan areas.
- Mass care planning and preparedness activities will be standardized across all metropolitan areas to ensure efficiency and the federal capacity to support logistics and material support requirements.
- Effective mass care actions will allow government time to establish and execute plans for the temporary housing of sheltered individuals.
- Significant disruption of the affected area's infrastructure, particularly power, transportation and communications systems, may occur. This will hinder the ability of responders to initiate and accomplish emergency, restoration and recovery actions in a timely manner.
- Depending on the location, scope and magnitude of the event, an elevation of the national threat level may prompt actions limiting the availability of air transportation within the United States. Such travel limitations can negatively impact the timely convergence, at the disaster affected area, of needed personnel and material resources.

- The wide dispersal of disaster clients will complicate federal government assistance eligibility and delivery processes for extended temporary housing and recovery support.

- Populations likely to require mass care services include:
  - Primary clients – with damaged or destroyed homes
  - Secondary and tertiary clients – denied access to homes
  - Transients – visitors and travels within the affected area
  - Emergency workers – seeking feeding support

- More people will initially seek to flee and seek shelter for terrorist attacks involving chemical, biological, radiological, nuclear, or explosive (CBRNE) agents than for natural catastrophic disaster events. They will also exhibit a heightened concern for the health related implications related to the disaster agent as well as the possibility of secondary attacks.

- Substantial numbers of trained mass care specialists and managers will be required for an extended period of time to augment local responders and to sustain mass care sheltering and feeding activities

- Close liaison and coordination with numerous government, voluntary, and non-government organizations (NGOs), will be necessary at the local, state, regional and national levels.

- The general public will need to be reassured regarding food and water safety, depending on the nature of the event.

- Immediately following major CBRNE events, decontamination facilities may not be readily available in all locations during the early stages of self-directed population evacuations. Unaware contaminated persons therefore may seek entry to shelters. These facilities may as a result become contaminated, adversely affecting resident health, and general public trust.

- Medical care in shelters will be a significant challenge as local EMS resources and medical facilities will likely be overwhelmed.

- Family reunification within the affected area will be an immediate and significant concern as many family members may be separated at the time of the event.

- Spontaneous volunteers and donations management will require significant attention immediately following the event. If not promptly and appropriately managed, attention to these theses activity will demand the diversion of resources away from service delivery.

- Coordinated, accurate, timely public information will be required immediately to inform the public of appropriate protective and self–care actions.

Attachment 3 – Program Benchmarks

Phase 1 / Year 1	Phase 2 / Year 2	Phase 3 / Years 3 & 4	Outlying Years
• Metropolitan area Mass Care planning and capacity building begins. • Working partnerships are established with government, NGO and private sector organizations in each metropolitan area. • National Mass Care Cadre System established. • 20,250 Mass Care Cadre System members trained and entered into system. • Potential shelter and feeding facilities in the metro areas are surveyed for catastrophic disaster use. • Shelter database structures and interagency connectivity defined. • Logistical and material support requirements are defined. • The ID process for the Mass Care Cadre System members is established. • Coordination to support the recovery phase is initiated. • Planning for health services, decontamination and transition to temporary housing. • Coordinated Assistance Network [CAN] coordinated with the federal government.	• All sheltering and feeding facility inventories are completed. • Identified facility shortfalls are identified and filled. • The national database of long-term shelter facilities is completed. • 17,250 additional Mass Care Cadre members are trained and issued identification. • Local partnership organizations, voluntary organizations and private sector entities are expanded. • The integrated national Mass Care operating system and database is operational within each metropolitan area and at the regional and national levels. • Scalability and capacity requirements for the CAN software system are established. • The integration of feeding and shelter facility and support databases is completed.	• The Mass Care Cadre System reaches the targeted membership of 30,000- members. • All members are trained. • All required shelter and feeding facilities are tested. • All shelter facility info is entered into local, regional and national database. • Communication ability and protocols for integrated agency response for mass care are completed for each targeted metropolitan area. • Training is completed for use of CAN in each metro areas • The CAN system is exercised • Mass Care exercises are conducted within the targeted metropolitan areas.	• Mass Care Cadre System membership is maintained at 30,000. • New members added and trained to accommodate attrition. • Mass Care plans in each metropolitan area are revised and enhanced based on exercise lessons learned. • Integrated agency exercises are conducted for CAN. • Exercise and operational lessons learned are incorporated into metropolitan area mass care plans. • Lessons learned are incorporated into the national Mass Care Cadre System and the Client Assistance Network system.

Attachment 4 – Non-Governmental Partners

The Red Cross has written memorandums of understanding (MOUs) or statements of understanding (SOUs) to provide assistance at the time of a disaster with many Voluntary Organizations/Non-Government Organizations /Private Sector entities, to include, but is not limited to, those listed below:

Food & Shelter Assistance
- NAMB Southern Baptists
- The Salvation Army
- America's Second Harvest
- Church of Jesus Christ of Latter Day Saints
- Woodmen of the World Insurance Society
- National Restaurant Association
- American School Food Service Association

Additional Mass Care Volunteer Assistance
- Corporation of National and Community Service (CNCS)
- National Urban League
- Various Faith based Partners such as Catholic Charities and Church World Service
- United States Jaycees

Transportation Assistance
- Civil Air Patrol
- AMTRAK
- FedEx

Child Care Assistance
- Church of the Brethren

Mental Health Assistance
- American Psychological Association
- National Mental Health Association
- American Counseling Association
- American Psychiatric Association
- Various Associations for Chaplains of varying denominations

Facilities Procurement
- International Brotherhood of Teamsters
- International Brotherhood of Painters and Allied Trades
- Faith-based partners

Technical Assistance
- American Radio Relay League
- Humane Society of the U.S.
- American Veterinary Medical Foundation
- National Funeral Directors Association
- National Foundation for Mortuary Care
- American Society of Civil Engineers
- National Voluntary Organizations Active in Disaster (NVOAD)

Attachment 5 - Legal Authority of Organization

American Red Cross Congressional Charter and Legal Status
Under the Congressional Charter of 1905 (36 U.S.C. §§ 300101-300111 (codified 1998), the American Red Cross and its chapters are a single national corporation organized to help fulfill United States treaty obligations under the Geneva Conventions. The charter mandates that the Red Cross maintain a system of domestic and international disaster relief, and entrusts the organization to serve as a medium of communication between members of the military and their families. Consistent with the Charter, the President of the United States appoints the Chairman of the Board of Governors of the American Red Cross, as well as seven members of the Board of Governors, all seven of whom must be federal government officials. Congressional committees oversee the domestic and international activities of the American Red Cross. The U.S. Supreme Court has confirmed the legal status of the American Red Cross as a unique federal instrumentality. The American Red Cross is recognized as a qualified tax-exempt 501(c)(3) nonprofit organization.

The **Robert T. Stafford Disaster Relief and Emergency Assistance Act**, 42 U.S.C. 5121-5206, establishes the programs and processes for the Federal government to provide disaster and emergency assistance to States, local governments, tribal nations, individuals and qualified private non-profit organizations. The provisions of the Stafford Act cover all hazards including natural disasters and terrorist events. Relevant provisions of the Stafford Act include: a process for Governors to request Federal disaster and emergency assistance from the President. The President may declare a major disaster or emergency:

(1) If an event is beyond the combined response capabilities of the State and affected local governments; and
(2) If based on the findings of a joint Federal-State-local Preliminary Damage Assessment (PDA), the damages are of sufficient severity and magnitude to warrant assistance under the Act. (Note: In a particularly fast-moving or clearly devastating disaster, FEMA may defer the PDA process until after the declaration.)

a. If an emergency involves an area or facility for which the Federal Government exercises exclusive or preeminent responsibility and authority, the President may unilaterally direct the provision of emergency assistance under the Stafford Act. The Governor of the affected State will be consulted if practicable.

b. FEMA can pre-deploy personnel and equipment in advance of an imminent Stafford Act declaration to lessen or avert the effects of a disaster and to improve the timeliness of disaster response.

c. When an incident poses a threat to life and property that cannot be effectively dealt with by the State or local governments, the Governor may request the Department of Defense (DOD) to use its resources after the incident occurs but prior to a Stafford

Act declaration to perform any emergency work "essential for the preservation of life and property" under Section 403 of the Stafford Act.

d. The Stafford Act directs appointment of a Federal Coordinating Officer (FCO) by the President. The FCO is designated by the Under Secretary for Emergency Preparedness and Response and appointed by the President to coordinate the delivery of Federal assistance to the affected State, tribe, local governments, and disaster clients.

Attachment 6 – List of Metropolitan Statistical Areas

Metropolitan Statistical Area	Population	Households
New York--Northern New Jersey--Long Island, NY--NJ--CT--PA	21,199,865	8,213,523
Los Angeles--Riverside--Orange County, CA	16,373,645	5,678,148
Chicago--Gary--Kenosha, IL--IN--WI	9,157,540	3,485,845
Washington--Baltimore, DC--MD--VA--WV	7,608,070	3,043,659
San Francisco--Oakland--San Jose, CA	7,039,362	2,651,275
Philadelphia--Wilmington--Atlantic City, PA--NJ--DE--MD	6,188,463	2,539,825
Boston--Worcester--Lawrence, MA--NH--ME--CT	5,819,101	2,318,421
Detroit--Ann Arbor--Flint, MI	5,456,428	2,208,124
Dallas--Fort Worth, TX	5,221,801	2,031,348
Miami--Fort Lauderdale, West Palm, Boca, Boynton FL	5,007,564	1,593,321
Houston--Galveston--Brazoria, TX	4,669,571	1,777,902
Atlanta, GA	4,112,198	1,589,568
Seattle--Tacoma--Bremerton, WA	3,554,760	1,467,176
Phoenix--Mesa, AZ	3,251,876	1,331,385
Minneapolis--St. Paul, MN--WI	2,968,806	1,169,775
Cleveland--Akron, OH	2,945,831	1,246,124
San Diego, CA	2,813,833	1,040,149
St. Louis, MO--IL	2,603,607	1,092,915
Denver--Boulder--Greeley, CO	2,581,506	1,042,779
Tampa--St. Petersburg--Clearwater, FL	2,395,997	1,143,979
Pittsburgh, PA	2,358,695	1,046,094
Cincinnati--Hamilton, OH--KY--IN	1,979,202	820,756
Sacramento--Yolo, CA	1,796,857	714,981
Kansas City, MO--KS	1,776,062	740,884
Orlando, FL	1,644,561	683,551
Indianapolis, IN	1,607,486	681140
San Antonio, TX	1,592,383	599,772
Charlotte – Gastonia – Rock Hill, NC	1,499,293	615,923
New Orleans, LA	1,337,726	556,234
Oklahoma City, OK	1,083,346	466,230
Totals:	**137,645,435**	**53,590,806**
U.S Totals:	**281,421,906**	**115,904,641**

Attachment 7 – List of Urban Area Security Initiative (UASI) Cities

New York, NY
Chicago, IL
Washington, D.C. / National Capital Region
Los Angeles, CA
San Francisco, CA
Philadelphia, PA
Houston, TX
Miami, FL
Boston, MA
Jersey City, NJ
Seattle, WA
Baltimore, MD
Santa Ana, CA
Newark, NJ
Detroit, MI
Kansas City, MO
Cincinnati, OH
Minneapolis, MN
Phoenix, AZ
Dallas, TX
Long Beach, CA
Pittsburgh, PA
St. Louis, MO
Atlanta, GA
Las Vegas, NV
San Diego, CA
Cleveland, OH
Anaheim, CA
Milwaukee, WI
Indianapolis, IN
Buffalo, NY
Memphis, TN
San Jose, CA
New Haven, CT
Tampa, FL
Louisville, KY
Orlando, FL
Columbus, OH
Denver, CO
Portland, OR
Sacramento, CA
Oakland, CA

St. Paul, MN
Charlotte, NC
Baton Rouge, LA
New Orleans, LA
Fresno, CA
Albany, NY
Richmond, VA
San Antonio, TX

Testimony of John Ullyot
Senior Vice President, Media Relations and Issues Management
Hill & Knowlton, Inc.

U.S. Senate Committee on Homeland Security
Hearing on "Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath"
May 15, 2008

Introduction

Mr. Chairman, Senator Collins, and members of the Committee, I am pleased to testify in front of you today on behalf of Hill & Knowlton, as this panel examines the issue of nuclear terrorism and providing a strategy for clear communications that will save as many lives as possible in the aftermath of such an event.

This Committee has taken a real leadership role in ensuring that our nation is as prepared as possible for nuclear terrorism and other large-scale emergencies, and it is a privilege to be able to provide our firm's insight as part of the information you are gathering for your oversight responsibilities in this area. Likewise, this Administration, with the Department of Homeland Security in the lead, has made solid efforts aimed at improving the means of communication in the event of a terrorist attack.

Norman Augustine, the retired chairman and chief executive officer of Lockheed Martin, once said, *"When preparing for a crisis, it is instructive to recall that Noah started building the ark before it began to rain."* It is encouraging that this committee recognizes the value of this approach. Put more succinctly, an ounce of prevention is worth a pound of cure, and even more so in a nuclear or other mass-casualty event.

My testimony today aims at delivering our perspective of best practices of emergency response and communications planning, and a discussion of the forces that will affect our government's ability to communicate effectively with all Americans, both in advance of any terrorist attack as part of a public education program, as well as in the event that an attack has occurred. We recognize that, in many respects, our views are aligned with work that the federal government, as well as many state and local governments, already have underway.

Hill & Knowlton is among the oldest communications advisory firms in the world, with over 80 years' experience advising some of the world's largest corporations and governments in many of their most difficult challenges, including natural disasters, industrial accidents, military actions, and serious health

threats. Our firm is one of the global leaders in crisis communications planning, with 72 offices in 41 countries, and we are privileged to count some of the world's foremost experts in crisis and risk communications among our leadership.

As Senior Vice President for Media Relations and Issues Management, I direct our Washington office's crisis communications and public affairs practices, but in developing testimony for today's hearing, our firm pulled together the best crisis planning strategies from across our global network to ensure that we provide our best collective advice for this Committee as it examines the uniquely difficult communications challenges that our federal, state and local officials would face when dealing with this particular disaster scenario.

Importance of Communication to Saving Lives

As a preface to my testimony this morning, I believe it is instructive for us to examine the events of the past two weeks, namely the natural disasters that struck Burma and China. While the death and destruction in these instances were not due to acts of terrorism, they carry important communications lessons that are relevant to the subject of today's hearing.

In Burma, where a military junta tightly controls information, the rest of the world struggled to learn the extent of the impact of the cyclone. Contrast that with the devastating earthquake that struck China earlier this week, where the broad access to wireless and digital communications meant that vast amounts of information - much of it inaccurate - flowed across China and around the world. As *The Wall Street Journal*, in Tuesday's edition, observed,

> "As the world's largest internet and cellphone population experiences a major disaster, many are turning to technology instead of waiting for China's government to spread the news. They quickly disseminated the information via micro-blogging, text messaging and online videos that reached millions. In cities across China, many were glued to their cellphones, getting the latest news. The result was some extremely swift on-the-ground reports, as well as the viral spreading of rumors."

We believe this sort of response following a large-scale disaster is a cautionary tale for those of us involved in communications planning.

The fact of the matter is that because of such technology, we need to be prepared for an overabundance of information; information that moves faster than any government agency, first responder or traditional news organization. If such technology

and information is managed properly, the result can save lives. If not, the outcome can be confusion, chaos and panic.

In today's world such technology cannot be controlled, short of shutting down or disabling networks. Therefore, we need to test our plans and systems to ensure they are designed for such a scenario, to break thru the clutter and noise.

In short, accurate and timely information can prove as vital as shelter, medical care and food supplies in times of national disaster.

Through this important series of hearings, the Committee has heard testimony that our government can do much more to plan and prepare our medical, mass-care, and response infrastructure to respond to a nuclear terrorism event. The committee has also recognized that one of the biggest life-saving techniques that government at all levels can employ in the aftermath of such an event is preventing further casualties through effective communication that keeps people out of harm's way, or removes them from a dangerous area, and frees up response resources to respond to those most in need of care.

It is important to note at the outset that our firm was not asked by this Committee to evaluate the current state of communications preparedness of the federal government, but, rather, to give our best thinking, as an agency with global expertise in crisis communications, of how we would advise the government and this Committee on communications planning for an event of this magnitude. Nor, I should note, does Hill and Knowlton currently work with the Department of Homeland Security or other federal agencies on such scenario planning.

Research

In preparation for this hearing, our firm commissioned a nationwide survey to provide a benchmark of current opinions on key communications factors following the detonation of a small nuclear device in a major American city. The Hill and Knowlton survey was conducted by one of the top research firms in the country, using standard methodologies in telephone interviews of over 1,000 Americans from Thursday through Sunday of last week.

An expanded version of the results is included in the attachment, but we wish to highlight three key findings:

1. Almost half of all Americans believe they are not equipped with sufficient information about what they should do in the event of such a terrorist event;

2. The closer people are to an actual attack, the more likely they are to look to, and rely on, information from local emergency management authorities, as opposed to federal authorities and leaders; and

3. Of all the types of information provided in the aftermath of an attack, people place a premium on messages that are, in order: (1) accurate, giving the full facts, no matter how negative, followed by (2) information that is timely. Comparatively few are interested in more abstract, general information such as how the nation will respond to the attack.

We will discuss this information further below, but it is important to understand these three findings at the outset as we approach the issue of communications planning for such an attack.

Communication in Situations of High Emotion

In developing a strategy for communicating effectively in the aftermath of a nuclear terrorist attack, it is essential to recognize the body of scholarship known as "risk

communications," that has revolutionized communications planning for situations of high concern or emotion.

The principles of risk communication draw upon more than 35 years of behavioral scientific research and are being applied regularly with success by governments and leading businesses in crisis planning. They have also been applied internationally on issues such as SARS, bird flu and the terrorist attacks in the London Underground.

Risk communications research demonstrates that, at times of high concern, the normal rules for effective communication must change if messages are to be heard, understood and remembered.

"Mental noise," for example, reduces people's ability to receive messages, on average, by 80 percent in times of high emotion. To penetrate that remaining 20 percent window of opportunity requires developing messages that are clear, concise, brief, and positive or directive.

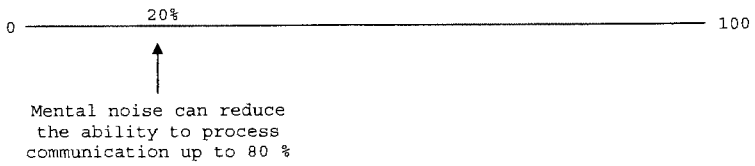


Fig. 1 Processing Communication/Mental Noise

(Source: Center for Risk Communication)

Underlying risk communication is an understanding of the factors people consider when evaluating risk. Trust has been confirmed in the research as the most important factor. And, at times of high concern, caring and empathy is equal to the combination of three other clusters of factors that have been found repeatedly to determine trust: competence and expertise; openness and honesty, and dedication and commitment. Recognizing this is critical both in terms of actions to be taken and in communicating about those actions.

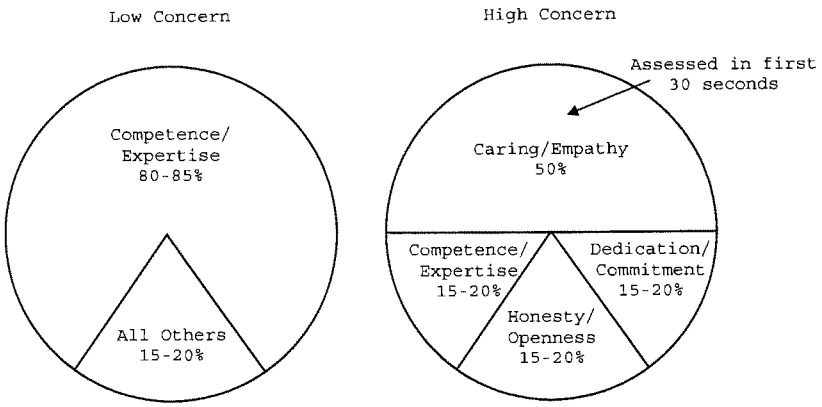


Fig. 2 Trust Determination Factors

(Source: Center for Risk Communication)

Finally, risk communications scholarship posits that the credibility of spokespeople -- in a crisis or otherwise -- generally relates to perceptions of the sources' proximity or independence, so the most credible sources of information are respected local citizens and those without a perceived agenda, and less credible sources are paid consultants and governmental officials. Our research from last week bears this out, as those closest to a nuclear attack are more trusting of their local responders and governmental officials than those at the federal level.

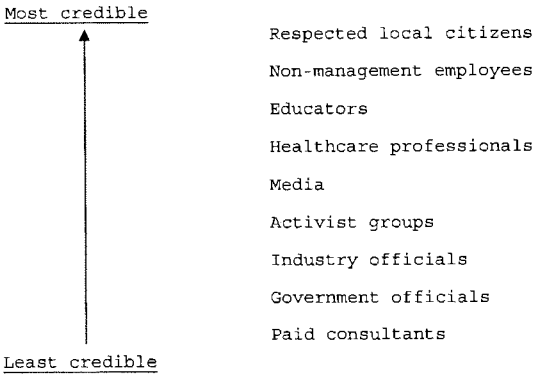


Fig. 3 Credibility Ladder

(Source: Center for Risk Communication)

In sum, then, mental noise, the importance of trust and empathy, and the natural variance in credibility of spokespeople -- favoring those most familiar to the audience -- are key principles to understand in preparing to communicate in situations of high emotion and risk.

Unique Emotional Demands of a Nuclear Event

Nuclear terrorism carries with it a particularly heightened emotion because it represents the pinnacle of possible threats facing the nation. Of the 19 types of major disasters listed by the Department of Homeland Security on its educational website -- from influenza pandemics to floods, hurricanes and tornadoes,

and even radiological devices, or "dirty bombs" -- probably none is as emotionally freighted from a communications perspective as a nuclear attack.

The fear and emotion associated with this type of disaster is probably greater than any other disaster, as it involves not only the attack itself, likely from an unknown perpetrator acting with the element of surprise, but because of the radiological exposure and contamination that could linger in the area after a detonation. Overcoming the "mental noise" in a nuclear event through clear communications not only represents a greater challenge than in other types of disasters; it can make the difference in saving potentially hundreds, or even thousands of lives.

For example, citizens adjacent to the immediate blast area, who may be better off sheltering in place, might expose themselves and their families to lethal doses of radiation through succumbing to the natural desire to evacuate, if not given clear and direct messages from authorities they trust. Similarly, those not immediately at risk from fallout or other dangers, but needing some degree of medical care, might divert precious resources from first responders and hospital personnel,

if they do not receive clear and specific information addressing the priority of care.

In sum, the importance of clear and credible communication in a disaster situation increases exponentially in the case of a nuclear attack, and governments at all levels need to plan with that understanding if they are going to communicate effectively to save lives.

Roadmap for Successful Communications

With all of this in mind, then, the question is, what should the government focus on in the area of communications to save as many lives as possible? As this Committee examines strategies for effective governmental communications planning for and execution after a nuclear attack, we think it is most helpful to focus in detail on the following nine areas, each of which we will discuss in turn:

1. Role of Interagency Coordination
2. Pre-event Message Development
3. Stakeholder Identification
4. Spokesperson Identification and Preparation
5. Involving Media and Digital Organizations
6. Importance of Public-Private Partnerships
7. Importance of Education and Awareness Efforts
8. Criticality of Period Immediately After an Event
9. Training and Lessons Learned

Role of Interagency Coordination

By establishing the Department of Homeland Security (DHS) through the Homeland Security Act of 2002, and well before then, this Committee and the Congress have long recognized the importance of the interagency approach in establishing clear lines of responsibility and coordination in disaster preparedness and response. The interagency approach remains just as critical in the area of communications planning for disasters, including an act of nuclear terrorism.

Although we have not conducted enough analysis to make a specific recommendation to the Committee in this area, the Committee could consider, as part of a subsequent review, whether to expand funding for such communications planning, or even to centralize it in an entity with a more dedicated focus for such planning.

Pre-event Message Development

With the vast amount of information literally at the public's fingertips, quality of information is more important than quantity, and the ability to break through the clutter is vital.

As our opinion research mentioned earlier, close to half of all Americans believe they do not have sufficient information to make smart decisions in the event of a terrorist attack with nuclear weapons. The objective of any communications plan -- whether it be in public education before any terrorist attack, or emergency response information following an attack -- is not solely to disseminate information, but also to affect behavior.

For this reason, it is critical that public agencies at all levels have confidence in the effectiveness of their message. The best way to achieve that is through research: both in determining the existing level of awareness, and in crafting messages and information that can be shown to be compelling.

Message testing is *de rigeur* in the corporate sector. It ensures the effectiveness of the investment. Going back to the "ounce of prevention" lesson, the investment in message testing will be far less than the consequence of ineffective messages.

Additionally, we would be well served by capturing the lessons learned from past events -- including Y2K, 9/11, and Katrina -- to identify best practices and other lessons for message development and delivery.

Stakeholder Identification

It is also important to understand the various audiences, or "stakeholders," and their diverse needs and perspectives. From this we will be better equipped to define the appropriate messaging - and means of delivery - both for public education and emergency response.

It would be a mistake to view the public citizenry as a monolith - all with the same concerns, level of understanding, and degree of trust in the various institutions they rely on for information. These are only some of the variables. Perhaps the most important variables are whether individuals are directly affected, or at immediate risk, or whether there is any separation from the specific event and their home, their work and their family.

We do not want to suggest that there can be a set of messages for every conceivable audience subset. Indeed, simplicity and clarity of message should be the order of the day. However, our experience simply tells us that messaging must work equally well across all audiences. Again, this underscores the importance of message research.

Spokesperson Identification and Preparation

As our own opinion research indicates, the closer people are to a nuclear terrorist attack, the more likely they will rely on local authorities as the primary source for trusted information on how to respond.

What this suggests is a need for a planning approach that recognizes the literally hundreds or even thousands of possible spokespersons across all fifty states, even if we just concentrate on the largest urban and metropolitan areas.

If we are to ensure an adequate standard of communications across all these levels and geographic areas, then a plan will need to be put into place to identify these possible spokespersons (or the offices they represent), together with a means of engagement, information sharing and training.

Involving Media and Digital Organizations

Historically, news media organizations have been a vital conduit of emergency response information, dating back to the legacy Emergency Broadcast System.

As we saw this week, the rapid expansion of digital and wireless communication means that information can be sent around the world as it happens, bypassing both government resources as well as the traditional news media. We witnessed a similar phenomenon in the wake of the London Tube bombings in July, 2005, where images captured on cell phones were being transmitted around the world, even as first responders were in transit to the scene (at least until the cell phone networks began to suffer under the stresses of demand). And on the day of the bombings, the BBC's website recorded some 1 billion hits.

This speaks to the likelihood of an overwhelming demand for immediate information, following a major incident, that will tax even the most robust systems. And in the event of a nuclear explosion, digital and wireless communications might in fact be disrupted by the incident itself.

As we saw on 9/11, in the event of a national emergency, people will turn to the broadcast media for immediate information, and will return to it on a regular basis for updates. In times of national emergency, television networks -- CNN, ABC, CBS, Fox, MSNBC, etc. -- have become the modern day

version of the old town green, where people gather to collect information, and to share experiences.

On the other hand, these networks - particularly cable news outlets -- must provide content on a 24/7/365 basis. And in the absence of new or fresh content, they turn to analysis and commentary, often offered by people with very little specific information. The result is a vacuum that is too-often filled with speculation and alarmism.

For these reasons, it is important these communications plans - both the public education and emergency response -- recognize the need to have a means of providing sufficient content and spokespersons to these networks so as to ensure a consistency of accurate and contextual information.

Equally important, DHS must recognize the new world order in which digital communications are increasingly becoming the primary source of information. To illustrate this point, according to a Zogby survey published earlier this year, 55% of Americans between the ages of 18 and 29 cite the Internet as their primary news source. Understanding that this important audience was only between the ages of 11 and 21 at the time of

9/11, we can see how rapidly public behavior and expectations can change.

Importance of Public-Private Partnerships

One of the successes of the Y2K exercise was the ability of the government to develop productive partnerships with the private sector -- including industry sectors, colleges, universities, hospitals, etc. -- in the coordinating and communications elements of this plan.

The Y2K strategy recognized -- and rightly so -- the important role these institutions can play both in education in advance of an event, and in emergency response, if needed. Indeed, because much of the population may be at work at the time of a terrorist event, it is likely that many Americans will need to rely on their employers for immediate information. We must harvest the lessons from Y2K and apply them to this planning exercise.

Likewise, the lessons of emergency notification and mobilization learned and put into place by colleges and universities following the tragic events at Virginia Tech ought

to be considered by DHS as it prepares for a terrorist attack scenario.

It is encouraging that DHS already recognizes the value of third-party and private sector collaboration.

Importance of Education and Awareness Efforts

As I noted earlier, almost half of our entire population believes it does not have adequate information to deal with a scenario such as a terrorist nuclear attack. This, more than anything else, is the proverbial problem that should keep us awake at night.

The objective of public education is second to none in importance. But it is also among the most challenging:

- How do we connect with a population that is already suffering from information overload?
- Seven years after 9/11, with the public becoming numb to the ongoing warnings about the terror threat, how do we connect with Americans without alarming them?
- How do we break through the barriers of cynicism and mistrust in the wake of Hurricane Katrina?

I would be wrong if I told you that we have the answers to these questions today. But we would encourage current and future administrations that there cannot be a let-up in public education of the terror threat. Indeed, there very likely needs to be an expansion, and one that recognizes the new dynamics that shape the way Americans receive and share information.

Criticality of Period Immediately After an Event

As we saw during the initial hours and days following 9/11 and Hurricane Katrina, the volume of uncertainty and misinformation following a nuclear terrorist attack will likely far outweigh the amount of accurate, credible and balanced information.

At the same time, this is the period of a national crisis when the public's appetite for information is most acute. Several factors will influence whether the public embraces the government's response or turns against it.

First is whether the public has a choice in terms of credible information sources. During 9/11, aside from those in the direct impact areas, the answer was "no" -- the federal

government was the main source of credible (official) information. But during Katrina, the various public audiences had a number of seemingly credible information sources at their disposal, some more reliable than others; some with a greater level of trust than others.

If there is only one source, that source will most likely enjoy a certain "honeymoon" period, in which the public, the media and other institutions withhold any attempt to challenge, contradict or criticize the federal response.

During Katrina, FEMA's "honeymoon" ended swiftly and abruptly because the media felt empowered to challenge the agency, and there was insufficient coordination of message among federal, state and local authorities.

The second factor is whether the event is seen as avoidable. A natural disaster is not, but the public -- rightly or wrongly -- could view a terrorist attack as being wholly preventable, particularly since almost seven years have passed since 9/11, and, during that time, billions of dollars have been spent to prevent another attack.

And while we have no empirical data to support this opinion, simply based on observation, we would postulate that the federal government could well enjoy a very short grace period with the public in the event of a terrorist nuclear attack, unless it can overcome the level of cynicism over an apparent failure to deter a terrorist attack, by way of exceeding the public's expectations for a government response.

The third factor relates to the quality of response from other institutions - including state and local governments, the media, large employers, or even international institutions. The federal government's response will be compared against these - in terms of content, speed and degree of empathy.

One of the lessons from Katrina is the need for wholly aligned coordination and communication among federal, state and local authorities. While politics is an inevitable force that will impact public perceptions of a government response, I think we can all agree is that the collapse of coordinated communications fed the cynicism and lack of trust amongst the public and the news media.

In short, the cacophony of Katrina must be replaced with a symphony of communications, in which all instruments work together.

Training and Lessons Learned

Finally, it is essential to say a word about the importance of rigorous training to successful communications execution in the event of a nuclear attack or other mass casualty disaster. As Penn State's legendary football coach, Joe Paterno, has said, "The will to win is important, but the will to prepare is vital."

Congress and the Executive Branch have recognized the importance of training for disaster response, including the mandate of major "TOPOFF" exercises every two years that test the coordinated capabilities of emergency personnel at all levels of government, including communicators at the principal levels. The communications training at TOPOFF includes message testing and interacting with media roleplayers, including a notional broadcast network.

Once again, DHS and the interagency are to be commended for their efforts in the past several years to expand the rigor of

these scenario tests for the communicators, including the involvement of state and local spokespeople, and the critical after-action, or "lessons learned," element of this training. This Committee has recognized the importance of continuing to improve on these and other exercises and it is our hope that some of the ideas we have presented today will aid the committee in this effort in the area of communications.

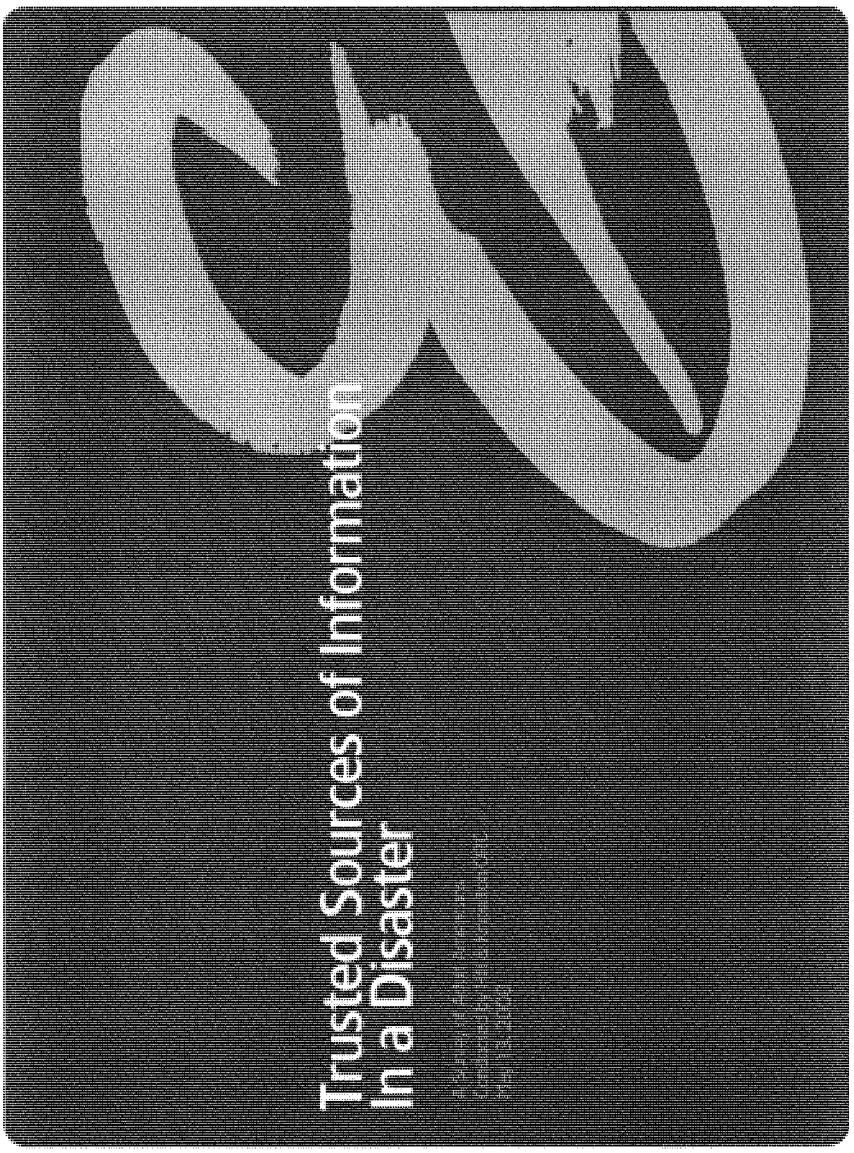
Conclusion

Mr. Chairman, Senator Collins and Members of the Committee, it has been a privilege to be able to outline our thinking for you as this Committee considers how governments and first responders at all levels can communicate most effectively to save lives in the event of a nuclear attack.

We believe this Committee and the Department of Homeland Security have accomplished a great deal in terms of preparing our nation for such an event. The opportunity now is to build on this progress, by ensuring that the communications planning recognizes the powerful technological and societal forces that have fundamentally changed the manner in which the public receives and shares information, and by identifying those remaining barriers to effective communications.

Government has no greater responsibility than the protection of its citizens, and we at Hill & Knowlton are humbled to be part of your critical efforts in this direction.

I look forward to your questions.



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Background and Purpose

- The following report is based on findings from a survey conducted by Hill & Knowlton on disaster preparedness.
- A telephone survey was executed by Opinion Research Corporation's CARAVAN omnibus on behalf of Hill & Knowlton for the purposes of this report.
- It was conducted among a sample of 1,008 adults (504 men and 504 women) aged 18 and over living in private households in the Continental United States. Interviewing for this survey was completed during the period of May 8-11, 2008.
- The survey was weighted by four variables: age, sex, geographic region and race to ensure reliable and accurate representation of the total population. The margin of error for questions based on the total sample is plus or minus three percentage points.

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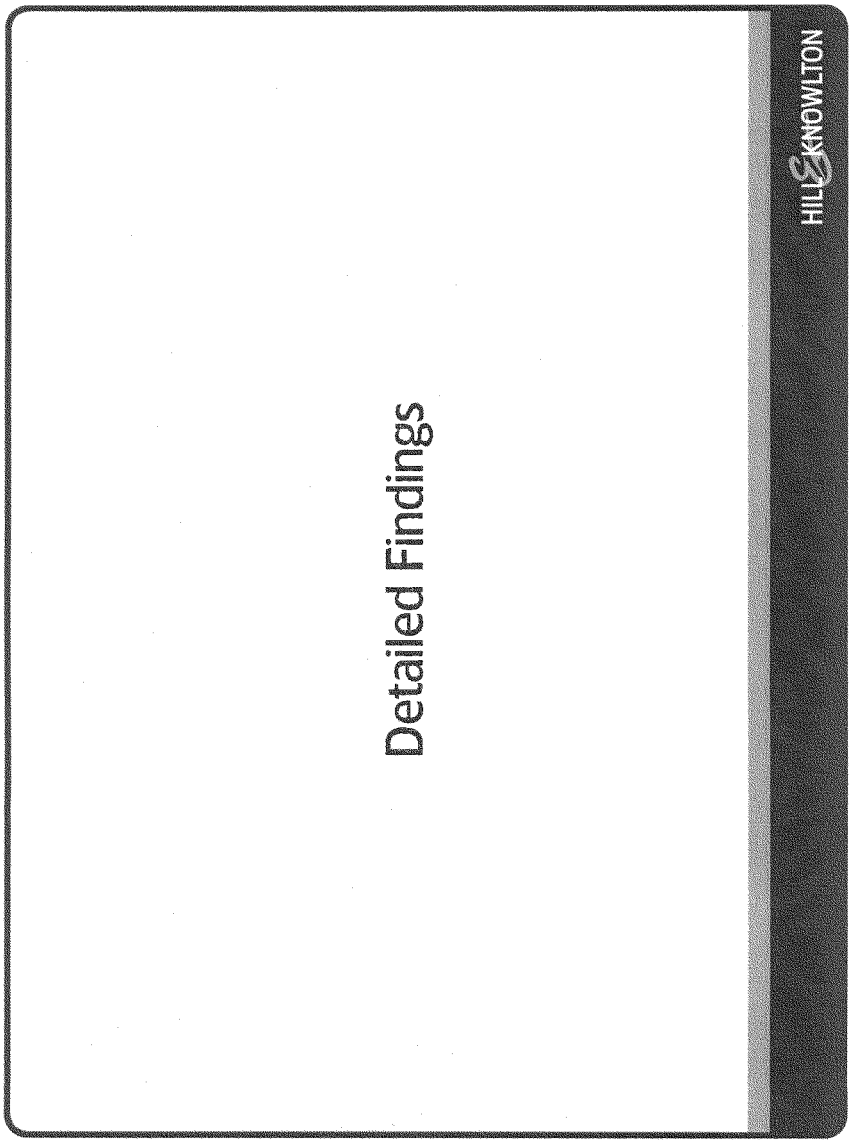

Trusted Sources of Information

Who Americans trust in an emergency, depends on how close the emergency is to where they live.

- In a local emergency, the more local the official, the more they are trusted.
  - In this instance the chief of the local fire department is more trusted as a source of information than the president of the country.
- For disasters taking place on the other side of the country, Federal officials are more trusted than local ones.
  - In this type of emergency, the President or the head of FEMA or Homeland Security, is more trusted than the chief of police or the mayor.

One possible explanation for this could be that Americans tend to trust who is *familiar*. In a local emergency, local officials are likely to be at least somewhat familiar and therefore trusted. In a more distant emergency, Federal officials are more likely to be familiar and therefore more trusted.

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When it comes to an event in or near their city, Americans have a clear pecking order for trust in officials.

Rank Order of Trust *(the most to the least)*	Official
1	The head of local response teams in the city affected, such as the chief of the fire department or chief of police
2	The local elected officials of the city or state affected, such as the mayor or the governor
3	The head of the federal emergency response department, in other words, the Secretary of Homeland Security or the head of the Federal Emergency Management Agency, or FEMA
4	The President of the United States

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When it comes to an event on the other side of the country, national officials rank higher than local officials as the most trusted source. However, Americans are less clear on the specific order.

Rank Order of Trust *(the most to the least)*	Official	
1	The President of the United States	The head of the federal emergency response department, in other words, the Secretary of Homeland Security or the head of the Federal Emergency Management Agency, or FEMA
2	The local elected officials of the city or state affected, such as the mayor or the governor	
3	The local elected officials of the city or state affected, such as the mayor or the governor	The head of local response teams in the city affected, such as the chief of the fire department or chief of police
4	The President of the United States	The head of local response teams in the city affected, such as the chief of the fire department or chief of police

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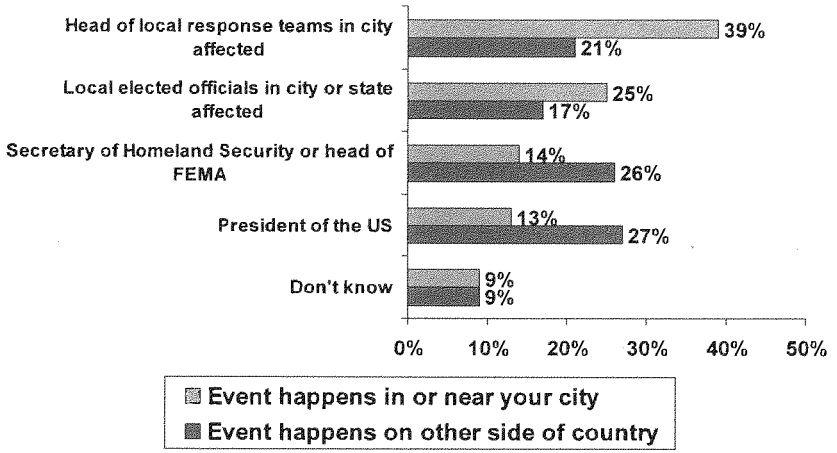
Most Trusted Source of Information



Q1/2: If such an event were to happen in or near your city or the city closest to you/in a city on the other side of the country from where you live, which of these officials do you think would deliver information that you could trust the most? The second most? The third most?
Base = total respondents, n= 1,008.

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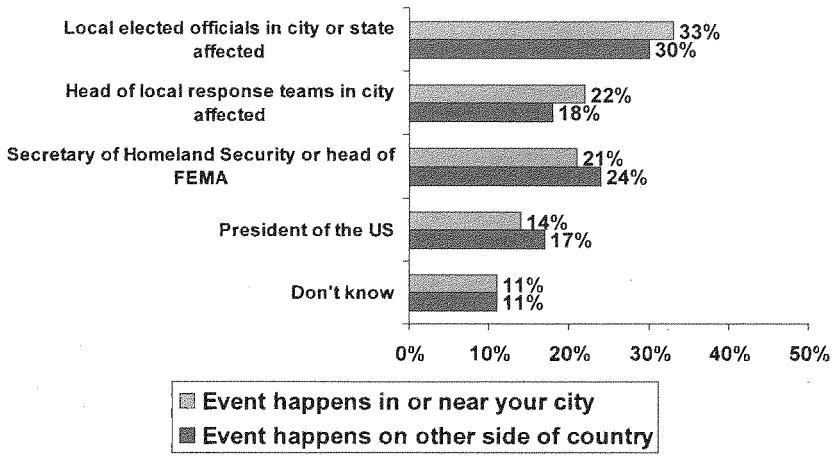
Second Most Trusted Source of Information



Q1/2: If such an event were to happen in or near your city or the city closest to you/in a city on the other side of the country from where you live, which of these officials do you think would deliver information that you could trust the most? The second most? The third most? Base = total respondents, n= 1,008.

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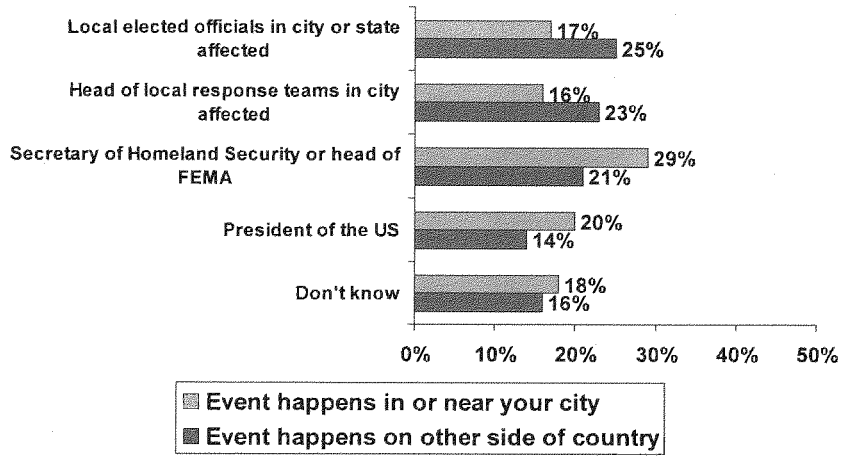
Third Most Trusted Source of Information



Q1/2: If such an event were to happen in or near your city or the city closest to you/in a city on the other side of the country from where you live, which of these officials do you think would deliver information that you could trust the most? The second most? The third most?
Base = total respondents, n= 1,008.

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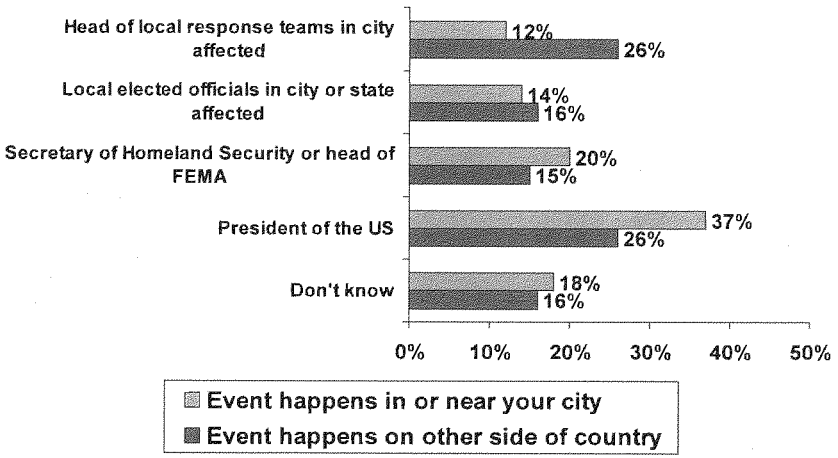
Least Trusted Source of Information



Q1/2: If such an event were to happen in or near your city or the city closest to you/in a city on the other side of the country from where you live, which of these officials do you think would deliver information that you could trust the most? The second most? The third most?
Base = total respondents, n= 1,008.

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The Most/Least Important Attribute of the Information Given

- Americans want accurate information in an emergency. Accurate information with the full facts, even if they are negative was ranked by 70% as the most important attribute of information in an emergency.
- The least important attribute is information about how the country is going to respond to the an incident – mentioned by 49%. 34% also chose "timely but incomplete" as the least important attribute.

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Most Important Attribute

Rank Order of Importance *(the most to the least)*	Attribute
1	The information is accurate, giving you the full facts as they are known at the time, no matter how negative
2	The information is timely, even if incomplete
3	The information indicates how the nation will respond to the attack

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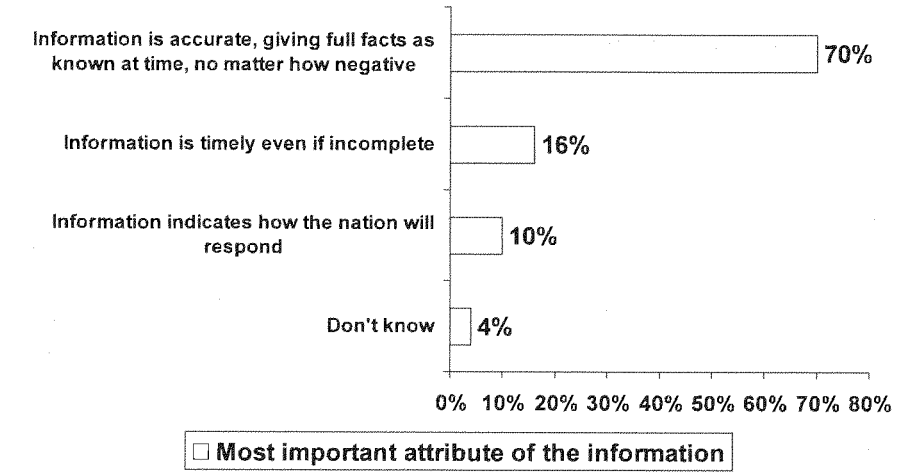
The Most Important Attribute of the Information Given



Q3: What is the most important attribute of the information that you would be looking to receive from those officials?
Base = total respondents, n= 1,008.

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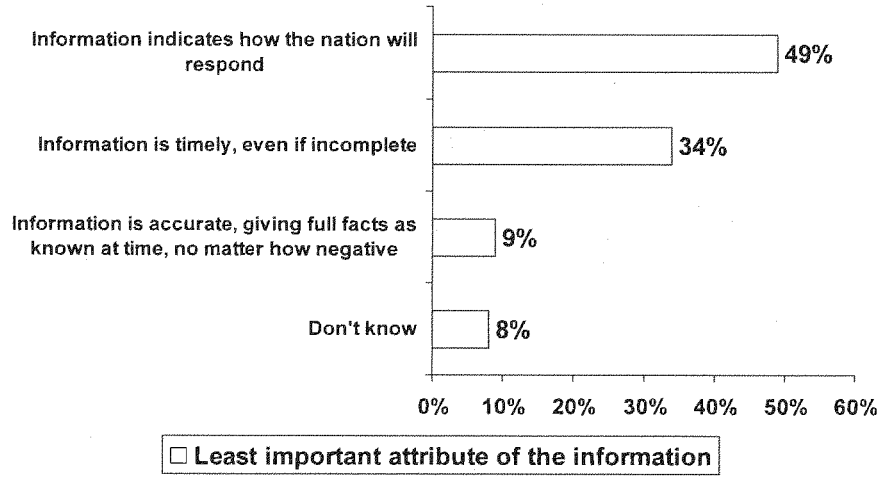
The Least Important Attribute of the Information Given



Q3: What is the most important attribute of the information that you would be looking to receive from those officials?
Base = total respondents, n= 1,008.

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Have the Information Needed to Prepare for Nuclear Detonation in or Near Your City?

- Almost half of Americans do not have the information they need – whether it comes from the government or a private source – to respond or react to a nuclear detonation in or near their city. Only 9% say they feel very prepared should this happen, from information provided by the government.

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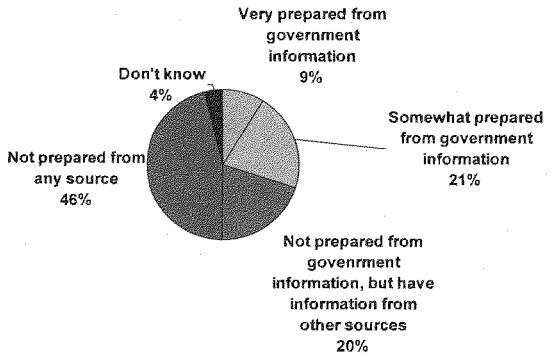
Have the Information Needed to Prepare for Nuclear Detonation in or Near Your City?



Q4: Do you think that you currently have the information you need from government institutions to prepare your family for a nuclear detonation in or near your city?
Base = total respondents, n= 1,008.

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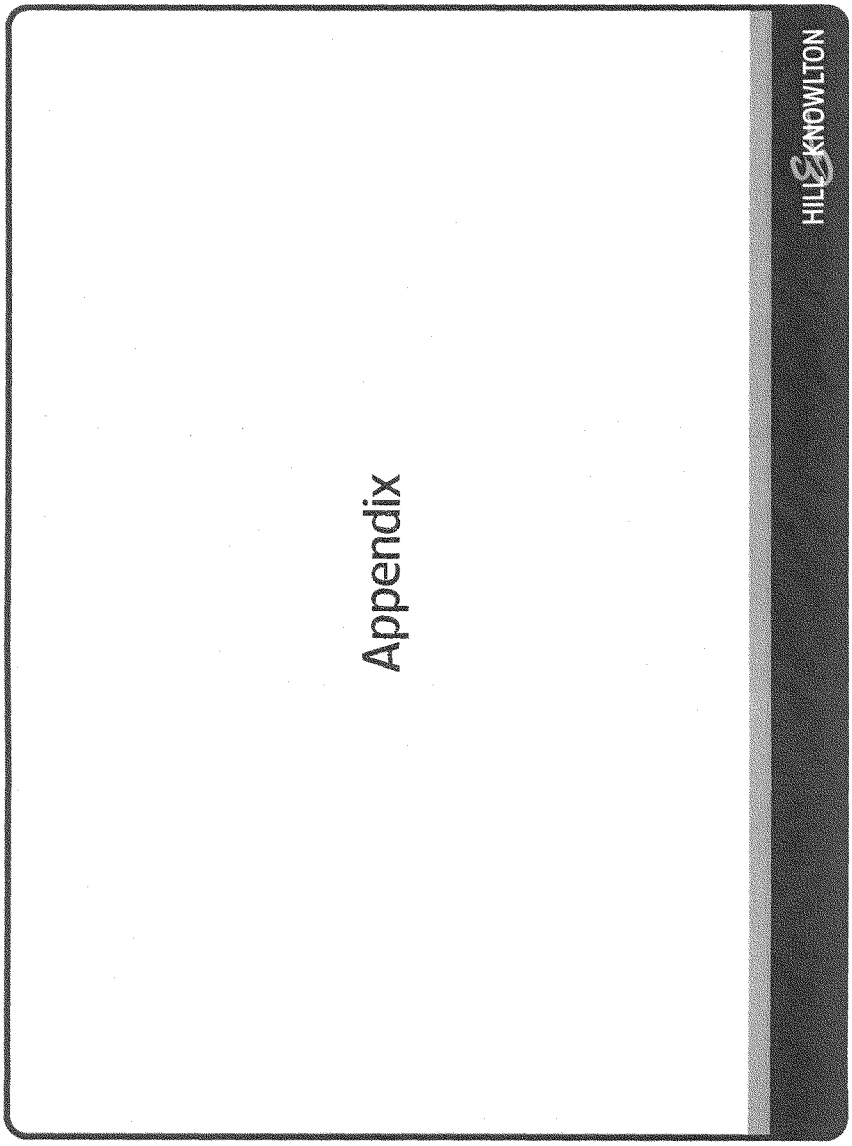

Reliability of Survey Percentages

- Results of any sample are subject to sampling variation. The magnitude of the variation is measurable and is affected by the number of interviews and the level of the percentages expressing the results.
- The table below shows the possible sample variation that applies to percentage results reported herein. The chances are 95 in 100 that a survey result does not vary, plus or minus, by more than the indicated number of percentage points from the result that would be obtained if interviews had been conducted with all persons in the universe represented by the sample.

Size of Sample on Which Survey Results Are Based	Approximate Sampling Tolerances Applicable to Percentages At or Near These Levels				
	10% or 90%	20% or 80%	30% or 70%	40% or 60%	50%
1,000 interviews	2%	2%	3%	3%	3%
500 interviews	3%	4%	4%	4%	4%
250 interviews	4%	5%	6%	6%	6%
100 interviews	6%	8%	9%	10%	10%

Additional Sampling Tolerances for Samples of 1,000 Interviews

9% or 91%	8% or 92%	7% or 93%	6% or 94%	5% or 95%
2%	2%	2%	1%	1%

4% or 96%	3% or 97%	2% or 98%	1% or 99%
1%	1%	1%	2%

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Sampling Tolerances When Comparing Two Samples

Tolerances are also involved in the comparison of results from independent parts of the sample. A difference, in other words, must be of at least a certain number of percentage points to be considered statistically significant – that is not due to random chance. The table below is a guide to the sampling tolerances in percentage points applicable to such comparisons, based on a 95% confidence level.

Size of Samples Compared	Differences Required for Significance At or Near These Percentage Levels				
	10% or 90%	20% or 80%	30% or 70%	40% or 60%	50%
1,000 and 1,000	3%	4%	4%	4%	4%
1,000 and 500	3%	4%	5%	5%	5%
1,000 and 250	4%	6%	6%	7%	7%
1,000 and 100	6%	8%	9%	10%	10%
500 and 500	4%	5%	6%	6%	6%
500 and 250	5%	6%	7%	7%	8%
500 and 100	6%	9%	10%	11%	11%
250 and 250	5%	7%	8%	9%	9%
250 and 100	7%	9%	11%	11%	12%
100 and 100	8%	11%	13%	14%	14%

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STATEMENT OF

R. David Paulison

ADMINISTRATOR

FEDERAL EMERGENCY MANAGEMENT AGENCY

DEPARTMENT OF HOMELAND SECURITY

BEFORE THE

HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS COMMITTEE

UNITED STATES SENATE

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath – the Federal Response"

June 26, 2008

Good morning Chairman Lieberman, Ranking Member Collins, and Members of the Committee. I am David Paulison, Administrator for the Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA). I am grateful to be representing the Department and FEMA with our Federal partners today. A terrorist attack involving an Improvised Nuclear Device (IND), such as that described in the DHS National Planning Scenario #1 involving a Nuclear Detonation -10 kiloton IND, would be catastrophic. Such an attack would present a scale and complexity of destruction that could immediately challenge or overwhelm the capabilities of State and local resources. It is an event that would demand cooperation with all levels of government and the private sector to ensure a coordinated response.

DHS Office of Health Affairs Planning and Assessments

Using funding provided by the U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Act (P.L. 110-28), the DHS Office of Health Affairs (OHA) is undertaking a multi-part project. The project includes developing a communications strategy for informing the public affected by an IND detonation on one of the Tier 1 Urban Area Security Initiative (UASI) cities, modeling the effects and impacts from a .1, 1.0, and 10 kT detonation in each of the Tier 1 UASI cities, and sponsoring the National Academy of Sciences to look at the adequacy of the medical and health response, adequacy of the Strategic National Stockpile (SNS), and effectiveness of the delivery of the SNS.

Public Information

In the event of a nuclear attack, the Federal Government must be prepared to provide timely and accurate guidance immediately. We are in the process of updating the National Response Framework's Incident Annexes, to include the Catastrophic Incident Annex and the Nuclear / Radiological Incident Annex. We recognize that response to a nuclear attack will require affected local, Tribal, State and Federal agencies and non-governmental organizations (NGOs) to coordinate in extraordinary or unprecedented ways to ensure the fast deployment of appropriate response resources, humane treatment of the affected population, and an aggressive coordinated public information campaign.

Under the NRF, the Department of Homeland Security Assistant Secretary for Public Affairs, Emergency Support Function (ESF) #15 Director, will activate the NRF Incident Communications Emergency Policy and Procedures. The nature of a radiological/nuclear incident may require modification to the release of information and media access guidelines. The ESF #15 External Affairs Officer designated for a radiological/nuclear incident will coordinate closely with responsible agencies. The ESF #15 Director may designate a staffer or retain the role of ESF #15 Operations Director.

Public Notification Systems

DHS/FEMA is the White House's executive agent for the Emergency Alert System (EAS). The national activation of the EAS must occur to allow non-affected states and neighboring areas to begin activation of their plans and control the movement of people into and from the affected areas. The EAS is designed to deliver EAS messages to serve the needs of special populations, such as the deaf and those with differing language requirements. When the activation order is given by national

authorities to DHS/FEMA, the agency can access broadcast stations around the Nation within several minutes.

The Integrated Public Alert and Warning System (IPAWS) is the Nation's next generation public communications and warning capability. When implemented, FEMA and the IPAWS Program Management Office (PMO) will work with public and private sectors to integrate warning systems to allow the President and authorized officials to effectively address and warn the public and State and local emergency operations centers via phone, cell phone, pagers, computers and other personal communications devices. The IPAWS will improve the reliability, security and accessibility of public alerts and warnings by transforming today's national emergency alert system from an audio-only system into one that can more reliably and effectively send alerts by voice, text or video to all Americans including those with disabilities or who cannot understand English. Through IPAWS, alerts will flow through multiple devices, such as cell phones, pagers, satellite television/radio, landline phones, desktop computers, personal digital assistants, and road signs. These live or pre-recorded messages may be sent via audio, video or text in multiple languages, including American Sign Language and Braille.

Authorities and Guidance

As required in the Homeland Security Act of 2002 and Homeland Security Presidential Directive 5 (HSPD-5), and as described in the NRF, the Secretary of Homeland Security has overall responsibility for domestic incident management. Should a terrorist attack us with a nuclear device, the President under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, has the authority to declare a major disaster or emergency, making Disaster Relief Funds available. The FBI has the lead responsibility for criminal investigations of terrorist acts or terrorist threats. The NRF's Nuclear/Radiological Incident Annex designates additional Federal agencies as cooperating agencies to respond to a nuclear incident. The NRF's Catastrophic Incident Annex (CIA) and Catastrophic Incident Supplement (CIS) provide the strategy for implementing and coordinating an accelerated proactive national response to a catastrophic incident that takes advantage of multiple Federal–level teams and assets.

The Federal Radiological Preparedness Coordinating Committee (FRPCC) provides a national-level forum for the development and coordination for radiological preparedness policies and procedures. The FRPCC is an interagency body consisting of the coordinating and cooperating agencies identified in the Nuclear/Radiological Incident Annex; it is chaired by DHS/FEMA. It also provides policy guidance for Federal radiological incident management activities in support of State, local and Tribal government radiological emergency planning and preparedness activities.

The Integrated Planning System (IPS) was mandated by the President in Annex I (National Planning) to HSPD-8 (National Preparedness). The system will guide planning across Federal Departments and Agencies, and the integration between Federal scenario-based planning and State / local capabilities-based planning. IPS will provide consistent direction and delineation of authorities, responsibilities and requirements. It was designed on the same planning principles established by the State and Local emergency management community through the Comprehensive Preparedness Guide – 101 (draft) "A Guide for All-Hazard Emergency Operations Planning for State, Territorial, Local and Tribal Governments" to ensure consistency between the Federal and State, Local and Tribal planning structures." The development and management of IPS is handled

by the DHS Office of Operations Coordination and Planning. FEMA is participating in the effort and manages several actions associated with its implementation, including CONPLAN development and integration with State / local / Tribal planning.

Stafford Act Authorities

In the event of a nuclear attack, as with all hazards, FEMA carries out its disaster response, recovery, and other programs under the legal authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). The Stafford Act describes the programs and processes by which the Federal Government provides disaster and emergency assistance to State and local governments, Tribal nations, eligible private nonprofit organizations, and individuals affected by a declared major disaster or emergency. The Stafford Act provides for a Presidential declaration of a major disaster or emergency after a Governor's request for assistance if:

- an event is beyond the combined response capabilities of the State and affected local governments; and
- based on joint Federal-State-local assessments, the damages are of sufficient severity and magnitude to warrant assistance under the Stafford Act.

In a particularly rapidly developing or clearly devastating disaster, there may be an expedited declaration.

Further, the President may issue an emergency declaration under the Stafford Act to provide direct emergency assistance without a Governor's request if an incident involves a subject matter that is exclusively or preeminently the responsibility of the United States Government. In such a case, the President will consult the Governor of the affected State, if practicable. Also, after a Presidential declaration has occurred, FEMA may provide accelerated Federal assistance and support where necessary to save lives, prevent human suffering, or mitigate severe damage, even in the absence of a specific request for particular resources or assistance from the Governor. In such cases, the Governor of the affected State will be consulted if practicable, but this consultation will not delay or impede the provision of such accelerated Federal assistance. Prior to a major disaster or emergency declaration, the Stafford Act authorizes FEMA to improve the timeliness of its response by pre-deploying personnel (who may be from any number of Federal agencies) and equipment to reduce immediate threats to life, property, and public health and safety.

DHS is in the final stages of publishing "Planning Guidance for Protection and Recovery Following a Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND Incidents" (the Guidance) in the Federal Register. This Guidance was formerly titled "Application of Protective Action Guides to Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents." The objective of the Guidance is to provide Federal, State, local and tribal decision makers with uniform Federal guidance to protect the public from harmful effects of radiation following a radiological dispersion device or improvised nuclear incident, and to ensure that local and Federal first responders can address the issues or circumstances that may arise.

Meeting the Challenge: the Federal Response

Recognizing the enhanced Stafford Act authorities included in the Post Katrina Emergency Reform Act, P.L.109-295, the new FEMA leans forward to deliver more effective disaster assistance to individuals and communities impacted by a disaster. In responding to an IND attack, FEMA would lean forward aggressively to push resources out and sustain the flow of resources as long as needed to ensure immediate and continued support to the impacted governments.

In an IND incident FEMA would coordinate the disaster response through the NRF's 15 Emergency Support Functions (ESFs). The ESFs serve as the primary operational-level mechanism that support the Federal government in providing disaster assistance to State and local jurisdictions overwhelmed in a disaster. Support can be provided by ESFs in functional areas such as decontamination, monitoring, transportation, communications, public works and engineering, firefighting, mass care, housing, human services, public health and medical services, search and rescue, food, and energy. Beyond the Stafford Act, many of the ESF partner agencies have their own authorities they can use in disaster response.

The *Catastrophic Incident Supplement to the NRF* (NRF-CIS) establishes a coordinated strategy for accelerating the delivery and application of Federal and Federally-accessible resources and capabilities in support of a response to a no-notice or short-notice catastrophic mass victim/mass evacuation incident, such as a nuclear terrorism attack. The NRF-CIS provides the operational strategy summarized in the *National Response Plan Catastrophic Incident Annex* (*NRF-CIA*). The NRF-CIS is designed to address an incident of catastrophic magnitude, in which the need for Federal assistance is obvious and immediate, and anticipatory planning and resource pre-positioning were precluded. The NRF-CIS outlines an aggressive concept of operations, establishes an execution schedule and implementation strategy, and, in the supporting appendices, provides functional capability overviews and outlines key responsibilities of Departments and Agencies. It is organized around a basic plan, two operational annexes, and thirteen referential appendices. The CIA has been recently updated and will soon be released. Updates to the CIS are planned.

The Basic Plan provides a general strategic overview and outlines the tactical concept of operations at the local, State, and Federal levels of government, to include detailed Federal logistical and transportation support actions and responsibilities. The operational annexes contain the Catastrophic Incident Response Execution Schedule (CIRES) and a supporting CIRES Transportation Support Schedule. The referential appendices include general planning assumptions, an inventory of Federal teams, abbreviations and acronyms, and additional information about unique functional area planning assumptions, response strategies, transportation and logistics requirements, capabilities, responsibilities, and concerns.

Immediately upon recognition that a domestic jurisdiction or region has suffered a catastrophic mass victim/mass evacuation incident, the Secretary of Homeland Security will direct implementation of the NRF-CIS, and direct initiation of the automatic response actions reflected in the CIS Execution Schedule. These actions include, but are not limited to:

- Designating and deploying a Federal Coordinating Officer (FCO) and activating and deploying a Federal incident management teams to the State Emergency Operations Center (EOC). The

teams will coordinate Federal support, through the State and incident command structure, to local authorities.

- Identifying and rapidly establishing necessary support facilities (Federal Mobilization Centers, Joint Field Offices (JFOs), etc. near the incident venue.
- Immediately activating and mobilizing incident-specific resources and capabilities (e.g., pharmaceutical caches, such as the Strategic National Stockpile of HHS's Centers for Disease Control and Prevention, search and rescue teams, medical teams and equipment, shelters, etc.) for deployment to the incident venue.
- Activating National and Regional level operations centers and field support centers to direct operations (e.g., tele-registration centers).
- Activating and deploying reserve personnel to augment and support organic State/local response capabilities and requirements in critical skills areas.
- Activating and preparing Federal facilities (e.g., HHS will activate hospitals) to receive and treat casualties from the incident area.
- Issuing timely public announcements to inform and assure the Nation about the incident and actions being taken to respond. If the venue and/or State infrastructure are incapable of providing timely incident information, warning, and guidance to the public in and around the affected area, the Federal Government will provide the necessary communications.
- Activating supplementary support agreements with the private sector for items such as generators.

Pre-Designated Resources

Recognizing that Federal and/or Federally accessible resources will be required to support State and local response efforts in some or all of the preceding areas, the Federal Government has pre-identified resources (e.g., medical teams, transportable shelters, preventive and therapeutic pharmaceutical caches, Federal medical facilities, cargo and passenger aircraft, etc.) that are expected to be needed/required to support the State and local incident response.

Upon NRF-CIS implementation, the Federal Government will act immediately and "push" these pre-designated resources to a Federal Mobilization Center or staging area near the incident area, as well as "push" certain actions (e.g., activate or make available Federal facilities, such as hospitals, and other capabilities). Upon arrival, these resources will be redeployed to the incident area and integrated into the response operations when requested and approved by - and in collaboration with – appropriate State or local incident command authorities, in accordance with the NRF and NIMS.

Federal departments and agencies, including the Department of Defense (DoD), have considerable resources and expertise that are critical in lifesaving and provide major support to the disaster response and recovery process. A major FEMA responsibility is to identify needs and to task, through Mission Assignments (MAs), the appropriate agency to fulfill these needs. The MA is the vehicle used by FEMA in a Stafford Act major disaster or emergency declaration to order immediate, short-term disaster response assistance from departments and agencies to help overwhelmed State, local, and Tribal governments that are unable to perform the necessary work.

Since Katrina, greater emphasis has been placed on the MA process, including expanding the use of Pre-Scripted Mission Assignments (PSMAs) to serve as a mechanism to facilitate rapid response, as well as to standardize development of MAs prior to and during disaster operations. By expanding the development of PSMAs, FEMA is now better prepared to support State, local, and Tribal governments in disaster responses. In 2006, FEMA had a total of 44 PSMAs (with 2 Federal agencies) in place to provide disaster response support. Since then, FEMA has increased the number of PSMAs to 224 (in coordination with 31 Federal departments and agencies) and additional PSMAs are in the developmental stages. This support ranges from heavy-lift helicopters from DoD, to generators from the U.S. Army Corps of Engineers, to Disaster Medical Assistance Teams from the Department of Health and Human Services, and Emergency Road Clearing Teams from the U.S. Forest Service.

Typically, the State identifies specific Federal support requirements and requests a Presidential major disaster or emergency declaration prior to the Federal government deploying personnel or assets. However, the NRF specifically requires the proactive notification and deployment of Federal resources in anticipation of or response to catastrophic incidents, where the need for Federal assistance is obvious, overwhelming, and immediate, and cannot wait for absolute situational clarity. These Federal resources will thus be ready to deliver assistance as soon as the President authorizes a major disaster or emergency declaration.

Operational Support to Our State Partners

FEMA's NRCC is the multi-agency center that functions as the disaster response operational component of the DHS National Operations Center (NOC). The NRCC provides overall Federal disaster response direction and coordination. It maintains situational awareness linkages with FEMA's Regional Response Coordinating Centers (RRCCs), State Emergency Operations Centers (EOCs), selected local EOCs in the ten FEMA Regions, DHS Regional components, Regional Emergency Support Function (ESF) EOCs, State Fusion Centers, Joint Terrorism Task Forces (JTTFs), Regional DoD Operations Centers (primarily at U.S. Northern Command and its Army component, U.S. Army North), Joint Field Offices (JFOs), and other key operational nodes.

The NRCC would carry out the crucial role of coordinating and maintaining situational awareness and a common operating picture of the activities of all of the responding and operational entities in a nuclear detonation event. It would also coordinate incident management operations; monitor potential or developing incidents; support regional and field components; and provide overall response and resource coordination and prioritization for DHS and FEMA. The NRCC maintains a 24/7 Watch Team and is augmented by NRF ESF representatives from departments and agencies to support disaster response operations.

The RRCCs are regionally-based multi-agency coordination centers that perform a complementary role to the NRCC. Operating in the ten FEMA Regions, the RRCCs link to State, Regional, and selected local EOCs; State fusion centers; JTTFs; Regional DoD and selected interagency Operations Centers, and provide situational awareness information, identify, and coordinate response requirements, perform capabilities analysis, and report on the status of Federal disaster response operations. The RRCCs deploy liaison officers and Emergency Response Teams-Advanced (ERT-A) to initiate Federal support, facilitate initial delivery of goods and services to save lives and property, and to stabilize local infrastructures. They facilitate prioritizing "in theater" interagency

resource allocation and coordination. NRCC and RRCC activations and operations are scalable and adjustable to most effectively address the nature, scope, magnitude, and potential impacts of an incident.

The FEMA Operations Center (FOC) actively supports the NRCC by maintaining a 24/7 operation, which, when required by events, executes notifications to all Federal Departments and Agencies that support the NRCC, as well as emergency management staff and emergency teams. Additionally, under specified circumstances, the FOC is tasked and authorized by Public Law to warn the American public of impending danger. Operations staff assigned to the FOC collect, analyze, and disseminate a wide range of all-hazard and event information to DHS, FEMA, and other Federal departments and agencies, as well as disaster response team members. This includes alerts and notification to departmental and FEMA emergency personnel.

In the event that local or Regional communications were impaired due to IND attack, FEMA would take the Federal lead in responding to the event to facilitate coordination of capability restoration. On the tactical level, FEMA would respond with National/Regional operational teams to provide initial situational awareness, interoperable tactical command and control communications between first responders, Department of Defense, National Guard, and other Federal response resources. On a more strategic level, Emergency Support Function #2 would be activated at the State and National levels to enable emergency managers to restore damaged critical infrastructure nodes based on Federal/State priorities.

In responding to an IND, FEMA can immediately deploy any or all of its disaster response teams, resources, and capabilities as follows:

- Nuclear Incident Response Team (NIRT): NIRT teams are specialized teams managed day-to-day by the DOE/National Nuclear Security Administration (NNSA) and EPA, and operationally controlled by DHS/FEMA when activated/deployed to provide expert technical advice and support in disaster response operations and other needs involving nuclear weapons accidents, radiological accidents, lost or stolen radioactive material incidents, and acts of nuclear terrorism. NIRT provides access to nuclear weapons design/production capabilities and is configured for rapid response to nuclear accidents or incidents. NIRT Interagency specialized teams are a quick deployment advance element with specialized equipment and trained personnel that assess situations and advise Federal, State, and local officials of the scope and magnitude of response needs. NIRT teams have the capability to conduct search and detection operations for nuclear weapons in urban or other areas on the ground or by special air support. Key DOE/NNSA assets that perform NIRT functions include an Aerial Measurement System (AMS) consisting of fixed and rotary wing assets containing highly sensitive radiation detection equipment used to map radioactive material deposits and the Radiological Assistance Program (RAP) consisting of teams of trained personnel with equipment and monitoring capability who are usually the first NIRT assets deployed to assess the radiological emergency. Additional NIRT assets include the Accident Response Group (ARG); Federal Radiological Monitoring and Assessment Center (FRMAC); Consequence Management Response Team (CMRT); Nuclear Emergency Support Team (NEST); Radiation Emergency Assistance Center/Training Site (REAC/TS); and National Atmospheric Release Advisory Capability (NARAC). EPA NIRT assets include the Radiological Emergency Response Team (RERT); Environmental Response Team (ERT);

National Decontamination Team (NDT); Regional Response Team (RRT); and RadNet Radiological Monitoring.

- Domestic Emergency Support Team (DEST): The DEST is a specialized interagency U.S. Government team that FEMA supports with the Department of Justice. It is designed to expeditiously provide expert advice, guidance and support to the FBI On-Scene Commander (OSC) during an actual or threatened Weapons of Mass Destruction (WMD) incident. The DEST is comprised of crisis and consequence management components and augments the FBI's Joint Operations Center with tailored expertise, assessment and analysis capabilities.

- Mobile Emergency Response Support (MERS) System: MERS is a critical FEMA asset that provides rapidly deployable command, control, and tactical disaster emergency communications capabilities, tactical operations, and logistics support for the on-scene management of disaster response activities. It is a key FEMA disaster response asset that would play an important role supporting the response to a detonation of a nuclear device in the United States. MERS supports Federal, State, and local disaster responders in several different areas, including multimedia communications, information processing, logistics, and overall incident operations and administration.

  Strategically positioned in six locations across the Nation, MERS Detachments can support multiple field operating sites and large JFOs within an incident area concurrently. MERS support falls into three broad categories:
  - Communications: Providing satellite, multiple radio vans, High Frequency line-of-sight microwave, land mobile radios, voice, video, and data capabilities, and wide area interoperability;
  - Operations: Providing mobile emergency operations centers, quick reaction support, disaster preparedness (HAZMAT) officers, and security officers; and
  - Logistics: Providing fuel, water, HVAC, life support, transportation, and power.

  FEMA continues to design, staff, and maintain a rapidly deployable, responsive, interoperable and highly reliable emergency communications capability using the latest commercial off-the-shelf voice, video and data technology. Among the goals for improving communications capabilities are simplifying the communications architecture; ensuring seamless user interoperability and user friendly information transfers; using flexible design options taking advantage of satellite/Internet technologies; pushing capabilities forward to state and local responders; increasing bandwidth and connectivity; and tying into public networks as far forward as possible.

- Emergency Response Teams-National (ERT-N): ERT-Ns are deployed by FEMA Headquarters in response to significant disaster events. Their purpose is to coordinate disaster response activities, coordinate and deploy key national response assets and resources, provide situational awareness, and maintain connectivity with key DHS operations centers and components. ERT-Ns are being replaced by Incident Management Assistance Teams (see below).

- Emergency Response Teams-Advanced (ERT-A): ERT-As are located in each of FEMA's Regions and are deployed in the early phases of an incident to work directly with the States to assess the disaster impact, gain situational awareness, help coordinate the disaster response, and supports specific state requests for assistance. ERT-As are made up of approximately 25 individuals who establish an initial presence in a State EOC. They can later staff the Joint Field Office to support the disaster response. ERT-As are being replaced by Incident Management Assistance Teams (see below).

- Federal Incident Response Support Teams (FIRSTs): FIRSTs are emergency response teams consisting of five individuals who can be immediately deployed to a significant incident or disaster. FEMA's two FIRSTs are located in Region IV in Atlanta, Georgia, and in Region V in Chicago, Illinois. They serve as the forward component of the ERT-A, and provide the core preliminary on-scene federal management in support of the local incident commander to ensure an integrated inter-jurisdictional response.

- Incident Management Assistance Teams (IMATs): To further enhance disaster response capabilities, FEMA is developing national and regional-level IMATs, a next generation of rapidly deployable interagency emergency response teams, designed to provide a forward Federal presence to facilitate managing the national response to catastrophic incidents. These teams will ultimately subsume the ERTs and FIRSTs and will have the capability to establish an effective Federal on-scene presence to support the State within 12 hours of notification; coordinate Federal support and response activities; and provide initial situational awareness. Teams will be self-sufficient for a limited period of time so as not to burden potentially scarce local resources. IMATs will be led by a credentialed Federal Coordinating Officer (FCO) and will eventually subsume the mission and capabilities of the existing FIRSTs and ERTs. Of the three National-level and ten Regional-level IMATs planned, the National IMAT-East and the Region IV, Region V, and Region VI IMATs have achieved operating have achieved operating capability.

- Urban Search and Rescue (US&R) Task Forces: The National US&R Response System, when activated, is another FEMA response asset that would play a critical role in response to an IND. Located throughout the continental United States, the 28 National US&R Task Forces (TF), are capable of operating in a WMD environment complete with the necessary tools, equipment, skills and techniques, can be deployed by FEMA to assist State and local governments in rescuing victims of structural collapse incidents or to assist in other search and rescue missions.

Additional Federal-level assets that would play important roles are the DHS Interagency Modeling and Atmospheric Assessment Center (IMAAC), which serves as the single Federal source of airborne hazards predictions of the effects from hazardous chemical, biological, and radiological releases and the Advisory Team for Environment, Food, and Health, which provides advice on protective actions to protect the public and the environment.

Decontamination and Containment

To effectively assist impacted populations post-nuclear attack, first responders should establish a buffer zone between the hot zone and cold zone to ensure contamination containment. This

requirement is intended to protect decontaminated evacuees and emergency responders and relief workers. Mass care responders support the impacted jurisdictions by providing services to decontaminated evacuees, including hydration, feeding, replacement clothing, emergency first aid, and other life sustaining assistance. These services may be expanded as evacuees are relocated to safe and secure areas. Containment is crucial to avoid spreading the contaminant to the unaffected population and to ensure the safe participation of relief agency staff.

If radiological contaminants are released into the environment, safe sheltering becomes a challenge. Local nongovernmental organizations (NGOs) such as Red Cross or Salvation Army will face severe challenges in effectively performing their usual mass care mission, due to potential contamination concerns. These organizations do not and cannot compel volunteers to enter contaminated areas or provide services to contaminated individuals and are not able to support government mass care missions. The federal government may need to help coordinate sheltering and mass care, under FEMA's Stafford authorities. Since NGO resources can only be deployed to areas outside the buffer zone, there will be delays in the provision of services while safe areas are identified and established. These delays will invariably cause additional hardship to the affected population, and test the resolve of all levels of government to ensure that buffer zones are enforced.

The degree of exposure to radiation and the overall devastation caused by the attack will determine how soon members of response teams will be able to move into position to help those directly affected. Personal self-sheltering options typically include homes, offices or schools and may have to be considered for those in the hot zone area and for those with critical transportation needs in the cold or buffer zones. In these cases, and as directed by local officials, individuals and households may need to shelter-in-place. In instances of radiological or nuclear contaminants, sheltering will require "safe rooms" or "safe building" to protect individuals and their household pets from exposure to nuclear material. The speed at which those in affected areas will be able to evacuate will depend on the nature of the attack (IND versus dirty bomb), the type of areas impacted (urban, ultra-urban, or rural) and the availability of specialized resources (decontamination equipment and transportation assets). Of course, although states and local jurisdictions are actively planning for nuclear events, these plans have never been implemented in actual emergency conditions, though some of them have been the subject of exercises.

Meeting Mass Care Needs Following a Nuclear Attack

Under the National Response Framework, Emergency Support Function 6 (ESF-6), the Mass Care/Emergency Assistance mission is to evaluate, coordinate, and support the delivery of mass care and emergency assistance during presidentially disasters and emergencies through the FEMA Regions, Federal ESF-6 partners, non-governmental agencies, the private sector and contract support. Effective June 1, 2007, FEMA assumed primary agency responsibilities for mass care. The American Red Cross (ARC) continues to support FEMA, focusing on mass care activities. ESF-6 provides basic, life-sustaining assistance to individuals, households and household pets that have been adversely affected by disaster, including nuclear terrorist attacks. While ESF-6 Mass Care supports these services, the Departments of Defense; Justice; and Health and Human Services will be tasked with the responsibility for determining if or when individuals and families can or will be evacuated from areas impacted by nuclear attack. In order to oversee evacuation support, sheltering activities, and reunification of families, ESF-6 is organized into 4 primary functions: Mass Care,

Emergency Assistance, Housing, and Human Services. **DHS is finalizing a Mass Evacuation Incident Annex, which is expected to be approved this week.**

- **Mass Care:** sheltering, feeding operations, emergency first aid, bulk distribution of emergency items and collecting and providing information on victims to family members.

- **Emergency Assistance**: Assistance required by individuals, families and their communities to ensure that immediate needs beyond the scope of the traditional "Mass Care" services provided at the local level are addressed. These services include support to evacuations (including registration and tracking of evacuees); reunification of families; pet evacuation and sheltering; support to specialized shelters; support to medical shelters; non-conventional shelter management (ships, tent cities, hotel/motel program or other group shelter facilities); coordination of donated goods and services; and coordination of voluntary agency assistance.

- **Housing:** Includes the housing components of the Individuals and Households Program (IHP), under Section 408 of the Stafford Act, such as Rental Assistance, Transient Accommodations, Repair, Replacement, Direct Assistance (Manufactured Housing or Direct to Landlord), Semi-permanent, and Permanent Construction, the Joint Housing Solutions Group, access to or provision of federal and other sources of housing assistance.

- **Human Services:** These services include implementation of the:

    - Individuals and Households Program;
    - Other Needs Assistance (ONA);
    - Small Business Administration Disaster Loan Program;
    - Emergency Food Stamps)Department of Labor);
    - Crisis Counseling and Training Program;
    - Disaster Unemployment Assistance; and
    - Disaster Legal Services,

Additionally, FEMA coordinates the provision of other federal disaster assistance programs and services to include crime victim compensation necessitated by an incident caused by criminal action, and the provision of case management services for individuals with special needs. These services may include new enrollment in federal human service benefits, re-enrollment in human services benefits being received prior to the event, coordination of case management services, or other actions as needed consistent with program authorities.

Programs and Tools Available under ESF-6

In the event a catastrophic disaster, the **Mass Evacuation Management Unit (MEMU)** may be activated. This unit serves as the coordinating and integrating unit to support mass evacuation activities at the Federal level. MEMU works in coordination with other mass care and emergency assistance units and ESF- 6 partners to ensure that appropriate and timely life sustaining services are delivered to evacuees. MEMU interacts with other FEMA Directorates and Regional and JFO staff to ensure coordination during multi-state mass evacuation events and during incidents requiring the support of host states.

The Congregate Care Coordination Unit (CCCU) serves as the coordinating unit to support all congregate care activities at the Regional and JFO levels. It provides resources and subject matter experts and coordinates with other ESF- 6 partners, other federal agencies (OFAs), and contractors at the NRCC. A CCCU may work in coordination with other Regional and State levels CCCUs. In addition, the CCU manages the National Shelter System (NSS).

The Reunification Services Unit (RSU) serves as the coordinating unit at the Federal level in support of the reunification of separated family members and the location of missing children. They ensure the coordination of information exchange for reunification purposes among Federal, State, local, Tribal and private sector entities and develop & implement programs and processes to comply with NRF and Post-Katrina Emergency Management Reform Act requirements, as well as managing the National Emergency Family Registry & Locator System (NEFRLS) and coordinating with the National Emergency Child Locator Center (NECLC).

FEMA's Special Needs Population Team works with ESF- 6 partners, OFAs and the private sector to support Regional and JFO initiatives when providing services to special needs populations. This team provides support to facilitate the integration of services at the Regional and JFO levels to ensure that mass care and emergency assistance services are in compliance with Federal, State and local requirements, regulations and laws.

Finally, our **Household Pet Management Unit** works with United States Department of Agriculture, OFAs, NGOs and others to ensure that household pet needs are coordinated during large mass evacuations or sheltering events.

The Federal mass care support requested by a host State or Tribe will be dependent on its internal capability and capacity to handle the sheltering needs and life-sustaining care of newly arriving evacuees. FEMA Individual Assistance programs beyond the scope of Mass Care and Emergency Assistance will be mobilized to provide long-term services to displaced evacuees. FEMA will work with the federal and voluntary agency community at forward and Host State reception sites to ensure that decontaminated evacuees with special needs receive support services and additional assistance.

FEMA has a sense of urgency and a determined resolve to build on knowledge derived from previous disaster events and Federal and State-level exercises. Today, our operations and programs reflect the lessons learned from the past, and are based on a collaborative approach to disaster response and recovery. FEMA continues to work with the States and local governments, as well as our Federal partners, NGO's, and voluntary agencies to improve our capabilities and work proactively to protect the American people.

I thank you for the opportunity to be here today, and I am pleased to answer your questions.

Testimony
Committee on Homeland Security and Governmental Affairs
United States Senate

HHS Radiological/Nuclear Preparedness

Statement of
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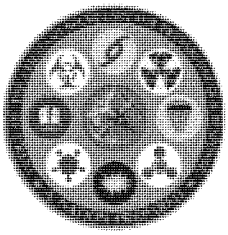

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Good morning, I am RADM W. Craig Vanderwagen, MD, the Assistant Secretary for Preparedness and Response (ASPR) at the Department of Health and Human Services. I appreciate the opportunity to present to the Committee on Homeland Security and Governmental Affairs the HHS plans and programs for public health and medical preparedness for and response to an improvised nuclear device or IND.

Earlier this year, in March, the Committee received a detailed response from HHS and other agencies addressing specific questions about readiness to respond to a nuclear terrorism incident. In my testimony today, I will provide a broad perspective on the HHS response to an IND incident while pointing out that the HHS response to an IND incident is part of ASPR's overall comprehensive all-hazards planning for all public health and medical emergencies resulting from natural or man-made causes. I should note that, while an IND event is the focus of my remarks today, HHS radiological/nuclear response planning also includes plans for responding to radiological dispersal devices (often known as dirty bombs) or other catastrophic events involving radiation. HHS responsibilities are included in the National Response Framework's Emergency Support Function #8, Public Health and Medical Services, and in Homeland Security Presidential Directives #18, Medical Countermeasures against Weapons of Mass Destruction, and #21, Public Health and Medical Preparedness. To address the breadth of resources and expertise and coordination needed for all of our medical countermeasure missions, the HHS Secretary has established the Public Health Emergency Medical Countermeasures Enterprise (PHEMCE). The Enterprise Governance Board, made up of myself, the Directors of the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC), and the Commissioner of the Food and Drug Administration (FDA), coordinates programs within the NIH, the CDC, and within two ASPR offices – the Biomedical Advanced Research and Development Authority, or BARDA, and the Office of Preparedness and Emergency Operations.

Through this Enterprise-wide effort, we are able to ensure that Federal activities with respect to needed medical countermeasures are coordinated effectively from research and development to acquisition and deployment.

Recent presentations to this Committee from Drs. Ashton Carter, William Bell, and Cham Dallas provided scenarios indicating the magnitude of disaster that could result from the detonation of an IND. The detonation of a large-scale IND will result in a catastrophic event. Many factors, however, will determine the number and type of casualties, including the size, type, and location of the device, time of day, and meteorological conditions.

During the Cold War, the magnitude of a state-sponsored nuclear event and the potential for multiple simultaneous detonations led to a sense of futility in mustering a civilian response. Over the last four years, HHS has approached planning for an IND with the goal of reaching as many people as possible, in a timely manner, to provide medical care as well as comfort and support. We recognize that few countries have attempted to undertake the detailed response planning that we, along with our other Federal, state, local, regional, and international partners, have undertaken. While there are certainly gaps remaining in our IND response plan, we have made substantial progress upon which we continue to build.

The basis for response and preparedness planning involves specific event scenarios. These scenarios are prepared by the Department of Homeland Security working with BARDA's public health and medical consequence modeling group, which includes modeling efforts from the Defense Threat Reduction Agency (DTRA) and the Agency for Healthcare Research and Quality (AHRQ). Models are refined continuously from the open desert models of a nuclear detonation to current models that take into account more accurately, though still not entirely, an urban setting.

While our medical and public health response plans are time-oriented, our new models describe the post-detonation time course in smaller increments to help planners better understand the rapidly changing situation on the ground. Radiation exposure rates in some locations can change significantly over a matter of hours, which is important for planners as they think about where the initial responders can and cannot enter. Similarly, certain areas will have radioactive fallout while some nearby areas will have little or no radiation and will be suitable for responders. The complex blast, thermal and flash blindness effects are now added to the models so victims at distances from the detonation site who have injury but no radiation exposure can also be estimated.

HHS prepares playbooks for the different scenarios of man-made and natural disasters. For radiological/nuclear response there are separate IND and Radiological Dispersal Devices (RDD) playbooks. These two playbooks have a good deal in common. They are internal documents for use by HHS during an event and include sections for the:

- Scenario;
- Concept of operations, or CONOPs, for the response ;
- Action steps;
- Briefing and decision papers; and
- Essential elements of information.

The Action Steps are time-oriented, and include pre-event steps should there be credible intelligence that the risk of an event is high. The Action Steps include a trigger for each step, a recommended strategy to follow, and specific actions to take. For example, should there appear to be a need to use drugs not currently approved by the FDA to treat Acute Radiation Syndrome (ARS), HHS can request an Emergency Use Authorization for a medical countermeasure [per PL 108-276, the Project BioShield Act of 2004] so the FDA Commissioner can rapidly consider an application to authorize the use of these drugs. This request

and authorization process would involve a series of actions by DHS, HHS (including FDA, NIH, and CDC), and DOD.

HHS response plans are based on models, scientific data, and clinical experience from radiation incidents. Recognizing that very few medical providers have experience in managing the consequences of a radiological or nuclear event and that these are very low probability events for the average medical responder, ASPR partnered with the National Library of Medicine to produce a tool called Radiation Event Medical Management, or REMM, that includes algorithms for just-in-time medical management. This tool has been produced with input from a wide range of international experts and is publicly available on the Internet. It can be downloaded to a home computer and PDA so that the information would be available, even following damage to the civil infrastructure.

The CDC has also produced an array of excellent educational materials and tools that are available on the Internet, as have other agencies including the Armed Forces Radiobiology Research Institute within the Department of Defense.

Depending on the type of event, the magnitude of an IND could result in tens of thousands of fatalities and severe casualties, resulting in the possible placement of over a hundred thousand people at risk for developing acute radiation syndrome (ARS) and of hundreds of thousands of people concerned about radiation exposure, not to mention the temporary displacement of hundreds of thousands of others. This type of event requires a response involving the entire nation. While the initial response is, of course, local, an event of this size will require rapid activation of regional partnerships and the influx of Federal resources.

Following an event, the HHS response will be coordinated under the National Response Framework, Emergency Support Function # 8, by the Emergency Management Group (EMG) through the Secretary's Operations Center (SOC).

The SOC will coordinate response activities with FEMA's National Response Coordination Center, the operational component of the Department of Homeland Security's (DHS) National Operations Center (NOC). Shortly after the event occurs, the Interagency Modeling and Atmospheric Assessment Center (IMAAC) will have gathered information on high altitude wind direction, which will carry the upper level fallout; however, it is recognized that wind patterns shift and that the lower altitude winds and urban canyons will have different airflow than the upper level atmosphere. The initial blast will create a mixture of injuries, some of which will involve radiation, while others will not, including those injuries from broken glass, burns, trauma, and vehicular injuries from the flash blindness. For the victims whose radiation exposure comes from the fallout and not the initial blast, the duration of radiation exposure determines who is at risk for developing ARS. The presence of radiation also limits the time that responders will be allowed to spend treating and rescuing victims.

HHS will work in close collaboration with state and local response efforts and the Federal Emergency Management Agency to implement its responsibilities under the National Response Framework to rapidly provide Federal public health and medical support in response to an IND event. The full-time U.S. Public Health Service (USPHS) responders include the Rapid Deployment Force (RDF) Teams, Applied Public Health Teams (APHT), Mental Health Teams (MHT) and additional USPHS Officers. Volunteer healthcare professionals are available through the Medical Reserve Corps, which has over 160,000 members in approximately 700 teams. The Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) ensures the availability of volunteers for quick exchange between jurisdictions.

The HHS Federal Medical Station (FMS) is a deployable healthcare platform that can provide non-acute hospital bed surge capacity and special medical needs sheltering. A standard FMS can house approximately 250 patients and is staffed by the Rapid Deployment Force teams.

In the event of an IND, local and regional hospital capacity will be quickly overwhelmed. The National Disaster Medical System (NDMS) is a critical component of the response. NDMS field teams include the Disaster Medical Assistance Teams (DMAT), Disaster Mortuary Operational Response Teams (DMORT), National Medical Response Teams (NMRT), and International Medical and Surgical Response Teams (IMSRT).

Specialty care will be required and, nationwide, there is limited capacity for burn care and for general emergency care. In collaboration with the American Burn Association (ABA), HHS is training nurses to be able to support burn surge capacity. We have also worked with ABA to develop a burn bed tracking system that provides a national snapshot of available burn beds.

To specifically address the treatment of acute radiation syndrome, ASPR has helped establish the Radiation Injury Treatment Network in partnership with the National Marrow Donor Program and the National Cancer Institute's Cancer Centers. The Network continues to grow in size and scope. In this way, we are effectively tapping into the expertise found in oncology and hematology care as there are significant similarities observed in bone marrow failure caused by acute radiation syndrome.

HHS has developed a response system called the RTR system for Radiation Treatment, Triage and Transport that takes into account the radiation exposure in determining medical response. HHS is developing an interactive geographic information system (GIS)-based mapping system, called MEDMAP, which will include the potential medical care sites and assembly centers in the U.S. so that up-to-date information will be immediately available by which to organize the response. Determining which local medical care and assembly center facilities are functional or not in the radiation plume is essential, as is having information on what regional and nationwide resources are available.

Victim decontamination and transportation capability for victims and displaced individuals will most likely be overwhelmed. Key to directing the assets to those in immediate need will be public messaging regarding who should evacuate, when they should do so, who should shelter in place, who is well outside any risk zone, and where displaced people should go. Those not requiring immediate life-saving medical care can go to assembly centers to prevent the filling up of medical care facilities. Determining radiation exposure and locations where responders and victims can go will depend on IMAAC modeling, the Federal Radiological Monitoring and Assessment Center (FRMAC) measurements, and consultation with the multi-agency Advisory Team for Environment, Food, and Health (A-Team). As information becomes available from responders, state and local decision makers can make sheltering versus evacuation recommendations. Federal public communications support will be coordinated by DHS, using the National Incident Communications Conference Line (NICCL).

The triage of individuals will be based on medical evaluation including where they were during and shortly after the event with particular attention to special needs that they may have. The initial triage will attempt to separate people into three broad categories:

- those needing immediate medical attention, which would include those with major injury and/or high radiation exposure;

- those without traumatic injury but at high risk of developing ARS; and

- those with minimal or no radiation exposure and no significant trauma who do not require immediate medical care.

Transportation will be a major challenge, and to mitigate this challenge, a FEMA ambulance contract is in place. Upon HHS request, FEMA is prepared to activate the ambulance contract to support patient evacuation. Presently, the contract covers all Gulf and East Coast States. The contract will ultimately be expanded to provide coverage for all 48 contiguous states. Although coverage is targeted to the Gulf and East Coast States, ambulances may be deployed to any area in the United States. The contract provides support for up to 300 ALS/BLS ground ambulances, 25 medical evacuation helicopters, and Para-transit seats, which can be either a van or bus, at least equipped with a wheel chair lift, to move up to 3,500 patients within 72 hours.

More definitive evaluation for the risk of ARS will require establishing a Radiation Laboratory network which will provide standardized testing methods for conducting routine blood counts and specialized tests called cytogenetics. Assessing internal contamination will not be a major component of an IND event, as opposed to an RDD event, where it is essential to determine the need for and type of therapy required to remove internal radioactive burdens. There is a well-developed plan for a biodosimetry and bioassay network, and initial funding to support the Radiation Laboratory Network has been requested in the President's FY09 CDC budget. NIAID and BARDA are currently investing in the development of novel, rapid, high-throughput biodosimetry to assist in triage and medical management decisions.

Medical care for an IND event will require medical products including those needed for trauma and burns, blood products, and medical countermeasures to address the various symptoms of acute radiation exposure. There are currently no licensed products to treat the acute radiation syndrome. Medical countermeasures to be used include agents such as the hematological growth factors that can potentially mitigate bone marrow syndrome, thereby saving lives and reducing the burden on the healthcare system. The growth factors currently available are those used for low white blood counts in hematology and oncology.

Other agents are under evaluation for low platelet count. BARDA, working closely with NIAID, provides an integrated, systematic approach to the development and purchase of these necessary countermeasures and diagnostic tools for public health emergencies.

Current medical planning includes providing intervention as soon as possible for those at high risk for ARS. For those in whom exposure is uncertain and for those who do not receive countermeasures in the time window for mitigation, serial evaluation of blood counts and possibly cytogenetic studies will determine who needs to receive treatment with the hematological growth factors. For many of those with ARS, the clinical manifestations might not occur for three to four weeks, so our plan is to refer patients to experts for observation and management using the Radiation Injury Treatment Network. Much of the management of ARS could be done as outpatient care.

The Federal supply of medical countermeasures will come from the Strategic National Stockpile (SNS). In addition to hemapoietic growth factors, the SNS currently holds large quantities of supplies for treating the burns and blast injuries that will accompany an IND event. The HHS PHEMCE Implementation Plan for Chemical, Biological, Radiological and Nuclear Threats published in Spring 2007 stated HHS interest in obtaining additional medical countermeasures for ARS. A BARDA Request for Proposals to acquire medical countermeasures using BioShield Special Reserve Funds to specifically address the neutropenia component of ARS recently closed; submitted proposals are currently being evaluated. Additional countermeasures for acquisition will be considered as the scientific progress indicates. To this end, BARDA also is currently reviewing proposals sent in response to a Broad Agency Announcement and hopes to fund the advanced development of multiple products aimed at the various blood-related defects involved with ARS in addition to neutropenia.

HHS is also coordinating its research and development efforts closely with the Department of Defense (DOD) to allow the most effective utilization of federal resources. Moreover, DOD recently launched a program addressing ARS gastrointestinal syndrome. The NIAID has a Medical Countermeasures Research and Development Program to develop improved and novel countermeasures for ARS, compounds for decorporating internal radionuclides, and rapid approaches to biodosimetry. Although these candidate products are years away from clinical application, knowing what is in the pipeline informs the current acquisition and future replacement plans for medical countermeasures.

In addition to investigating new agents and technologies, HHS is investigating new models of deployment and distribution for medical countermeasures that would enhance and improve the capabilities of the SNS and potentially incorporate other partners into a national network, including the Radiation Injury Treatment Network, Department of Veterans Affairs, and hospital and pharmaceutical distribution systems.

HHS continues to expand the network of subject matter experts to whom we reach out for knowledge and advice and with whom we consult should an event occur. Experts from the Federal government are members of requirements-setting working groups organized under the Enterprise Governance Board to address both radiological and nuclear medical countermeasure needs and the large quantities of blood and tissue products that will be required in an IND event. There are ongoing efforts in collaboration with academic partners, as exemplified by the Centers for Medical Countermeasures Against Radiation of NIAID, and with international partners such as the Global Health Security Action Group.

Over the last six years, there has been an increase in basic science research on normal tissue injury, including work specifically on radiation injury by radiation biologists, and also on general wound repair, including research by experts in regenerative medicine.

As you can see, there has been significant progress in developing our medical responses to an IND, including the development of novel system networks and medical countermeasures. Given the many variables that would determine the effect of an IND event on physical infrastructure and individual health, and the complex multi-faceted response required in the face of catastrophic numbers of affected individuals, we depend heavily on a systems-based approach exemplified by the Radiation Event Medical Management system, the playbooks, and medical treatment networks. The more we can prepare our response beforehand, and the more innovative we can be in integrating these various components, the better our response will be.

We view this complex response as a Radiation Event Management System and are working to integrate and pre-script as much of the response as possible. We communicate and coordinate with responders through our Regional Emergency Coordinators, and we inform the public through publications in medical literature, information on the Internet, and participation in national conferences. Certainly, there remains much to be done. An IND event could be a catastrophic event and we continue to develop expertise, products, and processes to provide an ever-improving response among Federal, regional, state, local and tribal responders and healthcare providers.

I recognize that there is much detail behind these various components that time does not permit me to present. Nevertheless, I thank you for the opportunity to provide this information to you and appreciate your interest in having the United States as prepared as possible.

I will be happy to answer any questions.

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AND GOVERNMENTAL AFFAIRS

Statement by

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and Americas' Security Affairs

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INTRODUCTION

Chairman Lieberman, Senator Collins, distinguished members of the Committee: thank you for the opportunity to address you today on the Department of Defense's (DoD's) capabilities and progress in preparing for a terrorist nuclear attack on an American city.

The greatest threat in today's security environment is the nexus between transnational terrorism and chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) weapons proliferation, particularly the proliferation of nuclear weapons.

As noted in our Strategy for Homeland Defense and Civil Support published in June 2005, "Terrorists will seek to employ asymmetric means to penetrate our defenses and exploit the openness of our society to their advantage. By attacking our citizens, our economic institutions, our physical infrastructure, and our social fabric, they seek to destroy American democracy. We dare not underestimate the devastation that terrorists seek to bring to Americans at home."

Our preeminent primary national security goal is to prevent a terrorist nuclear attack. In support of this objective, DoD assists civil authority efforts to detect, identify, neutralize, dismantle, and dispose of nuclear threats before they can reach our borders and, if they have penetrated our borders, before they can be employed against our nation.

Still, as you correctly noted two months ago, Mr. Chairman, "we must also prepare for the possibility that a determined terrorist will succeed despite our best efforts."

Should the terrorists succeed, we will face a challenge of appalling and unprecedented magnitude in the aftermath of a nuclear attack on an American city. As outlined in Scenario #1 (10-kiloton Improvised Nuclear Device) of the 15 National Planning Scenarios, we can expect hundreds of thousands of casualties;

100,000 sheltering in safe areas; 250,000 sheltering in place to avoid the plume; more than 1 million evacuees; total destruction within a one-half to three mile radius; all buildings in the immediate area destroyed; electricity and other services disrupted across much of the affected area; communications and other electronic equipment disrupted within a three mile radius, complicating emergency response and public information efforts; significant damage to the general support infrastructure (e.g., transportation, power generation and distribution, communications, food distribution, and fuel storage and distribution) with potentially cascading effects; and contamination of up to 3,000 square miles from the site of the explosion.

We -- Federal, State, and local governments, nongovernmental organizations like the American Red Cross, and the private sector -- must be prepared to respond quickly and effectively to save the thousands of lives placed at risk in the wake of a nuclear attack.

DoD's CBRNE response capabilities are the best funded, best equipped, and best trained in the world. During the past 7 years, DoD has developed unprecedented CBRNE response capabilities and has trained to employ these capabilities in rapid support to civil authorities to help save lives.

ROLES AND RESPONSIBILITIES

The Department of Homeland Security (DHS) is responsible for the coordinated U.S. national effort to prepare for, prevent, protect against, respond to, and recover from terrorist CBRNE attacks. If terrorists were to attack an American city with a nuclear weapon, DoD, at the direction of the President or the Secretary of Defense, as appropriate and consistent with the law and the imperative to maintain the Department's readiness, will provide critical nuclear consequence management support to civil authorities as part of the comprehensive national response to a nuclear incident.

DoD is a supporting agency for each of the 15 Emergency Support Functions (ESFs) and each of the 6 Incident Annexes of the National Response Framework, many of which would likely be activated in the event of a nuclear or radiological incident, including those most relevant to today's hearing: ESF #3 (Public Works and Engineering), ESF #5 (Emergency Management), ESF #6 (Mass Care, Emergency Assistance, Housing, and Human Services), ESF #8 (Public Health and Medical Services), ESF #10 (Oil and Hazardous Materials Response), the Catastrophic Incident Annex (and Supplement), and the Nuclear/Radiological Incident Annex.

Within DoD, several entities would play a key role in the response to a terrorist nuclear attack on an American city. For example, as Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs, I am responsible, by law (50 U.S.C. § 2313), for coordinating DoD assistance to Federal, State, and local officials responding to threats involving nuclear, radiological, biological, chemical weapons, or high-yield explosives or related materials or technologies, including assistance in identifying, neutralizing, dismantling, and disposing of CBRNE weapons and related materials and technologies.

Two combatant commands are responsible for employing Federal military forces to provide defense support of civil authorities, including responses to domestic terrorist nuclear attacks. The Commander of U.S. Northern Command (USNORTHCOM)) -- or, as is the case with all of the officials mentioned in this testimony, that person's designated successors -- is responsible for supporting civil responses to terrorist nuclear attacks in the lower 48 States and in Alaska, Puerto Rico, and the U.S. Virgin Islands. The Commander of U.S. Pacific Command (USPACOM) is responsible for Hawaii, Guam, American Samoa, the Commonwealth of the Northern Marianna Islands, and insular territories throughout the Pacific Ocean.

The Chief of the National Guard Bureau is responsible for advising the Secretary of Defense, through the Chairman of the Joint Chiefs of Staff, on matters involving the employment of non-federalized National Guard forces. He serves as the channel of communications for coordination between DoD and The Adjutants General of the 54 States and territories, and the District of Columbia, and facilitates State deployment and employment of non-federalized National Guard units and personnel in support of Emergency Management Assistance Compacts.

DoD installations can provide mutual aid to community fire organizations based on prior reciprocal agreements established in accordance with 42 U.S.C. § 1856a. Such mutual aid can include equipment for fire prevention and the protection of life and property from fire; fire fighting; and emergency services, including basic medical support, basic and advanced life support, hazardous material containment and confinement, and special events involving vehicular and water mishaps, and trench, building, and confined space extractions.

When faced with imminently serious conditions resulting from any civil emergency or attack that may require immediate action, and when time does not permit prior approval from higher headquarters, under DoD policy, military commanders and other responsible DoD officials are authorized to take necessary action to respond to requests from civil authorities to save lives, prevent human suffering, or mitigate great property damage. This is known as "Immediate Response Authority."

DOD RESPONSE CAPABILITIES

As stated in the 2005 Strategy for Homeland Defense and Civil Support, DoD "will be prepared to provide forces and capabilities in support of domestic CBRNE consequence management, with an emphasis on preparing for multiple, simultaneous mass casualty incidents." The Defense Department has developed

significant capabilities to contribute to the response to a terrorist nuclear attack on an American city, including:

National Guard Weapons of Mass Destruction - Civil Support Teams (WMD-CSTs). Consisting of 22 highly-skilled, full-time members of the Army and Air National Guard who are Federally resourced, trained, and certified, and operate under the command and control of a State governor (Title 32, U.S. Code). The WMD-CSTs support civil authorities at a CBRNE incident site by identifying CBRNE agents/substances, assessing current and projected consequences, advising on-site authorities on effective response measures, and assisting with appropriate requests for State and Federal support. When our nation was attacked on 9/11, there were only 9 WMD-CSTs. Today, we have a WMD-CST in each State and Territory (two in California), for a total of 55 WMD-CSTs. Currently, 53 of these WMD-CSTs have been certified by the Secretary of Defense. The remaining two teams, in Guam and the Virgin Islands, are expected to be certified this year.

National Guard CBRNE Enhanced Response Force Packages (CERFPs). Established after 9/11, the CERFPs are task-organized units of 200-400 personnel with combat support and service support mission essential tasks that, in conjunction with WMD-CSTs, assist local, State, and Federal authorities in CBRNE consequence management (e.g., casualty search and extraction, medical triage, casualty decontamination, and emergency medical treatment). CERFPs, which operate on State Active Duty, on duty under Title 32, U.S. Code, or, in extraordinary circumstances, on duty under Title 10, U.S. Code, are designed to fill the 6-72 hour gap in capabilities between the first local and State response and the Federal response following a CBRNE incident. There are currently 17 CERFPs (California, Colorado, Florida, Georgia, Hawaii, Illinois, Massachusetts, Minnesota, Missouri, Nebraska, New York, Ohio, Pennsylvania, Texas, Virginia, Washington, and West Virginia), of which 16 are trained and ready to respond to

CBRNE incidents in each of the 10 FEMA regions. The Virginia CERFP just completed training and is undergoing its evaluation today.

CBRNE Consequence Management Response Forces (CCMRFs). The CCMRFs, which includes elements of the U.S. Marine Corps Chemical-Biological Incident Response Force as well as CBRNE response capabilities from all of the Military Departments, is a force of 4,000-6,000 personnel that can be quickly tailored to provide a coordinated Federal military response to specific CBRNE incidents. The CCMRFs are Title 10, U.S. Code, joint forces capable of responding to a wide range of CBRNE attacks against the American people with a wide range of services, including: radiological assessment, decontamination and security of a contaminated site or area; medical triage, treatment, and care; and transportation and logistical support. DoD recognizes that terrorists often strike multiple targets simultaneously; therefore, DoD is identifying and sourcing three CCMRFs to improve our nation's CBRNE response capability. The first CCMRF is expected to be fielded this October.

Joint Task Force Civil Support (JTF-CS). JTF-CS, headquartered at Fort Monroe, Virginia, is a deployable, standing task force of 186 assigned military personnel, led by a two-star Army National Guard general officer serving on active duty, under the command of the USNORTHCOM commander. The mission of JTF-CS is to deploy, when directed, to a CBRNE incident site to exercise command and control of assigned Federal military forces, including the CCMRFs, in support of civil authorities.

Defense Coordinating Officers (DCOs). DoD appointed 10 DCOs, Colonels or Navy Captains, and assigned one to each of the 10 FEMA regions. If requested and approved, the DCO serves as DoD's single point of contact at the Joint Field Office (JFO) for requesting assistance from DoD. With few exceptions, requests for assistance originating at the JFO are coordinated with and processed through the DCO. The DCO may have a Defense Coordinating Element

(DCE) consisting of a staff of 6 military and civilian personnel and supported by military Emergency Preparedness Liaison Officers (EPLOs). Together, they facilitate coordination and support to activated NRF Emergency Support Functions. Specific responsibilities of the DCO (subject to modification based on the situation) include processing requirements for military support, forwarding mission assignments to the appropriate military organizations through DoD-designated channels, and assigning military liaisons, as appropriate, to activated ESFs.

U.S. Marine Corps Chemical-Biological Incident Response Force (CBIRF). The CBIRF is a deployable force capable of responding to a CBRNE incident in support of local, State, or Federal authorities and designated Combatant Commanders' consequence management operations by providing capabilities for agent detection and identification; casualty search and rescue; personnel decontamination; emergency medical care; and stabilization of contaminated personnel. The CBIRF consists of 117 personnel, 21 vehicles and necessary equipment, and follow-on forces of 200 additional personnel and 22 additional vehicles and equipment

U.S. Army Technical Escort Battalions. U.S. Army units such as the 22nd and 110th Chemical Battalions, when ordered, deploy task-organized teams within and outside the continental United States to conduct technical escort and CBRNE hazard characterization, monitoring, disablement, and elimination support operations. They provide CBRNE incident emergency response, homeland defense, and contingency support operations to combatant commanders and lead Federal agencies. They also provide site remediation and restoration support operations for the Department of Defense.

U.S. Army Chemical Battalions. The U.S. Army has 19 chemical battalion headquarters, 28 combat support chemical companies, 22 chemical companies (heavy), and 9 other chemical companies with decontamination capabilities. U.S.

Army Chemical Battalions receive, employ, and command and control task-organized forces in support of military operations. They are prepared to provide command and control of joint CBRNE response forces in support of civil authorities. U.S. Army Chemical Battalions employ various techniques and available equipment to extract and collect chemical, radiological, and/or biological samples from munitions, devices, material, and the environment.

U.S. Army Chemical Companies. The U.S. Army has 59 chemical companies capable of conducting mass personnel decontamination.

20th Army Support Command (CBRNE). When ordered, or when designated as Joint Task Force - Elimination, the 20th Army Support Command (CBRNE) deploys and conducts operations in support of Combatant Commanders or other government agencies in order to counter CBRNE threats in support of National Combating Weapons of Mass Destruction (WMD) objectives.

Defense Threat Reduction Agency (DTRA) Consequence Management Advisory Teams (CMATs). The DTRA CMATs are deployable, reachback enabled, incident-tailored teams comprised of a two-person cadre of advisors trained in providing and using CBRNE plans and models. DTRA CMATs provide on-site technical and scientific subject-matter experts, planners, and hazard prediction modeling support to Incident Commanders, Combatant Commanders, and Federal Coordinating Agencies or their delegated representatives when responding to catastrophic incidents involving CBRNE weapons. The DTRA CMATs can also be augmented by other DTRA subject matter experts when necessary.

Armed Forces Radiobiology Research Institute (AFRRI) Medical Radiobiology Advisory Team (MRAT). The MRAT can provide health physics, medical, and radio-biological advice to military and civilian command and control operations in response to a nuclear and radio-biological incident. The MRAT also augments the DTRA CMATs.

Global Patient Movement Requirements Center (GPMRC). Located at Scott Air Force Base, Illinois, the GPMRC coordinates execution of DoD's responsibility to lead National Disaster Medical System (NDMS) patient evacuation. The GPMRC moves patients from airfield to airfield while our partner agencies assist by moving patients from airfields to hospitals.

U.S. Army Corps of Engineers (USACE). USACE is a public engineering organization within DoD providing engineering support and services to DoD activities around the world, as well as to the nation's public works, flood protection, and navigation infrastructure. USACE provides support as the coordinating agency for ESF #3 and as a support agency to other ESFs, as specified in the NRF. USACE performs emergency support activities under separate statutory authorities, including Public Law 84-99. When conducting CBRNE response activities in support of the NRF, USACE has a coordinating relationship with USNORTHCOM, or USPACOM, as appropriate.

General Purpose Forces. DoD general purposes forces, when directed by the President or the Secretary of Defense, can provide valuable contributions to a nuclear attack response (e.g., transportation, medical, logistics, evacuation, damage assessment, and security). In the case of the use or threatened use of weapons of mass destruction, or in the case of terrorist attacks or threatened terrorist attacks that result, or could result, in significant loss of life or property, the President may call to active duty members and units of the Reserve Components for up to 365 days to provide assistance in the national response (10 U.S.C. § 12304(b)). The Reserve Components are capable of contributing significant capabilities.

DOD AND THE NATIONAL RESPONSE FRAMEWORK

Under the National Response Framework, USACE is the primary agency for ESF #3 (Public Works and Engineering) and, in this role, would provide direction and coordination of ESF #3 response-related activities and resources to facilitate the delivery of Federal Government services, technical assistance, engineering expertise, construction management, and other support to prepare for, respond to, and/or recover from a disaster or an incident requiring a coordinated Federal response.

As a supporting agency, DoD would provide support, as requested and as available, to ESF #5 (Emergency Management), which provides the core management and administrative functions in support of National Response Coordination Center (NRCC), Regional Response Coordination Center (RRCC), and JFO operations.

As a supporting agency to ESF #6 (Mass Care, Emergency Assistance, Housing, and Human Services), which coordinates the delivery of Federal mass care, emergency assistance, housing, and human services when local, tribal, and State response and recovery needs exceed their capabilities, DoD would provide logistical support, as approved by the Secretary of Defense. In addition, DoD, through USACE, would provide assistance by fulfilling mass care requirements for ice and water; inspecting mass care shelter sites to ensure suitability and accessibility of facilities to shelter victims safely; constructing temporary shelter facilities, including accessible shelters in the affected area, as required; and providing temporary housing support, such as temporary structures and expedited repair of damaged homes (including temporary roofing or other repairs that facilitate reoccupation of minimally damaged structures), as necessary.

As a supporting agency to ESF #8 (Public Health and Medical Services), which provides the mechanism for coordinating Federal assistance to supplement State, tribal, and local resources in response to a public health and medical

disaster, potential or actual incidents requiring a coordinated Federal response, and/or during a developing potential health and medical emergency, DoD would:

- Alert DoD NDMS Federal Coordinating Centers (FCCs) (Army, Navy, Air Force) and provide specific reporting/regulating instructions to support incident relief efforts;
- Alert DoD NDMS FCCs to activate NDMS patient reception plans in a phased, regional approach and, when appropriate, in a national approach;
- At the request of the Department of Health and Human Services (DHHS), provide support for the evacuation of patients and medical needs populations to locations where hospital care or outpatient services are available;
- Using available DoD transportation resources, in coordination with the NDMS Medical Interagency Coordination Group, evacuate and manage victims/patients from the patient collection point in or near the incident site to NDMS patient reception areas;
- Provide available logistical support to public health/medical response operations;
- Provide available medical personnel for casualty clearing/staging and other missions as needed, including aero-medical evacuation and medical treatment;
- Mobilize and deploy available Reserve and National Guard medical units, when authorized and necessary to provide support;
- Coordinate patient reception, tracking, and management to nearby NDMS hospitals, Veterans Affairs hospitals, and DoD military treatment facilities that are available and can provide appropriate care;

- Provide available military medical personnel to assist in the protection of public health (such assistance with food, water, wastewater, solid waste disposal, vectors, hygiene, and other environmental conditions);
- Provide available veterinary military personnel to assist ESF #8 personnel in the medical treatment of animals;
- Provide available DoD medical supplies for distribution to mass care centers and medical care locations being operated for incident victims, with reimbursement to DoD;
- Provide available emergency medical support to assist State, tribal, or local officials within the disaster area and the surrounding vicinity (such services may include triage, medical treatment, mental health support, and the use of surviving DoD medical facilities within or near the incident area);
- Provide assistance, as available, in managing human remains, including victim identification, mortuary affairs, and temporary interment of the dead;
- Provide evaluation and risk management support through use of DCOs, Emergency Preparedness Liaison Officers, and Joint Regional Medical Planners;
- Provide available blood products in coordination with DHHS;
- Provide medical surveillance and laboratory diagnostics and confirmatory testing in coordination with DHHS; and,
- Through USACE, provide technical assistance, equipment, and supplies as required in support of DHHS to accomplish temporary restoration of damaged public utilities affecting public health and medical facilities.

As a coordinating agency for the Nuclear/Radiological Incident Annex, which provides an organized and integrated approach for a timely, coordinated response by Federal agencies to terrorist incidents involving nuclear or radioactive

materials and accidents or incidents involving such material that may or may not rise to the level of a catastrophic incident, DoD would:

- Provide Defense Support of Civil Authorities (DSCA) in response to requests for assistance during domestic incidents;
- Coordinate Federal actions for radiological incidents involving DoD facilities, including U.S. nuclear-powered ships, or material otherwise under their jurisdiction (e.g., transportation of material shipped by or for DoD);
- Take appropriate independent emergency actions within DoD's statutory authority to protect the public, mitigate immediate hazards, and gather information concerning the emergency to avoid delay;
- Provide technical expertise, specialized equipment, and personnel in support of DHS, which is responsible for overall coordination of incident management activities; and,
- Through USACE:
    - Direct response/recovery actions as they relate to ESF #3 (Public Works and Engineering) functions, including contaminated debris management;
    - Provide response and cleanup support as a cooperating agency; and
    - Integrate and coordinate with other agencies, as requested, to perform any or all of the following:
        - Radiological survey functions;
        - Gross decontamination;
        - Site characterization;
        - Contaminated water management; and

- Site remediation.

DoD is also a supporting agency for the Catastrophic Incident Supplement (CIS) of the NRF, which is responsible for accelerating the delivery and application of Federal and Federally-accessible resources and capabilities in support of a jurisdictional response to a catastrophic mass victim/mass evacuation incident. Such an incident may result from a technological or natural disaster, or terrorist attack involving CBRNE weapons. DoD would:

- Activate the patient movement of the NDMS within one hour of an incident;
- Initiate deployment actions for DCO and supporting DCE to a JFO or Initial Operating Facility (IOF) within two hours of an incident;
- Participate in the NDMS Medical Interagency Coordination Group (MIACG) determination of which FCCs will be activated within three hours of an incident;
- Through USACE, alert and initiate deployment actions for ESF #3 teams and assets (water, power, debris, housing, ice, structural assessment, deployable tactical operations system) within three hours of an incident;
- Alert HQ Joint Task Force (JTFHQ) and designated Initial Entry Forces (IEFs). DoD will be prepared to deploy a Command Assessment Element (CAE) to provide rapid mission assessment in coordination with Federal authorities within four hours of an incident. DoD will identify key IEF capabilities as required based on assessment and coordination with DHS;
- Inventory and report bed availability to Federal Coordinating Facilities for all DoD NDMS medical facilities within twelve hours of an incident;
- Prepare to begin receiving evacuated patients from affected areas within eighteen hours of an incident;

- Facilitate DHS patient evacuation and Federal patient movement through the DoD U.S. Transportation Command (USTRANSCOM) Regulating and Command and Control (C2) Evacuation System (TRAC2ES);
- Coordinate the patient evacuation function of NDMS;
- Coordinate, through USTRANSCOM, the movement of casualties/patients from patient collection points to airfields or other transporting sites, to FCC Patient Reception Areas for triage into NDMS-civilian hospitals for NDMS Definitive Care. This will be accomplished through available DoD transportation assets (aircraft, rail, bus, ship), the Department of Transportation, and the General Services Administration; and
- Provide assistance in managing human remains, including victim identification and disposition.

In addition, DoD has Military Treatment Facilities (MTFs) that may -- through local agreements and within the vicinity of the incident site -- provide necessary assistance to save lives, prevent human suffering, or mitigate great property damage under the authorities of immediate response without prior approval by the Secretary of Defense.

As a supporting agency to ESF #10 (Oil and Other Hazardous Materials Response), which is responsible for providing Federal support in response to an actual or potential discharge and/or uncontrolled release of oil or hazardous materials when activated, DoD would:

- Provide DSCA in response to requests for assistance during domestic incidents, subject to the approval of the Secretary of Defense;
- Through USACE, provide response and recovery assistance to incidents involving contaminated debris, including CBRN contamination, including

waste sampling, classification, packaging, transportation, treatment, demolition, and disposal; and,

- When circumstances require, through the Navy Supervisor of Salvage, provide technical, operational, and emergency support in the ocean engineering disciplines of marine salvage, pollution abatement, and diving services.

INTERAGENCY COOPERATION

Although work continues, to date, DoD has, under 6 U.S.C. § 753, worked with the Federal Emergency Management Agency (FEMA) to develop 26 all-hazards, pre-scripted mission assignments (PSMAs) for DoD support and more than 30 PSMAs for USACE support for each of the 15 ESFs of the NRF. These all-hazards PSMAs include heavy- and medium-lift rotary-wing lift; tactical transportation; strategic transportation; communications support; emergency route clearance; damage assessment; temporary housing; mobilization centers; operational staging areas; temporary medical facilities; and rotary wing medical evacuation.

Since March 2006, DoD and other Federal partners have supported the DHS Incident Management Planning Team (IMPT) in the planning effort for Scenario #1 (Nuclear Detonation - 10-Kiloton Improvised Nuclear Device) of the 15 National Planning Scenarios.

Since March 2007, DoD and other Federal partners have supported the DHS IMPT in the planning effort for Scenario #11 (Radiological Attack - Radiological Dispersal Devices) of the 15 National Planning Scenarios.

The development of these plans has continued while the IMPT adapts to the new interagency planning construct and standards established by Annex I (National Planning) to Homeland Security Presidential Directive-8 (HSPD-8), *National Preparedness*. Approved by the President in December 2007, Annex I

is intended to enhance U.S. preparedness by establishing a standard and comprehensive approach to national planning. As I will note later in my testimony, there is a need to continue this planning with a renewed sense of urgency.

In accordance with Annex I, Federal partners are developing an Integrated Planning System (IPS) that, in its draft form, provides:

- National planning doctrine, guidance, and processes to ensure consistent planning across the Federal Government;
- A mechanism for concept development to identify and analyze missions and potential courses of action;
- a description of the process that allows for plan refinement and execution to reflect developments in risk, capabilities, or policies, as well as to incorporate lessons learned from exercises and actual events;
- A description of the process that links regional, State, local, and tribal plans, planning cycles, and processes and allows these plans to inform the development of Federal plans; and
- A process for integration of Federal, State, local, and tribal plans.

By this fall, we expect that a Strategic Guidance Statement and Strategic Plan for Scenario #1 (Nuclear Detonation - 10-Kiloton Improvised Nuclear Device) will be completed under the IPS and that Federal department and agency development of operations plans will be ongoing.

DoD is a member of the Federal Radiological Preparedness Coordinating Committee (FRPCC), an interagency body, chaired by FEMA with members from agencies responsible for supporting execution of the NRF Nuclear-Radiological Incident Annex. The FRPCC provides a national-level forum for the development and coordination for radiological prevention and preparedness policies and

procedures. It also provides policy guidance for Federal radiological incident management activities in support of State, local, and tribal government radiological emergency planning and preparedness activities.

In addition to interagency planning and other initiatives, DoD has forged strong, direct, day-to-day relations with DHS at all levels. For example:

- In 2003, DoD established a full-time DoD advisory and liaison office within DHS headquarters;
- Also in 2003, DoD and DHS signed a memorandum of agreement that authorized detailing of DoD personnel to DHS to fill critical specialties. Currently, more than 80 DoD personnel are directly supporting the DHS National Operations Center, the National Response Coordination Center, Science and Technology Directorate, Intelligence, Cyber and Telecommunications, and Domestic Nuclear Detection Office, FEMA, and the U.S. Coast Guard; and
- Defense Coordinating Officers and Defense Coordinating Elements are attached to each of the 10 FEMA regions to coordinate DoD assistance.

EXERCISES

Exercises are critical to ensuring readiness and identifying gaps and potential weaknesses within and across agencies in responding to terrorist attacks, including multiple, simultaneous events. These exercises support the DHS National Homeland Security Exercise Program established by Homeland Security Presidential Directive-8 (HSPD-8), *National Preparedness* (December 17, 2003).

Over the last five years, DoD has hosted numerous exercises involving Federal, State, and local partners. Many of these exercises involved scenarios addressing nuclear or radiological incidents, including Unified Defense (February 19-25, 2004); Determined Promise (August 5-10, 2004) and its successor Ardent Sentry (May 8-19, 2006, and April 30-May 17, 2007); Dingo King 05 (August 22-

26, 2005); Vital Guardian 06 (April 6-10, 2006); and Vigilant Shield (December 4-14, 2006, and October 15-20, 2007).

DoD also has participated in interagency table-top exercises (July 2003, May 2005, November 2006, March 2007, June 2007, and January 2008); Top Officials (TOPOFF) (TOPOFF II: May 12-16, 2003; TOPOFF IV: October 15-19, 2007); Cabinet-Level / Principal-Level exercises (CLE/PLE) involving nuclear or radiological incidents (September 26, 2007); and the State of Hawaii's "A Kele" Project (August 15-16, 2006).

IMPROVING PREPAREDNESS

In your invitation, you asked what could be done to prepare our country to respond to an act of nuclear terrorism and to mitigate its consequences more effectively. My answer is "realistic and detailed operational planning." As you stated, Mr. Chairman, last month, "Helping survivors in and around the blast area will require a planned, prepared and coordinated response by all levels of government. The federal government will have to bring all its capabilities to the attacked area quickly because local government will be overwhelmed." Complex, demanding mission sets like those involved in the response to a terrorist nuclear attack on an American city require detailed advance planning.

Planning can improve the effectiveness of a response by clearly defining required capabilities, shortening the time required to gain control of an incident, and facilitating the rapid exchange of information about a situation. Governments at all levels have a responsibility to develop detailed, robust, all-hazards response plans. These plans should have clearly defined leadership roles and responsibilities, and they should clearly articulate the decisions that need to be made, who will make them, and when. These plans should include both hazard-specific and comprehensive all-hazards plans that are tailored to each respective jurisdiction.

As noted earlier, in accordance with Annex I of HSPD-8, Federal partners are developing an Integrated Planning System that is intended to:

- Guide the development of Federal plans for the 15 National Planning Scenarios;
- Facilitate linkage of regional, State, local, and tribal plans, planning cycles, and processes and allow these plans to inform the development of Federal plans; and
- Guide the integration of Federal, State, local, and, tribal plans.

These last two points are crucial. The Federal Government can have the best, most detailed plan for responding to the 15 National Planning Scenarios, but that only gives us a *Federal* response, one that may not effectively support -- or, worse yet, may conflict with -- the regional and/or State responses (which also may not be mutually supportive). Federal, regional, State, and local plans must be integrated and synchronized to give us a truly *national* response to a future catastrophic incident.

To pursue this end, DoD has partnered with DHS to develop the Task Force for Emergency Readiness (or "TFER") initiative. The TFER is under the direct leadership of the Governor's state emergency management structure and teams State civilian planners, National Guard planners, DHS Federal Preparedness Coordinators, and DoD Emergency Preparedness Liaison Officers to:

- Produce State plans tailored to the unique strengths and vulnerabilities of each individual State; and
- Facilitate the integration and synchronization of local, State, Regional, Federal, and private sector incident planning.

The TFER initiative will enable merging bottom-up local/State planning with the Federal top-down approach to integrate the Federal-State planning

process, thereby implementing the coordination envisioned by the IPS and achieving a unity of effort that mirrors our nation's principles of self reliance and the federal model of government. In short, each state's TFER will provide a focal point for catastrophic response planning, integrating all relevant capabilities – military and civilian – found within the public and private sectors.

The strength of the TFER is in the fact that it will be a scalable, flexible organization whose responsibilities can be uniquely tailored to fit each State's needs. Typical task force functions might include:

- Completing operational plans for identified catastrophic scenarios;
- Promoting State deliberate planning and coordination;
- Assisting in ensuring local planning capability requirements are addressed;
- Offering a conduit to Federal response planning and capabilities (e.g. FEMA, DoD);
- Aiding State-to-State coordination for regional incidents (e.g., a hurricane);
- Supporting State crisis action planning;
- Implementing exercise lessons learned to improve subsequent planning;
- Informing State emergency manager dialogue and decision-making;
- Supporting multi-level policy coordination; and
- Informing logical, fiscally responsible decisions to address capability or capacity shortfalls.

Initially, the TFER initiative will be tested in select pilot states with the intent of expanding the concept to all States and territories in the United States.

CONCLUSION

In conclusion, we have learned -- and acted upon -- key lessons of the past from incidents such as the September 11, 2001 terrorist attacks; the Columbia

shuttle disaster in 2003; Hurricane Katrina in 2005; and the California wildfire in October 2007 and exercises where we and our Federal, State, and local partners have tested our plans, procedures, and preparedness. Readiness to respond to a nuclear attack is, by its horrific character, a process of urgent improvement, not a static end state.

Today, the Defense Department – Active, Reserve, National Guard, and DoD civilians – is indeed better prepared to assist civil authorities than at any other time in our nation's history. DoD's CBRNE response capabilities are the best funded, best equipped, and best trained in the world. Our men and women in military uniform are well prepared to provide substantial life-saving assistance -- and, with a sense of urgency, will do so when needed.

But we also realize that no matter how good we are, we must get better. We appreciate your leadership, Mr. Chairman, Members of the Committee, and your support for the Department of Defense.

Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath – the Federal Response

Statement by Chief James H. Schwartz

presented to

COMMITTEE ON HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS

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Good morning Chairman Lieberman, Ranking Member Collins, and distinguished Members of the Committee. I am James Schwartz, Fire Chief of Arlington County, Virginia. Today, I am testifying on behalf of the nearly 13,000 members of the International Association of Fire Chiefs (IAFC). The IAFC represents the leadership of America's fire, rescue, and emergency medical services (EMS) from large, metropolitan, career fire departments to small, rural, volunteer fire departments. I would like to thank the committee for their interest in the critical topic of nuclear terrorism response.

We have been fortunate never to have experienced a nuclear or radiological attack on American soil, although the probability of such an event continues to be debated by experts. Nevertheless, preparedness for a nuclear or radiological incident has long been a focus for emergency managers and first responders, and the fire service must stand ready to respond. This hearing will be a useful step in identifying remaining gaps in preparedness and response capabilities at all levels of government should a nuclear or radiological attack occur. The fire service recommends that capabilities should continue to be developed within an all-hazards risk management framework.

I have been asked to discuss the operational response at the local level to a scenario of a nuclear detonation with an explosive yield of 10-kilotons or less. The initial blast, ensuing fires and structural collapse, as well as the spread of radiation would entail significant casualties, but also would leave many surviving burn and trauma victims in need of care and individuals in need of radiological decontamination, as well as residents in need of guidance on whether to evacuate or shelter in place.

Preparedness

Preparedness and response go hand-in-hand. Adequate preparedness is a fundamental component of building an effective response capability. In order to adequately prepare to respond to a nuclear terrorism attack, a fire department needs the best possible threat information to assess the probability of a nuclear attack in its area, as well as information regarding the effect of an attack on its jurisdiction. In order to adequately respond to an incident of nuclear terrorism, a fire department must have the right equipment and training to respond to such an attack.

In Arlington County, the Metropolitan Medical Response System (MMRS) has facilitated close coordination between the local fire, law enforcement and public health departments, hospitals and the medical community, and neighboring jurisdictions, as well as state and federal entities. Federal assistance through programs such as the Urban Area Security Initiative (UASI) has enabled Arlington County and its partners in the National Capital Region (NCR) to purchase equipment, enhance training and communications infrastructure, and develop a better system to respond to a nuclear incident. It is also important to train our first responders and exercise the response system to test our planning, training, and equipment. The NCR recently conducted a small tabletop exercise on a nuclear attack. However, preparedness is an ongoing process, and America's first responders still have much work to do, in partnership with the federal government, to become fully prepared to respond to a terrorist nuclear attack.

Initial Response

In many ways, the response to a nuclear incident would resemble the response to any disaster or catastrophe. It is important to understand that the response to most incidents – whether wrought by man or nature – is strikingly similar. This is the underlying premise of the "all-hazards" perspective. Whether responding to a hurricane, a chemical spill, or a nuclear explosion, the fire service will rely upon the same scalable response framework, which includes the Incident Command System (ICS) and the National Incident Management System (NIMS). While first responders employ the same all-hazards incident management system to all disasters, the unprecedented and catastrophic scale of a nuclear incident would present considerable response challenges.

The fundamental cornerstone of every emergency event is that local government agencies are charged with leading the response. The initial response to a nuclear or radiological explosion is likely to resemble that of a conventional hazardous materials response. It may not be immediately clear to the first responders on the scene that nuclear or radiological material is involved in the incident. It should be noted that while responders in Arlington County are fortunate to have radiation detection equipment – purchased through UASI grant dollars – many first responders around the country lack even basic radiation detection equipment.

In Arlington County, chemical, radiological, nuclear, or explosive events (CRNE) are managed as hazardous materials incidents with mass casualty implications. In all situations, the greatest challenges are minimizing the potential for panic, minimizing additional exposure and secondary exposures, identifying the suspect substance, and providing prudent medical treatment.

The Arlington County response to a CRNE incident includes the combined and integrated capabilities of Arlington County's existing fire, EMS, hazmat, hazardous device, and law enforcement units operating under a unified incident command. Additionally, the healthcare systems in Arlington County, our hospital and other private healthcare providers, are recognized as critical elements in the overall response.

The essential response functions for fire department personnel arriving on the scene will include:

1) Command and control, with the first emergency responder on the scene assuming the role of Incident Commander (IC);
2) Isolation of the impact area and initial establishment of hot, warm, and cold zones;
3) Preliminary agent identification based on environmental clues and victim symptoms, as well as the results of field detection instrumentation and testing;
4) Initial victim care; and
5) Gross mass decontamination.

Arlington County Fire Department (ACFD) plans include specific protocols for units responding to explosive devices, including procedures for agent detection, emergency medical treatment, and medical management of contaminated patients. At the scene of an explosive event, the presence of a chemical, radiological, or biological agent is always assumed until detection protocols rule it out.

Arlington County also has available the National Capital Region National Medical Response Team (NMRT-NCR), a federally-funded rapid response team for CRNE events that can be used as a local response entity.

Incorporating Additional Local, State, and Federal Resources into the Response

Arlington County is fortunate to benefit from a robust mutual aid system, which enables a regional response to any significant incident. The ACFD has automatic aid agreements, in which resources are shared on a daily basis without regard to jurisdictional boundaries, with neighboring jurisdictions including the City of Alexandria, Fairfax City, Fairfax County, Fort Belvoir, Fort Myer, and Reagan National Airport. This system has been in place for more than 30 years and has resulted in strong relationships that are built on mutual trust and shared learning. Mutual aid agreements also exist with other jurisdictions throughout the NCR through the Council of Governments. Voice communication systems are interoperable throughout the region, which facilitates a coordinated response.

As the magnitude of an incident such as the one being discussed today becomes more clear and the region's resources become taxed, Arlington would request additional assistance through our statewide mutual aid plan. Virginia also would make a request to the federal government for assistance. The Emergency Management Assistance Compact (EMAC) may be used to provide assistance from other states.

Should an event be determined to be a nuclear or radiological incident, the mutual aid system would be quickly activated, marshaling additional resources from the NCR and statewide. Rapid deployment of National Guard Civil Support Teams also would be critical to aid in rapid assessment, technical advice, and general support.

Any event involving a nuclear or radiological attack would quickly overwhelm local and state capabilities and require federal support under the National Response Framework. However, despite its proximity to the nation's capital and the national significance of such an event, Arlington County must still be prepared to operate under the assumption that most federal support would not arrive for 48-72 hours.

It cannot be emphasized enough that as regional and federal resources become available, they must be integrated into the existing incident command structure in order to maintain a unified response effort. In order to achieve the level of coordination needed to carry out an effective and efficient response, the command structure must be respected by responders at all levels of government.

Technical Assistance

The ACFD is equipped with alpha, beta, and gamma radiation detectors, as well as pocket detectors for measuring radioactivity. We also have established standard operating procedures for response to potential CRNE incidents that are built on guidelines prepared and adopted by the NCR partners. These procedures include radiation dose exposure limits designed to protect first responders. Such tools and procedures will be critical in identifying radiation at the scene. However, far more sophisticated technical assistance will be needed to conduct accurate assessments of the amount of radioactive material involved, plume modeling, and downwind projections. In a nuclear event, this information will be critical to making lifesaving decisions regarding which areas to evacuate.

In a nuclear or radiological event, rapid plume modeling and analysis will be the federal government resource most urgently needed. In Arlington County, our hazmat team has rudimentary plume modeling capabilities, and our close working relationship with the Pentagon Force Protection Agency enables us to access more sophisticated plume analysis within minutes of an incident. Our training and procedures also anticipate the early arrival of a Department of Energy Radiological Assistance Program (RAP) Team, with whom we have also trained. Analysis from the Federal Radiological Monitoring and Assessment Center (FRMAC) will also be needed. This assistance must rapidly be integrated into the incident command system.

Communication

In a nuclear or radiological event, effective communication to survivors in and around the affected area will be critical to preventing panic and providing lifesaving advice regarding whether to evacuate or shelter in place.

With the assistance of UASI grant dollars, Arlington County, and the broader NCR, has developed several state-of-the-art emergency communications functions to aid in providing information during an emergency. Residents in every jurisdiction throughout the NCR can sign up for free text messaging alert systems from local governments that provide real-time emergency alerts and notifications to cell phones, pagers, email accounts, and PDAs. In Arlington, this system is referred to as Arlington Alert, which has 16,000 subscribers so far. Local governments in the NCR also deliver warnings through Reverse 9-1-1, an automated, non-subscription system that calls landline and cellular telephones with voice alerts and warnings. The system can be targeted to phone numbers in individual areas by map. Arlington also has its own AM radio station for public messaging, AM 1700, which is designed to provide information within minutes of an incident.

Our Office of Emergency Management (OEM), in coordination with Incident Command, will disseminate information to the public and serve as a trusted voice. OEM will also establish a Joint Information Center (JIC) to ensure that the multitude of agencies

involved in the response coordinate public messaging. This coordination is imperative so as to avoid providing conflicting information to the public.

On Scene Medical Care, Decontamination, and Victim Transportation

Few jurisdictions are optimally equipped to handle an event with mass casualties and large numbers of individuals simultaneously requiring medical care. Despite the robust planning devoted to this issue in Arlington County and throughout the NCR, surge capacity and treatment for mass casualties remain a significant challenge.

Enabled through the MMRS and UASI grants, Northern Virginia has developed an integrated, coordinated regional approach to medical response planning and operations. The Northern Virginia Emergency Response System (NoVaERS) is designed to provide immediate and well-coordinated front-line emergency services for the first 24 to 48 hours of a major emergency event anywhere in the region before state, federal and other response resources mobilize. The NoVaERS establishes command systems and authority, coordinated resource deployment, and the ability to respond in an integrated way across disciplines and jurisdictions. Although this system is a model for other jurisdictions, and has greatly increased the region's response capabilities, the region may not be fully prepared to handle the consequences of a mass casualty event on the scale of a nuclear attack.

In the event of a nuclear attack, one of the key missions of the first responders with the ACFD will be to address initial victim care and mass decontamination. A nuclear incident will create a large number of burn victims and those who suffer traumatic injuries. It is important that these victims be extricated, given emergency medical treatment, decontaminated, and transported to medical facilities.

In the first hours after a nuclear incident, triage will be one of the crucial tasks for responders. Disaster triage rapidly evaluates victims and assigns relative priority for their care and transport. The NCR uses colored ribbons to code patients for immediate identification.

In a nuclear event, minimal medical treatment will be conducted on victims prior to extraction to a safe, dedicated treatment area. Treatment areas will be established in the "cold zone" of an incident and treatment will be directed by the EMS branch of the incident command system. This Branch will have direct communications with the Northern Virginia Regional Hospital Coordinating Center (RHCC) who will notify hospitals of victim incidents and coordinate the distribution of patients to hospitals throughout the region.

In a CRNE event, decontamination will be a priority, as it addresses minimizing exposure time to patients and helping to control potential secondary contamination of responders and others. To control the spread of contamination, a Rapid Mass Casualty Decon Corridor may be established by arriving units using basic fire equipment until field decon units can be established. The Arlington County Hazmat Unit's Decontamination Group

will then establish a Mass Casualty Decon Corridor based on standard operating procedures.

The goal of Arlington County is to ensure that all patients from the scene are decontaminated before being transported. Any contaminated first responders will become a priority for decontamination. Deceased victims will be decontaminated only after living victims are attended. The Virginia Hospital Center – Arlington, as well as other major health care systems in Northern Virginia, Maryland, and the District of Columbia also have decontamination capabilities for walk-in patients.

According to existing agreements, decontaminated victims will be transported to hospitals and other medical facilities throughout the Washington area. To transport victims, Arlington County will use ambulances, multiple occupancy vehicles such as buses, and air assets. In addition, we may depend on local military and National Guard resources to assist in the transportation of patients. All victims will be tracked through the triage tag system. All vehicles used for victim transportation also will be decontaminated.

The greatest challenge in response to a nuclear attack will be the number of victims and nature of their injuries. The number of patients with severe burns and trauma will overwhelm a healthcare system that is already challenged to deliver care on a daily basis. Planning assumptions and exercises for incidents involving the number of patients contemplated in a nuclear attack always prompt a discussion about standard of care; in short, healthcare providers are reluctant to consider altering standards of care, as would be necessary to treat more viable victims, without pre-established liability protection.

Information Sharing to Inform Risk Management

A detailed discussion of the remaining challenges in sharing intelligence information at all levels of government may be better reserved for another setting. However, it is important to note that although information sharing has improved in recent years, the Department of Homeland Security and others in the intelligence community must continue to work toward sharing meaningful threat information with those state and local officials who are best prepared to act on it. Such information is vital to effectively targeting resources.

First responders must continuously practice risk management, carefully prioritizing the greatest risks, in order to maximize limited resources. It is therefore imperative that the federal government provide state and local officials with accurate information regarding threats. Currently, the majority of the threat information received from the federal government has led first responders to focus terrorism preparedness on conventional explosives, including IEDs, or some type of crude "dirty bomb" with small amounts of radiological material.

On any given day, the average metropolitan fire chief might face threats as diverse as large structural fire, a plane crash, a major wildland fire, a tornado or earthquake, a

pandemic flu outbreak, an anthrax attack, or even a nuclear bomb. However, he or she has a limited number of resources – even with the addition of valuable homeland security and first responder grants, such as UASI and MMRS – with which to address these threats. The federal government plays a crucial role in providing information, intelligence, and clear guidance about how to prioritize these threats. For example, is Arlington County more likely to face terrorism in the form of a 10-kiloton nuclear bomb, a smaller radiological "dirty bomb," or an anthrax attack? What are the projected casualty levels and other consequences associated with these threats?

Recommendations

Great strides have been made across all levels of government in boosting all-hazards preparedness and response capabilities in recent years. The IAFC is grateful to the contributions this committee has made toward this end. Yet, we also must acknowledge that few areas of the country have the full range of resources and capabilities to adequately respond to an event on the scale of a nuclear attack. The IAFC offers the following recommendations to guide the committee's work in this area:

- **Maintain an all-hazards, risk management focus.** As the committee considers whether greater attention should be devoted to preparing for nuclear terrorism response, the IAFC believes that it is important to continue to maintain an all-hazards risk management perspective in allocating our emergency management resources. First responders must continue to devote resources and focus to those threats which are most probable, while also preparing to respond to any situation.

- **Share meaningful information regarding threats.** The Department of Homeland Security and the broader intelligence community must strive toward meaningful information sharing and collaboration with state and local officials and responders regarding threats, and make distinctions about the varying levels of risk posed by each threat. Such information is central to managing risk. Detailed guidance regarding likely threat scenarios and ensuing consequences also is needed in order to prepare for effective response.

- **Encourage greater cooperative engagement between the federal government and non-federal stakeholders.** The Department of Homeland Security has improved its attempts to reach out to state and local officials and responders. However, the federal government must devote greater focus to achieving a truly collaborative approach to addressing vital preparedness and response issues. To facilitate cooperative engagement, the Department of Homeland Security and other key federal agencies should consider hosting symposia for shared learning with local practitioners and experts to explore a variety of threat scenarios and develop response guidelines and best practices.

  The IAFC is a member of the National Homeland Security Consortium, and supports the recommendations set forth in the recent white paper, *Protecting Americans in the 21st Century: Imperatives for the Homeland* which notes, "The

federal government has the opportunity to transition from top-down direction to meaningful cooperative engagement with all non-federal stakeholders. Doing so will enhance unity and allow us to achieve more rapid progress across the many challenges we confront."

- **Develop best practices for enhancing medical surge capacity and responding to mass casualty events.** Adequate medical surge capacity is lacking in communities across the nation. The federal government should provide leadership in marshaling expertise to develop best practices and creative solutions for communities to address a host of issues related to incidents which may involve mass casualties, as well as the need for medical surge capacity, especially for hospitals. This guidance must be developed in full partnership with local practitioners, and should address the needs of communities of all sizes.

- **Federal predictive modeling capabilities will be vital in a nuclear incident.** In a nuclear or radiological event, reliable plume modeling and analysis will be the resource most urgently needed from the federal government to guide decision-making and save lives. This technical assistance must be rapidly accessible to local incident commanders.

- **Department of Defense Civil Support Mobile Response Forces (CSMRFs) can assist in meeting capability gaps**. The IAFC is encouraged by reports that the U.S. Northern Command (NORTHCOM) is developing plans to stand up several large regional mobile response units to provide rapid civil support in the event of a WMD attack. This DOD capability will be a welcome addition to aid incident commanders in addressing consequence management needs in the wake of a nuclear incident. The fire service stands ready to contribute to the dialogue about how this capability can best be implemented to complement response operations.

Finally, let me note that efforts to improve the preparedness of the fire service for terrorism response are a high priority for the IAFC. The IAFC Terrorism and Homeland Security Committee, of which I am a member, has been working to create a practitioner's guide entitled, "Terrorism Response: A Checklist and Guide for Fire Chiefs." This tool is currently being pilot-tested by forty fire departments throughout the country. The guide will be released this fall.

Conclusion

Thank you for the opportunity to address the committee this morning. On behalf of the nation's fire and EMS chiefs, I would like to express our appreciation to this committee for its continued dedication to preparing the nation for future disasters, both natural and manmade.

Opening Statement
Of
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Before the Senate Homeland Security and Governmental Affairs Committee

The Global Nuclear Detection Architecture:
Are We Building Domestic Defenses That Will Make the Nation Safer

July 16, 2008

Introduction

Good morning Chairman Lieberman, Ranking Member Collins, and distinguished members of the Committee. As Deputy Director for the Department of Homeland Security's (DHS) Domestic Nuclear Detection Office (DNDO) and Assistant Director for Architecture, we would like to thank the Committee for the opportunity to discuss the work we have done at DNDO to develop an enhanced global nuclear detection architecture.

Overview of the Global Nuclear Detection Architecture

One of the earliest accomplishments of DNDO was the completion in November 2005 of what we call the baseline architecture analysis, which was our first look at the global nuclear detection architecture. The building blocks of the architecture are detection systems, along with the necessary supporting systems and capabilities. These detection systems and capabilities are structured into layers of detection and interdiction functions, deployed both domestically and overseas. When we speak about an enhanced global nuclear detection architecture, we mean a time-phased plan for strengthening nuclear detection systems worldwide. In 2005, when we performed the baseline architecture analysis, we analyzed the detection systems that existed worldwide at that time and identified options for strengthening them. That set the stage for a time-phased effort, which DNDO and our partners have been pursuing ever since, to strengthen the architecture by filling gaps, addressing vulnerabilities, improving technologies, building necessary infrastructure, and raising awareness about radiological and nuclear threats and the role of detection systems in mitigating them.

The architecture is developed with interagency and DHS partner input. While DNDO has been tasked to develop the enhanced architecture, the responsibility for actual "on the ground" implementation of the architecture resides with other agencies and partners. Federal partners include Customs and Border Protection (CBP), Department of Energy (DOE), Department of Defense (DoD), Federal Bureau of Investigations (FBI) and Department of State (DoS), pursuant to current implementation agreements. Important implementation roles are also played by State and local agencies, private industry, and foreign countries. Because of the importance of early engagement with potential users of detection systems, considerable effort has been made to involve DNDO's partners throughout the planning and development process for strengthening

the architecture. This division of labor in the architecture development and implementation can be succinctly summarized as "centralized planning with decentralized execution." Through this management construct, the architecture builds squarely upon, and is aligned with, the existing roles, responsibilities, functions and statutory authorities of the partners.

International portions of the architecture require close coordination with DoD, DOE, and DOS, as well as components of DHS with international responsibilities and relationships. The border portions are closely coordinated both within DHS (e.g., with CBP and the United States Coast Guard (USCG)), as well as with other relevant agencies. The interior portions of the architecture are being closely coordinated with Department of Justice (DOJ), including the FBI, and other Federal, State, and local entities.

The time-phased aspect of the enhanced architecture is important because it allows for the gradual integration of current and near-term technologies and approaches, as well as longer-term options that may draw upon technologies that are currently in the R&D phase and that may not be available for implementation for several years. Ultimately, to successfully prevent nuclear and radiological terrorism, detection systems, broadly defined, must be able to (1) encounter the adversary; (2) successfully detect and identify encountered threats; and (3) successfully interdict those threats. A multi-layered approach is essential. It is predicated on the understanding that no single layer of defense can detect all attempts at nuclear and radiological smuggling with one hundred percent effectiveness, but that multiple layers working in concert, i.e., defense in depth, can compensate for and eventually overcome shortcomings in individual layers. For this reason, the architecture provides multiple detection and interdiction opportunities overseas, at U.S. borders, and within the U.S. to effectively increase the overall probability of system success. Over time, the architecture will be improved and expanded by such means as developing better RN detection technologies, improving concepts of operations (CONOPS), enabling real-time reporting of detection events, and providing effective responses to real threats.

Development Process

Beginning with its baseline architecture analysis in 2005, DNDO adopted a geographical/transport model of the global architecture, based on the flow of weapons or

materials from point of origin, or source, through a series of detection "layers," to targets, typically in the United States. The architecture analysis involves five steps that form the technical basis for planning. First, establish the baseline, i.e., identify and describe the existing, baseline architecture. Second, identify gaps, vulnerabilities, and areas that need improvement. Third, develop options for improvement, including technical advances, policy shifts, operational concepts, and enhanced coordination or integration approaches; the options should be time-phased, reflecting near-term, mid-term and long-term time horizons. Fourth, analyze the options in terms of risk reduction, direct and indirect costs, feasibility, and other qualitative and quantitative factors that could affect decisions. Lastly, provide recommendations (again time-phased) for further development of rad/nuc capabilities and for strengthening the layered approach to detection and interdiction. The overall aim is substantial risk reduction through a balanced, robust, adaptive/responsive, cost-effective, and layered strategy.

Initial Progress and Ports of Entry (POE) Security

The architecture, as it existed in 2005, consisted of a large number of individual programs focused on particular areas of the architecture. Although individual programs were successful on their own terms, they were not always well-integrated; the lack of integration was recognized as a gap in the baseline architecture. Improvements could be gained through better coordinating programs and by transmitting information across layers. In addition, there are requirements within each layer, for example, alarm adjudication, that achieve economies of scale by applying a single capability or approach across multiple programs and architecture layers. Furthermore, the entire architecture benefits from sharing proven concepts of operation and good practices across multiple programs and layers. Unifying these procedures allows additional economies by consolidating software development and requirements and reducing individual program maintenance and support costs. Development of new technologies typically has application in multiple architecture layers as well. Therefore, both the development of new capabilities and the test and evaluation of those capabilities with their associated concepts of operation, support the entire architecture in a crosscutting manner.

DNDO's early work has been focused largely on container scanning at sea and land POEs. As deployments to these pathways approach completion, resources can increasingly be directed

toward addressing other vulnerabilities. In December of 2007, DHS met the Congressionally-mandated goal of the SAFE Port Act of scanning with RPMs all incoming containerized cargo at our top 22 seaports, which represents 98% of all incoming containerized cargo. Three years ago, we were only scanning 22% of cargo at seaports. This is real and measurable progress. In addition, we are now scanning with RPMs 100% of truck cargo entering the United States from Mexico and 91% of truck cargo entering the United States from Canada, resulting in a composite total of 96% of all truck and sea-containerized cargo entering into the U.S. being scanned for radiological and nuclear threats. Furthermore, we have plans in place to reach 100 percent coverage across the Northern Border in 2009.

Non-POE Analysis and Progress

The architecture design is predicated upon a phased approach and seeks to address all threat pathways entering the United States, which include land, sea, and air; each of these in turn can be further subdivided into authorized pathways through POEs and unauthorized pathways that bypass POEs (non-POE). To be effective, the defensive countermeasures along each threat pathway will require a multi-layered approach utilizing a variety of technology and operational capability solutions. In addition to ongoing deployments at POEs, work has continued throughout 2008 to address vulnerabilities associated with non-POE border crossings.

Within the borders of the United States, i.e., the "domestic interior" part of the architecture, major efforts have been devoted to broader engagement with State, local, and tribal officials to expand domestic detection and interdiction functions, and timely information sharing and analysis. DNDO's future plans are designed to directly address all of these concerns and the dynamic nature of the threat.

DNDO is also working closely with its intra-agency partners to address the aviation pathway. By December 30 2007, as a result of a DHS departmental initiative including CBP, TSA and DNDO, CBP was scanning all international general aviation aircraft arriving in the United States. Meanwhile, during 2008, DNDO, in partnership with CBP, began rigorously testing Commercial Off-the-Shelf and Government Off-the-Shelf (COTS/GOTS) equipment for effectiveness in the general aviation environment in conjunction with controlled laboratory tests

using next generation human portable devices. Focusing on international general aviation (IGA) applications, the testing was conducted at Andrews AFB in March-June 2008, with a final test report expected in August 2008. Five test sessions were conducted at Andrews AFB to baseline the performance of currently-deployed systems for scanning of small, medium, and large IGA aircraft, to assess whether any CBP operational procedure changes could enhance performance, and to evaluate performance of other human-portable scanning equipment to support CBP operations. Test results will be utilized in preparing a Joint Assessment for the Secretary of Homeland Security, and will feed subsequent research and development efforts, as appropriate.

Small maritime craft represent another pathway that could be exploited by terrorists who seek to smuggle illicit nuclear or radioactive material and weapons into the United States. DNDO has collaborated with the USCG, CBP, and other agencies to develop the recently approved DHS Small Vessel Security Strategy (SVSS); DNDO's small maritime craft initiatives are well-aligned with the broader Small Vessel Security Strategy, which addresses much more that radiological and nuclear threats. DNDO is partnering with Federal, State, and local agencies to create a layered, "defense-in-depth" maritime preventive radiological/nuclear detection (PRND) Program to address a portion of this vulnerability through Maritime Program Assistance (PA). As part of the Maritime PA, DNDO actively engages select high-risk ports and neighboring regions to increase awareness and assist Federal, State, and local agencies as they establish an effective maritime PRND Program. Assistance is provided in the form of a series of facilitated discussions with the maritime stakeholders to develop a strategy and implementation plan. We also work closely with the USCG to support and enhance their maritime radiation detection program. Through joint acquisitions, every Coast Guard boarding team is now equipped with radiation detection equipment. Coast Guard needs are being factored into the development of next-generation nuclear detection systems.

DNDO initiated the West Coast Maritime PRND Pilot in the fourth quarter of FY 2007. This 3-year pilot is evaluating the effectiveness of regional maritime PRND programs in addressing the small vessel threat. The activities of this pilot will allow DNDO to gather lessons learned to provide recommendations for future, wider-scale deployments by Federal, State, and local entities. The pilot will be conducted in the Puget Sound, Washington, and San Diego, California

regions and is further supported by the maritime component of the Securing the Cities (STC) initiative in New York City. The pilot will design, field, and evaluate a radiation detection architecture (specific to each selected region) that reduces the risk of rad/nuc threats that could be illicitly transported on recreational craft or small commercial vessels. The project aims to develop rad/nuc detection capabilities for public safety forces for use during routine public safety and enforcement operations.

To address the security of our Nation's many miles of land border between official POEs, DNDO and CBP have been cooperatively conducting studies and examining options for deploying enhanced radiation detection capability to the U.S. border enforcement community that is focused on those areas of the land border between the ports of entry (the non-POE land border). Currently, DNDO is working with CBP to conduct field evaluations of Personal Radiation Detectors (PRDs). Based on these field evaluations, DNDO and CBP will determine the feasibility and costs of equipping 21 Border Patrol sectors along the northern and southern borders. No decisions have yet been made, and recommendations for deployments (if any are found to be feasible) will be based on a step-by-step assessment of lessons learned from the field evaluations. Compatibility with Border Patrol operations will be a key criterion, since the operational environment presents unique challenges and is very different from that experienced at ports of entry.

DNDO continues to work with Federal, State, and local partners to develop PRND capabilities and enhance opportunities to detect illicit materials or devices before they are used by an adversary. To accomplish this, DNDO conducts targeted outreach to raise awareness of the rad/nuc threat and works with FEMA's National Preparedness Directorate (NPD) to include PRND-specific language in the annual DHS grant guidance. To supplement the equipment purchased using DHS grant funds, DNDO continues to develop programs and products to assist State and local communities in planning, organizing, equipping, training, and exercising PRND capabilities. To create these programs and products, DNDO draws on the vast experience of the over fifty stakeholders from twenty-five States that participate in the DNDO State and Local Stakeholder Working Group (SLSWG) meetings.

An example of these products is the PRND Program Assistance. DNDO actively engages select States to increase awareness and assist Federal, State, and local agencies as they establish an effective Statewide PRND Program. Assistance is provided in the form of a series of facilitated discussions with State and local stakeholders to develop a strategy and implementation plan. The first delivery of this effort recently concluded in Florida. Through this effort, Florida established a state working group under their Domestic Security Oversight Committee to support the State wide coordination of PRND activities. With Florida's activities well underway, the program assistance efforts are beginning in California.

Building on the relationship we have fostered with State and local agencies, we are implementing interior detection programs and we are learning many lessons from our pilot activities in the New York City (NYC) region through the Securing the Cities (STC) Initiative. Separate from cargo and port security, these lessons provide examples of how best to broadly integrate detection and interdiction capabilities within a major urban area. In FY 2009, DNDO will complete the development and documentation of deployments to the NYC region. Additional DNDO activities will focus on the completion and implementation of a capability for detection system supportability. By August of this year, DNDO will conduct an assessment of the STC business model to determine its applicability in other urban areas.

Similarly, under the FY 2006 Homeland Security Appropriations, DNDO began the Southeast Transportation Corridor Pilot to look at the feasibility of incorporating preventive detection activities into commercial vehicle inspection operations. This pilot program involves nine States and the District of Columbia, incorporating both detection operations at fixed weigh stations and mobile detection operations for use in road-side inspection activities. This pilot program is culminating in a full-scale exercise involving all the member states and will provide a basis for recommendations for a national deployment strategy for commercial vehicle inspection activities.

International Cooperation

Although most international cooperation on nuclear detection is within the purview of other agencies, especially the Departments of Defense, Energy, and State, DNDO has participated in

selected international engagements. One example that has an obvious close linkage with the domestic detection mission is cooperation with Canada and Mexico. The Security and Prosperity Partnership (SPP) allows DNDO to work with Canada and Mexico to develop a robust regional "North America" rad/nuc detection architecture. Through the framework of international outreach efforts, DNDO, in conjunction with other agencies involved in international work, will continue to promote the notion of regional architectures (North America being only one example of a possible regional architecture) to further enhance our combined rad/nuc detection capabilities.

During the past year, DNDO has been involved with activities to further expand partnerships under the SPP. We hosted a 3-day Detection workshop with Canada in May 2008 to share information and begin discussions on future areas of interest where collaboration is desired from each country

The Global Initiative to Combat Nuclear Terrorism (GI) was jointly approved by President Bush and President Putin in July 2006 to build the capacity of willing partner nations to combat the global threat of nuclear terrorism. The GI builds on the legal foundation of UNSCs 1540, 1373, and the Nuclear Terrorism Convention and seeks to implement them by bringing together committed international partners to build and exercise their capabilities to prevent, protect, and respond to the threat of nuclear terrorism. Currently, 75 partner nations have joined the initiative. One of the GI principles is specifically related to our objectives regarding the Global Nuclear Detection Architecture: 'Improve the ability to detect nuclear and other radioactive materials and substances in order to prevent illicit trafficking in such materials and substances, to include cooperation in the research and development of national detection capabilities that would be interoperable.'

Within the framework of the GI, the DNDO hosted a workshop in the Spring of 2008 to work with foreign counterparts to jointly develop model guidelines for a global rad/nuc detection architecture that will focus on all the layers and associated pathways: POEs; air, land, and maritime pathways; and interior countermeasures. The model guidelines are currently being drafted and will serve as a template for an integrated defense-in-depth strategy, should nations or

regions decide to develop or strengthen their nuclear detection capabilities. The document will build on existing international (for example, International Atomic Energy Agency, World Customs Organization) documents and publications already developed for various components of the architecture.

Conclusion

Over the long term, the architectural vision that the architecture is evolving toward can be characterized by several common themes that apply across all layers. In every layer we will seek to increase detection coverage and capability, i.e., our ability to detect the full range of radiological/nuclear threats in the wide variety of settings where threats might be encountered. In addition, we will perform research, development, testing and evaluation to make those detection capabilities less costly, more reliable and easier to use. We will also bring additional techniques into the detection toolkit to reduce or eliminate remaining vulnerabilities. Sensors, responders, intelligence analysts, radiological/nuclear experts, law enforcement, emergency responders, security personnel and even the general public will become more integrated and have the right information at the right time to support their efforts. The envisioned architecture incorporates education, training and outreach to raise awareness at all levels of government and law enforcement. Lastly, the distribution of detection capabilities will be widespread and balanced across the layers of the architecture. It will cover all modes of transport and all areas of the world with special emphasis on areas of elevated risk. The deployments will also be more agile, unpredictable and responsive to changing information and evolving adversaries so that any attempt to transport radiological/nuclear weapons or material runs a definite risk of discovery and interdiction. In this Global Nuclear Detection Architecture of the future, detection will combine with prevention, protection and response to significantly reduce the risk to the Nation and to the world from radiological or nuclear terrorism.

This concludes our prepared statement. Chairman Lieberman, Ranking Member Collins, and Members of the Committee, we thank you for your attention and will be happy to answer any questions that you may have.

United States Government Accountability Office

GAO

Testimony

Committee on Homeland Security and Governmental Affairs, U.S. Senate

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NUCLEAR DETECTION

Preliminary Observations on the Domestic Nuclear Detection Office's Efforts to Develop a Global Nuclear Detection Architecture

Statement of David C. Maurer, Acting Director
Natural Resources and Environment

GAO-08-999T

July 16, 2008

GAO
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Highlights

Highlights of GAO-08-999T, a testimony before the Committee on Homeland Security and Governmental Affairs, U.S. Senate

NUCLEAR DETECTION

Preliminary Observations on the Domestic Nuclear Detection Office's Efforts to Develop a Global Nuclear Detection Architecture

Why GAO Did This Study

In April 2005, a Presidential Directive established the Domestic Nuclear Detection Office (DNDO) within the Department of Homeland Security to enhance and coordinate federal, state, and local efforts to combat nuclear smuggling domestically and abroad. DNDO was directed to develop, in coordination with the departments of Defense (DOD), Energy (DOE), and State (State), an enhanced global nuclear detection architecture—an integrated system of radiation detection equipment and interdiction activities. DNDO implements the domestic portion of the architecture, while DOD, DOE, and State are responsible for related programs outside the U.S.

This testimony provides preliminary observations based on ongoing work addressing (1) the status of DNDO's efforts to develop a global nuclear detection architecture, (2) the challenges DNDO and other federal agencies face in implementing the architecture, and (3) the costs of the programs that constitute the architecture. This statement draws on prior GAO reviews of programs constituting the architecture, and GAO's work on strategic planning.

What GAO Recommends

GAO recommends that DNDO develop, in coordination with DOD, DOE, and State, a strategic plan to guide agency efforts to develop a more comprehensive architecture. In commenting on a draft of this statement, DNDO concurred with this recommendation.

To view the full product, including the scope and methodology, click on GAO-08-999T. For more information, contact David Maurer at (202) 512-3841 or maurerd@gao.gov.

What GAO Found

According to GAO's preliminary work to date, DNDO has taken steps to develop a global nuclear detection architecture but lacks an overarching strategic plan to help guide how it will achieve a more comprehensive architecture. Specifically, DNDO has developed an initial architecture after coordinating with DOD, DOE, and State to identify 74 federal programs that combat smuggling of nuclear or radiological material. DNDO has also identified gaps in the architecture, such as land border crossings into the United States between formal points of entry, small maritime vessels, and international general aviation. Although DNDO has started to develop programs to address these gaps, it has not yet developed an overarching strategic plan to guide its transition from the initial architecture to a more comprehensive architecture. For example, such a plan would define across the entire architecture how DNDO would achieve and monitor its goal of detecting the movement of radiological and nuclear materials through potential smuggling routes, such as small maritime craft or land borders in between points of entry. The plan would also define the steps and resources needed to achieve a more comprehensive architecture and provide metrics for measuring progress toward goals.

DNDO and other federal agencies face a number of coordination, technological, and management challenges. First, prior GAO reports have demonstrated that U.S.-funded radiological detection programs overseas have proven problematic to implement and sustain and have not been effectively coordinated, although there have been some improvements in this area. Second, detection technology has limitations and cannot detect and identify all radiological and nuclear materials. For example, smugglers may be able to effectively mask or shield radiological materials so that it evades detection. Third, DNDO faces challenges in managing implementation of the architecture. DNDO has been charged with developing an architecture that depends on programs implemented by other agencies. This responsibility poses a challenge for DNDO in ensuring that the individual programs within the global architecture are effectively integrated and coordinated to maximize the detection and interdiction of radiological or nuclear material.

According to DNDO, approximately $2.8 billion was budgeted in fiscal year 2007 for the 74 programs included in the global nuclear detection architecture. Of this $2.8 billion, $1.1 billion was budgeted for programs to combat nuclear smuggling internationally; $220 million was devoted to programs to support the detection of radiological and nuclear material at the U.S. border; $900 million funded security and detection activities within the United States; and approximately $575 million was used to fund a number of cross-cutting activities. The future costs for DNDO and other federal agencies to address the gaps identified in the initial architecture are not yet known or included in these amounts.

Mr. Chairman and Members of the Committee:

I am pleased to be here today to discuss our preliminary work for several members of Congress on the Domestic Nuclear Detection Office's (DNDO) efforts to develop a global nuclear detection architecture—essentially, an integrated system of radiation detection equipment and interdiction activities to combat nuclear smuggling in foreign countries, at the U.S. border, and inside the United States. Preventing terrorists from using radiological or nuclear material to carry out an attack in the United States is a top national priority. Since the events of September 11, 2001, there is heightened concern that terrorists may try to smuggle nuclear materials or a nuclear weapon into the United States. If terrorists were to carry out such an attack, the consequences could be devastating to our national interests.

In April 2005, the President issued a directive establishing DNDO, within the Department of Homeland Security (DHS), to enhance and coordinate federal, state, and local efforts to prevent radiological and nuclear attacks.[1] Congress subsequently passed the SAFE Port Act of 2006, which established DNDO in statute.[2] Among other things, DNDO must develop, in coordination with the departments of Defense (DOD), Energy (DOE), and State (State), an enhanced global nuclear detection architecture. DNDO is explicitly charged with implementing the domestic portion (at the U.S. border and within the United States) of the architecture and with coordinating the nuclear detection efforts of federal, state, and local governments. It is also responsible for developing, acquiring, and deploying radiation detection equipment to support the efforts of DHS and other federal agencies. The directive and the SAFE Port Act also reaffirmed that DOD, DOE, and State are responsible for programs to combat radiological and nuclear smuggling outside the United States.

[1] Homeland Security Presidential Directive 14 / National Security Presidential Directive 43, *Domestic Nuclear Detection*, April 15, 2005.

[2] 6 U.S.C. §§ 591-596a.

Over the past few months, we have been examining the steps that DNDO has taken to develop a global nuclear detection architecture. Our work is ongoing and our statement today will provide preliminary observations on DNDO's effort. Specifically, our statement will discuss (1) the status of DNDO's efforts to develop a global nuclear detection architecture, (2) the challenges DNDO and the other federal agencies face in implementing the architecture, and (3) the costs of the current and proposed programs that constitute the global nuclear detection architecture. We plan to issue our final report in January 2009.

To begin addressing these objectives, we interviewed officials from DNDO about steps taken to develop and improve upon the existing architecture. We reviewed and analyzed documents DNDO used to help create the baseline, or initial, architecture, as well as studies on gaps identified in the architecture.[3] We interviewed agency officials from DOD, DOE, and State who manage programs that are part of the architecture to get their perspectives on challenges faced in implementing the architecture. In addition, we interviewed subject matter experts from the academic and nonprofit sectors, as well as representatives from the International Atomic Energy Agency (IAEA), to gain their perspective on efforts to develop and implement the architecture. We have conducted our work to date in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

[3] To assess DNDO's efforts to develop the architecture, we are in the process of comparing DNDO's planning practices with those that we have found to be effective in developing enterprise architectures. An enterprise architecture is a tool, or blueprint, for understanding and planning complex systems. GAO has developed an Enterprise Architecture Management Maturity Framework. This framework outlines steps toward achieving a stable and mature process for managing the development, maintenance, and implementation of enterprise architectures. See GAO, *Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management (Version 1.1)*, GAO-03-584G (Washington, D.C.: April 2003).

Summary

According to our preliminary work to date, DNDO has taken steps to develop a global nuclear detection architecture, but it lacks an overarching strategic plan to help guide how it will achieve a more comprehensive architecture. Specifically, DNDO has developed an initial architecture after coordinating with, among others, DOD, DOE, and State, to identify 74 federal programs that combat smuggling of nuclear or radiological material. Many of these programs predate the establishment of DNDO. These programs cover all of the layers of detection, including securing special nuclear and radiological materials at their source in foreign countries and in the United States as well as detecting these materials at U.S. borders or within the United States. DNDO has also collaborated with other federal agencies, such as DOD, DOE, and State, to (1) identify gaps in the initial architecture, such as land borders between ports of entry, small maritime vessels, and international general aviation, and (2) develop programs to address these gaps. For example, DNDO has a joint project underway with the Customs and Border Protection's (CBP) Office of Border Patrol to assess the feasibility of equipping border patrol agents with portable radiological and nuclear detection equipment along the U.S. border. Although these efforts to address recognized gaps in the architecture are necessary first steps, DNDO has not developed an overarching strategic plan that will guide its transition from the initial architecture to a more comprehensive architecture. Such a plan would define across the entire architecture how, for example, DNDO will achieve its goal of detecting the movement of radiological and nuclear materials through potential smuggling routes, such as small maritime craft or land borders in between ports of entry. This plan would also define the steps and resources needed to achieve a more comprehensive architecture and provide metrics for measuring progress toward goals, such as enhancing detection along borders.

DNDO and other federal agencies face a number of coordination, technological, and management challenges in developing a more comprehensive detection architecture. First, prior GAO reports have demonstrated that critical, long-standing U.S.-funded radiological detection programs overseas—which are a critical component of the architecture—have proven problematic to implement and sustain and have not been

effectively coordinated. Although coordination among the agencies has improved, as a chain is only as strong as its weakest link, challenges in any of the programs that constitute the architecture may ultimately limit its overall effectiveness. Second, detection technology has limitations and is currently unable to detect and identify all smuggled radiological and nuclear materials. For example, smugglers may be able to effectively mask or shield radiological materials so that it evades detection. In addition, we have previously raised concerns about DNDO's efforts to develop a new generation of radiation detection equipment. Furthermore, while radiation detection equipment is an important part of the architecture, combating nuclear smuggling requires an integrated approach that also includes proper training and intelligence gathering on smuggling operations. Third, DNDO faces challenges in managing the implementation of the architecture. DNDO has been charged with developing an architecture that is dependent on programs implemented by other agencies. Ensuring that these individual programs within the architecture are effectively integrated poses a challenge for DNDO. In addition, the majority of the employees in DNDO's architecture office are on detail from other federal agencies or are contractors. While this staffing approach taps expertise across several agencies, detailees return to their home organizations after a relatively short time and in some cases there have been delays in filling these vacancies. As a result, this turnover may limit the retention and depth of institutional memory.

According to DNDO, approximately $2.8 billion was budgeted in fiscal year 2007 for the 74 programs included in the global nuclear detection architecture. Of this $2.8 billion, approximately $1.1 billion was budgeted for programs designed to combat nuclear smuggling and secure materials internationally. Approximately $220 million was devoted to programs to support the detection of radiological and nuclear material at the U.S. border; and an additional $900 million funded security and detection activities within the United States. Finally, approximately $575 million was used to fund a number of cross-cutting activities that support many different layers of the architecture, such as those focused on research and development or technical support to users of the detection equipment. In addition to these programs, DNDO and other federal agencies are pursuing future initiatives to address the gaps identified in the initial architecture. The

costs to implement and sustain these and other future programs and equipment are not yet known or included in these figures. We are in the process of reviewing this cost information and will provide more detailed analysis in our final report.

Background

According to IAEA, between 1993 and 2006, there were 1,080 confirmed incidents of illicit trafficking and unauthorized activities involving nuclear and radiological materials worldwide. Eighteen of these cases involved weapons-usable material—plutonium and highly enriched uranium (HEU)—that could be used to produce a nuclear weapon. IAEA also reported that 124 cases involved materials that could be used to produce a device that uses conventional explosives with radioactive material (known as a "dirty bomb"). Past confirmed incidents of illicit trafficking in HEU and plutonium involved seizures of kilogram quantities of weapons-usable nuclear material but most have involved very small quantities. In some of these cases, it is possible that the seized material was a sample of larger quantities available for illegal purchase. IAEA concluded that these materials pose a continuous potential security threat to the international community, including the United States.

Nuclear material could be smuggled into the United States in a variety of ways: hidden in a car, train or ship; sent through the mail; carried in personal luggage through an airport; or walked across an unprotected border. In response to these threats, U.S. agencies, including DHS, DOD, DOE, and State, implemented programs to combat nuclear smuggling in foreign countries and the United States. DOD, DOE, and State fund, manage, and implement the global nuclear detection architecture's international programs. Many international detection programs were operating for several years before DNDO was created. For example, DOE's Materials Protection, Control, and Accounting program, initiated in 1995, provides support to the Russian Federation and other countries of concern to secure nuclear weapons and weapons material that may be at risk of theft of diversion. In addition, during the 1990s, the United States began deploying radiation detection equipment at borders in countries of the former Soviet Union. DOD's Cooperative Threat Reduction (CTR) program launched a variety of

programs in the early 1990s to help address proliferation concerns in the former Soviet Union, including helping secure Russian nuclear weapons. Two other DOD programs have provided radiation portal monitors, handheld equipment, and radiation detection training to countries in the former Soviet Union and in Eastern Europe. Similarly, State programs have provided detection equipment and training to numerous countries. DHS, in conjunction with other federal, state, and local agencies, is responsible for combating nuclear smuggling in the United States and has provided radiation detection equipment, including portal monitors, personal radiation detectors (known as pagers), and radioactive isotope identifiers at U.S. ports of entry.

All radiation detection devices have limitations in their ability to detect and identify nuclear material. Detecting attempted nuclear smuggling is difficult because there are many sources of radiation that are legal and not harmful when used as intended. These materials can trigger alarms—known as nuisance alarms—that may be indistinguishable in some cases from alarms that could sound in the event of a true case of nuclear smuggling. Nuisance alarms can be caused by patients who have recently had cancer treatments; a wide range of cargo with naturally occurring radiation (e.g., fertilizer, ceramics, and food products) and legitimate shipments of radiological sources for use in medicine and industry.

DNDO Has Begun to Develop Programs to Enhance the Initial Architecture, but It Lacks an Overarching Strategic Plan for Achieving Future Architecture Improvements

In October 2005, a few months after its inception, DNDO completed its initial inventory of federal programs associated with detecting the illicit transport of radiological and nuclear materials. As part of this effort, DNDO defined the architecture's general approach: a multilayered detection framework of radiation detection equipment and interdiction activities to combat nuclear smuggling in foreign countries, at the U.S. border, and inside the United States. DNDO, in collaboration with other federal agencies, such as DOD, DOE, and State, analyzed the gaps in current planning and deployment strategies to determine the ability of individual layers of the architecture to successfully prevent illicit movement of radiological or nuclear materials or devices.

DNDO identified several gap areas with respect to detecting potential nuclear smuggling, such as (1) land border crossings into the United States between formal points of entry, (2) small maritime craft (any vessel less than 300 gross tons) that enter the United States, and (3) international general aviation.

In November 2006, DNDO completed a more detailed analysis of programs in the initial architecture. DNDO identified 72 programs across the federal government that focused on combating radiological and nuclear smuggling and nuclear security and it discussed these programs in depth by layer. The analysis also included a discussion of the current and anticipated budgets associated with each of these programs and each of the layers. In June 2008, DNDO released the *Joint Annual Interagency Review of the Global Nuclear Detection Architecture*. This report provides an updated analysis of the architecture by layer of defense and a discussion of the 74 programs now associated with each of the layers, as well as an estimate of the total budgets by layer.

To address the gaps identified in the domestic portions of the architecture, DNDO has initiated pilot programs to address primary areas of concern or potential vulnerability. For example:

- For the land border in between ports of entry, DNDO and CBP are studying the feasibility of equipping CBP border patrol agents with portable radiological and nuclear detection equipment along the U.S. border.
- For small marine vessels, DNDO is working with the Coast Guard to develop and expand the coverage of radiological and nuclear detection capabilities that can be specifically applied in a maritime environment.
- For international general aviation, DNDO is working with CBP, the Transportation Security Administration, and other agencies to develop and implement radiological and nuclear detection capabilities to scan international general aviation flights to the United States for possible illicit radiological or nuclear materials.

To date, we have received briefings on each of these programs from DNDO, but we have not yet fully reviewed how they are being implemented. We will examine each of these more closely during the course of our review.

Our preliminary observation is that DNDO's pilot programs appear to be a step in the right direction for improving the current architecture. However, these efforts to address gaps are not being undertaken within the larger context of an overarching strategic plan. While each agency that has a role in the architecture may have its own planning documents, DNDO has not produced an overarching strategic plan that can guide its efforts to address the gaps and move to a more comprehensive global nuclear detection architecture. Our past work has discussed the importance of strategic planning.[4] Specifically, we have reported that strategic plans should clearly define objectives to be accomplished, identify the roles and responsibilities for meeting each objective, ensure that the funding necessary to achieve the objectives is available, and employ monitoring mechanisms to determine progress and identify needed improvements. For example, such a plan would define how DNDO will achieve and monitor the goal of detecting the movement of radiological and nuclear materials through potential smuggling routes, such as small maritime craft or land borders in between ports of entry. Moreover, this plan would include agreed-upon processes and procedures to guide the improvement of the architecture and coordinate the activities of the participating agencies.

DNDO and Other Agencies Face Coordination, Technological, and Management Challenges

DNDO and other agencies face a number of challenges in developing a global nuclear detection architecture, including (1) coordinating detection efforts across federal, state,

[4] GAO, *Managing for Results: Enhancing Agency Use of Performance Information for Management Decision Making*, GAO-05-927 *(Washington*, D.C.: Sept. 9, 2005); GAO, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, D.C.: Oct. 21, 2005); GAO, *Combating Terrorism: Observations on National Strategies Related to Terrorism*, GAO-03-519T (Washington, D.C.: Mar. 3, 2003); and GAO, *Executive Guide: Effectively Implementing the Government Performance and Results Act*, GAO/GGD-96-118 (Washington, D.C.: June 1996).

and local agencies and with other nations, (2) dealing with the limitations of detection technology, and (3) managing the implementation of the architecture.

Federal Agencies Have Experienced Difficulties Coordinating Radiation Detection Efforts

Our past work on key aspects of international and domestic programs that are part of the architecture have identified a number of weaknesses. In order for the architecture to be effective, all parts need to be well thought out, managed, and coordinated. As a chain is only as strong as its weakest link, limitations in any of the programs that constitute the architecture may ultimately limit its effectiveness. Specifically, in past work, we have identified the following difficulties that federal agencies have had coordinating and implementing radiation detection efforts.

- We reported that DOD, DOE, and State had not coordinated their approaches to enhance other countries' border crossing.[5] Specifically, radiation portal monitors that State installed in more than 20 countries are less sophisticated than those DOD and DOE installed. As a result, some border crossings where U.S. agencies had installed radiation detection equipment were more vulnerable to nuclear smuggling than others.[6] Since issuing our report, a governmentwide plan encompassing U.S. efforts to combat nuclear smuggling in other countries has been developed; duplicative programs have been consolidated; and coordination among the agencies, although still a concern, has improved.
- In 2005, we reported that there is no governmentwide guidance for border security programs that delineates agencies' roles and responsibilities, establishes regular information sharing, and defines procedures for resolving interagency

[5] GAO, *Combating Nuclear Smuggling: Efforts to Deploy Radiation Detection Equipment in the United States and in Other Countries*, GAO-05-840T (Washington, D.C.: June 21, 2005).

[6] Portal monitors installed by State do not have the ability to detect neutron radiation, which translates into a decreased ability of those monitors to be able to detect plutonium, one of the nuclear materials of greatest proliferation concern.

disputes.[7] In the absence of guidance for coordination, officials in some agencies questioned other agencies' roles and responsibilities.

- More recently, in 2008, we found that levels of collaboration between U.S. and host government officials varied at some seaports participating in DHS's Container Security Initiative (CSI).[8] In addition, we identified hurdles to cooperation between CSI teams and their counterparts in the host government, such as a host country's legal restrictions that CBP officials said prevent CSI teams from observing examinations.

Furthermore, many international nuclear detection programs rely heavily on the host country to maintain and operate the equipment. We have reported that in some instances this reliance has been problematic. For example:

- About half of the portal monitors provided to one country in the former Soviet Union were never installed or were not operational. In additional, mobile vans equipped with radiation detection equipment furnished by State have limited usefulness because they cannot operate effectively in cold climates or are otherwise not suitable for conditions in some countries.[9]
- Once the equipment is deployed, the United States has limited control over it, as we have previously reported.[10] Specifically, once DOE finishes installing radiation equipment at a port and passes control of the equipment to the host government, the United States no longer controls the equipment's specific settings or its use by foreign customs officials. Settings can be changed, which may decreased the probability that the equipment will detect nuclear material.

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[7] GAO, *Weapons of Mass Destruction: Nonproliferation Programs Need Better Integration*, GAO-05-157 (Washington, D.C.: Jan. 28, 2005).

[8] GAO, *Supply Chain Security: Examinations of High-Risk Cargo at Foreign Seaports Have Increased, but Improved Data Collection and Performance Measures Are Needed*, GAO-08-187 (Washington, D.C.: Jan. 25, 2008).

[9] GAO-05-840T.

[10] GAO, *Preventing Nuclear Smuggling: DOE Has Made Limited Progress in Installing Radiation Detection Equipment at Highest Priority Seaports*, GAO-05-375 (Washington, D.C.: Mar. 31, 2005).

Within the U.S. borders, DNDO faces coordination challenges and will need to ensure that the problems with nuclear detection programs overseas are not repeated domestically. Many pilot programs DNDO is developing to address gaps in the architecture will rely heavily on other agencies to implement them. For example, DNDO is working closely with the Coast Guard and other federal agencies to implement DNDO's maritime initiatives to enhance detection of radiological and nuclear materials on small vessels. However, maritime jurisdictional responsibilities and activities are shared among federal, state, regional, and local governments. As a result, DNDO will need to closely coordinate activities related to detecting radiological and nuclear materials with these entities, as well as ensure that users are adequately trained and technical support is available. DNDO officials told us they are closely coordinating with other agencies, and our work to assess this coordination is still underway. We will continue to explore these coordination activities and challenges as we continue our review.

Limitations in Detection Technology Hamper the Architecture's Effectiveness

The ability to detect radiological and nuclear materials is a critical component of the global nuclear detection architecture; however, current technology may not able to detect and identify all smuggled radiological and nuclear materials. In our past work, we found limitations with radiation detection equipment.[11] For example:

- In a report on preventing nuclear smuggling, we found that a cargo container containing a radioactive source was not detected as it passed through radiation detection equipment that DOE had installed at a foreign seaport because the radiation emitted from the container was shielded by a large amount of scrap metal. Additionally, detecting actual cases of illicit trafficking in weapons-usable nuclear material is complicated: one of the materials of greatest concern in terms

[11] GAO-05-375.

of proliferation—highly enriched uranium—is among the most difficult materials to detect because of its relatively low level of radioactivity.

- We reported that current portal monitors deployed at U.S. borders can detect the presence of radiation but cannot distinguish between harmless radiological materials, such as ceramic tiles, fertilizer, and bananas, and dangerous nuclear materials, such as plutonium and uranium. DNDO is currently testing a new generation of portal monitors. We have raised continuing concerns about DNDO's efforts to develop and test these advanced portal monitors.[12] We currently have additional work underway examining the current round of testing and expect to report on our findings in September 2008.
- Environmental conditions can affect radiation detection equipment's performance and sustainability, as we also have previously reported. For example, wind disturbances can vibrate the equipment and interfere with its ability to detect radiation. In addition, sea spray may corrode radiation detection equipment and its components that are operated in ports or near water. Its corrosive nature, combined with other conditions such as coral in the water, can accelerate the degradation of equipment.

It is important to note that radiation detection equipment is only one of the tools that customs inspectors and border guards must use to combat nuclear smuggling. Combating nuclear smuggling requires an integrated approach that includes equipment, proper training, and intelligence gathering on smuggling operations. In the past, most known interdictions of weapons-useable nuclear materials have resulted from police investigations rather than by radiation detection equipment installed at border crossings.

DNDO Faces Challenges in Managing the Global Nuclear Detection Architecture

The task DNDO has been given—developing an architecture to keep radiological and nuclear materials from entering the country—is a complex and large undertaking. DNDO has been charged with developing an architecture that depends on programs

[12] GAO, *Combating Nuclear Smuggling: Additional Actions Needed to Ensure Adequate Testing of Next Generation Radiation Detection Equipment*, GAO-07-1247T (Washington, D.C.: Sept. 18, 2007).

implemented by other agencies. This lack of control over these programs poses a challenge for DNDO in ensuring that all individual programs within the global nuclear detection architecture will be effectively integrated. Moreover, implementing and sustaining the architecture requires adequate resources and capabilities to meet needed commitments. However, the majority of the employees in DNDO's architecture office are detailees on rotation from other federal agencies or are contractors. This type of staffing approach allows DNDO to tap into other agencies' expertise in radiological and nuclear detection. However, officials told us that staff turnover may limit the retention and depth of institutional memory since detailees return to their home organizations after a relatively short time. In some cases, there have been delays in filling these vacancies. We will continue to examine this potential resource challenge as we complete our work.

In spite of these challenges, DNDO's efforts to develop a global nuclear detection architecture have yielded some benefits, according to DOD, DOE, and State officials. For example, an official from the State Department told us that DNDO is working through State's Global Initiative to Combat Nuclear Terrorism to develop model guidelines that other nations can use to establish their own nuclear detection architectures and recently sponsored a related workshop. In addition, DOE officials said that DNDO's actions have helped broaden their perspective on the deployment of radiation detection equipment overseas. Previously, the U.S. government had been more focused on placing fixed detectors at particular sites, but as a result of DNDO's efforts to identify gaps in the global detection network, DOE has begun to work with law enforcement officials in other countries to improve detection capabilities for the land in between ports of entry. Finally, DNDO, DOD, DOE, and the Office of the Director of National Intelligence for Science and Technology are now formally collaborating on nuclear detection research and development and they have signed a memorandum of understanding (MOU) to guide these efforts. The MOU will integrate research and development programs by, for example, providing open access to research findings in order to leverage this knowledge and to reduce conflict between different agency programs. In addition, the MOU encourages joint funding of programs and projects and

calls on the agencies to coordinate their research and development plans. In our ongoing work, we will examine DNDO's progress in carrying through on these initiatives.

Approximately $2.8 Billion in Fiscal Year 2007 Funded Programs Associated with Detecting the Transport of Radiological and Nuclear Weapons or Materials

DNDO reported that approximately $2.8 billion was budgeted in fiscal year 2007 for 74 programs focused on preventing and detecting the illicit transport of radiological or nuclear materials.[13] These programs were primarily administered by DHS, DOD, DOE, and State and spanned all layers of the global nuclear detection architecture. Specifically:

- $1.1 billion funded 28 programs focused on the international aspects of the architecture;
- $221 million funded 9 programs to support detection of radiological and nuclear material at the U.S. border;
- $918 million funded 16 programs dedicated to detecting and securing radiological or nuclear materials within the U.S. borders; and
- $577 million funded 34 cross-cutting programs that support many different layers of the architecture by, for example, research and development or technical support to users of the detection equipment.

The fiscal year 2007 budget of $2.8 billion will not sustain the architecture over the long term because additional programs and equipment will be implemented to address the gaps. For example, this amount does not include the cost estimates related to acquiring and deploying the next generation of advanced portal monitors that are currently being tested. In addition, DNDO is just beginning new efforts to mitigate gaps in the architecture and budget estimates for these activities are limited. We are in the process

[13] The total number of programs reported by DNDO as being related to the architecture is 74. However, the sum of the programs by layer is more than 74 because some programs are relevant to more than one layer of detection.

of reviewing this cost information and will provide more detailed analysis in our final report.

Conclusions

DNDO has been given an important and complex task—develop a global nuclear detection architecture to combat nuclear smuggling and keep radiological and nuclear weapons or materials from entering the United States. This undertaking involves coordinating a vast array of programs and technological resources that are managed by many different agencies and span the globe. Since its creation 3 years ago, DNDO has conceptually mapped the current architecture and identified how it would like the architecture to evolve in the near term. While DNDO's vision of a more comprehensive architecture is laudable, to achieve this goal, it will need to address a number of key challenges including building close coordination and cooperation among the various agencies involved and developing and deploying more advanced radiation detection technology. Although DNDO has taken some steps to achieve these ends, it has not done so within the larger context of an overarching strategic plan with clearly established goals, responsibilities, priorities, resource needs, and mechanisms for assessing progress along the way. Developing and implementing a global nuclear detection architecture will likely take several years, cost billions of dollars, and rely on the expertise and resources of agencies and programs across the government. Moving forward, DNDO should work closely with its counterparts within DHS, as well as at other departments, to develop a comprehensive strategic plan that helps safeguard the investments made to date, more closely links future goals with the resources necessary to achieve those goals, and enhance the architecture's ability to operate in a more cohesive and integrated fashion.

Recommendations for Executive Action

We recommend that the Secretary of Homeland Security, in coordination with the Secretary of Defense, the Secretary of Energy, and the Secretary of State, develop a strategic plan to guide the development of a more comprehensive global nuclear detection architecture. Such a plan should (1) clearly define objectives to be accomplished, (2) identify the roles and responsibilities for meeting each objective, (3)

identify the funding necessary to achieve those objectives, and (4) employ monitoring mechanisms to determine programmatic progress and identify needed improvements.

Agency Comments

We provided a draft of the information in this testimony to DNDO. DNDO provided oral comments on the draft, concurred with our recommendations, and provided technical comments, which we incorporated as appropriate.

Mr. Chairman, this concludes my prepared statement. We will continue our review and plan to issue a report in early 2009. I would be pleased to answer any questions that you or other Members of the Committee have at this time.

GAO Contacts and Staff Acknowledgments

For further information on this testimony, please contact me at (202) 512-3841 or maurerd@gao.gov. Glen Levis, Assistant Director, Elizabeth Erdmann, Rachel Girshick, Sandra Kerr, and Tommy Williams made key contributions to this statement. Additional assistance was provided by Omari Norman and Carol Herrnstadt Shulman. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement.

(360983)

Testimony of Dana A. Shea
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Congressional Research Service

Before

The Committee on Homeland Security and Governmental Affairs
U.S. Senate

July 16, 2008

on
"The Global Nuclear Detection Architecture: Are We Building Domestic Defenses That Will Make the Nation Safer?"

Chairman Lieberman, Ranking Member Collins, and other Members of the Committee:

Thank you Mr. Chairman for the opportunity to testify before the committee today. My name is Dana Shea, and I am a Specialist in Science and Technology Policy with the Resources, Science, and Industry Division of the Congressional Research Service at the Library of Congress. At the request of the Committee, I am here today to discuss the global nuclear detection architecture. With your permission, I request that my written testimony be placed in the hearing record.

My testimony today has three parts. First, I will provide a brief overview of the requirement to develop a global nuclear detection architecture. Second, I will summarize the approach taken by the Domestic Nuclear Detection Office (DNDO) within the Department of Homeland Security (DHS) in meeting this requirement. Third, I will identify several policy issues that may be of interest to the committee and Congress.

Establishment of the Global Nuclear Detection Architecture

To start with the overview: The SAFE Port Act (P.L. 109-347) gave DNDO the statutory responsibility to develop an "enhanced global nuclear detection architecture." This architecture is to be implemented by multiple federal agencies, including the Departments of State, Homeland Security, Energy, and Defense. Similar language was included in Homeland Security Presidential Directive 14. This directive established the Domestic Nuclear Detection Office within the Department of Homeland Security (DHS) in 2005.[1]

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[1] Executive Office of the President, The White House, *Domestic Nuclear Detection*, Homeland
(continued...)

Neither the Presidential directive nor the SAFE Port Act explicitly defined the global nuclear detection architecture. Therefore, the meaning of this phrase is open to interpretation.

The DNDO interpreted this phrase and describes the global nuclear detection architecture to be:

- a multi-layered structure of radiological and nuclear detection systems, deployed both domestically and overseas;
- a well-defined and carefully coordinated network of interrelationships among them; and
- a set of systems engineering-based principles and guidelines governing the architecture's design and evolution over time.[2]

Their global nuclear detection architecture consists at least of deployed federal detection systems, the programs that support them, the data they generate, the mechanisms that coordinate them, and a process for future growth and development.

DNDO's Implementation of the Global Nuclear Detection Architecture

The global nuclear detection architecture aims to prevent the detonation of a radiological or nuclear weapon within the United States. It is a system of systems, that is a structure that aligns nuclear detection systems and the programs that support them into geographically based layers. The global nuclear detection architecture has both physical and conceptual components. The physical component is composed of the sensor systems deployed by federal agencies. The conceptual component is the mechanism for organizing and analyzing program capabilities in this system-of-systems context.

The DNDO global nuclear detection architecture has three layers (exterior, border, and interior) organized by their geographic scope. Each layer is composed of several sublayers. Each layer provides an independent opportunity to detect the radiological or nuclear threat. With this layered approach, the likelihood that a particular threat will be detected is increased. This is because each layer of the architecture provides an opportunity to detect the threat. While it is likely that no single layer will provide perfect detection,[3] the combination of these less than perfect layers may be sufficient to detect the threat.

Several federal programs are aligned with each architecture layer. By comparing the requirements of these layers and the capabilities developed by the aligned programs, experts may identify gaps in the global nuclear detection architecture. Such a "gap analysis" is one example of the benefits of creating an overarching architecture. While the existing federal

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[1] (...continued)
Security Presidential Directive HSPD-14/National Security Presidential Directive NSPD-43, April 15, 2005.

[2] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO RD&O-2.

[3] The DNDO acknowledges that "no single layer of protection can ever be one hundred percent successful." (Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO ACQ-8.)

programs may have been meeting their individual program goals, an architecture structure allows a focus on identifying gaps between programs.

The DNDO has identified baseline funding and participation levels in the architecture. According to DNDO, the global nuclear detection architecture has been used to identify gaps in the Nation's abilities to detect radiological and nuclear materials. Also, that DNDO is in the process of addressing these identified gaps.

Potential Issues for Congress

Several key issues face decision-makers when considering the global nuclear detection architecture and its use. I will discuss four of these issues:

- the architecture's ability to meet its primary goal of detecting radiological and nuclear material;
- the prioritization of current and future investments in the architecture;
- the criteria for policymakers to judge the architecture's success; and
- DNDO's ability to sustain and evolve the architecture in the future.

Effectiveness of the Global Nuclear Detection Architecture. The global nuclear detection architecture aims to prevent the detonation of a radiological or nuclear weapon in the United States. A failure of the architecture will likely become readily apparent; the success of the architecture may not be so clear. The success of the architecture will depend not only on detecting these materials, but also on interdicting these materials. The DNDO has identified the protection of radiological and nuclear sources as part of the global nuclear detection architecture. These components beyond detection require the coordination and cooperation of multiple agencies, potentially in multiple countries, and the ability to correlate and combine data from multiple sources.

Accurate information gathered by DNDO regarding the performance and benefits of the architecture's programs is essential to the architecture's effectiveness. However, such information may be difficult to generate, measure, or even estimate. This information involves terrorist intent and capability, the effectiveness of deployed and future sensor systems, and the value of nontangible concepts, like deterrence. System evaluation and analysis efforts to validate the performance of these systems in the field may be necessary. Absent such validated information, policymakers may find judgments regarding success in meeting architecture goals hard to make.

Congress may face the issue of what constitutes an acceptable level of risk in the architecture. It is unlikely that any single sublayer in the global nuclear detection architecture will be 100% effective. Thus, the global nuclear detection architecture will leverage the detection capabilities of a series of less than perfect detection opportunities. The global nuclear detection architecture may be able to detect a radiological or nuclear threat more effectively if it incorporates a mixture of detection approaches. What constitutes an acceptable level of risk will likely be a major policymaking decision, especially in the case where additional small benefit may come at substantial cost.

Use for Prioritization and Planning. The system-of-systems approach embodied in the DNDO global nuclear detection architecture can be a powerful tool for prioritization and planning. If DNDO can establish an overall view of radiological and nuclear detection, it

may attempt to optimize the total architecture. It might do this both by refining investment in existing programs as well as identifying areas where investment in new programs would yield particular benefit. A key component of this approach is the development of an accurate representation of the architecture, a model. The DNDO might use this model to identify trade-offs and alternative approaches, establish the risk-reduction benefits and economic costs of these approaches, and inform policymakers' critical decisions regarding further investment. Examples of such critical decisions might include whether to provide additional resources to programs that increase the barrier to acquiring nuclear or radiological material or to programs that prevent such material from entering the United States. While both investments would reduce the risk of a successful terrorist attack, an architecture analysis may be able to identify which investment would provide the greater risk reduction at the lower cost.

The DNDO has undertaken efforts to coordinate between global nuclear detection architecture participant agencies. Detailees from these agencies have positions within DNDO. The DNDO has established formal coordination mechanisms between agencies. Yet, the priorities of the global nuclear detection architecture may not exactly align with the priorities of the participating agencies or their individual programs.

The DNDO is a coordinating office, not an implementing agency. Its acquisition programs support implementation by other DHS components. Other federal agencies have invested heavily in nuclear detection programs. The DNDO does not control other agency budgets or have the ability to require other agencies to revise or adjust their funding investments.

Therefore, a key issue for Congress is priority setting for the global nuclear detection architecture's implementation. If the future priorities of participating agencies conflict with the results of DNDO's architecture analysis, policymakers may need to choose between these priorities when appropriating funds and supporting agency or architecture needs. Congressional comparison of the priorities identified by DNDO's analysis of the architecture's performance and participating agency requests for appropriations may be a key component in the architecture's effectiveness and implementation.

One possible mechanism to achieve such oversight is to provide the DNDO Director with the authority to review and assess the budgets of other participating agencies. A similar authority for telecommunications system security was granted to the Director of the National Security Agency.[4] Another mechanism might be to require the compilation and submission of an annual, unified global nuclear detection architecture budget supplement, similar to that of the National Nanotechnology Initiative. Linking the identification and reporting of the nuclear detection architecture to the budget cycle could provide Congress with several advantages. Congress would likely see how the priorities of the architecture are being translated and implemented by the various participating agencies. Congress would also obtain an overarching view of the implications of changing funding levels among programs.

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[4] The Director of the National Security Agency has this type of authority for the purposes of telecommunications systems and automated information systems security. Executive Office of the President, The White House, *Telecommunications and Computer Security*, National Security Decision Directive 145 (NSDD-145), September 17, 1984.

Determining Success. The robustness of the global nuclear detection architecture likely depends on three factors:

- the information DNDO receives from other agencies,
- DNDO's interpretation of that information into metrics and benchmarks essential for the architecture, and
- DNDO's continual reassessment of the architecture based on this information.

Clear strategic goals, performance metrics, and other benchmarks relevant for the architecture are needed to assure that important aspects of other agency activities are provided and incorporated. Without these performance metrics and benchmarks, factors not essential to the mission of the architecture may become the criteria by which success is judged. For example, the number of sensors deployed may not be an appropriate metric if the sensors duplicate other investments, are in an low-risk area according to the architecture analysis, or provide relatively small additional value.

To promote the timely implementation of the global nuclear detection architecture, Congress could solicit from DNDO timelines, milestones, and funding requirements for portions of the global nuclear detection architecture along with a series of implementation alternatives. By identifying the different stages for implementation of the global nuclear detection architecture, Congress may be able to determine what criteria qualify as a near-term success while still allowing for growth and completion of longer-term goals.

Long-term Maintenance. The DNDO has identified the architecture as having an evolving component to it, where future iterations of the architecture may address concerns that cannot be best addressed with current technology. The efforts of DNDO to maintain the global nuclear detection architecture will depend on its ability to document and pass on the rationale for critical architecture decisions. The DNDO draws upon subject matter experts and detailees from other parts of DHS and from other agencies to provide unique expertise and necessary interagency input and coordination. This use of detailees may pose unanticipated challenges to the long-term maintenance of the global nuclear detection architecture due to the limited duration of their positions.

Congressional oversight of the architecture's evolution is a key component to maintaining adequate resources for a long-term activity and assuring that such activities have achievable milestones and metrics. Congress might require DNDO to provide reports identifying the

- main goals of the architecture layers,
- time lines for achieving these goals,
- agencies and programs best suited in DNDO's opinion to meeting these goals,
- cost of these programs,
- alternative approaches considered and rejected, and
- any dissenting opinions from partner agencies in the architecture.

Such reports might provide Congress with the detailed understanding necessary to balance the important goals of the architecture with other policy objectives that may need to be considered. Congress might also address the issue of maintaining institutional knowledge.

One way to address this issue is to require DNDO to identify those positions best filled by permanent staff rather than detailees. Another way might be to establish specific mechanisms to maintain institutional knowledge, such as mentoring or mandating documentation of lessons learned and key decision-making criteria.

Mr. Chairman, that concludes my prepared statement. I would be happy to answer any questions that you or other Members of the Committee might have.

ATTACHMENT: CRS Report RL34574, *The Global Nuclear Detection Architecture: Issues for Congress*, by Dana A. Shea, July 16, 2008.

Order Code RL34574

CRS Report for Congress

The Global Nuclear Detection Architecture: Issues for Congress

July 16, 2008

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Prepared for Members and Committees of Congress

The Global Nuclear Detection Architecture: Issues for Congress

Summary

The U.S. government has implemented a series of programs to protect the nation against terrorist nuclear attack. Some of these programs predate September 11, 2001, while others were established since then. Most programs are within the Nuclear Regulatory Commission; the Departments of Defense, Energy, and State; and agencies that became part of the Department of Homeland Security (DHS) upon its creation, and they are focused on detecting the illicit acquisition and shipment of nuclear and radiological materials and protecting and securing nuclear weapons. These disparate programs have historically been viewed as lacking coordination and centralized oversight.

In 2006, the Domestic Nuclear Detection Office (DNDO) was established within the Department of Homeland Security to centralize coordination of the federal response to an unconventional nuclear threat. The office was codified through the passage of the SAFE Port Act (P.L. 109-347) and given specific statutory responsibilities to protect the United States against radiological and nuclear attack, including the responsibility to develop a "global nuclear detection architecture." Determining the range of existing federal efforts protecting against nuclear attack, coordinating the outcomes of these efforts, identifying overlaps and gaps between them, and integrating the results into a single architecture are likely to be evolving, ongoing tasks.

The global nuclear detection architecture is a multi-layered system of detection technologies, programs, and guidelines designed to enhance the nation's ability to detect and prevent a radiological or nuclear attack. Among its components are existing programs in nuclear detection operated by other federal agencies and new programs put into place by DNDO. The global nuclear detection architecture is developed by DNDO in coordination with other federal agencies implementing nuclear detection efforts and this coordination is essential to the success of the architecture.

This architecture is a complicated system of systems. Measuring the success of the architecture relative to its individual components and the effectiveness of additional investments are challenges. The DNDO is developing risk and cost methodologies to be applied to the architecture in order to understand and prioritize the various nuclear detection programs and activities in multiple federal agencies.

Congress, in its oversight capacity, has shown interest in the development and implementation of the global nuclear detection architecture and in the decision-making process attendant to investments in it. Other issues that may be foci of congressional attention include the balance between investment in near-term and long-term solutions for architecture gaps, the degree and efficacy of federal agency coordination, the mechanism for setting agency investment priorities in the architecture, and the efforts DNDO has undertaken to retain institutional knowledge regarding this sustained architecture effort.

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The Global Nuclear Detection Architecture: Issues for Congress

Introduction

Detection of and protection against illicit acquisition and use of special nuclear material (SNM) is a longstanding concern of the U.S. government.[1] Since the development of nuclear weapons, federal agencies have been involved in securing U.S. nuclear assets against diversion, theft, and attack. Similarly, concerns that terrorists or non-state actors might acquire a nuclear weapon or the materials necessary to construct one have led to federal efforts to track, detect, and secure such materials both domestically and abroad.

Preventing a terrorist or non-state nuclear attack within the United States involves more than detection of the nuclear weapon. Detection of nuclear and radiological material is one part of a larger system of deterrence, counterproliferation, and response activities. Intelligence information regarding the intent and capability of terrorist and non-state groups and law enforcement activities disrupting the formation and action of these groups play key roles in preventing initial acquisition of nuclear and radiological materials. Subsequent to the detection of nuclear or radiological materials, successful interdiction of these materials is another crucial step. Nevertheless, this report addresses only the global nuclear detection architecture, not programs focusing on events prior or subsequent to the detection opportunity.

The federal government has implemented a series of programs focused on detecting the illicit shipment of nuclear and radiological materials and protecting and securing nuclear weapons and material. Following the events of September 11, 2001, these programs were augmented by new programs focusing on preventing radiological and nuclear terrorism within the United States. Some of these new and existing efforts had overlapping goals, but they generally used different approaches to improve the detection and security of nuclear materials. These programs largely reside within the Departments of Defense, Energy, and State; agencies that became part of the Department of Homeland Security (DHS) upon its creation in 2002; and the Nuclear Regulatory Commission. Many of these agencies have both national and international roles in nuclear defense, protecting domestic nuclear assets while aiding in securing or detecting the transport of foreign nuclear material.

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[1] The term "special nuclear material" was defined by the Atomic Energy Act and includes plutonium and uranium enriched in the isotope 233 or in the isotope 235. See 42 U.S.C. 2014.

Programs established by the Departments of Defense and Energy and the Nuclear Regulatory Commission have focused on the security of nuclear and radiological materials. For example, the Department of Energy (DOE) International Nuclear Materials Protection and Cooperation program aids in securing foreign special nuclear material.[2] The Department of Defense (DOD), through the Defense Threat Reduction Agency (DTRA), has enhanced the security and safety of fissile material storage and transportation in the former Soviet Union while dismantling and destroying associated infrastructure.[3]

Other programs have focused on detection of nuclear and radiological materials in transit, in order to detect attempts to illicitly transport a nuclear weapon or special nuclear material across borders. The DOE Second Line of Defense (SLD) program aids in establishing capabilities to detect nuclear and radiological materials in foreign countries at ports of entry, border crossings, and other designated locations.[4] The Department of State Export Control and Related Border Security Assistance Program undertakes similar efforts to provide radiation detection capabilities at border crossings.[5] Other programs are designed to detect nuclear and radiological materials in transit towards the United States, through screening either at foreign ports or at the U.S. border. For example, U.S. Customs and Border Protection uses both handheld and portal-based radiation monitoring to detect nuclear and radiological materials entering the United States.

Once created, DHS expanded the deployment of radiation detectors, both portal monitors through the Radiation Portal Monitor (RPM) program and handheld and portable detectors through the U.S. Coast Guard and Customs and Border Protection. The DHS Science and Technology (S&T) Directorate began research and development activities to develop an improved radiation detection portal and an integrated plan and structure for the use of federal radiation detection equipment. Additionally, DHS developed several overarching initiatives, such as the Container Security Initiative and the Secure Freight Initiative, to increase the likelihood that

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[2] For more information about the International Nuclear Materials Protection and Cooperation program, see online at [http://nnsa.energy.gov/nuclear_nonproliferation/Office%20of%20Int'l%20Material%20Protection%20&%20Cooperation.htm]. See also CRS Report RL31957, *Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union*, by Amy F. Woolf.

[3] For more information on DTRA activities in Cooperative Threat Reduction, see online at [http://www.dtra.mil/oe/ctr/programs/index.cfm]. See also CRS Report RL31957, *Nonproliferation and Threat Reduction Assistance*, by Amy F. Woolf

[4] For more information on the Second Line of Defense program, see Office of the Second Line of Defense, National Nuclear Security Administration, *SLD Implementation Strategy: Revision B*, April 2006, online at [http://www.doeal.gov/dicce/ImplementationDocs/SLDImplentationStrategy.pdf], and the Office of the Second Line of Defense, National Nuclear Security Administration, *Strategic Plan*, 2006, online at [http://www.doeal.gov/dicce/ImplementationDocs/StrategicPlan.pdf]. See also CRS Report RL31957, *Nonproliferation and Threat Reduction Assistance*, by Amy F. Woolf.

[5] For more information on the Export Control and Related Border Security Assistance Program, see online at [http://www.state.gov/t/isn/export/ecc/20779.htm]. See also CRS Report RL31957, *Nonproliferation and Threat Reduction Assistance*, by Amy F. Woolf.

nuclear and radiological material or a nuclear weapon would be detected, identified, and interdicted during shipping. These initiatives built on other federal efforts, such as the DOE Megaports Initiative, which deploys radiation detection equipment and aims to increase detection of nuclear materials at ports of departure rather than at ports of entry.

The early post-September 11, 2001, efforts of the federal government, taking place in several agencies and departments, were criticized by experts who perceived that these activities were uncoordinated and insufficient to protect the United States from nuclear terrorism.[6] The Defense Science Board, among others, recommended that the federal government make a greater, more organized effort to protect the United States against the nuclear terrorism threat.[7]

Domestic Nuclear Detection Office

The Domestic Nuclear Detection Office (DNDO) was established by President Bush on April 15, 2005.[8] Established to centralize coordination of the federal response to an unconventional nuclear threat, DNDO is located within the Department of Homeland Security. Its first budget was requested as part of the S&T Directorate, but it was subsequently established as an independent office whose Director reports directly to the Secretary. The office was given statutory authority in the SAFE Port Act (P.L. 109-347) and given specific responsibilities to protect the United States against radiological and nuclear attack. Among these responsibilities is to

> develop, with the approval of the Secretary and in coordination with the Attorney General, the Secretary of State, the Secretary of Defense, and the Secretary of Energy, an enhanced global nuclear detection architecture with implementation under which (A) the Office will be responsible for the implementation of the domestic portion of the global architecture; (B) the Secretary of Defense will retain responsibility for implementation of Department of Defense requirements within and outside the United States; and (C) the Secretary of State, the Secretary of Defense, and the Secretary of Energy will maintain their respective responsibilities for policy guidance and implementation of the portion of the global architecture outside the United States, which will be implemented consistent with applicable law and relevant international arrangements.[9]

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[6] See, for example, Government Accountability Office, *Combating Nuclear Smuggling: Efforts to Deploy Radiation Detection Equipment in the United States and in Other Countries*, GAO-05-840T, June 21, 2005.

[7] See Defense Science Board, *Report of the Defense Science Board Task Force on Preventing and Defending Against Clandestine Nuclear Attack*, June 2004, and Defense Science Board, *Protecting the Homeland: Report of the Defense Science Board 2000 Summer Study; Executive Summary, Volume I*, February 2001.

[8] Executive Office of the President, The White House, *Domestic Nuclear Detection*, Homeland Security Presidential Directive HSPD-14/National Security Presidential Directive NSPD-43, April 15, 2005.

[9] 6 U.S.C. 592(a)(4).

The development and implementation of a global nuclear detection architecture is a challenging endeavor. Because federal efforts to protect against nuclear attack are spread among multiple agencies, determining the full range of existing efforts, coordinating the outcomes of these efforts, identifying any overlaps and gaps between them, and developing an architecture integrating current and future efforts are likely to be evolving, ongoing tasks.

What is the Global Nuclear Detection Architecture?

Although the SAFE Port Act requires that DNDO establish an "enhanced global nuclear detection architecture," it does not define this term. A variety of interpretations are possible. For example, an architecture could be a collection of federal and nonfederal programs, a grouping of sensors or other technologies designed to detect nuclear and radiological material, a mechanism for collecting and distributing information about nuclear and radiological material, a framework for investment and prioritization of detection assets, or various combinations of the above and more.

The DNDO describes the global nuclear detection architecture as comprising several key elements: "a multi-layered structure of radiological/nuclear (rad/nuc) detection systems, deployed both domestically and overseas; a well-defined and carefully coordinated network of interrelationships among them; and a set of systems engineering-based principles and guidelines governing the architecture's design and evolution over time."[10] In implementing this definition, DNDO solicited information about existing programs from agencies involved in nuclear detection. The DNDO then performed a "net assessment" of federal nuclear detection capabilities. This assessment determined that 72 programs contributed in whole or in part to the existing global nuclear detection architecture, with total funding of more than $2.2 billion in FY2006.[11]

This existing global nuclear detection architecture includes programs at DHS,[12] the Department of Defense (DOD),[13] the Department of Energy (DOE),[14] the Department of State (DOS), and other agencies. According to DHS, before the formation of DNDO these programs were "a disparate patchwork of systems,

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[10] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO RD&O-2.

[11] This estimate may understate the total investment, as programs for which nuclear detection is only a component were prorated. This prorating may have not accurately captured the true investment for the nuclear detection component of the program. (Office of Inspector General, Department of Homeland Security, *DHS' Domestic Nuclear Detection Office: Progress in Integrating Detection Capabilities and Response Protocols*, OIG-08-19, December 2007.)

[12] Such as the Container Security Initiative, the Secure Freight Initiative, and the Radiation Portal Monitor program.

[13] Such as the DOD Cooperative Threat Reduction activities.

[14] Such as the DOE Second Line of Defense programs.

distributed and implemented in recent years across multiple departments, jurisdictions and locations without any degree of coordination."[15] Organized by DNDO into a global nuclear detection architecture framework, the combined system of systems relies heavily on its technological component, with the deployment of radiation detectors at points of entry, commercial ports, and other border crossings key to its effectiveness.

Although much focus has been given to technologies to detect nuclear or radiological material that have been developed or procured by DNDO, the global nuclear detection architecture encompasses more than just these sensors. Other elements include the use of sensor data to inform decision-makers, effective reaction to a detection event, and interdiction of the detected nuclear or radiological material. According to the Government Accountability Office, "combating nuclear smuggling requires an integrated approach that includes equipment, proper training of border security personnel in the use of radiation detection equipment, and intelligence gathering on potential nuclear smuggling operations."[16] Other experts have concluded that the deployment of radiation detectors needs to be highly integrated with other federal efforts, prioritized on identified threats, configured for flexibility and efficiency, and part of a global approach including international institutions.[17]

The DNDO has attempted to align existing federal programs so that their capabilities can be compared and integrated into an organizing framework that can help identify gaps and duplication. This framework consists of three partially overlapping layers with nine sub-layers. See **Figure 1**.

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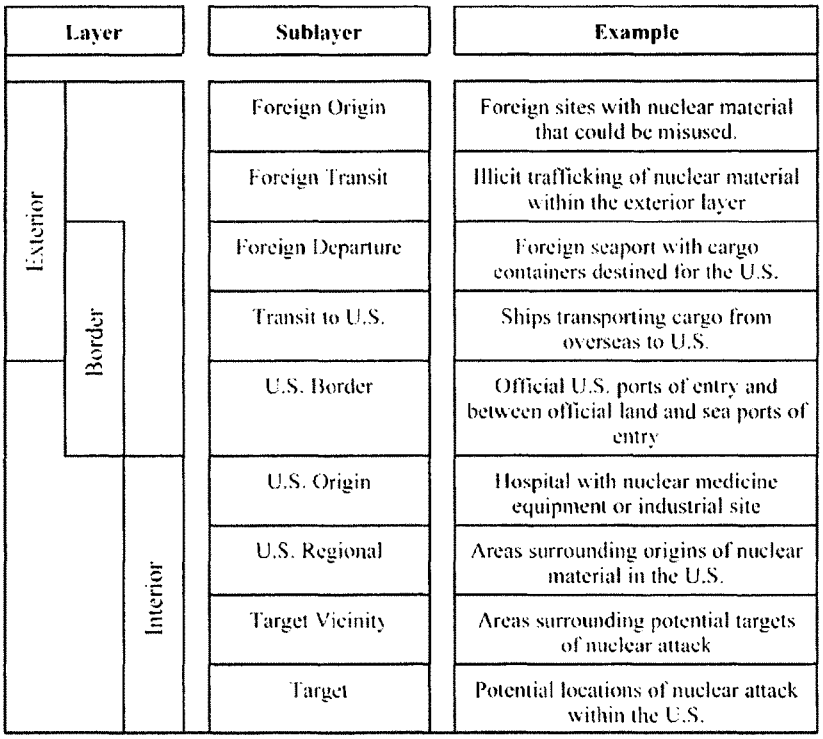
[15] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2008*, p. DNDO RD&O-5.

[16] Government Accountability Office, *Combating Nuclear Smuggling: Efforts to Deploy Radiation Detection Equipment in the United States and in Other Countries*, GAO-05-840T, June 21, 2005.

[17] James Goodby, Timothy Coffey, and Cheryl Loeb, Center for Technology and National Security Policy, National Defense University, *Deploying Nuclear Detection Systems: A Proposed Strategy for Combating Nuclear Terrorism*, July 2007.

Figure 1. Layers of the Global Nuclear Detection Architecture



Source: CRS adaptation of Domestic Nuclear Detection Office, May 17, 2007, as reproduced in Department of Homeland Security, Office of Inspector General, *DHS' Domestic Nuclear Detection Office Progress in Integrating Detection Capabilities and Response Protocols*, OIG-08-19, December 2007.

The layers are distinguished geographically: interior, border, and exterior. The overlap between the exterior and border layers may make analysis of priorities between and within the layers more difficult. The sublayers correspond mainly to conceptual steps in the transportation of a threat object to a target.

The global nuclear detection architecture has a broad, international scope, so implementing it is difficult. Multiple agency initiatives and programs must be relied on to achieve the architecture's goals, and its effectiveness is dependent on many factors outside of DNDO's direct authority and control.

By categorizing existing programs in this architecture, DNDO can analyze federal nuclear detection capabilities, identifying gaps and vulnerabilities through which a potential adversary might be able to avoid detection. These gaps may be filled by redirecting existing efforts, increasing existing efforts, deploying available

technology, and implementing research and development programs that develop solutions to such gaps.

Layered Defense

A layered, defense-in-depth approach to a global nuclear detection architecture was recommended by the Defense Science Board when considering how to protect DOD assets against unconventional nuclear threats.[18] Successful application of a layered defense provides multiple opportunities to detect and interdict threats. According to DNDO, "It is recognized that no single layer of protection can ever be one hundred percent successful," and a layered defense strategy acknowledges this difficulty.[19] If one sublayer fails to detect a threat, the next may succeed.

This increase in the likelihood of detection occurs in two different ways. In one case, a threat may avoid the detector in an outer layer, but then encounter a detector in an inner layer. In this case, having more detection rings makes it more likely that a detector is encountered. An example of this approach could be the use of random truck screening at weigh stations on interstate highways. The DNDO has explicitly attempted to incorporate such redundancy into its global nuclear detection architecture, identifying numerous areas where detection capabilities might be integrated into existing operations

> Examples include, but are not limited to, fixed and mobile detection systems integrated into commercial vehicle inspection activities, detection enabled law enforcement, and screening conducted for special events. Capabilities that may require additional operational costs include mobile teams sweeping of areas of concern, chokepoint screening at bridges and tunnels, roadway monitoring concepts, and options for reducing the risk posed by the small maritime craft pathway.[20]

Alternatively, a threat may encounter a detector in an outer layer that fails to detect it, but then may encounter a different type of detector in an inner layer that is more successful. In this case, it is the use of different detection technologies or procedures that provides the increased likelihood of success. Examples might include the screening of manifest information for shipments entering the United States, followed by the use of radiation detection equipment, or the physical search of a vehicle triggered by suspicious behavior even though a radiation detector did not detect any emitted radioactivity. Prior experience has shown that nuclear smuggling detection occurs not only through the raising of alarms by radiation detection

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[18] Defense Science Board, *Report of the Defense Science Board Task Force on Preventing and Defending Against Clandestine Nuclear Attack*, June 2004, and *Protecting the Homeland: Report of the Defense Science Board 2000 Summer Study; Executive Summary, Volume I*, February 2001.

[19] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO ACQ-8.

[20] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2008*, p. DNDO ACQ-7.

equipment at borders, but also by intelligence information and through police investigations.[21]

An additional advantage to a layered system is that its multiple detection and interdiction opportunities may increase the number of steps that a terrorist group must take to evade detection. Because of these additional steps, the group may be more likely to be detected by other means unrelated to the global nuclear detection architecture. For example, if it is necessary to disassemble a nuclear device to avoid detection, the reassembly of the device within the United States might be prevented by unrelated law enforcement activities. Even better, the increased complexity of evading detection might deter an attacker from even attempting a particular type of attack.

The ability to correlate information from different layers may also enhance the detection capability of the global nuclear detection architecture. Fusion of data from the different layers may reveal patterns or information not apparent in any single layer. It is the intent of the global nuclear detection architecture to integrate detection and notification systems at the federal, state, and local level,[22] but accomplishing that goal may take significant time and effort, as procedures, technology, and data formats may need to be harmonized to allow easy information exchange.

Methodology and Metrics for Evaluation

A significant advantage to establishing a global nuclear detection architecture is that it provides a framework for analysis of the overall effectiveness of federal nuclear detection efforts. Thus the performance of programs in each layer of the architecture can be measured and judged within the context of the overall structure rather than in isolation. In this way, effectiveness and efficiency can be maximized for the architecture overall rather than for each program individually.

Decision-makers attempting to analyze the architecture effectiveness and efficiency will likely require a methodology and establishing metrics, qualitative or quantitative, for each layer or sublayer. The DNDO uses the global nuclear detection architecture framework to identify gaps in existing detection capabilities.[23] Methodology to map existing and future capabilities onto an analytical construct that is sensitive to changes in the architecture would provide a more robust tool for prioritization and assessment. According to DNDO, application of such a risk- and cost-based assessment methodology to radiological and nuclear countermeasures

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[21] See Government Accountability Office, *Combating Nuclear Smuggling: Efforts to Deploy Radiation Detection Equipment in the United States and in Other Countries*, GAO-05-840T, June 21, 2005.

[22] Office of Inspector General, Department of Homeland Security, *DHS' Domestic Nuclear Detection Office: Progress in Integrating Detection Capabilities and Response Protocols*, OIG-08-19, December 2007.

[23] The DNDO states that the largest gaps in their border layer are air, maritime, and land pathways between designated ports of entry. (Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO RD&O-8.)

would be relatively new, and DNDO planned to validate the employed methodology in 2008 on the basis of independent peer review.[24]

In 2004, the DHS S&T Directorate requested studies for the development of such an analytic framework and the identification of appropriate metrics.[25] This work was transferred to DNDO upon its creation in 2005.[26] Since then, additional studies of general aviation and maritime pathways have expanded the analytic basis for assessment of investments in the global nuclear detection architecture.[27] The degree to which existing programs can be related to these analytic frameworks likely determines their utility and applicability. A notional analytic framework — one in which some elements of the framework may not reflect the actual systems in place or some parameters are estimated or extrapolated rather than based on empirical data — may not be adequate for deciding which programs to invest in, alter, or otherwise optimize for maximum effect within the framework. On the other hand, a framework derived only from existing programs may overvalue the existing assets while undervaluing the potential contributions of new programs.

A further concern with respect to analytic methodology is its ability to reflect the effects of both large and small changes. The global nuclear detection architecture is a multi-billion dollar enterprise composed of dozens of programs. A methodology that encompasses all these programs but omits significant detail may not be sensitive enough to reflect the impact of incremental changes. For example, some experts have advocated deployment of radiation detection sensors at specific sites based on identified smuggling routes and at ports of entry where nuclear and radiological materials are not adequately secure.[28] Ideally, an analytic methodology would provide the means to compare that strategy to other strategies, such as an increase in border detectors.

A methodology that addresses all programs in sufficient detail may be cumbersome to use and may not reflect the value of intangible concepts, such as

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[24] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2008*, p. DNDO RD&O-7. The FY2009 congressional justification does not state that DNDO performed an independent peer review of the employed methodology.

[25] Homeland Security Advanced Research Projects Agency, S&T Directorate, Department of Homeland Security, "Radiological and Nuclear Countermeasure System Architectures Analysis (RNCSAA)," BAA 04-01, February 2004.

[26] For an overview of the goals of this study, see Department of Homeland Security, *National Capital Region Coordination: First Annual Report*, September 2005, p. F-41, online at [http://www.dhs.gov/xlibrary/assets/NCR_DHS_Congressional_Final_090105.pdf].

[27] Office of Inspector General, *Department of Homeland Security, DHS' Domestic Nuclear Detection Office: Progress in Integrating Detection Capabilities and Response Protocols*, OIG-08-19, December 2007.

[28] James Goodby, Timothy Coffey, and Cheryl Loeb, Center for Technology and National Security Policy, National Defense University, *Deploying Nuclear Detection Systems: A Proposed Strategy for Combating Nuclear Terrorism*, July 2007.

deterrence or misdirection.[29] An approach involving analysis of selected components of the global nuclear detection architecture, rather than the architecture as a whole, may make the analytical methodology more tractable. However, this may lead to inaccuracy when considering areas that fall between the individual component analyses or when considering the overall context of the architecture. Optimizing the efficiency and effectiveness of each individual component may not optimize the overall architecture. Even if it does, such an approach may not be cost effective.

The DNDO has stated that it takes a systems engineering approach to developing and refining the global nuclear detection architecture. Such an approach attempts to optimize the overall performance of the architecture rather than optimizing any particular program within it. Treating the global nuclear detection architecture as a "system of systems" may efficiently develop an effective architecture, but such treatment requires clear metrics around which the system is to be engineered.

The DNDO may find identifying the appropriate metrics for evaluation challenging. Outcome-oriented metrics, such as the number of false positives resolved,[30] the number of threats found, or the number of vehicles cleared, may not be suitable for judging the effectiveness of the architecture, though these metrics may help determine the efficiency or completeness of the planned architecture. On the other hand, more desirable measures, such as the degree of risk reduction, may require a more complete understanding of global risk than is currently available.

Metrics based on analysis of the existing global nuclear detection architecture may have similar difficulties. If the existing architecture has insufficient detection capability or coverage, incremental improvement to that architecture may lead to a new architecture that still has insufficient detection ability or coverage. Conversely, if the performance of the architecture is acceptable, incremental improvements may not yield substantial benefit when compared with the incremental cost.

Vulnerability or gap analysis could be used to prioritize and assess architecture effectiveness.[31] A challenge for this approach is the difficulty of determining an acceptable level of detection and geographic coverage.

The DNDO has identified gaps in the global nuclear detection architecture and is attempting to develop options and strategies for reducing these gaps.[32] A

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[29] An example of misdirection might be the deployment of decoy radiation detectors. While decoys would have no radiation detection capability, opponents would not know this. They might choose a more risky approach because of their inaccurate understanding of actual detector deployment.

[30] A false positive occurs when the system indicates a threat even though no threat is present.

[31] For the purposes of this report, vulnerabilities refer to when current capabilities are at least partly insufficient to meet current needs. Gaps refer to when no current capability exists to meet a current need.

[32] The DNDO refers to both the absence of detection capability and limitations in existing

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vulnerability- or gap-based approach relies on implementing or developing solutions to these vulnerabilities or gaps, but the determination of a vulnerability may rely on an assessment of whether the detection capabilities of the existing system are sufficient. This assessment of a sufficient or acceptable detection capability, unlikely to be 100%, may be open to debate.[33]

Finally, the nature of the terrorist nuclear threat, potentially a changing threat based on an intelligent adversary, implies that any metrics and methodology developed to assess the global nuclear detection architecture's effectiveness will need to evolve as the threat does. When advances in technology, new intelligence information, and other factors are considered, the effectiveness of the global nuclear detection architecture may need to be judged on active testing or "red teaming" of the architecture.[34] The results of such active testing may be misleading if the testing does not conform to the threat for which the architecture is designed. For example, if the architecture is designed to detect only large amounts of a nuclear material, testing it with a small amount of nuclear material may highlight current limitations but not address the effectiveness of the architecture at the tasks for which it is designed.[35] Moreover, a robust architecture containing sublayers with varying detection success rates may still provide sufficient protection against a particular threat, even if a single sublayer is insufficiently protective. In order to validate the results of "red teaming" exercises, DNDO plans to "conduct and quantify assessment results in various directions, including scenario-based 'bottom-up' assessments, capabilities-based 'top-down' assessments, and complex metrics development."[36]

Priority Setting

Gaps and vulnerabilities in the global nuclear detection architecture, depending on their nature, may be addressed now or in the future. In some cases, no solution to gaps and vulnerabilities is currently available, and a solution will need to be identified through research and development. The DNDO has stated that "there are still key, long-term challenges and vulnerabilities in our detection architecture that

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[32] (...continued)
detection systems as gaps. See Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO R&DO-8.

[33] The DNDO acknowledges that "no single layer of protection can ever be one hundred percent successful." (Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO ACQ-8.)

[34] The DNDO undertakes a series of net assessments, including "red teaming" to identify the effectiveness of the planned and deployed global nuclear detection architecture. (Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2008*, p. DNDO R&DO-2.)

[35] For example, individuals have been able to successfully smuggle surrogate materials into the United States past radiation detection equipment deployed by DHS. Thomas B. Cochran and Matthew G. McKinzie, "Detecting Nuclear Smuggling," *Scientific American*, March 2008.

[36] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2008*, p. DNDO R&DO-24.

require long-range, higher risk research programs that will need to be evaluated in terms of risk reduction, direct and indirect costs, operational feasibility, and other relevant decision factors."[37] In other cases, the available near-term solution is an incremental improvement over existing approaches. In these cases, decisions must be made about whether to invest in a near-term, incomplete solution, accept the presence of a gap or vulnerability and invest in a long-term program to develop a more complete solution, or do both. Choosing between these options requires an understanding of the risk posed by the existing vulnerabilities, the benefits available through the near- and long-term options, and their relative costs.

Decision-makers are faced with difficult choices when setting priorities for implementing the global nuclear detection architecture. In the case of existing programs, incremental increases in the performance of a system may be challenged on the basis of their perceived costs and benefits.[38] In the case of new programs, questions may arise about whether the effort expended on a new program would have been better used elsewhere. Finally, given that improvement of the global nuclear detection architecture is a multi-year project, one must determine which portion of the architecture to focus on at any given time.

A likely benefit of casting federal efforts at nuclear detection into the framework of a global architecture is the ability to prioritize, in a quantitative or qualitative fashion, across programs.[39] Even absent a rigorous methodology to discriminate finely between the results of different investments, the global nuclear detection architecture may be able to provide a rank ordering of vulnerabilities and gaps, and thus a rank ordering of investment priorities.[40] Thus, it may provide an interagency tool to analyze current technology options and R&D investments relative to the federal government's detection needs.

The DNDO analysis methodology underpinning the global nuclear detection architecture continues to undergo revision and refinement:

> In order to maximize the effectiveness of the FY 2008 edition of the [global nuclear detection architecture], DNDO will leverage the independent observation of a full peer review to ensure that the requirements called forth in the [global

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[37] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2008*, p. DNDO R&DO-8.

[38] See, for example, Government Accountability Office, *Combating Nuclear Smuggling: DHS's Cost-Benefit Analysis to Support the Purchase of New Radiation Detection Portal Monitors Was Not Based on Available Performance Data and Did Not Fully Evaluate All the Monitors' Costs and Benefits*, GAO-07-133R, October 17, 2006.

[39] The DNDO states that its risk-based cost-benefit analysis methodology is used to quantify and prioritize architecture improvements. Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2008*, p. DNDO R&DO-9.

[40] According to the DNDO Inspector General, DNDO has been able to develop a list of detection priorities. (Office of Inspector General, Department of Homeland Security, *DHS' Domestic Nuclear Detection Office: Progress in Integrating Detection Capabilities and Response Protocols*, OIG-08-19, December 2007.) It is unclear how these priorities have been ordered.

> nuclear detection architecture] continue to reduce the risk from nuclear terrorism. Accordingly, risk and economic impact methodology documents (carefully prepared and reviewed to protect sensitive/classified vulnerability information) will be produced and subjected to broad peer review.[41]

This review and these documents have not been made public. Congress may wish to determine whether the review addresses congressional concerns and whether the underlying architecture methodology is sufficiently robust. Alternatively, Congress may wish to direct DNDO to perform a review of the analysis methodology through an open process.[42]

Similarly, a global nuclear detection architecture may be able to highlight regions or modalities where investment or additional focus may provide a steeper or quicker reduction of vulnerability. For example, following the development of the baseline global nuclear detection architecture, DNDO decided to focus efforts on addressing vulnerabilities associated with aviation and maritime domains.[43]

Interagency Coordination

As well as developing the global nuclear detection architecture, DNDO is also responsible for coordinating the activities of other federal agencies whose programs make up the global nuclear detection architecture. For the architecture to be successful, substantial interagency coordination must occur on the operational and policy levels.

Congress recognized the need for DNDO to have access to specific talent resident in other agencies. The SAFE Port Act authorizes the DHS Secretary to "request that the Secretary of Defense, the Secretary of Energy, the Secretary of State, the Attorney General, the Nuclear Regulatory Commission, and the directors of other Federal agencies, including elements of the Intelligence Community, provide for the reimbursable detail of personnel with relevant expertise to [DNDO]."[44] Under this authority and that of the Intergovernmental Personnel Act (IPA),[45] DNDO has established a significant interagency workforce, including personnel from DOD, DOE, the Federal Bureau of Investigation, the Department of State, and the Nuclear

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[41] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2008*, p. DNDO RD&O-9.

[42] For example, the methodology underpinning the DHS Bioterrorism Risk Assessment underwent review through the National Academies of Science even though the results of this risk assessment are classified. See National Research Council, *Interim Report on Methodological Improvements to the Department of Homeland Security's Biological Agent Risk Analysis*, National Academies Press, 2007.

[43] Office of Inspector General, Department of Homeland Security, *DHS' Domestic Nuclear Detection Office: Progress in Integrating Detection Capabilities and Response Protocols*, OIG-08-19, December 2007.

[44] 6 U.S.C. 591(a).

[45] The Intergovernmental Personnel Act allows for the temporary transfer of personnel to a federal agency. See 5 U.S.C. 3371-76.

Regulatory Commission, as well as intra-agency personnel from the Science and Technology Directorate, U.S. Customs and Border Protection, the Transportation Security Administration, and the U.S. Coast Guard.[46]

The DNDO uses the detailees and IPAs as part of its coordinating function. By using these experts as conduits back to their agencies, DNDO is able to draw on the expertise and address the needs and concerns of these agencies. The DNDO also has established a more senior policy coordinating body, the Interagency Coordination Council, to address higher level policy issues and further coordinate activities between agencies, but the extent to which this body is able to implement and develop new policy for the participating agencies is not known. The Interagency Coordination Council was reportedly used to develop the deployment strategy for the global nuclear detection architecture and studies of maritime and aviation threats.[47]

The successful operation of the Interagency Coordination Council is critical for oversight and implementation of the global nuclear detection architecture, but procedural and organizational issues may pose barriers to its success. The Director of DNDO may not be equal in authority to the officials in other agencies with whom he is coordinating. Other officials may have more or less control of budgets, activities, and policies. Additionally, other agencies may perceive the global nuclear detection architecture as a DNDO document, rather than as a consensus coordination document. If so, other agencies may not quickly adopt the premises or analytical constructs expressed as part of the global nuclear detection architecture, preferring to continue to operate under individual agency priorities.[48]

The DNDO also has implemented an Advisory Council consisting of officials from other DHS components. The DNDO uses the Advisory Council to solicit the opinions of and resolve intra-agency issues within DHS.[49]

Beyond the interagency activities organized within DNDO, coordination of DNDO activities with other portions of the federal government occurs within the White House through the Domestic Nuclear Defense Policy Coordinating Committee. This joint policy coordination body was created jointly by the Homeland Security Council and the National Security Council and provides a high-level forum for the generation of guidance and coordination among federal agencies with

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[46] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO-1.

[47] Office of Inspector General, Department of Homeland Security, *DHS' Domestic Nuclear Detection Office: Progress in Integrating Detection Capabilities and Response Protocols*, OIG-08-19, December 2007.

[48] A similar situation exists with the requirement for the DHS Under Secretary for Science and Technology to coordinate homeland security research and development across the federal government. In this case, the Under Secretary for Science and Technology was able to release a coordination document without the consensus of other government agencies, but rather with other agency consultation.

[49] Office of Inspector General, Department of Homeland Security, *DHS' Domestic Nuclear Detection Office: Progress in Integrating Detection Capabilities and Response Protocols*, OIG-08-19, December 2007.

responsibilities for nuclear defense, detection, and interdiction.[50] Other interagency planning activities, such as coordination of long-term research and development, occur through subcommittees of the National Science and Technology Council.[51]

Congress has identified such coordination and cooperation as a key issue for DNDO, and in the Department of Homeland Security Appropriations Act, 2007, withheld $15 million from DNDO until a memorandum of understanding had been established with each federal entity and organization participating in DNDO activities.[52] The DNDO entered into these agreements throughout FY2007.[53]

Issues for Congress

Multiple agencies implement the global nuclear detection architecture, even though its development is located within a single agency. Congress, in its oversight role, may be able to assess agency implementation of the global nuclear detection architecture across the federal government and thus identify weaknesses or inefficiencies that may occur. Additionally, Congress may be uniquely positioned to address policy challenges. Mechanisms for policy setting, the establishment of funding levels within the global nuclear detection architecture, implementation of development plans for the architecture and the identification of solutions to gaps and vulnerabilities, and the continued maintenance of the global nuclear detection architecture all are issues that Congress may choose to address.

Priority Setting and Appropriateness of Funding Levels Within the Global Nuclear Detection Architecture

The annual federal investment in the global nuclear detection architecture is spread across multiple agencies and across the layers and sublayers of the global nuclear detection architecture. The appropriate balance of funds in each of the different layers and sublayers, as well as between the different programs and agencies, is likely an issue of policy interest. When Congress established the Cooperative Threat Reduction program in 1991, it focused on securing nuclear materials at their source and preventing these materials from being transferred into non-state hands.[54] These continuing programs represent significant investment in the

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[50] Office of Inspector General, Department of Homeland Security, *DHS' Domestic Nuclear Detection Office: Progress in Integrating Detection Capabilities and Response Protocols*, OIG-08-19, December 2007.

[51] Testimony of DNDO Director Vayl S. Oxford, Department of Homeland Security, before the House Homeland Security Committee, Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology, on October 10, 2007.

[52] P.L. 109-295, Title IV.

[53] Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO M&A-4.

[54] For more information on the Cooperative Threat Reduction program, see CRS Report

(continued...)

exterior layer of the architecture. More recently, DNDO and Congress have focused on the border layer of the global nuclear detection architecture. The DNDO has invested in Advanced Spectroscopic Portal (ASP) and Cargo Advanced Automated Radiography System (CAARS) technologies to improve the ability to detect nuclear and radiological materials at the borders,[55] and Congress has mandated the improved screening of cargo containers shipped to the United States.[56] Investment in the interior layer of the architecture has arisen mainly through historical programs designed to protect and safeguard national nuclear facilities and laboratories.

Congress might expand or reduce agency funding levels to more closely match the levels determined by DNDO to meet the needs of the global nuclear detection architecture, increase overall funding for all aspects of the global nuclear detection architecture to increase redundancy, or decrease funding if it believes other funding priorities are more important. Shifting funding between layers of the architecture has complex ramifications: it may imperil international agreements, lead to perceptions of weakness or strength in the various programs, or cause interagency disagreements. Additionally, unless a robust evaluative system has been established for the global nuclear detection architecture with clear metrics, tying architecture performance to program funding, changes in investment in the different layers of the global nuclear detection architecture may not yield optimal risk reduction. It is difficult to assess without careful evaluation whether shifting funds from one program to another will have a positive or negative net impact; the relative size of the two programs is not necessarily the relevant criterion for assessing its impact on the global nuclear detection architecture. Moreover, DNDO is not statutorily empowered to direct changes in the funding of other agencies. Only through higher-level budgetary policy

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[54] (...continued)
RL31957, *Nonproliferation and Threat Reduction Assistance: U.S. Programs in the Former Soviet Union*, by Amy F. Woolf.

[55] The Advanced Spectroscopic Portal is a radiation detection system designed to be able to identify the source of the detected radiation. The Cargo Advanced Automated Radiography System is an imaging system designed to automatically detect special nuclear material by X-ray imaging. The Advanced Spectroscopic Portal technology has been the subject of a number of congressional hearings and Government Accountability Office audits. See, for example, House Committee on Homeland Security, Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology, "Nuclear Smuggling Detection: Recent Tests of Advanced Spectroscopic Portal Monitors," hearing held March 5, 2008; and House Committee on Energy and Commerce, Subcommittee on Oversight and Investigations, "Nuclear Terrorism Prevention: Status Report on the Federal Government's Assessment of New Radiation Detection Monitors," hearing held September 18, 2007. See also, Government Accountability Office, *Combating Nuclear Smuggling: Additional Actions Needed to Ensure Adequate Testing of Next Generation Radiation Detection Equipment*, GAO-07-1247T, September 18, 2007; and Government Accountability Office, *Combating Nuclear Smuggling: DHS's Decision to Procure and Deploy the Next Generation of Radiation Detection Equipment Is Not Supported by Its Cost-Benefit Analysis*, GAO-07-581T, March 14, 2007.

[56] Section 1701 of the Implementing Recommendations of the 9/11 Commission Act of 2007 (P.L. 110-53) requires that, by July 1, 2012, all maritime cargo containers entering the United States be scanned by nonintrusive imaging equipment and radiation detection equipment at a foreign port before departure.

decisions can interagency funding profiles be changed. This situation may result in a mismatch between the optimal investment levels for the global nuclear detection architecture and the actual investments made. Congress might choose to provide the DNDO Director with the authority to review and assess the budgets of other departments and agencies involved in the global nuclear detection architecture and to comment or recommend alternative budget allocation to the Interagency Coordinating Council or directly to the Office of Management and Budget.[57]

Another possible approach would be for Congress to require that agencies create a single global nuclear detection architecture budget, to provide Congress with a more transparent correlation between agency funding and the global nuclear detection architecture. For example, an annual budget supplement is issued for the National Nanotechnology Initiative, another multi-agency federal endeavor with a large budget. Such a budget supplement for nuclear detection might be coordinated by DNDO through the Interagency Coordinating Council, Homeland Security Council, National Security Council, or National Science and Technology Council, or through one of the agencies participating in the global nuclear detection architecture. Alternately, Congress might vest a budgetary coordinating role within the Office of Science and Technology Policy rather than within DNDO.

Congress established an Office of the United States Coordinator for the Prevention of Weapons of Mass Destruction Proliferation and Terrorism within the White House. The head of this office is to advise the President, formulate national strategy and policy, lead interagency coordination and implementation, and oversee development of a comprehensive, coordinated budget for weapon of mass destruction proliferation and terrorism prevention.[58] While the scope of the Coordinator's responsibilities is broader than nuclear and radiological issues, the comprehensive, coordinated budget so developed might be one mechanism for clarification of priorities for nuclear detection investment. As of the writing of this report, the position of Coordinator has not been filled.

The affected agencies may not be supportive of the establishment of a unified budget or additional review of agency budget decisions. Reportedly, agencies resisted similar options that were considered during the creation of DNDO, leading to "major limits on both its scope and its power."[59] Agencies may perceive a bottom-up process to be more effective in meeting agency and national needs than a top-down process.

Congress has mandated an annual interagency review of the global nuclear detection architecture. This review is to be overseen by the Secretaries of Homeland Security, State, Defense, and Energy, the Attorney General, and the Director of

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[57] The Director of the National Security Agency has this type of authority for the purposes of telecommunications systems and automated information systems security. Executive Office of the President, The White House, *Telecommunications and Computer Security*, National Security Decision Directive 145 (NSDD-145), September 17, 1984.

[58] P.L. 110-53, Title XVII, Subtitle D, Sec. 1841.

[59] Michael A. Levi, *On Nuclear Terrorism*, Harvard University Press, November 2007, p. 146.

National Intelligence. Its purpose is to ensure that each participating agency assesses and evaluates its participation in the global nuclear detection architecture. The review is to include evaluation of detection technologies, identification of deficiencies, and assessment of agency capacity for implementation of its responsibilities within the global nuclear detection architecture.[60] This interagency review process may cause the agencies involved to clarify their priorities and funding requirements and thereby cause further evolution of the global nuclear detection architecture.

Balance Between Incremental and Transformational Changes to the Global Nuclear Detection Architecture

The DNDO aims to improve "the probability of detection by integrating and deploying current technologies, continually improving these technologies through both near-term enhancements and transformational research and development, and expanding detection capabilities at the Federal, State and local levels."[61] In expanding and improving the global nuclear detection architecture, DNDO and other participating agencies are faced with a temporal choice. Vulnerabilities and gaps identified through the global nuclear detection architecture could be reduced by applying immediately available technologies that provide a partial solution or by investing in research and development to develop technologies that will provide a more complete solution in the long-term. In the first case, the abilities of the global nuclear detection architecture would be incrementally improved as technologies that marginally increase the detection capabilities of the existing architecture are adopted and then serially replaced. Such a strategy might be costly, as multiple generations of equipment, each with some advantage over the previous version, are purchased and deployed. Although each generation would be an improvement, it would not provide a fully acceptable level of detection and security. In the other case, known vulnerabilities might not immediately be addressed at all, allowing the possibility that attackers could exploit them while a research and development program attempted to develop a single system that would remove the vulnerability. Thus, an appreciable risk would remain, even though it could be partly reduced in the near term, until the results of the research and development program came to fruition.

In practice, expansion and improvement of the global nuclear detection architecture requires a balance of these two approaches, using incremental advances and transformational research in coordination to develop a robust architecture. A key concern is how this balance is achieved and identified. The DNDO is addressing this complex problem by developing time-phased plans to address the most important gaps in the existing global nuclear detection architecture.[62] These plans will allow "for the integration of current and near-term technologies and approaches, as well as

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[60] P.L. 110-53, Title XI, Sec. 1103.

[61] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2008*, p. DNDO RD&O-8.

[62] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO RD&O-7.

longer-term options that may draw upon technologies that are currently in the R&D phase and that may not be available for implementation for several years."[63]

Additionally, DNDO has taken a spiral development approach that appears to lean toward deploying available technologies, even if they serve only as partial solutions, rather than leaving a gap unaddressed. In spiral development, technologies are refined as they are implemented based on information generated during their deployment. Thus, though the technology may serve only as a partial solution when first implemented, the goal is for it to become a more complete solution over time.

Among key issues facing Congress are determining the optimal process for creating a robust global nuclear detection architecture, understanding the capabilities of near- and long-term technology and their potential effect on the global nuclear detection architecture, and assessing the adequacy of the metrics used to measure the risk reduction benefits. Congress bestowed upon DNDO the responsibility for developing and implementing a global nuclear detection architecture as part of efforts to safeguard the United States. The success of DNDO's activities in establishing this architecture will likely require ongoing evaluation and oversight into the future.

Long-Term Maintenance of the Global Nuclear Detection Architecture

Although the use of detailees, IPAs, and liaisons from other agencies has helped DNDO to maintain contact with other stakeholders, its reliance on these temporary personnel may make long-term efforts difficult to sustain. As temporary personnel return to their home agency, institutional memory may be lost. As of April 2007, 79% of DNDO's employees were either detailees, liaisons, or contractors rather than permanent staff.[64] Efforts that rely on continued improvement and adjustment over time, as the global nuclear detection architecture does, will likely depend on DNDO's ability to clearly enunciate and document the rationale and approaches that it developed and considered when they were established. Otherwise, these efforts may be delayed as new personnel have to reevaluate the ongoing process. Similarly, coordination between agencies through the Interagency Coordinating Council may suffer if consensus decisions are not well understood by the successors of the Council participants.

The DNDO may be able to offset this potential loss of institutional memory in a number of ways. One possibility is a mentoring process in which outgoing personnel actively mentor their replacements during an overlap period in order to provide continuity of information and expertise. Another would involve comprehensive documentation of decisions, both positive and negative, so that future staff have a written record to refer to when trying to understand why a particular approach was taken and why a competing approach was set aside. Finally, expanding

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[63] Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2009*, p. DNDO RD&O-8.

[64] Office of Inspector General, Department of Homeland Security, *DHS' Domestic Nuclear Detection Office: Progress in Integrating Detection Capabilities and Response Protocols*, OIG-08-19, December 2007.

DNDO's permanent staff might provide long-term stability and more retention of core knowledge.

The DNDO does appear to be increasing its permanent federal staff. As seen in **Table 1**, the number of detailees has decreased and the number of permanent staff has increased since the creation of the office.

Table 1. DNDO Staff Levels

	FY2006 (estimate)	FY2007 (estimate)	FY2008 (estimate)	FY2009 (requested)
Detailees	66	65	45	45-50[a]
Total Staff	112	130	130	144

Source: CRS analysis of DNDO congressional justifications for FY2007, FY2008, and FY2009.

a. DNDO reported a range in the number of detailees projected for FY2009.

Some positions within DNDO may be best filled by permanent DNDO staff, while others may require the expertise possessed only by detailees. A key issue facing decision-makers is balancing DNDO's need for technical or subject matter experts with building a core of permanent DNDO staff able to develop and evolve the nascent global nuclear detection architecture. The mechanisms being used by DNDO to retain institutional knowledge and DNDO's strategic decisions regarding the use of detailees may require oversight from Congress to ensure that congressional interests in program and agency continuity are met.

Research and Development Coordination

Research and development investment plays a role in strategies for addressing the architecture's gaps and vulnerabilities. The aim is to develop technologies to fill the gaps in the global nuclear detection architecture. Both DHS and DOE fund research and development in the area of nuclear and radiological detection equipment.

The SAFE Port Act of 2002 gave DNDO the statutory authority to

> conduct, support, coordinate, and encourage an aggressive, expedited, evolutionary, and transformational program of research and development to generate and improve technologies to detect and prevent the illicit entry, transport, assembly, or potential use within the United States of a nuclear explosive device or fissile or radiological material, and coordinate with the Under Secretary for Science and Technology on basic and advanced or transformational research and development efforts relevant to the mission of both organizations.[65]

[65] 6 U.S.C. 592.

The research and development activities DNDO undertakes under this authority addresses gaps and vulnerabilities in the global nuclear detection architecture. The DNDO has highlighted detecting threat materials from greater distances, in highly cluttered backgrounds, and in the presence of shielding and masking materials as particular challenges.[66]

Although Homeland Security Presidential Directive 14 required DNDO to "conduct, support, coordinate, and encourage an aggressive, expedited, evolutionary, and transformational program of research and development efforts," it also directed the Secretary of Energy to "lead the development of nonproliferation research and development and, where appropriate, make available dual-use counter-proliferation and counter-terrorism nuclear detection research and development to DNDO and other entities and officials to support the development of the domestic nuclear and radiological detection system."[67] The long-term coordination of this research appears to be occurring through the Subcommittee on Nuclear Defense Research and Development of the National Science and Technology Council Committee on Homeland Defense and National Security.[68] Additional coordination occurs between agencies participating in the global nuclear detection architecture as well.

The coordination of these research and development activities is likely to remain of interest in Congress, to prevent duplication of effort and ensure that agencies meet their missions and roles. Congress may use its oversight authority to assess the balance of investments between agencies, address undue duplication of research and development activities, and increase or decrease the resources available for particular technology approaches under consideration.

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[66] Testimony of DNDO Director Vayl S. Oxford, Department of Homeland Security, before the Senate Judiciary Committee, Subcommittee on Terrorism, Technology, and Homeland Security, on July 27, 2006.

[67] Executive Office of the President, The White House, *Domestic Nuclear Detection*, Homeland Security Presidential Directive HSPD-14/National Security Presidential Directive NSPD-43, April 15, 2005.

[68] Testimony of DNDO Director Vayl S. Oxford, Department of Homeland Security, before the House Homeland Security Committee, Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology, on October 10, 2007.

Robert F. Nesbit
Hearing before the Senate Committee on Homeland Security and Government Affairs
16 July 2008

Good morning Chairman Lieberman, Ranking Member Collins and distinguished members of the committee. My name is Bob Nesbit, I am employed by the MITRE Corporation and have been a member of the Defense Science Board for 10 years.

The Defense Science Board conducted a study to examine the best strategies to employ against the threat of terrorist use of WMD. Larry Lynn and I served as the study co-chairs with members from industry, academia, the FFRDCs and the National Labs. The findings and recommendations of the DSB are advisory. They do not represent the official position of the Department of Defense.

We examined potential attacks in three distinct time frames – during the planning and preparation, while the attack is in progress, and in the aftermath of the event.

For the nuclear terror topic of today's hearing, one finding stands out. If a terrorist or rogue state somehow gains possession of a nuclear device and intends to use it against the United States, we are in big trouble. Our recommendations, therefore, stressed doing everything possible to prevent acquisition since once this happens it would be very difficult to detect in transit, stop and secure the device prior to detonation.

We recommend increased effort in three pre attack areas.

1. Improve intelligence on these threats to include:
    - Greater emphasis on tracking key individuals with specific technical expertise
    - Increased fielding of deep penetration and close access intelligence sources and methods
    - More persistent surveillance assets to include tagging tracking and locating capabilities
    - In depth analysis to create a better understanding of adversary motives and intentions

2. Develop diplomatic, economic and military response options to serve as a deterrent against the original source of the nuclear device or material. To make these response options credible will require improved forensics to be able to identify the original source. Extended planning and publication of the outline of the response options will make U.S. intentions perfectly clear to all.

3. Strengthen and broaden international cooperative efforts in non-proliferation and increased security of nuclear materials to include the Proliferation Security Initiative, Nunn-Lugar and other special diplomatic efforts.

For example, the take down of the AQ Khan network and Libyan program was a remarkable success based on intelligence, diplomacy and international cooperation. It is likely the highest value counter nuclear terrorism operation in the last 10 years.

As a second priority we recommend increased emphasis in consequence management following an attack. There is little that can be done for those unfortunate enough to be at the point of the blast, but there is much that can be done to limit total casualties – some estimate by as much as one-half. Radically increased medical surge capabilities are needed to treat the radiation exposure itself, and deal with trauma and burn injuries. Large numbers of people with first-level disaster training are needed to stabilize the injured until professional medical care is available. DoD personnel may be required to deal with quarantine of affected areas and eventual decontamination.

Finally, detecting a nuclear device in transit can be very difficult. The physics of the situation makes the sensor technology quite challenging and if the perpetrator is clever and uses shielding, non obvious entry paths and transit means, or employs salvage fuzing to initiate the weapon upon detection; it would make detection prior to detonation even less likely. A terrorist group that was adept enough to acquire a nuclear device should be assumed to have a similar skill level in carrying out the attack.

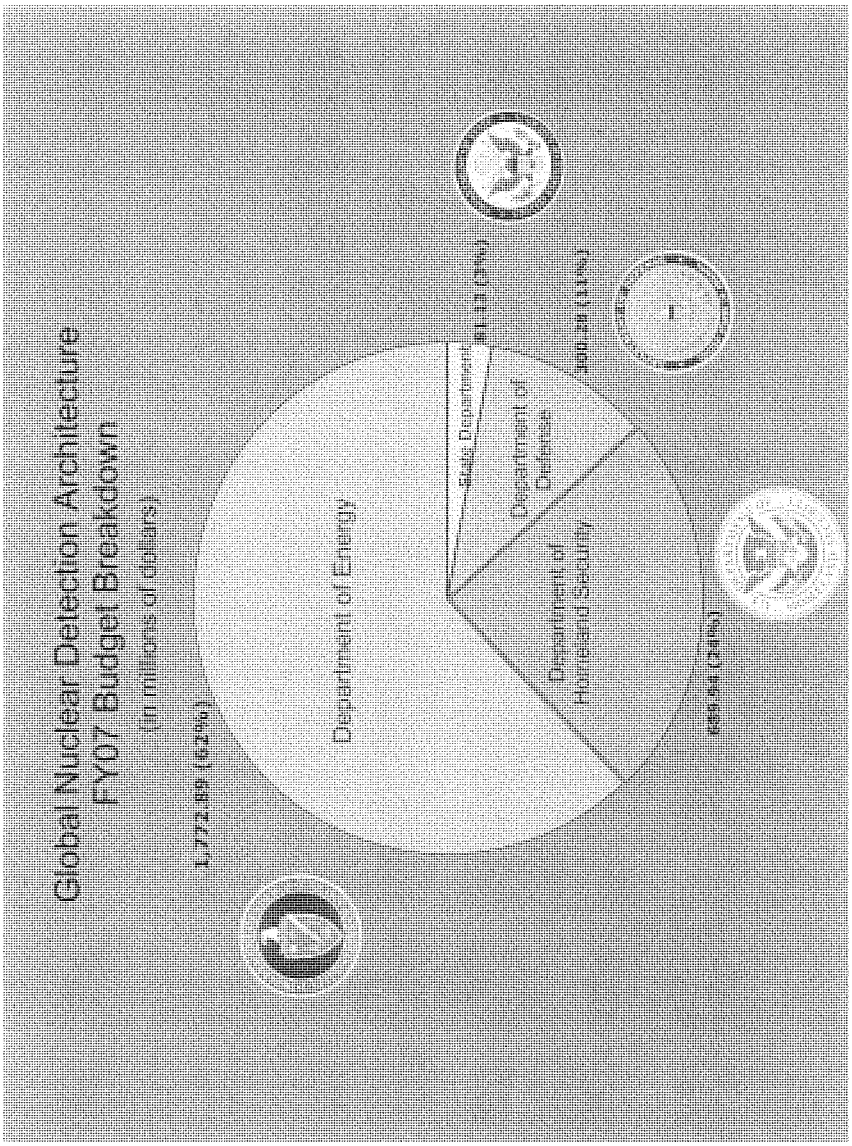
While we did not endorse deploying a very large number of fixed, pre-emplaced radiation detectors throughout the U.S., we did conclude that we ought to make terrorist planning more difficult and uncertain by selectively deploying detectors.

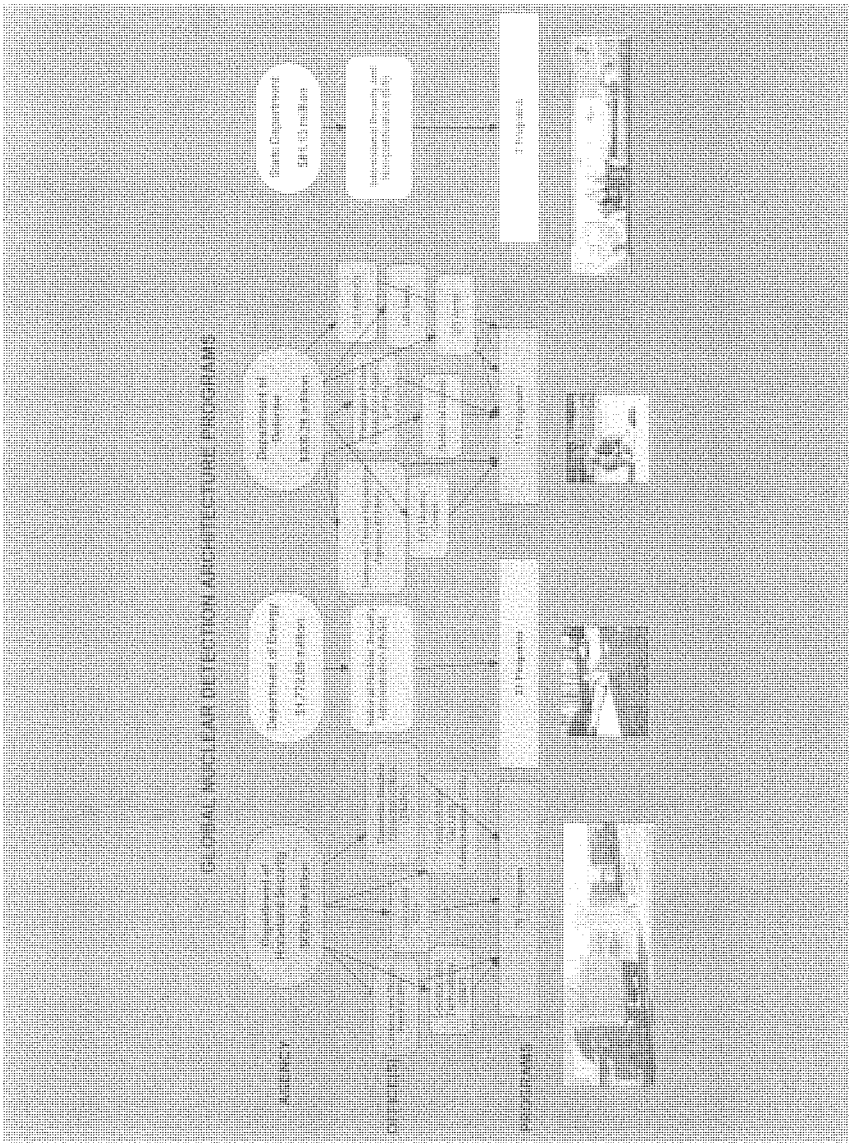
- To small areas cued by intelligence or heightened alerts
- Near certain key portals, high value targets or special events
- In a mobile randomized non overt manner, but the existence of such publicized, to add complexity to the offense.

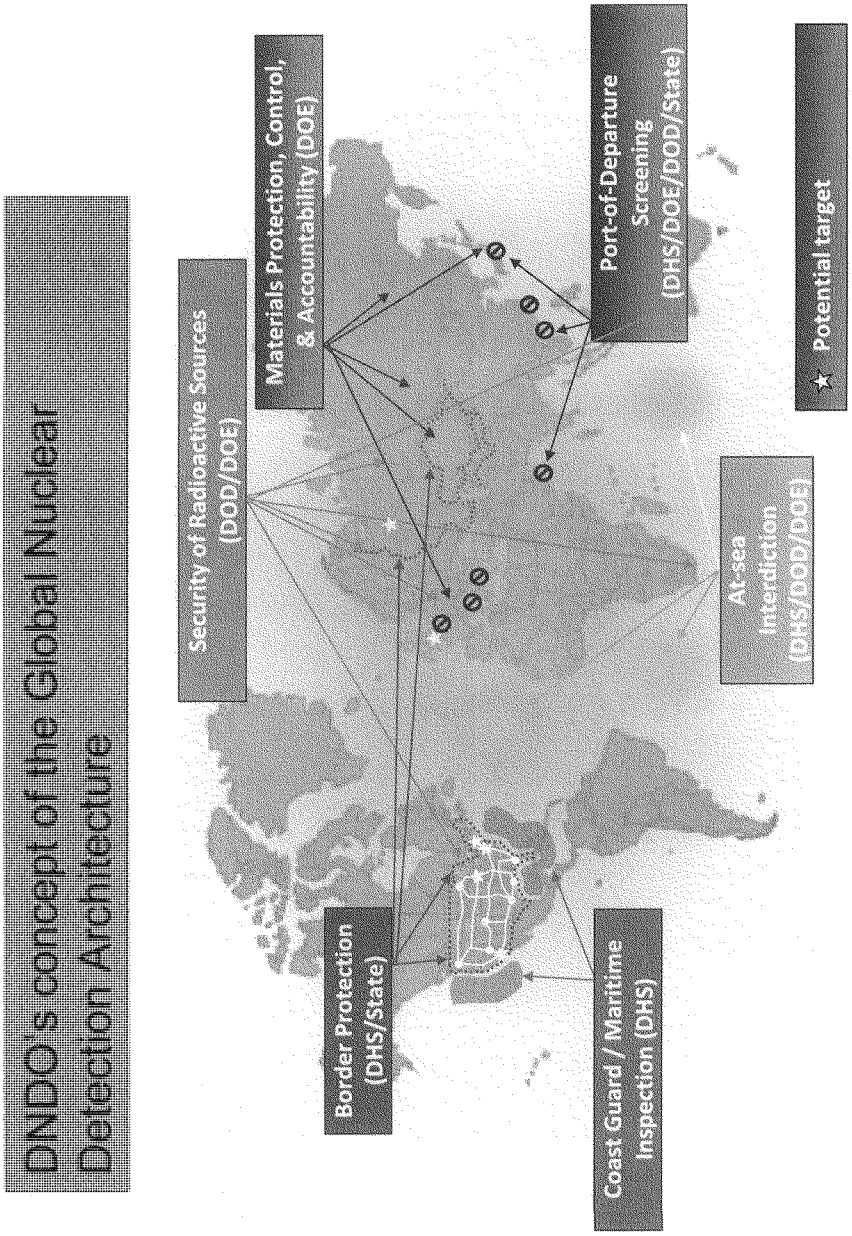
Probing for these defenses by the terrorists may increase the likelihood of their apprehension.

We derived these results, priorities and rankings using a fairly quantitative approach. DHS produced 14 potential scenarios in which terrorists might use WMD against the U.S. We estimated the most probable beneficial impact in terms of lives saved and injuries and economic loss avoided if each defensive alternative were employed against each of the scenarios. The sum of those benefits over all 14 scenarios provided a measure of impact. The individual approaches were ranked based on their value, a combination of the impact and the cost of implementing the defensive approach.

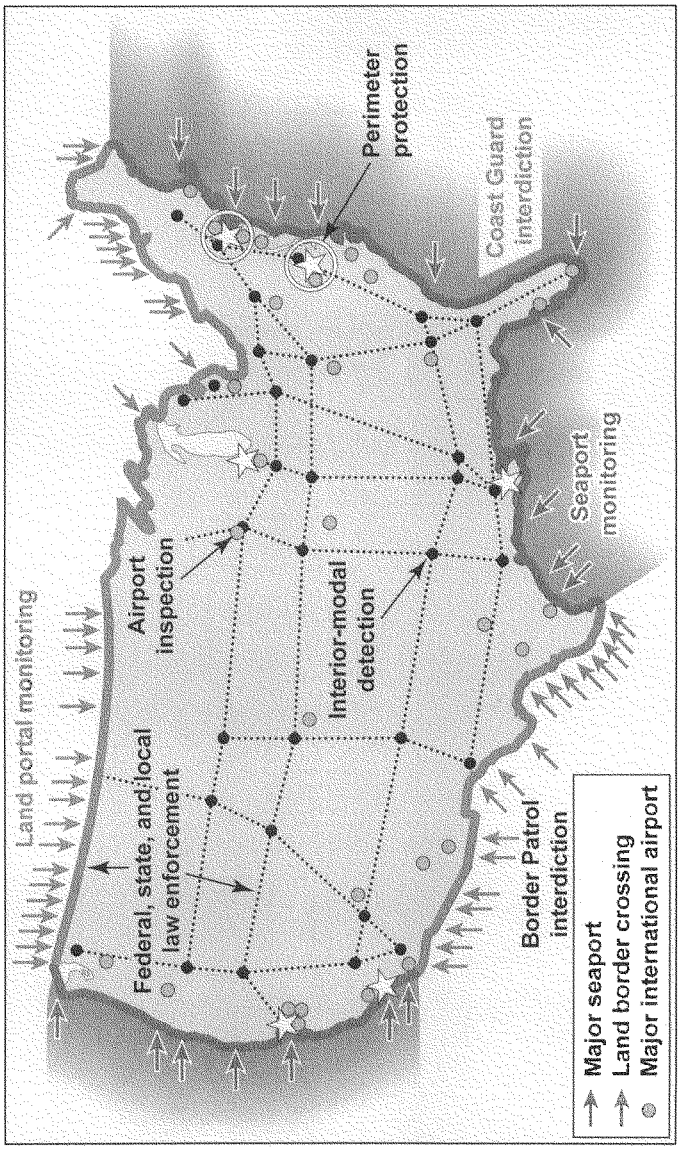
This concludes my prepared statement. With the committee's permission, I request it be submitted for the record. I thank you for your attention and will be happy to answer any questions you may have.







DNDO's concept of the border and interior layers of the domestic detection architecture



Department of Homeland Security Domestic Nuclear Detection Office
Submission for the record
Hearing before the Senate Homeland Security and Governmental Affairs Committee
July 16, 2008
The Global Nuclear Detection Architecture:
Are We Building Domestic Defenses That Will Make the Nation Safer

GALLAWAY: Senator Collins, thank you for your question. DNDO conducts targeted outreach to raise awareness of the rad/nuc threat and works with FEMA's National Preparedness Directorate (NPD) to include preventive rad/nuc detection (PRND) specific language in the annual DHS grant guidance. DNDO also continues to develop programs and products to assist States and local communities in planning, organizing, equipping, training, and exercising PRND capabilities. To create these programs and products, DNDO draws on the vast experience of the over fifty stakeholders from twenty-five States that participate in the DNDO State and Local Stakeholder Working Group (SLSWG) meetings. This group helps DNDO ensure that as domestic programs are implemented, Federal operational support is effective. The SLSWG has met nine times over the past three years and has provided key guidance in the development of the PRND Program Management Handbook, associated modules, and many other initiatives.

In partnership with a collection of multi-jurisdictional, multi-disciplinary State and local partners, DNDO developed the PRND Program Management Handbook to provide consistent guidance for building and enhancing State and local PRND Programs. The handbook currently includes two modules to assist the development of specific capabilities. The Commercial Vehicle Inspection (CVI) module enables State and local jurisdictions to integrate rad/nuc capabilities into their current CVI operations, while the Small Maritime Craft module enhances their ability to detect rad/nuc material in a maritime environment. With the assistance of DNDO facilitators, the State of Florida and five of its major cities are currently using the handbook to develop a Statewide PRND implementation plan. Other States have requested the facilitated delivery and it is expected that the handbook delivery will significantly improve the ability of State and local agencies to detect and interdict illicit rad/nuc material. In the future, DNDO expects to again engage State and local partners to develop a Special Events module to assist in detecting rad/nuc material at sporting events, other mass gatherings and National Special Security Events. We can also work with State and local officials to deploy a surge package to augment rad/nuc detection capabilities during heightened alert states for wide-area rad/nuc detection efforts and at high risk events, like local special events.

DNDO's Operations Support Directorate (OSD) and MMD Interior Mission Area, together with the State and local community, have reviewed and gathered training requirements and developed curricula for various levels and types of PRND training courses and incorporated the State and local community into the process of creating detailed protocols for resolving detection alarms. Training courses are supplemented by exercises that engage with State Homeland Security Offices, law enforcement, and emergency responder organizations and associations to provide operations and technical support, and prevention mission partnerships. DNDO had a role in developing and participated in the following exercises:

1. Full-Scale TOPOFF-4 Exercise, in October 2007

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2. National Level Exercise in February 2008
3. Ten SETCP Workshops
4. Operation Urgent Action, in New York State, October 2007
5. Domestic PRND Alarm Adjudication Workshops, April –May 2008
6. Global Initiative TTX, in Spain, May 2008
7. DOE/CBP Joint Mega Port program TTX, Bahamas, May 2008

DNDO conducted PRND training for over 400 State and local officials in FY 2006, and over 2,400 officials in FY 2007. DNDO plans to train another 5,000 personnel in FY 2008 and 7,500 personnel in FY 2009.

I'd also like to briefly describe another important program that engages State and local agencies. The Securing the Cities, or STC, initiative seeks to design and implement an architecture for the coordinated and integrated detection and interdiction of illicit rad/nuc materials that may be used as a weapon within a major urban area. The initial STC engagement is being conducted with the NYC region, which for the purposes of the STC initiative is defined as within 45 miles of the NYC border. STC stakeholders include NYC (New York City Police Department, in particular), the counties proximate to NYC, the State of New York, the State of New Jersey, the State of Connecticut, the Port Authority of New York/New Jersey (PANY/NJ) and the Metropolitan Transportation Authority (MTA). State and local participation is incorporated into all aspects of the STC initiative through multi-jurisdictional working groups.

DNDO led and funded a collaborative effort with DOE to provide rad/nuc detection Subject Matter Expert (SME) assistance to STC State and local agencies in an operational environment. SME personnel work with STC partner agencies in the field to assist in the development of procedures for detection, interdiction, and reachback operations. This is a widely popular concept with the State and local partners and seen as a cost effective way to improve their proficiency and effectiveness in this mission area. This has also provided a vehicle for informally assessing training and equipment gaps and requirements for the region. The first workshops have been executed, and included:

- November workshops with State of New Jersey and Port Authority of New York & New Jersey
- January workshops with New Jersey Transit Police
- February workshops at the Military Ocean Terminal, Bayonne, New Jersey
- March workshops with the New York State Department of Health and Weapons of Mass Destruction Civil Support Team, Scotia, New York

Surveys of workshop effectiveness are being gathered by DNDO's Red Teaming and Net Assessments group.

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In addition, maritime drills have been conducted at maritime chokepoints along the Hudson River, New York Harbor, and New Jersey approaches to NYC:

- Hudson River in August 2007
- Raritan Bay area in November 2007
- New York Harbor in January 2008

Key milestones for STC systems acquisition in 2008 include:

- Release of 2008 Funding Opportunity Announcement in January 2008
- Award of 2008 Cooperative Agreement in August 2008
- Training and equipment delivery in September 2008

As indicative of STC's success, State and local jurisdictions regionally coordinated and executed substantive preventive rad/nuc detection screening operations for an August 2007 threat message, for New Years Eve, and for the Pope's visit.

United States Government Accountability Office

GAO

Testimony
Before the Committee on Homeland Security and Governmental Affairs
United States Senate

For Release on Delivery
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COMBATING NUCLEAR SMUGGLING

DHS Needs to Consider the Full Costs and Complete All Tests Prior to Making a Decision on Whether to Purchase Advanced Portal Monitors

Statement of Gene Aloise, Director
Natural Resources and Environment

GAO-08-1178T

DRAFT

September 25, 2008

GAO
Accountability · Integrity · Reliability

Highlights

Highlights of GAO-08-1178T, a testimony before the Committee on Homeland Security and Governmental Affairs, United States Senate

COMBATING NUCLEAR SMUGGLING

DHS Needs to Consider the Full Costs and Complete All Tests Prior to Making a Decision on Whether to Purchase Advanced Portal Monitors

Why GAO Did This Study

The Department of Homeland Security's (DHS) Domestic Nuclear Detection Office (DNDO) is responsible for addressing the threat of nuclear smuggling. Radiation detection portal monitors are key elements in our national defenses against such threats. DHS has sponsored testing to develop new monitors, known as advanced spectroscopic portal (ASP) monitors, to replace radiation detection equipment currently being used at ports of entry. ASPs may offer improvements over current generation portal monitors, particularly the potential to identify as well as detect radioactive material and thereby minimize both missed threats and false alarms. However, ASPs cost significantly more than current generation portal monitors, and testing of ASPs' capabilities needs to be more objective and rigorous. Due to concerns about ASPs' cost and performance, Congress has required that the Secretary of DHS certify that ASPs will provide a significant increase in operational effectiveness before obligating funds for full-scale ASP procurement. DHS is currently testing ASPs and anticipates a decision on certification in November 2008.

This testimony addresses (1) the highlights of GAO's September 2008 report on the life cycle cost estimate to deploy ASPs (GAO-08-1108R), and (2) preliminary observations from ongoing work reviewing the current program of ASP testing.

To view the full product, including the scope and methodology, click on GAO-08-1178T. For more information, contact Gene Aloise at (202) 512-3841 or aloisee@gao.gov.

What GAO Found

GAO's independent cost estimate suggested that from 2007 through 2017 the cost of DNDO's program to equip U.S. ports of entry with radiation detection equipment will likely be about $3.1 billion, but could range from $2.6 billion to $3.8 billion. GAO's estimate was based on the anticipated costs of DNDO implementing its 2006 project execution plan, the most recent official documentation of the program. DNDO's cost estimate of $2.1 billion to implement its project execution plan is unreliable because it omits major project costs, such as maintenance, and relies on a flawed methodology. For example, although the normal life expectancy of the standard cargo ASP is about 10 years, DNDO's estimate considers only 8 years. According to DNDO officials, the agency is now following a scaled-back ASP deployment strategy rather than the 2006 project execution plan, and a senior DNDO official told GAO the ASP deployment strategy could change dramatically depending on the outcome of ongoing testing. GAO's analysis indicated the cost to implement the scaled-back plans over the period 2008 through 2017 will be about $2.0 billion, but could range from $1.7 billion to $2.3 billion. However, frequent changes in DNDO's deployment strategy make it difficult to assess ASP program costs. GAO's recent report recommended that the Secretary of Homeland Security direct DNDO to update the project execution plan, revise its cost estimate, and communicate the revised estimate to the Congress so that it is fully apprised of the program's scope and funding requirements. DHS agreed with the recommendations.

DNDO has made progress in addressing a number of problems GAO identified in previous rounds of ASP testing. However, GAO's ongoing review of the 2008 ASP testing program identified several potential areas of concern. First, the DHS criteria for "significant increase in operational effectiveness" appear to set a low bar for improvement—for example, by requiring ASPs to perform at least as well as current generation equipment when nuclear material is present in cargo but not specifying an actual improvement. GAO recently requested additional information from DNDO about the rationale behind these criteria, particularly in light of seemingly stricter criteria found in other documents. Second, the ASP certification schedule does not allow for completion of computer simulations that could provide additional data on ASP performance. While these computer simulations may have limitations, they also could provide useful data on ASP capabilities prior to the Secretary's decision on certification. Finally, the test schedule is highly compressed and is running at least 8 weeks behind, leaving limited time for analysis and review of test results. Assuming that DHS addresses these concerns, the 2008 round of testing could provide an objective basis for comparing ASPs with current generation equipment. However, GAO recommended in March 2006 that DHS analyze the benefits and costs of deploying ASPs to determine whether any additional detection capability provided by ASPs is worth the cost, and would still question the replacement of current generation equipment with ASPs until DNDO demonstrates that any additional increase in security would be worth the ASPs' much higher cost.

Mr. Chairman and Members of the Committee:

I am pleased to be here today to discuss our work on the plans of the Department of Homeland Security's (DHS) Domestic Nuclear Detection Office (DNDO) to develop and deploy advanced spectroscopic portal (ASP) radiation detection monitors to the nation's ports of entry.[1] Preventing radioactive material from being smuggled into the United States—perhaps to be used by terrorists in a nuclear weapon or in a radiological dispersal device (a "dirty bomb")—is a key national security objective. Today I will discuss our September report, which focuses on developing an independent life cycle cost estimate for replacing radiation detection equipment already deployed at U.S. ports of entry with ASPs,[2] and our ongoing work reviewing DNDO's current program of ASP testing activities, which started in April 2008 and are scheduled to be completed in November 2008 under DNDO's latest plan. These tests are critically important because they will serve as the primary support for a congressionally mandated DHS Secretarial certification of the effectiveness of ASPs, also scheduled for November 2008.

Radiation portal monitors—large stationary detectors through which cargo containers and trucks pass as they enter the United States—are an important component of the radiation detection system. The portal monitors in use today, known as polyvinyl toluene (PVT) monitors, are capable of detecting radiation but not identifying specific radioactive materials. To address this limitation, U.S. Customs and Border Protection (CBP) relies on handheld detection technologies, particularly radioactive isotope identification devices (RIID), to help CBP officers distinguish between dangerous and benign materials.[3] CBP's standard operating procedures for use of radiation detection equipment include conducting primary inspections with PVTs to detect the presence of radioactivity, and secondary inspections with PVTs and RIIDs to confirm and identify the source and determine whether it constitutes a threat. Any vehicle triggering a PVT alarm

[1]DNDO was established within DHS in 2005; its mission includes developing, testing, acquiring, and supporting the deployment of radiation detection equipment at U.S. ports of entry.
[2]GAO, *Combating Nuclear Smuggling: DHS's Program to Procure and Deploy Advanced Radiation Detection Portal Monitors Is Likely to Exceed the Department's Previous Cost Estimates*, GAO-08-1108R (Washington, D.C.: Sept. 22, 2008).
[3]CBP, also part of DHS, began deploying radiation detection equipment in 2002, prior to DNDO's creation, under the radiation portal monitor project. CBP remains responsible for operating the equipment.

is referred to a secondary screening area, where it is sent through a second PVT to confirm the original alarm. Whether the second PVT confirms the alarm or not, the vehicle, driver, and any passengers or cargo are scanned by a CBP officer with a RIID, which can detect radiation and also identify many of the most commonly used radioactive materials by name. All PVT alarms must be resolved—that is, CBP officers must investigate each alarm until they are convinced that the vehicle, occupants, and any cargo pose no threat and, if radioactive materials are found, that the vehicle occupants appear to have a legitimate reason to possess and transport them—before the vehicle, driver, and any passengers can be allowed to enter the United States.

In contrast to PVTs, ASPs offer the potential to detect radiation and identify the source, reducing the need for secondary screenings of cargo containing benign radioactive materials. According to DNDO, the inability of the current generation PVT systems to identify the type of material causing an alarm results in the need to balance system sensitivity with the false and innocent alarm burden to the flow of commerce. DNDO also believes that CBP may use an inordinate amount of inspection resources for radiation detection at the expense of other missions, such as drug interdiction. To address these limitations, DNDO is sponsoring the development of ASPs with the expectation that they will minimize both missed threats and false alarms when deployed for primary screening and improve upon the RIID's identification performance and time required to correctly resolve primary alarms when deployed for secondary screening.

ASPs cost significantly more than PVTs. DNDO's latest unit cost estimate (including deployment costs) is about $800,000 for the standard cargo version of the ASP and about $425,000 for the PVT standard cargo portal. Due to concerns about the performance and higher cost of ASPs relative to PVTs, the Congress has required that the Secretary of Homeland Security submit a report certifying that ASPs will provide a significant increase in operational effectiveness.[4] Prior to primary and secondary deployment of the ASPs, the Secretary must submit separate and distinct certifications that address the unique requirements for operational effectiveness of each type of deployment.

[4]Public Law 110-161 (121 Stat. 2069).

Our prior work on DNDO's efforts to develop and procure ASPs raised a number of serious concerns. In March 2006, we reported on, among other things, DNDO's efforts to develop ASPs; we recommended that DHS analyze the benefits and costs of deploying ASPs to determine whether any additional detection capability provided by ASPs is worth the additional cost.[5] In October 2006, we concluded that DNDO's cost-benefit analysis did not provide a sound basis for its decision to purchase and deploy ASPs at an estimated cost at that time of $1.2 billion—for example, because DNDO relied on assumptions of the anticipated performance level of ASPs instead of actual test data.[6] We also reported that DNDO did not assess the likelihood that ASPs would either misidentify or fail to detect nuclear or radiological material; rather, it focused its analysis on reducing the time necessary to screen traffic at ports of entry and the impact of any delays on commerce. We recommended, in part, that DNDO conduct further testing before spending additional funds to purchase ASPs. Similarly, in September 2007, we testified that DNDO's testing of ASPs at the Department of Energy's (DOE) Nevada Test Site did not represent an objective or rigorous assessment because DNDO used biased test methods that enhanced the apparent performance of the ASPs and did not test the limitations of the ASPs' detection capabilities.[7] We recommended that DHS delay ASP certification and full-scale production decisions until all relevant tests and studies have been completed, limitations to these tests and studies have been identified and addressed, and results of the tests and analyses have been reported to the appropriate congressional committees. For reasons I am about to discuss, these recommendations are as important today as when we made them last year.

My testimony today addresses (1) the highlights of our September 2008 report on our independent life cycle cost estimate for deploying ASPs at ports of entry, and (2) preliminary observations from our ongoing work reviewing the current program of ASP

[5]GAO, *Combating Nuclear Smuggling: DHS Has Made Progress Deploying Radiation Detection Equipment at U.S. Ports of Entry, but Concerns Remain*, GAO-06-389 (Washington, D.C.: Mar. 22, 2006).
[6]GAO, *Combating Nuclear Smuggling: DHS's Cost-Benefit Analysis to Support the Purchase of New Radiation Detection Portal Monitors Was Not Based on Available Performance Data and Did Not Fully Evaluate All the Monitors' Costs and Benefits*, GAO-07-133R (Washington, D.C.: Oct. 17, 2006).
[7]GAO, *Combating Nuclear Smuggling: Additional Actions Needed to Ensure Adequate Testing of Next Generation Radiation Detection Equipment*, GAO-07-1247T (Washington, D.C.: Sept. 18, 2007).

testing. For our September 2008 report, we contracted with a company with expertise in estimating the life cycle costs of major federal acquisitions. Together we developed an independent cost estimate of DHS's 2006 strategy to deploy radiation detection portal monitors, covering fiscal years 2007 through 2017, to ensure that the Congress has authoritative information on all the life-cycle costs associated with a full-scale acquisition of radiation portal monitors. To review ASP testing, we analyzed ASP test plans and interviewed senior DNDO officials responsible for managing the ASP program, and we observed testing conducted at the DOE's Nevada Test Site and Pacific Northwest National Laboratory. We also interviewed DOE, national laboratory, National Institute of Standards and Technology, and DHS officials. We conducted this work, including our work to date on ASP testing, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Summary

Our independent cost estimate suggests that from 2007 through 2017 the cost of DNDO's program to equip U.S. ports of entry with radiation detection equipment will likely be about $3.1 billion, but could range from $2.6 billion to $3.8 billion. We based our estimate on the anticipated costs of DNDO implementing its 2006 project execution plan, the most recent official documentation of the radiation portal monitor project's objectives, scope, schedule, costs, and funding requirements. According to the project execution plan, DNDO will buy and deploy multiple types of portal monitors, including ASPs designed to screen rail cars, airport and seaport cargo, as well as mobile ASPs to provide greater flexibility in screening commerce. In March 2008, DNDO estimated the total cost of deploying radiation portal monitors to be about $2.1 billion, but we believe the agency's estimate is unreliable because it omits major project costs, such as maintenance, and relies on a flawed methodology. For example, although the normal life

expectancy of the standard cargo ASP is about 10 years, DNDO's estimate considers only 8 years. Furthermore, during the course of our review, DNDO officials told us the only ASP that the agency now plans to deploy is the standard cargo portal monitor. Although DNDO could not fully document this change, the agency provided a one-page summary of its current deployment plans. We performed a limited analysis of these summary data and determined that the cost to deploy standard ASP cargo portals over the period 2008 through 2017 will likely be about $2 billion, but could range from $1.7 billion to $2.3 billion. However, a DNDO official responsible for overseeing the agency's operations told us that even the deployments listed on the one-page summary could change dramatically depending on the outcome of ongoing testing. In our view, it is difficult to assess the costs of the ASP program because of the frequent changes in DNDO's deployment strategy. Our report recommended that the Secretary of Homeland Security direct DNDO to update the project execution plan, revise its cost estimate, and communicate the revised estimate to the Congress so that it is fully apprised of the program's scope and funding requirements. DHS agreed with our recommendations.

While DNDO has made progress in addressing a number of problems we identified in previous rounds of ASP testing, we have identified potential areas of concern based on our ongoing review of the 2008 ASP testing program. First, the DHS criteria for "significant increase in operational effectiveness" appear to set a low bar for improvement. Most notably, the criteria for primary screening require ASPs to perform at least as well as current generation equipment when special nuclear material or medical or industrial isotopes are present in cargo, but they do not specify an actual improvement. We recently requested additional information from DNDO about the rationale behind these criteria, particularly in light of seemingly stricter criteria found in other documents. Second, the schedule leading up to ASP certification does not allow for completion of "injection studies"—a type of computer simulation for testing the response of the ASP threat identification algorithms to data on threat objects combined with stream-of-commerce data from a port of entry. While we recognize that injection studies have limitations, they could provide useful data on ASP capabilities, particularly for primary screening. Finally, the test schedule leading up to certification is highly

compressed and is running at least 8 weeks behind, leaving limited time for analysis and review of test results. Assuming that DHS addresses these concerns, the 2008 round of testing could provide an objective basis for comparing ASPs with current generation equipment. However, consistent with our March 2006 recommendation that DHS analyze the benefits and costs of deploying ASPs, we would still question the replacement of current generation equipment with ASPs until DNDO demonstrates that any additional detection capability and increase in security provided by ASPs would be worth the ASPs' much higher cost.

DNDO's Program to Deploy Radiation Detection Portal Monitors at U.S. Ports of Entry Is Likely to Cost About $3 Billion

As we discuss in our report, our independent cost estimate suggested the total cost of DNDO's program to equip U.S. ports of entry with radiation detection equipment will likely be about $3.1 billion, but could range between $2.6 billion and $3.8 billion. We based our estimate on the anticipated costs of DNDO implementing its 2006 project execution plan, the most recent official documentation of the radiation portal monitor project's objectives, scope, schedule, costs, and funding requirements. According to this plan, DNDO plans to buy and deploy several types of ASPs, including those designed to screen rail cars, airport cargo, and seaport cargo, as well as mobile ASPs that provide greater flexibility in screening commerce. The plan also provides for the deployment of several types of PVTs. Clearly, the numbers and types of portal monitors deployed will significantly affect the total cost of the radiation portal monitor project. In all, the project execution plan calls for the purchase of 2,754 portal monitors, with a total of 2,582 scheduled for deployment—approximately 1,034 ASPs and 1,548 PVTs—and 172 held in excess at the project's completion.

In developing our estimate, we categorized radiation portal monitor project costs according to program phases—design and development, procurement, deployment, maintenance, and operational sustainment. We did not incorporate operational costs, in particular the cost of CBP officers operating the radiation detection equipment. DNDO and CBP believe that deploying ASPs will reduce the use of CBP staff resources for

radiation detection tasks, but currently there are no usable estimates of how CBP's staffing would change with the deployment of ASPs. Our analysis included a period of 11 years: actual life-cycle expenses from fiscal year 2007, and estimated life cycle costs from fiscal year 2008 through 2017.

DNDO's estimate of $2.1 billion to deploy radiation detection equipment (submitted as part of its budget request to OMB in March 2008) is unreliable because it omits major project costs and relies on flawed methodology. As a result, DNDO's cost estimates and budget requests for the radiation portal monitor project are too low, which could lead to significant cost overruns later in the project. DNDO's estimate contains the following major deficiencies:

- It does not appear to include the costs of all variations of ASPs contained in DNDO's project execution plan. DNDO's current baseline considers only the standard ASP cargo portal and ignores the costs of other types of ASPs, such as those designed to screen rail cars, airport and seaport cargo, and mobile detectors. According to senior DNDO officials, the current approved project execution plan no longer reflects the agency's procurement and deployment plans for ASPs. In acknowledging that the project execution plan should be revised and updated, these officials told us that DNDO currently plans to field only the standard cargo ASP portal, mainly at high-volume ports of entry. (We used the 2006 project execution plan because it is the agency's only official plan for ASP deployment.)

- DNDO's estimate considers only 8 years rather than 10 years, the operational life expected by the manufacturer of sodium iodide crystals, a key ASP component. DHS cost guidance maintains that a project's life cycle can be estimated over that period of time during which equipment will remain available before it is exhausted, that is, decayed or deteriorated. DNDO officials agreed that a 10-year life cycle cost estimate would have been more appropriate and said that they would have used a 10-year estimate had they not been constrained by OMB budget submission software, which limits the number of years of costs that can be included.

- DNDO's cost estimate does not include all of the elements of the ASPs' life cycle, such as maintenance or operational sustainment. These costs are approximately $999.2 million and $364.9 million, respectively, under our cost estimate.

- DNDO did not have detailed documentation of the costs to support its estimates. According to OMB, DHS, and GAO guidelines, such documentation is necessary to establish the basis of the estimates and to provide assurances that the estimates are credible.

Assuming DNDO attempts to implement its authorized 2006 project execution plan rather than its scaled-back plan, our report estimated a $753 million budget shortfall for the radiation portal monitor project for fiscal years 2008 through 2012 (the years included in both our analysis and the DNDO analysis). Additionally, we estimated that DNDO will require another $833 million from fiscal year 2013 through fiscal year 2017 to complete the entire life cycle of the program.

According to DNDO officials, our cost estimate will result in estimates higher than the program's current true cost because it is based on the outdated project execution plan. However, in the absence of more recent documentation, we believe our independent cost estimate must be based on the agency's most recent approved plan (the 2006 project execution plan). Furthermore, several official DNDO documents specify that multiple versions of ASPs will be deployed. For example, the agency's February 2006 expenditure plan submitted to the Congress foresees "several variants" of ASP systems being deployed, with standard cargo, rail, and automobile versions mentioned specifically. And DNDO's submissions to OMB for budget years 2008 and 2009 describe a program that includes land crossings, seaports, rail lines, airports, and other ports of entry. Finally, agency officials acknowledged the program requirements that would have been fulfilled by the discontinued ASPs remain valid, including screening rail cars, airport cargo, and cargo at seaport terminals, but the agency has no current plans for how such screening will be accomplished. These officials told us the technology to accomplish

these requirements likely will not be ASP monitors and could be a totally new technology. We believe a comprehensive estimate of the cost to provide radiation detection equipment for U.S. ports of entry should account for meeting these objectives, even if DNDO decides that ASP technology is not suited to them.

DNDO agreed in June 2008 to update its project execution plan so that we could better estimate the costs of the agency's current plans. DNDO also agreed to provide an updated estimate of the standard portal's life cycle costs and to meet with us to reconcile our two estimates. However, DNDO did not provide a revised project execution plan or cost estimate and instead provided in July 2008 a one-page spreadsheet of summary information outlining its plans to buy and deploy portal monitors for the 7-year period 2008 through 2014. DNDO's summary data indicate that during this time period the agency plans to deploy 717 ASPs and 1,005 PVTs. The summary data do not provide the breadth and depth of information needed to generate detailed and fully documented cost estimates. Furthermore, according to subsequent discussions with a senior DNDO official, if ongoing tests indicate the ASPs' performance warrants it, the agency may speed its deployment of ASPs over the next few months. In our view, the frequent changes in deployment plans and the lack of available cost documentation raise concerns about the overall management of the radiation portal monitor project and whether it is guided by a sound and stable strategy. Nonetheless, we used the agency's summary data to perform a more limited cost estimate for only the standard cargo portal. We found that from 2008 to 2017 the total program cost for buying and deploying standard cargo portals would likely be about $2 billion, but could range from about $1.7 billion to $2.3 billion.

Our report recommended that the Secretary of Homeland Security direct the Director of DNDO to (1) work with the Commissioner of CBP to update the project execution plan to guide the entire radiation detection program at U.S. ports of entry, (2) revise DNDO's estimate of the program's cost and ensure that the estimate considers all the costs associated with its project execution plan, and (3) communicate this revised estimate to

the Congress so that it is fully apprised of the program's scope and funding requirements. DHS agreed with our recommendations in its comments responding to our draft report.

Preliminary Observations of Ongoing Testing of ASPs

We are currently reviewing the ongoing 2008 ASP testing program and process leading to a decision by the Secretary of Homeland Security on certification of ASPs, and we plan to issue a final report in November 2008, prior to the Secretary's decision on certification. Our work to date shows that DNDO has made progress in addressing a number of problems we identified in previous rounds of ASP testing. A particular area of improvement is in the performance testing at the Nevada Test Site, where DNDO conducts trials of the ability of ASPs to detect and identify radioactive materials, particularly those that could be used in a nuclear weapon. In 2007, we reported that DNDO had allowed ASP system contractors to adjust their systems after preliminary runs using the same radiological materials that would be used in the formal tests, potentially biasing the test results. In contrast, in our more recent work, we found that the plan for the 2008 round of performance testing stipulated that there would be no system contractor involvement in test execution, and no ASP system contractors were present at the test location on the day we observed performance testing. Furthermore, DNDO officials told us, and we observed, that they did not conduct preliminary runs with threat objects that were used in the formal tests. A further area of improvement in the performance testing concerns the use of handheld RIIDs. Specifically, DNDO used actual CBP officers who adhered to nearly all of the standard operating procedures in testing the RIIDs. This improvement addresses our concern from last year that DNDO did not objectively test the performance of the RIIDs because it did not use a critical CBP standard operating procedure that is fundamental to the equipment's performance in the field.

Despite these improvements, we have identified potential areas of concern based on our ongoing review. Our concerns fall into three areas:

- *DHS's criteria for "significant increase in operational effectiveness."* DNDO, CBP and the DHS management directorate agreed on six criteria for the degree of improvement ASPs must provide over current generation equipment—four criteria for primary screening and two for secondary screening. These criteria appear to set a low bar for improvement. Most notably, the criteria for primary screening require ASPs to perform at least as well as current generation equipment when special nuclear material or medical or industrial isotopes are present in cargo, but they do not specify an actual improvement. Similarly, one of the criteria for secondary screening requires ASPs to reduce the average time to release conveyances but does not indicate a specific level of reduction. As such, the criteria leave open the possibility of a Secretarial decision in favor of certification even if ASPs do not provide a significantly higher probability of detection compared with current generation PVTs when deployed for primary screening and only a small reduction in the time required for secondary screening. We recently requested additional information from DNDO about the rationale behind these criteria, particularly in light of seemingly stricter criteria found in other documents such as the ASP performance specification, which requires an 80 percent probability of detection, at a 95 percent confidence, of government-designated representative threat objects. We are awaiting DNDO's response.

- *The extent to which the 2008 testing program provides a sound basis for determining ASPs' operational effectiveness.* While the performance testing at Nevada Test Site could provide a useful comparison of the performance of the ASPs and current generation equipment for both primary and secondary screening given the improvements described above, DNDO does not plan to complete "injection studies" that could provide additional data on ASP performance prior to ASP certification. (Injection studies are a type of computer simulation for testing the response of the ASP threat identification algorithms to data on threat objects combined with stream-of-commerce data from a port of entry.) Rather, DNDO officials told us that testing using actual threat objects is sufficient for certification. While we recognize the limitations of injection studies such as the inability to exactly model threat objects

hidden in commerce, reliance on performance testing but not injection studies for the Secretary's decision on certification will result in less data with which to evaluate the capabilities of ASPs, particularly for primary screening.[8] According to officials from Pacific Northwest National Laboratory, which has a lead role in injection studies, computer simulations allow for an increased statistical confidence in the measured probability of detection compared with testing at Nevada Test Site. The ASP test and evaluation master plan similarly emphasizes the importance of injection studies for a complete test of radiation detection system performance, and a February 2008 DNDO presentation to us includes among its fiscal year 2008 objectives the use of preliminary results from injection studies to evaluate performance of ASPs for primary screening. However, injection studies have taken longer than projected due to a number of issues such as deficiencies in the stream-of-commerce data.

- *The schedule leading up to a decision on ASP certification by the Secretary of Homeland Security.* The test schedule leading up to certification is highly compressed and is running at least 8 weeks behind the schedule DNDO provided to us in May 2008, leaving limited time for analysis and review of test results. Key phases of the test schedule include system qualification, followed by testing at Pacific Northwest National Laboratory to demonstrate that ASPs are ready to be integrated into the interdiction systems at U.S. ports of entry and concurrent testing at Nevada Test Site to compare the ASP performance in detecting and identifying threats with that of current generation equipment. According to DNDO, the systems qualification and performance tests have been completed, but only after being delayed due to problems with system qualification. The final two phases, field validation at four ports of entry operated by CBP and operational testing at one port of entry, have not yet started. Field validation was to have started yesterday—September 24—but as with integration and performance testing this phase has also been delayed, and CBP has not yet indicated when it will begin. Even before this latest delay, the time between the scheduled end of operational testing in early November and a Secretarial

[8]Injection studies as currently designed have less relevance to evaluating the use of ASPs for secondary screening because the studies will not compare ASP performance with that of the handheld RIIDs, a key component of the current generation equipment used for secondary screening.

decision on certification on November 28 allowed less than a month for review and analysis of results. Furthermore, DHS officials have indicated that the Secretary may make a decision on certification on the basis of "quick look" (preliminary) rather than final reports if the quick look reports are favorable to ASPs. The limited time between completion of testing and a decision on certification, combined with the potential reliance on quick look reports, increases the risk of a decision in favor of certification being called into question later by a more thorough analysis and review of results.

Assuming that DHS addresses these concerns—for example, by clarifying the criteria for significant increase in operational effectiveness, performing the injection studies, and delaying a Secretarial decision on certification—the 2008 round of testing could provide an objective basis for comparing ASPs with current generation equipment. However, consistent with our March 2006 recommendation that DHS analyze the benefits and costs of deploying ASPs to determine whether any additional detection capability provided by ASPs is worth the cost, we would still question the replacement of current generation equipment with ASPs, particularly considering the gaps identified by DNDO in the global nuclear detection architecture—essentially, an integrated system of radiation detection equipment and interdiction activities to combat nuclear smuggling in foreign countries, at the U.S. border, and inside the United States. As we testified before this committee earlier this year, such gaps include land border crossings into the United States between formal points of entry, small maritime vessels, and international general aviation.[9] An updated cost-benefit analysis, based on the latest information on ASP costs and test performance, could help policymakers address any trade-offs in addressing these gaps versus replacing current generation radiation detection equipment already deployed at ports of entry. The current generation equipment has known limitations, particularly with regard to the limited ability to detect certain nuclear materials and the inability to distinguish between types of radiological material. However, the existing equipment provides at least some detection capability and may act as a deterrent, and there is no evidence we are aware of that it is impeding the flow of commerce.

Mr. Chairman, this concludes my prepared statement. I would be pleased to respond to any questions that you or other members of the Committee may have.

GAO Contact and Staff Acknowledgments

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[9]GAO, *Nuclear Detection: Preliminary Observations on the Domestic Nuclear Detection Office's Efforts to Develop a Global Nuclear Detection Architecture*, GAO-08-999T (Washington, D.C.: July 16, 2008).

Opening Statement

Of

Mr. Vayl S. Oxford

Director, Domestic Nuclear Detection Office

Department of Homeland Security

Before the Senate Homeland Security and Governmental Affairs Committee

September 25, 2008

Introduction

Good morning, Chairman Lieberman, Ranking Member Collins, and distinguished members of the Committee. I am Vayl Oxford, Director of the Domestic Nuclear Detection Office (DNDO), and I would like to thank the committee for the opportunity to discuss our systems acquisition process and two major programs. To date, our largest near-term development and acquisition programs have been for next-generation radiation portal monitors (RPMs), through our Advanced Spectroscopic Portal (ASP) program, and the development of next-generation non-intrusive inspection systems (NII), through the Cargo Advanced Automated Radiography Systems (CAARS) program. Today, I would like to convey DNDO's progress on these programs as we continually strive to develop and procure technological solutions to more effectively detect illicit radiological and nuclear (rad/nuc) material, while integrating end-user requirements and conducting test and evaluation campaigns to ensure that equipment is suitable for operators and their missions.

ASP Systems Contracting and Procurement

The ASP program represents our next generation RPM technology that is currently being tested, prior to seeking certification from the Secretary of Homeland Security for full rate production. U.S. Customs and Border Protection (CBP) currently scans cargo entering at our Nation's ports of entry (POEs) using polyvinyl toluene (PVT)-based RPMs and adjudicates alarms by sending conveyances to a secondary inspection area and manually scanning them with a hand-held radioisotope identifier (RIID). Next generation technology will improve upon the capabilities of currently deployed PVT-RPMs by collecting spectroscopic data that is automatically analyzed to identify the isotopic content of the radioactive source. This isotopic information is the key to distinguishing between threat and innocent objects. This will be especially important for POEs that have a high volume of containers, or those that see a high rate of naturally occurring radioactive material. DNDO awarded contracts to Raytheon Company, Thermo Fisher Corporation, and Canberra Industries, Inc. for the development and production of ASP in July of 2006. ASP Engineering Development Models were developed for the purpose of the initial developmental test, and subsequently, Low Rate Initial Production Units were designed and built.

Testing and Certification of ASP

As part of the development and acquisition process, DNDO has undertaken a very rigorous test campaign to evaluate ASP systems. This campaign consisted of a broad range of test phases designed to evaluate ASP performance and operations. For test planning, execution, and analysis, we worked in coordination with subject matter experts from CBP, DOE, National Institutes of Standards and Technology, the Environmental Measurements Laboratory, Sandia National Laboratory, Pacific Northwest National Laboratory (PNNL), Los Alamos National Laboratory, the Applied Physics Laboratory of Johns Hopkins University, Brookhaven National Laboratory and National Security Technologies.

The current ASP test campaign transitions the program from developmental to functionality and performance testing which will provide data for an acquisition decision. Testing status is as follows:

(1) System Qualification Testing, designed to demonstrate that ASP units are manufactured in accordance with processes and controls that meet the specified design requirements, is complete;

(2) Performance Testing at the Nevada Test Site (NTS), designed to evaluate ASP, PVT, and RIID detection and identification performance against realistic threat materials, is complete;

(3) Integration Testing to determine whether the ASP systems are ready to deploy in an operational setting for secondary and primary deployment is nearly complete;

(4) Field Validation Testing to exercise the ASP in a stream of commerce environment at POEs is scheduled to be complete next month;

(5) Operational Test and Evaluation (OT&E) designed to measure the operational effectiveness and suitability of ASP will be independently conducted by the DHS Science and Technology Directorate (S&T) also next month.

In the Spring of 2008, a Memorandum of Understanding was signed by DNDO, CBP, S&T, and the DHS Management Directorate, outlining the roles and responsibilities for ASP testing. DHS leadership directed the DHS, S&T Director of T&E and Standards to be the ASP Director of OT&E with oversight responsibilities for operational ASP testing activities. The OT&E utilizes portions of data collected from performance testing conducted at NTS, integration testing

conducted at the PNNL Integration Laboratory, and field validation activities conducted at CBP POEs. Additional OT&E will be conducted with an additional set of suitability and effectiveness tests at the Field Validation site. OT&E of this nature for equipment prior to deployment is the first of its kind performed within the Department.

The Fiscal Year (FY) 2007 Homeland Security Appropriations Act (P.L. 109-295) required that the Secretary certify ASP system performance before DNDO commits to full-rate production and deployment. The language specifically stated, "That none of the funds appropriated under this heading shall be obligated for full scale procurement of Advanced Spectroscopic Portal Monitors until the Secretary of Homeland Security has certified through a report to the Committees on Appropriations of the Senate and the House of Representatives that a significant increase in operational effectiveness will be achieved." We have worked with our Departmental partners to define criteria that demonstrate a "significant increase in operational effectiveness" over the current systems for deployment of ASP in secondary and primary scanning applications.

In early FY 2008, the Secretary of Homeland Security decided to closely couple ASP certification with the larger production and deployment decision, representing Key Decision Point 3 in the DHS Investment Review Process. Under this process, field validation and operational suitability testing must signify not only that the next-generation ASP systems demonstrate significant improvement in operational effectiveness, but also that they fully meet the functional requirements of the mission as defined by the functionality matrix developed by CBP. Currently CBP and DNDO are collaborating on a Joint deployment Strategy which will identify the appropriate locations in which to deploy the ASP systems. DNDO will use a combination of cost-benefit analyses as well as demonstrated performance metrics, including data from the current test campaign, to assist in the Secretary's certification decision. Part of the certification process will also involve consulting with the National Academy of Sciences, as required in the FY 2008 Consolidated Appropriations Act. We are cooperating with the Government Accountability Office (GAO) and the National Academy to provide both groups with information and visibility into our testing processes and data collection and analysis.

In FY 2009, subsequent to Secretarial certification, DNDO working with CBP, would commence full rate production and deployment of the ASP cargo portal units, beginning with the highest priority POEs. DNDO will continue to work closely with CBP to execute a continuous improvement program as a means to provide for upgrades to the operational system, as needed.

CAARS and JINII

Another major development and acquisition program within DNDO is the CAARS program that was announced in October 2006, with awards to Science Applications International Corporation, American Science and Engineering, and L-3. CAARS systems, when deployed, will serve as a complementary technology to the ASP and PVT-based passive detection systems. CAARS will scan cargo containers or other conveyances of interest and provide an automated alert if a rad/nuc threat is found. Specifically, the technology that is under development will automatically distinguish between low density non-threat materials such as aluminum and steel, and higher density materials that indicate the possible presence of threat, such as uranium or plutonium, or threat-shielding materials such as lead or tungsten.

Consistent with any rigorous development and acquisition program, DNDO conducted system requirement reviews in November 2006 and preliminary design reviews in late May and June 2007 to assess the maturity of the CAARS technology. As a result, DNDO found that the technology was more difficult to implement than originally anticipated and determined that the technology should be demonstrated so that its full performance capability could be established prior to acquisition. It was also determined that the CAARS units, as currently designed, are too large and complex to be operationally effective. Finally, since 2006, there have been several technical advances in currently-deployed or soon-to-be-deployed NII systems that might provide some, but not all, of the desired capability. Accordingly, DNDO undertook a "course correction" in April 2008 and modified the three CAARS contracts to remove the "acquisition" component of the contracts, yet retain the demonstration and the test and evaluation (T&E) components of the contracts to allow collection of the required performance data.

As part of the course correction, the Joint Integrated Non-Intrusive Inspection (JINII) Program was established - "joint" because the project is a collaboration between DNDO and CBP, and

"integrated" because it seeks to combine the ability to detect both traditional contraband and high density material, including special nuclear material. The JINII program has two main components. First, a test and evaluation campaign will be performed with currently-deployed or soon-to-be-deployed NII systems to characterize their ability to detect shielded nuclear material through *manual* operator image interpretation. Simultaneously, a rapid research campaign will be performed to determine if simple methods are available to upgrade the currently deployed and soon-to–be-deployed NII systems to incrementally improve the capability to detect shielded nuclear material. Near-term upgrades could include methods to provide improvements in accuracy, sensitivity, automation, and throughput rate. As methods are found, they will be developed and tested by DNDO. DNDO is also working cooperatively with DHS Science and Technology in non radiological threat areas such as Non Intrusive detection for narcotics, explosives and contraband detection. This technology could be leveraged into future DHS S&T Research and Development Maritime and Air Cargo Non Intrusive Inspection programs.

Second, the JINII program will continue the CAARS program to demonstrate whether the systems *automatically* detect shielded nuclear material with higher sensitivity relative to current systems. The CAARS systems may have the capability to detect traditional contraband such as illicit narcotics and threat materials such as explosives. We note, however, that the detection of "traditional" contraband may not be as highly automated as the detection of high density materials. It is anticipated that searches for "traditional" contraband will continue to require operator image analysis.

With this two-pronged approach of demonstrating advanced concepts (i.e.., CAARS) and testing of potential near-term upgrades to existing capability, the JINII program will result in the development of systems with the capability to automatically detect shielded SNM. In developing and testing systems we will take full advantage of the significant amount of ongoing industrial R&D in this area. This strategy will result in the availability of integrated contraband and rad/nuc detection capability for effective and rapid introduction into CBP operations, as prescribed by the purpose of the JINII program.

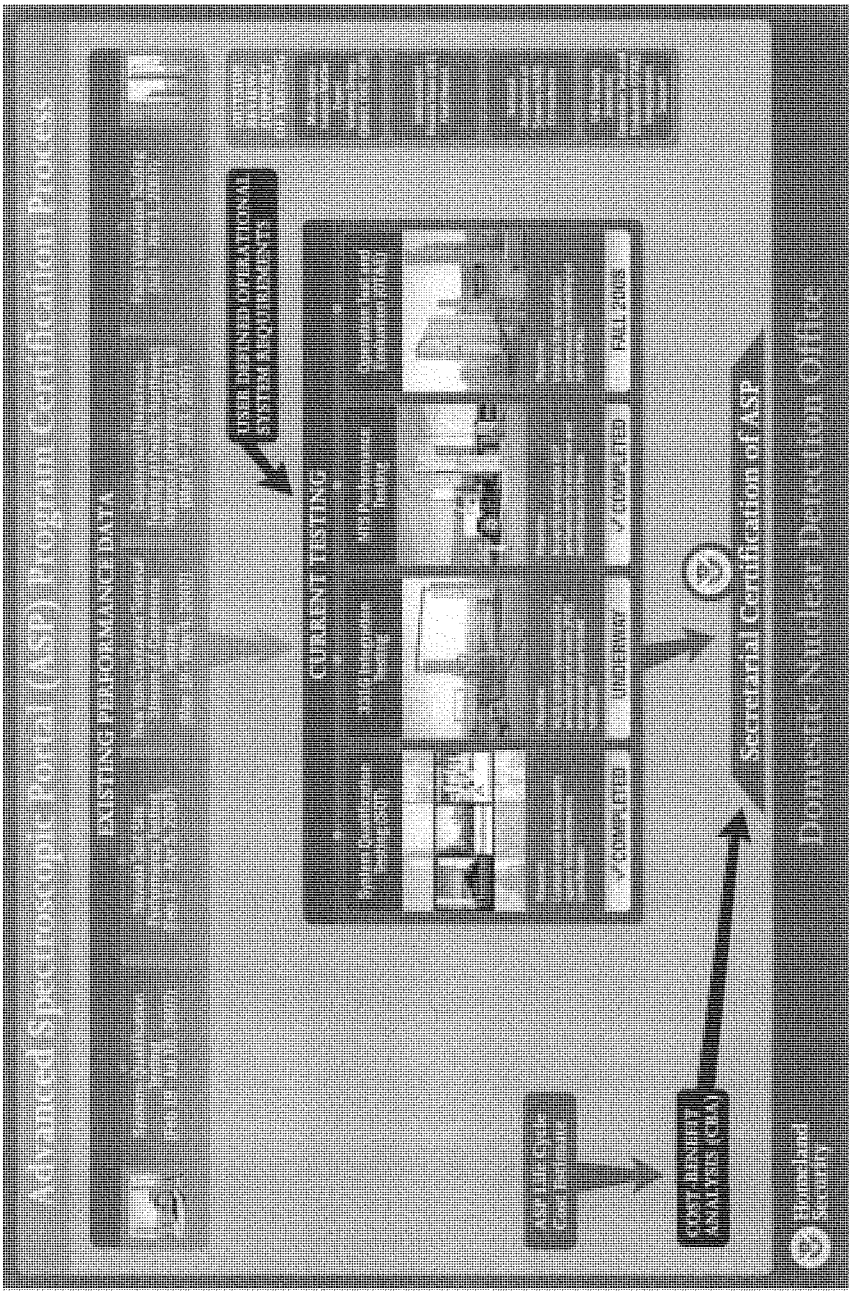
Development and Acquisition Program Management

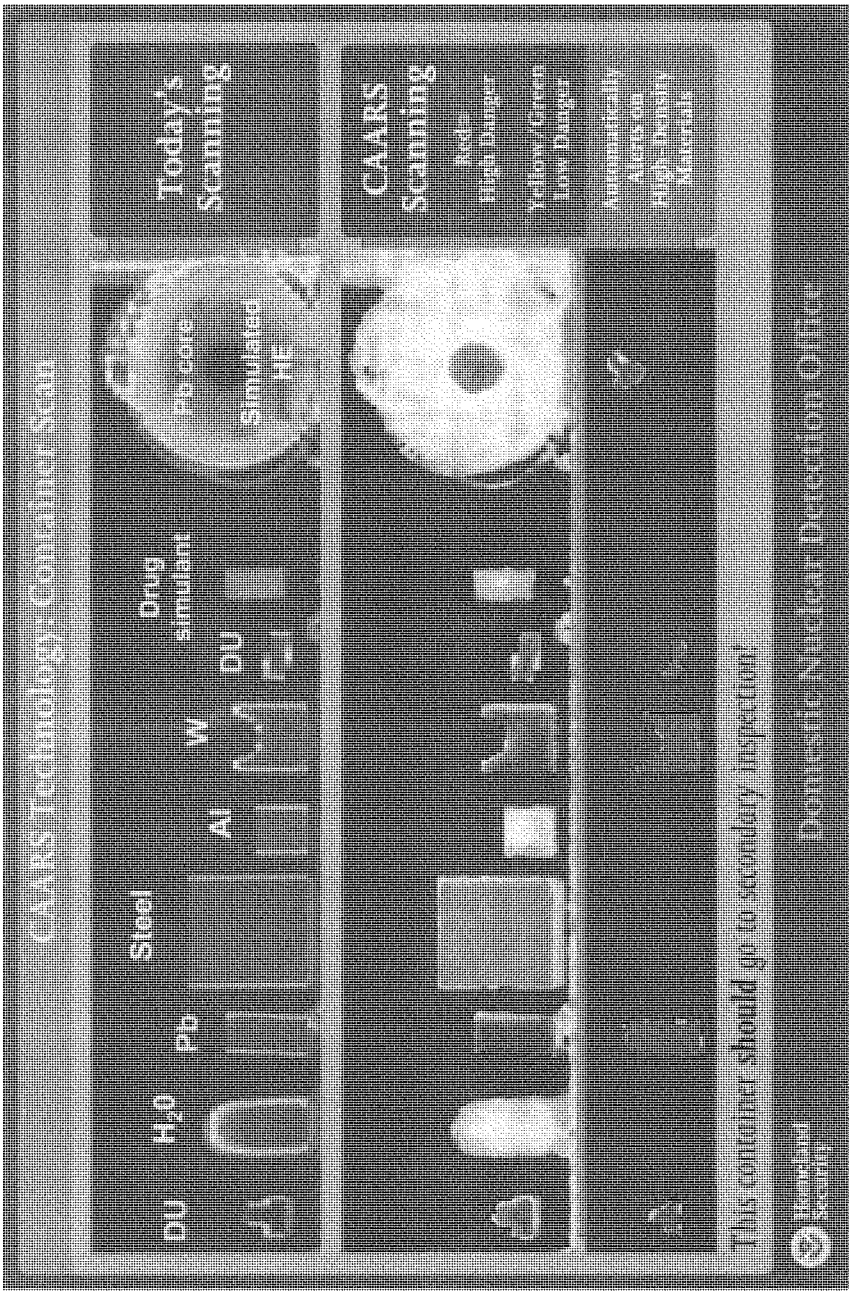
Our programs for detection of rad/nuc material in different environments with multiple operators must be designed and implemented dependent upon a broad range of factors. Thus, program management processes are tailored to fit the specific development needs and projected acquisition strategies for each piece of equipment. We work with subject matter experts and end-users to develop lists of technical standards and customer requirements against which we can evaluate operability and performance. Protocols for the development of the cutting edge rad/nuc detection capabilities such as those we are pursuing did not exist prior to DNDO's efforts and this has required us to foster relationships with other agencies and gather information about needs and standards that were not previously integrated. Along the way, DNDO has integrated lessons learned and best practices for collecting and documenting customer requirements, contracting for development of new technologies, developing and executing test and evaluation procedures, and making acquisition decisions. The course correction to the CAARS program is an example of how we make programmatic adjustments, when necessary, to ensure that operators will receive the best equipment as soon as possible to support their mission needs.

Conclusion

It is the intention of DNDO to continue to promote the development of emerging technologies and to rigorously test and evaluate equipment, in order to make procurement and acquisition decisions that will best address the detection requirements prescribed by the evolving Global Nuclear Detection Architecture. We work with our inter- and intra-agency partners to ensure that deployment and operability of our systems enhance security and efficiency without unnecessarily impeding legitimate traffic at the nation's borders.

We plan to work with the GAO and our customers to foster better understanding of our development, acquisition, and testing approaches and will continue to share results of our efforts with Congress. This concludes my prepared statement. With the committee's permission, I request my formal statement be submitted for the record. Chairman Lieberman, Ranking Member Collins, and members of the Committee, I thank you for your attention and will be happy to answer any questions you may have.





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Hearing before the

SENATE HOMELAND SECURITY AND GOVERNMENT AFFAIRS COMMITTEE

INTRODUCTION

Good morning Chairman Lieberman, Senator Collins and distinguished Members of the Committee. I am Thomas Winkowski, Assistant Commissioner, Office of Field Operations, U.S. Customs and Border Protection (CBP). Thank you for the opportunity to discuss with you today CBP's efforts to strengthen supply chain security while facilitating the flow of legitimate trade and travel.

I would also like to express my gratitude to the Committee for the strong support you provided for important CBP initiatives over the past year and ask for your continued support of other CBP initiatives, such as the Security Filing requirement, better known as "10+2", which will strengthen and further extend outward our layered-approach to border security. Your support has enabled CBP to make significant progress in securing our borders and protect our nation against terrorist threats. CBP looks forward to working with you to build on these successes.

CBP has made great strides to secure America's borders, facilitate legitimate trade and travel, and ensure the vitality of our economy. As America's frontline border agency, our priority mission is to protect the American public against terrorists and the instruments of terror, while at the same time enforcing the laws of the United States and fostering the nation's economic security through lawful travel and trade. Today, our trained CBP officers, technology, automation, electronic information, and partnerships with the trade community and foreign governments strengthen CBP's cargo security and anti-terrorism initiatives. We have extended our zone of security outward and have reinforced the components of our layered strategy.

As we work toward securing our ports and borders, we must also continue to perform our traditional missions, which include: stemming the flow of illegal drugs and other contraband; protecting our agricultural and economic interests from harmful pests and diseases; protecting American businesses from theft of their intellectual property; regulating and facilitating international trade; collecting import duties; and enforcing United States trade laws. On a typical day in fiscal year 2008, CBP processed more than 1.1 million pedestrians and passengers, 70,200 truck, rail, and sea containers and more than 82,000 shipments of goods; intercepted hundreds of aliens at and between our ports

of entry; and seized more than 7,300 pounds of narcotics at and between our ports of entry.

CBP OVERVIEW

I am pleased to appear before the Committee today to highlight key accomplishments related to supply chain security, in particular with regard to new and emerging technology. CBP has made tremendous progress in ensuring that supply chains bringing goods into the United States from around the world are more secure against potential exploitation by terrorist groups who aim to deliver weapons of mass destruction. The use of cutting edge technology has greatly increased the ability of our frontline CBP officers to successfully detect and interdict illicit importations of nuclear and radiological materials. CBP uses a multi-layered approach to ensure the integrity of the supply chain from the point of stuffing through arrival at a U.S. port of entry. This multi-layered defense is built upon interrelated initiatives, which include the 24-Hour and Trade Act rules, the Automated Targeting System (ATS), Non-Intrusive Inspection equipment and Radiation Portal Monitors, the Container Security Initiative (CSI), and the Customs-Trade Partnership Against Terrorism (C-TPAT) initiative. These complementary layers enhance security and protect our nation.

Today, I'm going to focus on the technology component of our strategy. Security technology is continuously evolving, and not only in terms of capability but also in terms of compatibility, standardization, and integration with information systems. As technology matures, it must be evaluated and adjustments to operational plans must be made. Priority should be given to effective security solutions that complement and improve the business processes already in place, and which build a foundation for 21st century global trade. A more secure supply chain also can be a more efficient supply chain. However, it is important to note that there is no single technological solution to improving supply chain security.

RPM and NII Detection Technology

The specific technologies that I'm going to address today – that play a critical role in our layered enforcement strategy – are large-scale X-ray and gamma imaging systems and radiation detection devices.

The deployment of imaging systems and radiation detection equipment has contributed to CBP's tremendous progress in ensuring that supply chains bringing goods into the United States from around the world are secure against potential exploitation by terrorist groups as a means to deliver weapons of mass effect.

Prior to the events of September 11, 2001, not a single Radiation Portal Monitor (RPM) and only 64 large-scale Non- Intrusive Inspection (NII) systems were deployed to our nation's borders.

By October of 2002, CBP had deployed the first RPM at the Ambassador Bridge in Detroit. Today, CBP has 1,120 RPMs operational at seaports, land border ports of entry, and mail facilities, and has deployed 203 large-scale gamma ray or x-ray imaging systems nationwide. Additionally, CBP has deployed over 1,200 Radiation Isotope Identifier Devices (RIID) and over 16,400 Personal Radiation Detectors (PRD). These devices allow CBP to inspect 100 percent of all identified high-risk cargo.

Currently, 94 percent of trucks arriving through northern border ports, 100 percent through southern border ports, and 98 percent of arriving sea containers are scanned by our radiation detection technologies. CBP scans 97 percent of all cargo arriving in the U.S. by land and sea using RPMs. In addition, CBP officers now scan 100 percent of general aviation aircraft arriving in the U.S. from foreign destinations using handheld radiation identification devices.

I also am pleased to report to this committee that on September 8, 2008, our first RPM deployment within the airport cargo environment was commissioned at Dulles International Airport. This milestone deployment allows CBP to scan all air cargo terminating at the Dulles Airport. CBP plans to deploy radiation detection systems to 30 of our nation's airports, which will result in the scanning of 99 percent of all air cargo entering the commerce of the U.S. for nuclear and radiological materials.

In addition to the significant strides made in the area of radiation detection technology, CBP also continues to deploy NII systems. NII technology serves as a force multiplier that allows officers to detect possible anomalies between the contents of the container and the manifest. CBP relies heavily on the use of NII as it allows us to work smarter and more efficiently in recognizing potential threats. In fact, well over 6 million scans using NII systems were conducted in fiscal year 2008. Additionally, to date, CBP NII systems have conducted over 26 million exams resulting in over 6,800 narcotics seizures with a total weight of over 2.2 million pounds.

The CBP NII Acquisition Plan is constantly reevaluated as available technology is assessed against the evolving threat. To help refine our acquisition strategy, we consider factors such as traffic volume, types and density levels of imported commodities, port infrastructure constraints, appropriate mix of equipment and cost effectiveness of available technology.

CBP has identified high-energy systems that have demonstrated the appropriate performance characteristics that will enhance CBP's ability to non-intrusively examine cargo and conveyances for weapons of mass effect and other contraband. These performance characteristics include mobility, greater penetration capability, and improved image quality.

In addition to our constant assessment of available technology, we are working closely with the Department of Homeland Security's Domestic Nuclear Detection Office (DNDO) and the Science and Technology Directorate on a strategy to develop near- and

long-term technology that spans our entire mission space and effectively integrates into our port operations.

As you know, in fiscal year 2006, financial management of RPM efforts transitioned from CBP to DNDO. I am happy to report that, even though the procurement role changed, the collaborative working relationship did not. What we bring to the process is knowledge of how our ports work, what we need for support of our front-line officers, the type of technological package we can inject in our operational environment, all the while being considerate that throughput and capacity is so delicate to cross-border travel and trade in the environment. CBP maintains an active consultation role in the research, development and deployment of RPM technology and looks forward to a continued, positive working relationship with Director Oxford and his staff.

The first generation RPM systems, although very sensitive, do have limitations. While they alert CBP officers to the presence of radiation, a secondary exam is necessary to positively identify the location and specific isotope causing the alert. In the event that a CBP officer is unable to positively resolve the alert, scientific reach back is available on a 7/24 basis through CBP's National Targeting Center and Laboratory & Scientific Services Division.

Understanding these limitations and the need for a more robust radiological detection architecture, DNDO was chartered to develop and acquire new technologies that will improve CBP's radiation and nuclear detection capabilities. One of these new technologies is the next generation RPM, or the Advanced Spectroscopic Portal (ASP).

The ASP is expected to enhance our detection capability, while significantly reducing the number of secondary examinations due to its ability to distinguish between actual threats and natural or medical radiation sources that are not security threats. I would like to note as a point of reference that, out of the approximately 275 million conveyances scanned with RPMs to date, CBP officers have responded to and resolved over 1.5 million alarms. As a specific example, the Port of Los Angeles – Long Beach, our nation's largest seaport, adjudicated nearly 115,000 radiological alarms last year, which translates into between 400 and 600 alarms on a typical weekday.

The ASP's ability to make the distinction between naturally occurring radioactive materials and real security alarms of potential threats is expected to significantly reduce the burden of responding to benign, nuisance alarms –mostly generated by everyday products– thus, allowing us to focus our staffing and resources on high-risk shipments and other border security initiatives.

As the scope of CBP's mission increases, we must continue to maintain our tactical edge by integrating new technology into our ports of entry. Certainly, working in collaboration with DNDO and other agency partners to identify emerging technology is a priority for CBP.

While CBP has successfully deployed large-scale gamma imaging equipment that scans 100 percent of commercial rail traffic arriving from Mexico and approximately 90 percent of all commercial rail traffic arriving into the U.S. from Canada, the scanning of rail cars with any fixed type of radiation portal monitor continues to present significant challenges. CBP and the DNDO will continue to work together while encouraging the private sector to produce new and emerging technologies to address these challenges.

CBP COORDINATION WITH THE DOMESTIC NUCLEAR DETECTION OFFICE (DNDO)

CBP has worked closely with DNDO in the development and operational testing of the ASP. CBP's focus for operational testing is to determine that systems can be deployed and are effective across a wide range of operational environments. Specifically, CBP provided DNDO with functional requirements for the ASP and has been actively engaged in every step of testing, including performance testing at the Nevada Test Site and the integration testing currently ongoing at a mock port of entry located at the Pacific Northwest National Laboratory.

During integration testing, CBP works closely with DNDO to assess each system's performance as an integrated unit, including reach-back capability and ancillary equipment, such as traffic lights and automated gate arms. This system capability is essential to maintain positive control of vehicles at our congested ports of entry. In addition, CBP works with DNDO to assess and categorize each system's defects to ascertain their technological impact as it relates to performance and operational impact to the front-line CBP officer – the users of the system.

If defects cannot be fixed by the vendor, CBP will asses each operational action or "work around" required to compensate for the defect to determine if it is operationally feasible. At this point in time, CBP is still in the process of assessing each vendor's system performance as an integrated unit and the feasibility of the totality of operational "work arounds." CBP currently expects several more weeks of integration testing before we are in a position to determine if this technology is ready for the next phase of testing, known as field validation, an actual stream of commerce testing at four major ports of entry.

CONCLUSION

In conclusion, I would like to say that technology plays an enormous role in securing the supply chain. Security technology is continuously evolving, not only in terms of capability but also in terms of compatibility, standardization, and integration with information systems. It is important to note that there is no single technology solution to improving supply chain security. As technology matures, it must be evaluated and adjustments to operational plans must be made. Priority should be given to effective security solutions that complement and improve the business processes already in place and build a foundation for 21st century global trade. A more secure supply chain also can be a more efficient supply chain.

Mr. Chairman, Members of the Committee, today I have addressed CBP's commitment to investing its efforts in the areas of new and emerging detection technology, along with some of the very positive steps we have taken towards enhancing cargo security. I believe CBP has demonstrated and will continue to demonstrate its leadership and commitment to protecting America against terrorists and the instruments of terror. As we move forward to face the many challenges ahead, we look forward to working in partnership with the 111th Congress, as we have with the 110th, to continue building on our many accomplishments and focus on getting the desired results. With continued support, CBP will succeed in meeting the challenges posed by the ongoing terrorist threat, while continuing to facilitate the ever-increasing numbers of legitimate shipments and travelers.

Thank you again for this opportunity to testify. I will be happy to answer any of your questions.

Statement of

Thomas B. Cochran, Ph.D.
Senior Scientist, Nuclear Program,
Natural Resources Defense Council, Inc.

on
The Utility of
Advanced Spectroscopic Portal Monitors
for Interdicting WMD

Before the
Committee on Homeland Security and Governmental Affairs
United States Senate
Washington, D.C.

September 25, 2008

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Introduction. Mr. Chairman and members of the Committee, thank you for providing the Natural Resources Defense Council (NRDC) the opportunity to present its views on the Advanced Spectroscopic Portal (ASP) systems that are currently being considered for deployment at ports and border crossings. NRDC is a national, non-profit organization of scientists, lawyers, and environmental specialists, dedicated to protecting public health and the environment. Founded in 1970, NRDC serves more than 1.2 million members and supporters with offices in New York, Washington, Los Angeles, San Francisco, Chicago and Beijing. I am a nuclear physicist and former director of NRDC's Nuclear Program.

Before summarizing our conclusions, please permit me to submit for the record a recent article summarizing our analysis of the issue before us, namely, "Detecting Nuclear Smuggling," written by my colleague Matthew G. McKinzie and myself, which appeared in the April 2008 issue of the *Scientific American*. I also wish to submit a rulemaking petition we presented to the Nuclear Regulatory Commission (Docket No. PRM-50-90) that seeks to establish a date after which the Commission will no longer license the civil use of highly enriched uranium (HEU), along with the Federal Register Notices describing the petition and requesting public comments (73 FR 30321-30322 (27 May 2008) and 73 FR 49965 (25 Aug 2008).

Summary of Conclusions.

1. Advanced Spectroscopic Portal (ASP) monitors are not cost-effective. Additional units should not be purchased. The limited number of ASP monitors already purchased should be used for continued field testing and research and development.
2. A crude nuclear device constructed with highly enriched uranium (HEU) poses the greatest risk of mass destruction by terrorists.
3. Neither the ASPs, nor the currently deployed Radiation Portal Monitors (RPMs), can reliably detect lightly-shielded, significant quantities of HEU.
4. The ASPs, if deployed for primary screening, will not significantly increase the probability of detection of HEU over the probability of detecting HEU using the currently deployed RPMs.
5. The ASPs, if deployed for secondary screening, will not increase the probability of detection of HEU or other materials at all over the probability of detection using the currently deployed RPMs, unless the alarm threshold of the RPMs is lowered, causing the false alarm rate of the RPMs to increase. Even then, the ASPs will not *significantly* increase the probability of detecting HEU.
6. Plutonium is detected primarily by neutron detectors, therefore the spectroscopic detectors of the ASP which do not detect neutrons will not increase the probability of detecting plutonium. Consequently, the ASPs will not significantly increase the probability of detecting plutonium.
7. There is no evidence that the potential benefits of the ASP monitors in reducing the false alarm rate and improving the accuracy of alarm resolution is cost-

effective or now necessary to reduce delays to commerce from the screening process.

8. For the purpose of certifying the ASPs, the Department of Homeland Security (DHS) has defined "significant increase in operational effectiveness"—the certification requirement under the FY2007 Homeland Security Appropriations Act (P.L. 109-295)—primarily in terms of its ability to reduce the false alarm rate, rather than in terms of its ability to increase the probability of detection of HEU. Consequently, the process has been rigged to insure certification of the ASP even though (1) they will not significantly increase the probability of detecting nuclear weapon-usable HEU and plutonium, and (2) a reduction in the false alarm rate and an improvement in the accuracy of alarm resolution is not cost-effective.
9. The Executive Branch and the Congress currently lack an office or interagency process to establish priorities for funding Federal programs to reduce the threat of terrorist use of weapons of mass destruction.
10. Too much emphasis has been placed on radiation detector deployment at border crossings, when the most effective tools for combating terrorist use of weapons of mass destruction are:
    a. eliminating and securing weapon-usable materials at their source
    b. good intelligence
    c. good police work, and
    d. response planning and training to improved mitigation and recovery capabilities.
11. The sources of HEU that represent the greatest risk of diversion are associated with civil and naval fuel activities.
12. The highest priorities of the United States in this area should be to eliminate the civil use of HEU globally, blend down excess military stocks, and increase security on the remaining military stocks.
13. In this regard the President should declare, and back with the full weight of our diplomacy, that the United States seeks—in the interest of and in cooperation with all nations—to achieve as quickly as possible a global ban on the civil use of HEU. For its part the United States should more rapidly convert all research and test reactors and medical isotope targets from HEU to low enriched uranium (LEU).
14. The President should request that the Nuclear Regulatory Commission (NRC) change its regulations (10 CFR 50.64, 10 CFR 50.2, *inter alia*) so that it no longer preserves the option of licensing civil use of HEU, except for the purpose of down-blending existing stock of HEU, and to permit for a limited period of time HEU at facilities where there is a good-faith ongoing effort to convert from HEU to LEU.

Analysis and Discussion.

I will elaborate on some of the conclusions listed above.

1. Advanced Spectroscopic Portal (ASP) monitors are not cost-effective. Additional units should not be purchased. The limited number of ASP monitors already purchased should be used for continued field testing and research and development.
These conclusions follow from our assessment that ASPs cannot reliably detect HEU, as enumerated below, and from our view that the deployment of the ASPs cannot be justified on the basis that they will reduce the false alarm rate and accuracy of alarm resolution.

2. A crude nuclear device constructed with HEU poses the greatest risk of mass destruction by terrorists.
A simple, gun-like improvised nuclear bomb design involves two subcritical pieces of HEU that are driven together so that they form a supercritical mass. The "Little Boy" atom bomb dropped on Hiroshima assembled about 65 kilograms of HEU within a millisecond by firing one subcritical piece down a gun barrel at a second subcritical piece. In 1987 Nobel laureate physicist and Manhattan Project scientist Luis Alvarez noted that if terrorists had modern weapons-grade uranium, they "would have a good chance of setting off a high-yield explosion simply by dropping one half of the material on the other half." Our own technical analysis of this issue confirms Alvarez's statement. Also, for reasons set forth in our *Scientific American* article, HEU represents a greater risk than plutonium. Designing an HEU bomb seems shockingly simple and the only substantial impediment for terrorists is secretly gathering sufficient material.

As noted by Vayl Oxford in his September 18, 2007 testimony before the Subcommittee on Oversight and Investigations of the House Committee on Energy and Commerce, according to the 9/11 Commission, one of the gravest threats facing the Nation is the possibility of a nuclear threat. The Defense Science Board's (DSB's) 2005 Summer Study on "Reducing Vulnerabilities to Weapons of Mass Destruction", Volume 1, May 2007, analyzed fourteen scenarios that span nuclear, biological, chemical and radiological threats. The only nuclear threat analyzed by the DSB where radiological monitoring could potentially play a role in interdiction was an "improvised nuclear device using highly enriched uranium stolen from the former Soviet Union."

3. Neither the ASPs, nor the currently deployed RPMs, can reliably detect lightly-shielded, significant quantities of HEU.
To reveal radioactive material, the radiation must first be detected, but also the signals must be discernible from those produced by harmless radioactive substances in the cargo. Two significant factors can reduce a detector's ability to detect the signal of HEU: a) shielding that absorbs radiation, and b) the distance between the source and detector. These factors present an insurmountable impediment for both RPMs and ASPs to reliably detect HEU. The basis for this conclusion is summarized in Thomas B. Cochran and Matthew G. McKinzie, "Detecting Nuclear Smuggling," *Scientific American,* April 2008, which I have submitted for the record. More detailed technical documentation for these conclusions is available to the committee should it desire to receive it.

4. The ASPs, if deployed for primary screening, will not significantly increase the probability of detection of HEU over the probability of detecting HEU using the currently deployed RPMs.
The ASPs use sodium-iodide (NA-I) or other crystals to provide the spectroscopic capability of the ASPs. The mass and volume of these crystals is substantially smaller than the mass and volume of the plastic scintillation detector material used in the RPMs (and in the ASPs). Although the background count rate in the energy channels of the Na-I crystals is reduced over the background count rate of the plastic scintillators, this difference does not make up for the difference in the detector mass. Therefore if the ASPs are deployed for primary screening, there capabilities to flag HEU are practically identical to the RPMs.

5. The ASPs, if deployed for secondary screening, will not increase the probability of detection of HEU at all over the probability of detection using the currently deployed RPMs, unless the detection threshold of the RPMs is lowered, causing the false alarm rate of the RPMs to increase. Even then the ASPs will not *significantly* increase the probability of detecting HEU.
Since the HEU must be detected by the RPMs before the ASPs are utilized in a secondary screening mode, the ASPs cannot increase the probability of detecting the HEU. Note that David Huizenga, in his September 18, 2007 testimony before the Subcommittee On Oversight and Investigations of the House Committee on Energy and Commerce, was careful to say that the ASP monitors "will improve the rate and accuracy of alarm resolution." Nowhere does he claim the ASP monitors will increase the probability of detection of HEU or other radioactive materials of concern.

6. Plutonium is detected primarily by neutron detectors. Therefore the spectroscopic detectors of the ASP which do not detect neutrons will not increase the probability of detecting plutonium.
While I do not have access to the ASP design data, and therefore could be mistaken, I am unaware of any significant improvement in the sensitivity of the helium-3 neutron detectors. In any case, since the improvised nuclear device detonation risk associated with HEU is much greater than the risk associated with plutonium, overall cost-effectiveness of the ASPs cannot be justified on the basis of a marginal improvement in the plutonium detection probability. To the best of my knowledge, the technical literature in this area exhibits no substantial concerns regarding the RPM systems to detect plutonium.

7. There is no evidence that the potential benefit of the ASP monitors in reducing the false alarm rate and improving the accuracy of alarm resolution is cost-effective or necessary to reduce delays to commerce from the screening process.
ASP monitors have the potential to reduce the false alarm rate over that of the currently deployed RPMs, irrespective of whether the ASPs replace the RPMs as the primary screening system, or serve as a secondary screening system augmenting the continued use of RPMs as the primary screening system. In either case, I am unaware of any analysis that demonstrates that reducing the false alarm rate using ASPs is cost-effective. There is no evidence that the quantified definition of "significant increase in operational

effectiveness" being used for certification was derived from a cost-benefit analysis based on a comparison of current versus expected delays in moving commerce under different assumptions about the rate and accuracy of alarm resolution. In our view, peer-reviewed analysis to answer this question is required but has not been performed or published.

8. For the purpose of certifying the ASPs, the Department of Homeland Security (DHS) has defined "significant increase in operational effectiveness"—the certification requirement under the FY2007 Homeland Security Appropriations Act (P.L. 109-295)—primarily in terms of its ability to reduce the false alarm rate, rather than in terms of its ability to increase the probability of detection of HEU. Consequently, the certification process has been rigged to insure certification of the ASP even though (1) they will not significantly increase the provability of detecting nuclear weapon-usable HEU and plutonium, and (2) a reduction in the false alarm rate and an improvement in the accuracy of alarm resolution is not cost-effective. Customs and Border Protection or DNDO can provide the test requirements used for defining "significant increase in operational effectiveness." DNDO concluded ASP certification and deployment of ASPs was a vital priority *prior to* completing their testing.

9. and 10. The Executive Branch and the Congress currently lack an office or interagency process to establish priorities for funding Federal programs to reduce the threat of terrorist use of weapons of mass destruction. Too much emphasis has been placed on radiation detector deployment at border crossings, when the most effective tools for combating terrorist user of weapons of mass destruction are:

a. eliminating and securing weapon-usable materials at their source
b. good intelligence
c. good police work, and
d. response planning and training to improved mitigation and recovery capabilities

As noted by Dana A. Shea, a Specialist at the Congressional Research Service, in July 16, 2008 testimony before this committee, the Global Nuclear Detection Architecture is primarily a structure of nuclear detection systems. The U.S. Government lacks "an overarching plan to help guide how it will achieve a more comprehensive architecture." Thus, prioritizing expenditures among radiological detection systems largely excludes trade-offs among intelligence, law enforcement, planning for response to nuclear events, and "first line of defense" programs to eliminate or secure nuclear source materials. Where is the evidence, for example, that spending some $2 billion or more on ASP deployments is more cost-effective than investing these funds on efforts to accelerate the elimination of HEU sources and seeking a global ban on civil use of HEU? The Defense Science Board's 2005 Summer Study, "Reducing Vulnerabilities to Weapons of Mass Destruction" identified six high payoff low-cost areas of recommendations that it believed would greatly reduce vulnerabilities to weapons of mass destruction. None involved improving the rate and accuracy of the alarm resolution of RPMs.

11. and 12. The sources of HEU that represent the greatest risk of diversion are associated with civil and naval fuel activities. The highest priority of the United

States should be to eliminate the civil use of HEU globally, blend down excess military stocks, and increase security on the remaining military stocks.
This can be deduced from an analysis of historical data on nuclear trafficking following the collapse of the Soviet Union. There is no evidence—at least not in the open literature—of the diversion of a nuclear weapon. As indicated by Senator Lieberman when he opened the hearings before this committee on July 16, 2008, "Between 1993 and 2006, there were 1080, confirmed incidents of illicit trafficking in nuclear materials. Eighteen of those cases involved weapons-grade materials, and another 124 involved material capable of making a so-called "dirty bomb" that would use conventional explosives to spread nuclear materials." An analysis of this record, I believe, would show that the majority, if not all, of the 18 cases involving HEU or plutonium were from facilities using these materials for civil research or the production or use of naval or space reactor fuel. Few if any of these attempted diversions were from nuclear weapon production facilities. For reasons explained in our *Scientific American* article, HEU represents a greater threat than plutonium with regard to use by terrorists for construction of an improvised nuclear explosive.

13. and 14. In this regard the President should declare, and back with the full weight of our diplomacy, that the United States seeks—in the interest of and in cooperation with all nations—to achieve as quickly as possible a global ban on the civil use of HEU. For its part the United States should more rapidly convert all research and test reactors and medical isotope targets from HEU to low enriched uranium (LEU). The President should request that the Nuclear Regulatory Commission (NRC) change its regulations (10 CFR 50.64, 10 CFR 50.2, *inter alia*) so that it no longer preserves the option of licensing civil use of HEU, except for the purpose of down-blending existing stock of HEU, and to permit for a limited period of time HEU at facilities where there is a good-faith ongoing effort to convert from HEU to LEU.
Simply stated, if the HEU is eliminated it cannot be used to construct a nuclear explosive device. While it would not completely eliminate the threat, achieving, and even seeking a global ban on civil use of HEU would provide the greatest reduction in the risk associated with terrorist use of weapons of mass destruction.

Conclusion.
The RPMs have two problems. They cannot reliably detect lightly shielded HEU and they produce excessive false alarms. The ASP monitors are an attempt to solve the wrong problem, namely, reducing the false alarm rate of the RPMs, rather than increasing the probability of detection of HEU. In this regard, the ASPs are not cost-effective and more ASPs should not be purchased.

Because the RPMs do not reliably detect HEU, they are ineffective at reducing the U.S. national security risk due to nuclear terrorism. Correcting the wrong problem also does not reduce the risk. DHS hides these shortcomings by claiming the RPMs and ASPs are part of a layered defense, no part of which is 100 percent effective. While true, this does not imply that this or any other layer is cost-effective. The United States is spending billions of dollars on "scarecrows," hoping the deployment of these ineffective systems will convince the birds to fly to a different field. We can do better. We can, for example, call for a global ban on the production and use of HEU for civil purposes, as well as a ban on further production of HEU and plutonium for military purposes and apply the full weight of the government to achieve these goals. To protect the U.S. from terrorist nuclear attack, the country should forge a larger, more effective strategic plan with the highest priority given to eliminating civil use of HEU globally.

NATIONAL SECURITY

DETECTING NUCLEAR SMUGGLING

Radiation monitors at U.S. ports cannot reliably detect highly enriched uranium, which onshore terrorists could assemble into a nuclear bomb

By Thomas B. Cochran and Matthew G. McKinzie

KEY CONCEPTS

- Existing radiation portal monitors, as well as new advanced spectroscopic portal machines, cannot reliably detect weapons-grade uranium hidden inside shipping containers. They also set off far too many false alarms.
- So-called active detectors might perform better, but they are several years off and are very expensive.
- The U.S. should spend more resources rounding up nuclear smugglers, securing highly enriched uranium that is now scattered overseas, and blending down this material to low-enriched uranium, which cannot be fashioned into a bomb.

—*The Editors*

Customs inspectors at a pier in New York City send a sealed cargo container just taken off a ship from Istanbul through a radiation scanner. A dozen new tractors seem to be inside. Although the detector senses no radiation, the inspectors open the container anyway. Their handheld units show no radiation either, so they allow the container to leave. A private hauler drives it to a small Midwestern city. There terrorist cell members remove what was their final shipment of highly enriched uranium, concealed as 10 metal washers in the tractor engines, together weighing two kilograms. Months later an improvised nuclear device with a yield of one kiloton is detonated in Los Angeles. The blast, fire and airborne radioactivity kill more than 100,000 people. Virtually all shipping into the U.S. is halted, precipitating a financial crisis. Military operations commence in the Middle East after forensics and intelligence efforts trace the plot to cells in Pakistan and Iran.

Are these terrible events far-fetched? Twice in recent years the two of us helped an ABC News team that smuggled a soda can–size cylinder of depleted uranium through radiation detectors at U.S. ports. The material did not pose a danger to anyone, but it did emit a radiation signature comparable to that of highly enriched uranium (HEU), which can be assembled into a nuclear bomb. As you read this article, the Bush administration and the U.S. Congress are likely considering spending billions of dollars for additional detectors at ports and other border crossings—detectors that would also fail to reliably spot our cylinder or a similar amount of HEU.

A crude nuclear device constructed with HEU poses the greatest risk of mass destruction by terrorists. In the aftermath of the September 11 attacks, the U.S. government sought to prevent the smuggling of nuclear weapons and materials. The U.S. Department of Homeland Security instituted what it called a "layered defense," built largely around costly radiation detectors.

Why focus on detection? The sheer number of cargo containers entering the U.S. is staggering. Containers come in different sizes, so the number is counted as the equivalent of standard, 20-foot containers, or "twenty-foot equivalent units" (TEUs). More than 42 million TEUs entered American ports in 2005. By 2007 Homeland Security had deployed hundreds of radiation portal monitors. It also asked Congress for additional, advanced machines but in October

JOHN MCDONNELL AP Photo; PHOTOILLUSTRATION BY SCIENTIFIC AMERICAN

backed off to perform further testing on those units, in light of software problems. Although some federal officials and government contractors claim that the technology will be effective, an analysis we have conducted shows that the machines will not reliably reveal HEU. Instead the government must place a much higher priority on efforts to identify and eliminate or secure known stocks of HEU, stopping the potential problem at its source.

Easy to Hide

To wreak havoc, terrorists could steal, purchase or be given a fully assembled nuclear weapon, but that scenario is not likely. Intact nuclear weapons are generally under greater physical security than the fissile material needed to build one. A more probable route is to illicitly obtain this material—which is now scattered among many civil, military and space power facilities worldwide—and then to smuggle it into the U.S. and assemble a bomb. Two fissile materials are of primary concern: plutonium and HEU.

Less plutonium than HEU is needed to achieve a given explosive yield, but crafting a plutonium weapon requires far more complex engineering. Plutonium is also easier to detect if shipped among cargo. HEU is easier to handle, to form into a crude explosive device and is much harder to detect in a cargo container. Furthermore, a greater amount of HEU exists in more dispersed and less secured places. According to the International Atomic Energy Agency, 275 confirmed incidents involving nuclear material and criminal intent occurred globally between January 1993 and December 2006. Four involved plutonium, but 14 involved HEU. More than 40 countries harbor HEU, with the highest risk of theft being from facilities in Russia, other former Soviet states and Pakistan. And a recent Harvard University study concluded that U.S.-funded security work had not been completed at 45 percent of nuclear sites of concern in countries once part of the Soviet Union.

Obtaining nuclear material is no small challenge, but the ABC News exercises showed that smuggling it into the U.S. can be a straightforward matter. In the summer of 2002 an ABC News unit successfully slipped a lead-lined steel pipe containing a 6.8-kilogram (15-pound) cylinder of depleted uranium (DU) past U.S. Customs and Border Protection by placing it inside a standard cargo container. This material is unsuitable for a weapon, but its chemical properties are

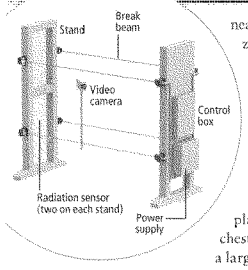
URANIUM IN A HAYSTACK

20
Length, in feet, of a typical shipping container. The volume of international shipping is measured in "twenty-foot equivalent units," or TEUs.

297 million
Number of TEUs shipped worldwide in 2005.

42 million
TEUs entering U.S. ports that same year.

6,500
TEUs arriving at the Port of New York and New Jersey on a light day; up to 13,000 on a busy day.



CURRENT PORTAL MONITORS wait to detect radiation as containers slowly pass by. Inset: Sensors on both sides can pick up radiation; a video camera identifies the vehicle.

nearly identical to those of HEU. Our organization, the Natural Resources Defense Council (NRDC), prepared the shielded cylinder. The ABC News crew placed the pipe in an ordinary suitcase and carried it on passenger trains from Vienna to Istanbul—a route chosen to simulate a terrorist journey. The news crew saw no radiation detection equipment along the way.

On reaching Istanbul, the journalists placed the suitcase inside an ornamental chest, packed alongside crates of huge vases in a large metal shipping container that left Istanbul by ship on July 10. When the container arrived at Staten Island in New York, Customs officials, part of Homeland Security, targeted it as high risk, in part because of its origin, and flagged it for more thorough screening. The machine and its operators failed to sense the uranium. ABC News aired its story on September 11, 2002, a year after the 9/11 attacks.

ABC News repeated the experiment a year later. This time the suitcase was placed inside a teak trunk that was loaded with other furniture within a container in Jakarta. The container arrived at the Port of Long Beach, Calif., on August 23. As before, this shipment was targeted and screened by Customs personnel but was allowed to proceed by truck on September 2. ABC News announced that officials once again failed to detect depleted uranium. After the story aired, Customs seized our cylinder, "disposed" of it and placed one of us (Cochran) on an air-travel watch list for several months.

Inadequate Detectors

The Department of Homeland Security began installing first-generation detector systems—known as radiation portal monitors (RPMs)—in late 2002. Despite the ABC News results, more than 800 of these machines and their successors have been placed at manned ports of entry, land border crossings, airports, seaports, and international mail and courier facilities. These machines are so-called scintillation detectors that count neutrons and gamma rays but do not measure their total energy. The instruments can therefore gauge the intensity of detected radiation but cannot measure the characteristic radiation spectrum, or signature, of a source.

To reveal radioactive material, the radiation must first be detected, but then the counts must also be discernible from those produced by harmless radioactive substances in the cargo—everything from bananas, brazil nuts and white potatoes to cat litter, aircraft parts, glass and

FRANK FRANKLIN II AP Photo (top); GEORGE RETSECK (inset)

concrete. This natural background radiation can vary significantly depending on a container's contents. The inability of RPMs to measure a source's characteristic radiation spectrum, however, leads inevitably to false alarms from background sources, and the false-alarm rate for the current monitors is problematically high—as high as several hundred a day at certain facilities. When an alarm is triggered, Customs agents must run containers through further scans or inspect them by hand, adding considerable shipping delays and cost.

The further testing is done by a gamma-ray imaging system called VACIS, which produces an x-ray scan of the container contents. Customs officers are also equipped with small, pagerlike personal radiation detectors. Although all these sensors were present during the second ABC experiment, none of them detected the concealed uranium.

Given the RPMs' deficiencies, Homeland Security announced in 2006 that it would acquire hundreds of second-generation radiation detectors—advanced spectroscopic portal (ASP) machines—with the price tag for total hardware alone exceeding $1 billion. The system has both gamma-ray and neutron detectors but can also perform gamma-ray spectroscopy to show a radiation signature; when applied together, the techniques are intended to lower false alarms by identifying a source as harmless radioactive cargo. In August 2007 President George W. Bush signed into law the Implementing Recommendations of the 9/11 Commission Act of 2007, which mandates that within five years *all* maritime cargo be scanned *before* it is loaded into vessels in foreign ports heading to the U.S. Many more detectors would have to be deployed.

This move is ill-advised, however, because even the ASP machines are not dependable. Their ability to reliably sense shielded HEU was not demonstrated during classified trials at the U.S. Department of Defense's Nevada test site. Moreover, the ASP machines failed to function properly, when installed at the Port Authority of New York and New Jersey, as a result of software problems. Indeed, in November 2007 the *Washington Post* revealed that Homeland Security itself had questioned the machines' effectiveness. According to the newspaper, in September 2006 auditors at the U.S. Government Accountability Office alleged that officials had greatly exaggerated the tools' capabilities. Another investigation by the accountability office a year later found that officials had overseen compromised tests of the ASP system. After petitioning Congress to allocate funds for more ASPs, in October 2007 Homeland Security chief Michael Chertoff decided to postpone certifying the new ASPs and further production until problems were resolved. When this issue of *Scientific American* reaches newsstands, Homeland Security will likely be presenting Congress with new contractor performance data on the ASP detectors. Legislators will have to decide whether to continue to fund such acquisitions in light of the machines' checkered history.

A Fair Surrogate

Homeland Security was not fond of the ABC exercises and asserted publicly that if NRDC's slug of depleted uranium had been HEU, inspectors would have identified and intercepted it. We disagree. Our analyses show that when even lightly shielded with lead and steel, depleted and highly enriched uranium have similarly weak radiation signals and would be equally hard to detect by either generation of monitor.

To compare DU with HEU, we calculated the radiation particle count and detector dose rate at various distances from shielded and unshielded samples of both and then compared these quantities with background radiation. We performed our calculations using the standard radiation analysis software employed by Los Alamos National Laboratory and common uranium radiation data supplied by Lawrence Livermore National Laboratory.

Some HEU contains extremely small concentrations of the isotope uranium 232, which is not found in natural uranium but is produced when HEU is irradiated in nuclear reactors. In the U.S. and Russia most HEU was enriched from uranium that was recovered from military fuel and thus is contaminated with trace amounts of uranium 232. Even minuscule quantities, less than one part per billion (ppb), have a telltale radiation signal.

Two significant factors can reduce an RPM's ability to detect the signal of either pure or contaminated HEU: shielding that absorbs radiation, and distance between the source and detector. When not shielded, the calculated dose rate for pure and contaminated HEU is greater than for DU. But much of the dose in both cases arises from the lower-energy part of the gamma-ray spectrum, which is readily absorbed by shielding. If the source is wrapped in a one-millimeter-thick layer of lead, the radiation dose rate from HEU with no uranium 232 is *less* than

RADIATION COMPARED

The slug of depleted uranium (DU) that we prepared and that ABC News smuggled past portal monitors is shown below. It is a good substitute for testing whether the monitors could detect highly enriched uranium (HEU) because the radiation signal from uncontaminated DU, when shielded inside a cargo container, is actually greater than that from uncontaminated HEU.

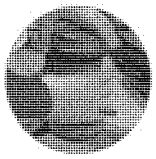
CALCULATED DOSE RATE (microrad/hour)
two centimeters away, when wrapped in three millimeters of lead

DU: 1,500
HEU: 100

CALCULATED DOSE RATE (microrad/hour)
two meters away, for same samples

DU: 1.0
HEU: 0.1

NATURAL BACKGROUND: 2–10

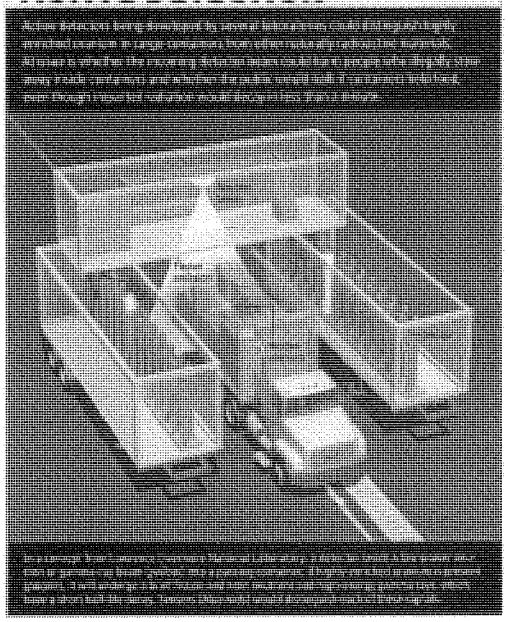


COURTESY OF MATTHEW G. MCKINZIE

DEPLETED URANIUM cylinder, shielded in lead, was slipped past portal detectors.

NEW TECHNOLOGY

ACTIVE DETECTION



the dose rate of similarly shielded DU. For HEU contaminated with 2 ppb of uranium 232 and encased in the same shielding, the gamma-ray dose rate is about equal to that from DU. Public data indicate that roughly half of Russian HEU may have a uranium 232 concentration less than 0.2 ppb, and all HEU produced in Pakistan and Iran is likely free of the isotope.

For both DU and HEU, the emitted radiation decreases with distance from the source. We calculated that for lightly shielded HEU (covered by one-millimeter-thick lead) with no uranium 232, the dose rate is less than 5 percent of the background radiation at two meters; for HEU contaminated with 0.2 ppb the dose rate is less than 10 percent of the background radiation. In a typical portal monitor the distance from a standard shipping container's center to a detector on either side is greater than two meters. Thus, neither RPMs nor the newer ASPs would distinguish most shielded HEU from Russia if any were placed near the center of a container.

Our work demonstrates that DU is a good surrogate for HEU in testing Homeland Security's ability to detect smuggled nuclear weapons material. Had our test slug been HEU, the RPMs would not have detected it, and neither would have the next-generation ASPs.

Enough for a Bomb

To make matters worse, it is conceivable that terrorists could smuggle HEU into the U.S. by shipping pieces smaller than the slug we used. The question, then, is whether small pieces of HEU could be assembled into a crude bomb with substantial explosive yield.

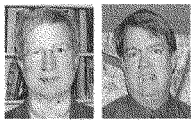
Most modern nuclear weapons are based on implosion: conventional explosives are detonated to compress nuclear material so well that it erupts in a runaway fission chain reaction. Terrorists operating covertly are unlikely to be able to assemble such a device because of its complexity. A simpler gunlike design can be effective, however; two subcritical pieces of HEU are driven together so that they form a supercritical mass. The "Little Boy" atom bomb that was dropped on Hiroshima in 1945 brought together about 65 kilograms of HEU within a millisecond by firing one subcritical piece down a gun barrel at a second subcritical piece.

The "quality" of nuclear material since then has continued to improve, however, so much so that in 1987 Nobel laureate physicist and Manhattan Project scientist Luis Alvarez noted that if terrorists had modern weapons-grade uranium, they "would have a good chance of setting off a high-yield explosion simply by dropping one half of the material on the other half." To test that assertion, we modeled the difference between the Little Boy design and an improvised nuclear device as crude as the one Alvarez described.

We again used the Los Alamos software code and modeled the yield of Little Boy on publicly available design information, as well as two simple configurations of HEU in a gun assembly. Our modeling showed that, for an explosive-driven gun assembly, the minimum quantity that was required to obtain a one-kiloton explosive yield would be substantially less than the amount of HEU in Little Boy. Most disturbingly, with larger quantities, a one-kiloton yield could be achieved with a probability greater than 50 percent by dropping a single piece of HEU onto another, confirming Alvarez's statement. Designing an HEU bomb seems shock-

[THE AUTHORS]

Nuclear physicists Thomas B. Cochran ***(left)*** **and** Matthew G. McKinzie ***(right)*** **work together at the Natural Resources Defense Council in Washington, D.C. Cochran holds the Wade Greene Chair for Nuclear Policy; McKinzie is a senior scientist in the Nuclear Program.**



GEORGE RETSECK (illustration); COURTESY OF THOMAS B. COCHRAN (Cochran); COURTESY OF MATTHEW G. MCKINZIE (McKinzie)

EDITORS' NOTE

The authors and editors have been careful to not expose details that could help terrorists or that are not readily available in published sources.

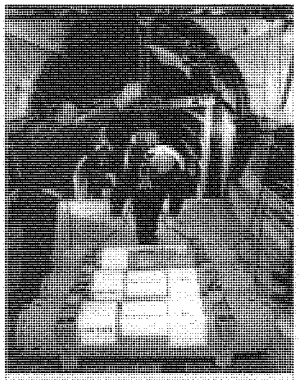
ingly simple. The only real impediment, therefore, is secretly gathering sufficient material.

More Effective Countermeasures

Given the difficulty portal monitors have in detecting smuggled HEU, stopping any clandestine influx is crucial. The U.S. government has essentially four choices: rely on intelligence to identify and round up nuclear smugglers; eliminate HEU at its source; consolidate HEU and safeguard it; or detect HEU as it crosses international borders. Wise policy would pursue all these avenues in a balanced way, based on their effectiveness and cost. The current U.S. approach, however, is far too reliant on the dubious detectors. The federal government does have programs to "blend down" excess Russian military stocks of highly enriched uranium into low-enriched uranium and to replace HEU fuel in research reactors with low-enriched fuel. The U.S. is also helping to improve the physical security of some Russian HEU stocks. But the government has not given these programs, which do not fall under Homeland Security, the same high priority as portal monitor programs.

As trials have shown, neither RPMs nor ASPs are currently able to provide reliable protection. Homeland Security does support research on other advanced detection schemes, such as active detection systems that bombard a container or vehicle with low-energy neutrons, creating a telltale gamma-radiation signal. Last year Lawrence Livermore unveiled a prototype that it claims can detect lightly shielded uranium pieces of less than one kilogram, with a low false-alarm rate [*see box on page 102*]. Rapiscan Systems in Torrance, Calif., is developing a similar scheme. The technology would have to be commercialized and its costs significantly reduced, however. Concern by the public, and by shippers, that cargo contents would be exposed to the gamma rays produced would also have to be addressed, even though the energy levels are very low and the radiation dissipates within an hour. Lawrence Livermore has said it could have a system ready for commercial evaluation by 2009.

Congress is likely now debating whether it should continue to support the troubled, multibillion-dollar ASP program. With RPMs and ASPs, Customs agents might catch an amateur terrorist attempting to smuggle HEU, but they are unlikely to catch a sophisticated agent like 9/11 terrorist Mohamed Atta. The U.S. government should instead place a much higher policy priority, and in some cases spend more funds, on securing and eliminating HEU sources worldwide. The government should also seek a global ban on the commercial use of HEU, such as isotope production for medical applications and experiments on nuclear reactor designs, most of which can be performed with low-enriched uranium or in particle accelerators. To protect the U.S. from terrorist nuclear attack, the country should forge a larger, more effective strategic plan centered on eliminating access to weapons-grade material. ■



INTERNATIONAL ATOMIC ENERGY AGENCY *via AP Photo*

BETTER PLAN

Radiation monitors at U.S. ports are significant for preventing terrorists from smuggling highly enriched uranium for a nuclear bomb. We maintain that the country should therefore enhance protective actions, some not under way. Chief among them:

- Identify and round up nuclear smugglers.
- Secure more sources of poorly guarded HEU and repatriate to its country of origin for elimination.
- Blend down excess Russian stocks of HEU into low-enriched uranium.
- Replace HEU fuel in research reactors with low-enriched fuel.
- Seek a global ban on the commercial use of HEU, such as medical applications, most of which can be performed with low-enriched uranium.

—*The E. and M. G. Mn. E.*

MORE TO EXPLORE

Thwarting Nuclear Terrorism. Alexander Glaser and Frank N. von Hippel in *Scientific American*, Vol. 294, No. 2, pages 56–63; February 2006.

Securing the Bomb 2007. Matthew Bunn. Harvard University and Nuclear Threat Initiative, September 2007.

Looking for Hidden Materials. Dennis Slaughter in *Nuclear News*, page 43; November 2007.

Radiation Detectors for Border Are Delayed Again. Robert O'Harrow, Jr., in *Washington Post*, page A1; November 20, 2007.

The Illicit Trafficking Database, maintained by the International Atomic Energy Agency, lists unauthorized activities involving radioactive materials: www.iaea.org/NewsCenter/News/2007/itdb.html

Attachment 2
Cochran Testimony
September 25, 2008

NATURAL RESOURCES DEFENSE COUNCIL

March 24, 2008

Annette L. Vietti-Cook, Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
Attention: Rulemakings and Adjudications Staff

Subject: **NRDC's Petition For Rulemaking to Ban Future Civil Use of Highly Enriched Uranium**

Dear Madam Secretary:

Pursuant to 10 C.F.R. § 2.802, the Natural Resources Defense Council, Inc. ("NRDC") hereby petitions the U.S. Nuclear Regulatory Commission ("NRC") to institute a rulemaking to amend the regulations applicable to the licensing and export of "special nuclear material" found in 10 C.F.R. § 50.64 and § 70 *et seq.*, and other applicable regulations.

The rationale and the bases for this petition in part can be found in the enclosed article, Thomas B. Cochran and Matthew G. McKinzie, "Detecting Nuclear Smuggling," *Scientific American*, Vol. 298, No.4, April 2008, pp. 76-80. We look forward to providing NRC Staff with substantial additional technical support for this petition, but only after arrangements have been made with the Commission and Staff to ensure that the unclassified information is appropriately protected.

Three extra copies of the petition for rulemaking have been attached. Please do not hesitate to contact us at (202) 289-6868 if you have any questions. NRDC appreciates your prompt consideration of this matter.

Sincerely,

Thomas B. Cochran, Ph.D.
Senior Scientist
Wade Greene Chair for Nuclear Policy

Matthew G. McKinzie, Ph.D.
Senior Scientist

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Senior Attorney

Christopher E. Paine
Director, Nuclear Program

Robert S. Norris, Ph.D.
Senior Research Associate

CC:

The Honorable Dale E. Klein, Chairman
The Honorable Gregory B. Jaczko
The Honorable Peter B. Lyons
The Honorable Kristine L. Svinicki

The Honorable Jeff Bingaman
The Honorable Pete V. Domenici
The Honorable Barbara Boxer
The Honorable James M. Inhofe
The Honorable Joseph I Lieberman
The Honorable Susan M. Collins
The Honorable John D. Dingell
The Honorable Joe Barton
The Honorable Henry A. Waxman
The Honorable Thomas M. Davis, III
The Honorable Edward J. Markey

NRDC'S PETITION FOR RULEMAKING TO BAN THE FUTURE COMMERICAL USE OF HIGHLY ENRICHED URANIUM

Summary and Proposed Actions

NRDC requests that the Commission institute a rulemaking proceeding to effect the following policies:

1. Establish a date after which the NRC shall not license the civil use of highly enriched uranium ("HEU"), except for possible approval under 2 below.

2. For a limited number of existing licensees consider on a case by case basis the establishment of an intermediate ^{235}U concentration limit less than 40 percent and a second date (after the date established under 1 above), such that between the date established under 1 above and the second date the NRC may license the civil use of HEU with a ^{235}U concentration between 20 percent and the intermediate concentration limit.

3. As an alternative to 1 and 2 above, declare as a matter of NRC policy that after December 31, 2009 (or an alternative date) the NRC shall not license the use of HEU, except for use as reactor fuel in the MITR-II at the Massachusetts Institute of Technology ("MIT"), the Heavy Water Test Reactor at the National Institute of Standards and Technology ("NIST") and MURR at the University of Missouri at Columbia. MIT, NIST and the University of Missouri shall be required to establish in consultation with the NRC, the dates when their respective reactors must be converted to low enriched uranium ("LEU") fuel, and to report annually to the NRC on progress toward fuel conversion and whether the conversion date will be met.

4. Establish a date after which the NRC shall not license or otherwise authorize the export of highly enriched uranium ("HEU"), except for possible approval under 5 below.

5. For licensees that have been authorized within the past five years to export HEU to Canada to manufacture reactor targets for Mo-99/Tc99m production, consider the establishment of an intermediate ^{235}U concentration limit less than 40 percent and second date (after the date established under 4 above), such that between the date established under 4 above and the second date the NRC may license or otherwise authorize export of HEU with a ^{235}U concentration between 20 percent and the intermediate concentration limit.

HEU is defined as uranium with a concentration of at least 20 percent ^{235}U. "Civil use" and export of HEU, as it applies to 1 through 5 above, shall apply to all NRC licensed use and export of HEU except:

a) blending down of existing stocks of HEU;
i) to low enriched uranium ("LEU") fuel for civil power reactors,
ii) to HEU (20-40 percent ^{235}U) to meet requirements under 2 and 5,

b) HEU used for weapons and naval propulsion reactor fuel;

c) irradiated direct use HEU, including HEU in spent fuel and radioactive waste regulated under 10 C.F.R. § 72;

e) uses of HEU exempt under 10 C.F.R. Subpart B § 70.11-70-17; and

d) small quantities of HEU, including possession and use of HEU covered under a general license (10 C.F.R. Subpart C § 70.19-70.20), the production of calibration or reference sources covered under 10 C.F.R. § 70.19; and materials containing less than one gram of contained ^{235}U and thus exempt from the requirements of 10 C.F.R. § 74.

Rationale for the Rulemaking Petition

In our view the time is ripe for the NRC to fix a date after which the NRC will no longer license the civil use of HEU. The importance of this cannot be overstated, for it will establish an urgently needed precedent that HEU is simply too dangerous for continued commercial use. There continues to be widespread civil use of HEU in other countries. In some of these countries there is an unacceptable risk of diversion of HEU for unauthorized use; and some of these countries are unlikely to forego the civil use of HEU as long as similar use of HEU is permitted in the United States. This issue has less to do with the security of HEU used for civil activities in the United States than it does in signaling to other countries the imperative of eliminating vulnerable sources of HEU elsewhere. Instituting a rulemaking petition to effect the policies listed above are of the highest national security interest to the United States because:[1]

a) The greatest non-state threat to the United States is the risk that terrorists will use HEU to fabricate an improvised nuclear explosive device made with HEU.

b) It is alarmingly easy to design and construct a "gun-assembly" type improvised nuclear explosive device made with HEU, if provided with a sufficient quantity of HEU. High-speed assembly, e.g., using a gun and/or gun propellant, is not necessary to achieve a yield in excess of a kiloton. To increase yields simple designs can be optimized using computer codes available to scientists and engineers worldwide.

[1] Thomas B. Cochran and Matthew G. McKinzie, "Detecting Nuclear Smuggling," *Scientific American*, Vol. 298, No. 4, April 2008, pp. 98-104

c) A one kiloton surface burst nuclear explosion at some locations in the United States can produce casualties comparable to the 21-kiloton airburst over Nagasaki.

d) HEU cannot be reliably detected with radiation portal monitors presently deployed at ports and other border crossings, and this situation is unlikely to be improved by the deployment of second generation devices—the advanced spectroscopic portals currently under development. Moreover, portal monitors are useless if they are bypassed. Millions of illegal aliens and much contraband have entered the United States without passing through prescribed portals.

e) Consequently, the highest priority should be on eliminating HEU at its source.

f) Existing federal government programs to eliminate existing stocks of HEU in other countries are progressing too slowly given the high national security risk.

There are no commercial power reactors in the United States that use HEU fuel, and there are no plans to deploy HEU-fueled power reactors licensed by the NRC in the foreseeable future.

The NRC continues to license the civil use of HEU to fuel seven existing research and test reactors in the United States that have not yet converted to LEU fuel. The NRC licenses one facility, the BWXT Lynchburg Technology Center, to manufacture reactor fuel for several of these reactors. In addition, the NRC licenses the export of HEU to Canada for use as a reactor target material to produce molybdenum-99 (Mo-99) for Tc-99m production. Tc-99m is the most widely used medical isotope. There are no other civil uses of HEU licensed by the NRC as far as we know.

Under 10 C.F.R. § 50.64, the NRC prohibits the continued use of HEU fuel in domestic non-power reactors if there is an LEU fuel alternative available. Since an LEU fuel has been developed for the three HEU-fueled TRIGA-type research reactors licensed by the NRC—namely, the reactors at Oregon State University, University of Wisconsin, and Washington State University—these three reactors will be converted to LEU fuel during this year, or next. Three of the remaining four research reactors, namely, the MITR-II at MIT, the Heavy Water Test Reactor at the National Institute of Standards and Technology ("NIST") and MURR at the University of Missouri at Columbia,[2] are working with the Department of Energy ("DOE") to develop LEU fuel alternatives for these reactors. DOE has announced that it intended to convert these reactors to LEU fuel by 2014. This schedule, however, appears optimistic, at least from the point of view of the reactor operators. This leaves only the very small (100 megawatt-thermal) Nuclear Test Reactor ("NTR") at General Electric Vallecitos Nuclear Center, whose conversion plans are unknown to us. The NTR is used for radiography, a service that is also provided by the newer and larger LEU-fueled TRIGA reactor at the McClellan Nuclear Radiation Center, which is also in California.

[2] MURR is used for commercial medical isotope production, research and development and education.

GE-Hitachi Nuclear Energy Americas, LLC, which holds the license for the NTR, is a joint venture of the General Electric Company and the Japanese firm, Hitachi. Under current NRC regulations GE-Hitachi has been permitted to continue to operate the NTR on HEU fuel by certifying to the NRC annually that the U.S. Department of Energy does not have the funds for the conversion to LEU. GE alone has assets exceeding $400 billion, and Hitachi's are about $90 billion. These two firms can well afford to promptly convert their NTR to LEU fuel without U.S. government support. If they believe it is not worth the investment to do so, the NTR should be shut down before it is refueled.

The NRC authorizes the export of HEU from the United States to Canada to manufacture reactor targets for Mo-99/Tc99m production. The targets are irradiated in the Canadian National Research Universal (NRU) reactor, and the Mo-99 is extracted by the Canadian firm, MDC Nordion. A two to three year supply of HEU target material has already been authorized by the NRC. The Canadians could then use LEU targets, which are used by at least two other Mo-99 producers. The Australian Nuclear Science and Technology Organization (ANSTO, formerly AAEC) has been producing the fission product Mo-99 in HIFAR (and its replacement, the OPAL reactor) using LEU targets for more than thirty years. Although the operating cost of using LEU targets would be similar or less than the cost of using HEU, MDS Nordion would incur an additional up front cost associated with the conversion to LEU. This is a small price to pay for the elimination of HEU from commerce.

We do not believe establishing a firm date for ending civil HEU will have a detrimental effect on medical isotope production. If contrary evidence is provided by others in this proposed rulemaking, we suggest that the Commission consider establishing an additional period of time, during which limited civil use would be permitted of 20 %- to 40 %-enriched HEU. This may reduce the potential inconvenience and cost experienced by the two principal affected parties, the University of Missouri and MDC Nordion. In this regard, the reduction from 93.5%-enriched to 40%-enriched-HEU would only increase the target material requirement for Mo-99 production by a factor of about 2.3. To achieve a one kiloton yield using an improvised nuclear explosive device of similar design, approximately four times more 40%-enriched HEU would be required than 93.5%-enriched material.

Conclusion

There is no known civil use of HEU, including its use as reactor fuel, as a target material for production of Mo-99 (for Tc-99m production) and for the production of other medical isotopes, that either a) cannot be performed using LEU, LEU-fueled reactors or accelerators, or b) is so important that the benefits of its use outweigh the risks. The proposed changes to 10 C.F.R. § 50.64 and § 70 *et seq.* will clearly signal the leadership of the United States in the imperative of eliminating the civil use of HEU around the globe. As we noted in our cover letter for this rulemaking petition, the basis for some of these assertions are summarized in the enclosed *Scientific American*, article. We look forward to providing you with additional technical support for this petition, but only after

arrangements have been made with the Commission to ensure that the unclassified information is appropriately protected.

Statement of Interest

NRDC is a national non-profit membership environmental organization with offices in Washington, D.C., New York City, San Francisco, Chicago, Los Angeles and Beijing. NRDC has a nationwide membership of over one million combined members and activists. NRDC's activities include maintaining and enhancing environmental quality and monitoring federal agency actions to ensure that federal statutes enacted to protect human health and the environment are fully and properly implemented. Since its inception in 1970, NRDC has sought to improve the environmental, health, and safety conditions at the nuclear facilities operated by DOE and the civil nuclear facilities licensed by the NRC and their predecessor agencies.

Attachment 3
Cochran Testimony
September 25, 2008

NATURAL RESOURCES DEFENSE COUNCIL

September 8, 2008

Ms. Annette L. Vietti-Cook, Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
Attention: Rulemaking and Adjudications Staff

Subject: Docket No. PRM-50-90; NRC-2008-0279
Additional comments by the NRDC

Dear Madam Secretary:

We are writing to provide additional comments regarding the subject rulemaking.

A. Consideration of licensing HEU of intermediate concentrations.

In our initial petition for rulemaking we requested that the Commission consider, as an alternative policy, establishing for a limited number of licensees an intermediate ^{235}U concentration limit of less than 40 percent, to permit continued use of highly enriched uranium (HEU) for a longer period of time. After consultation with staff at the Department of Energy (DOE) we are convinced that this alternative would not be an improvement over establishing a date after which the NRC would no longer authorize the use or export of highly enriched uranium (HEU), with exceptions indicated as a) through d) on page 4 of our March 24, 2008 petition.

Recommendation.

We recommend that NRC exclude the alternative policy option to establish for a limited number of licensees an intermediate ^{235}U concentration limit less than 40 percent.

B. Avoiding the risk of shutting down existing HEU-fueled reactors.

Several comments, e.g., August 1, 2008, comments by John A. Bernard on behalf of the National Organization of Test Research and Training Reactors (TRTR), and August 6, 2008, comments by Edward S. Lau and Thomas Newton on behalf of the MIT Nuclear Reactor Laboratory, raised concerns that establishing a date after which the NRC would not license civil use of HEU could jeopardize the continued operation of reactors currently using HEU fuel, even if there is a good faith effort to convert from HEU to LEU fuel.

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Washington, DC 20005
TEL 202 289-6868 FAX 202 289-1060

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TRTR noted that schedules already exist for the conversion of large non-power reactors, but that fixing a conversion date with certainty is not possible because fuels are still undergoing scientific trials. Qualification of a new fuel is a scientific process the outcome of which is not always predictable.

It is not our intention to propose a policy that might disrupt ongoing research reactor operations where there is a good faith effort to convert to LEU fuel. We agree that the rule should allow for the continued operation of these reactors, should there be an unplanned or unknown technology barrier arising during the development phase that prevents meeting the schedule for conversion.

We believe at least some of those who opposed the NRDC petition altogether have overlooked an important consideration. If the Commission adopted the NRDC proposed rule, the Commission would be announcing that it will not grant any licenses for new civil uses of HEU. Any new civil-HEU uses would require another rulemaking. This is a strong message that would be sent when the rule is promulgated.

If this petition is rejected and the *status quo* maintained, the Commission would not consider whether to formally end civil use of HEU until the last of the current users has converted to LEU, and even then it would require a new rulemaking to establish that no new license applications would be considered under the current 10 CFR 50 and 70 regulations. Rejecting this petition therefore sends a signal to the rest of the world that the United States wishes to preserve indefinitely the option of licensing new civil uses of HEU. This *status quo* option, we submit, is not in the national security interest of the United States.

We believe both concerns can be accommodated by modifying the rule we proposed in our initial petition.

Recommendation.

We recommend that the rule should be written to require each licensee of an existing HEU-fueled reactor to establish and periodically update in consultation with the NRC a schedule for conversion from HEU to LEU fuel, and that the licensee be required to make a good faith effort to meet the schedule. Should the conversion be delayed for technical reasons that are unforeseen or beyond the control of the licensee, the NRC would consider amendments to the conversion plan that could enable continued operation of the reactor beyond the originally estimated date for conversion.

C. Avoiding the risk of disrupting the supply of Tc-99m for medical use.

Another concern raised by commenters relates to whether the rule proposed by NRDC would disrupt the availability of medical isotopes, primarily Tc-99m from Canada. Here also, it is not our intention to propose a policy that might disrupt the availability of the medical isotope Tc-99m. We believe this concern can similarly be accommodated.

Recommendation.

We recommend that the rule should be written to require that the recipient of the HEU exported to Canada should establish and periodically update, in consultation with the NRC, a schedule for conversion from HEU to LEU targets, and that the licensee be required to make a good faith effort to meet the schedule. Should the conversion be delayed for reasons that are unforeseen or beyond the control of the licensee, the NRC would consider the advisability of continuing export licensing of HEU for targets, in light of prevailing supply conditions for medical isotopes and an assessment of the global security environment.

If the Canadian recipient is unwilling to establish such a schedule, exports would continue to be granted until such time as alternative production of Mo-99/Tc-99m is available from domestic sources that produce Mo-99 using LEU targets or fuel.

D. This petition constitutes an incremental step in addressing the HEU threat to the United States.

In comments to the NRC, the TRTR organization argues that the requested actions would be superfluous in that the United States is already doing them. We submit that the actions would not be superfluous. First, we are heartened by the fact that TRTR agrees with the editors' summary of our *Scientific American* article; that more needs to be done to round up HEU internationally; and that "there may be [we would argue "there are"] areas of the world where regulatory systems are weak or non-existent or where such systems are or have been violated." Where we part ways is that TRTR dismisses the primary purpose in establishing the rule—to send a strong signal to other countries regarding the dangers associated with civil use of HEU to encourage them to follow suit and ban the civil use of HEU. TRTR apparently believes that the mere fact that the United States is working on the issue should suffice. Given that it has been 30 years since the Reduced Enrichment for Research and Test Reactors (RERTR) program was initiated and seven years since 9/11; a stronger signal is warranted.

But in the same set of comments to the NRC, TRTR also posits that the actions proposed by the petition "would create a false sense of security" in that "the problem can be solved by simply changing the way the United States regulates its known internal stocks of HEU and related materials." In our work with the ABC News Investigative Unit as discussed in the *Scientific American* article accompanying the petition, we have confronted head-on the current false sense of security concerning the HEU threat. Actions resulting from this petition clearly do not directly address HEU stocks of greatest concern and so would not reasonably be viewed as a solution to the problem. Rather, the actions resulting from this petition would remove the remaining status of HEU as a commercial product for the United States, clarifying the issue and setting an important precedent for other countries.

Recommendation.

We recommend that the NRC approve this petition in order to clearly and visibly end new civil uses of HEU in the United States, and continue with existing licenses for civil use of HEU to monitor and facilitate the transition to LEU-fuel operation at these research reactors and medical isotope production facilities.

Sincerely,

Thomas B. Cochran
Senior Scientist

Sincerely,

Matthew G. McKinzie
Senior Scientist

Attachment 4
Cochran Testimony
September 25, 2008

30321

Federal Register
Vol. 73, No. 102
Tuesday, May 27, 2008

Proposed Rules

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

[Docket No. PRM–50–90; NRC–2008–0279]

Natural Resources Defense Council; Receipt of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Petition for rulemaking; Notice of receipt.

SUMMARY: The Nuclear Regulatory Commission (NRC) has received and requests public comment on a petition for rulemaking dated March 24, 2008, filed by the Natural Resources Defense Council (petitioner). The petition was docketed by the NRC and has been assigned Docket No. PRM–50–90. The petitioner is requesting that the NRC amend the regulations that govern domestic licensing of production and utilization facilities, and special nuclear material to establish a date when the NRC will no longer license the use or export of highly enriched uranium (HEU) except for restricted use by a few specialized facilities. The petitioner believes that the amendment is needed to protect the public from potential exposure to an improvised nuclear explosive device made with HEU and used by terrorists.

DATES: Submit comments by August 11, 2008. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: You may submit comments by any one of the following methods. Please include the following number (PRM–50–90) in the subject line of your comments. Comments on petitions submitted in writing or in electronic form will be made available for public inspection. Personal information, such as your name, address, telephone number, e-mail address, etc., will not be removed from your submission.

Mail comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Attention: Rulemaking and Adjudications staff.

E-mail comments to: rulemaking.comments@nrc.gov. If you do not receive a reply e-mail confirming that we have received your comments, contact us directly at (301) 415–1677. Comments can also be submitted via the Federal eRulemaking Portal *http:www.regulations.gov.*

Hand deliver comments to: 11555 Rockville Pike, Rockville, Maryland, between 7:30 am and 4:15 pm on Federal workdays.

Publicly available documents related to this petition may be viewed electronically on the public computers located at the NRC Public Document Room (PDR), Room O1 F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The PDR reproduction contractor will copy documents for a fee.

Publicly available documents created or received at the NRC after November 1, 1999 are also available electronically at the NRC's Electronic Reading Room at *http://www.nrc.gov/reading-rm/adams.html.* From this site, the public can gain entry into the NRC's Agencywide Documents Access and Management System (ADAMS), which provides text and image files of NRC's public documents. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC PDR Reference staff at 1–800–397–4209, 301–415–4737 or by e-mail to *pdr.resource@nrc.gov.*

For a copy of the petition, write to Michael T. Lesar, Chief, Rulemaking, Directives and Editing Branch, Division of Administrative Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001. The petition is also available electronically in ADAMS at ML080940052.

FOR FURTHER INFORMATION CONTACT: Michael T. Lesar, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Telephone: 301–415–7163 or Toll-Free: 1–800–368–5642 or E-mail: *Michael.Lesar@NRC.Gov.*

SUPPLEMENTARY INFORMATION:

Background

The NRC has received a petition for rulemaking dated March 24, 2008, submitted by the Natural Resources Defense Council (petitioner). The petitioner requests that the NRC amend 10 CFR part 50, "Domestic Licensing of Production and Utilization Facilities;" 10 CFR part 70, "Domestic Licensing of Special Nuclear Material" and other applicable regulations. Specifically, the petitioner requests that 10 CFR 50.64, "Limitations on the use of highly enriched uranium (HEU) in domestic non-power reactors" and portions of Part 70 that govern licensing of production of calibration or reference sources be amended to establish a date when the NRC will no longer license the civilian use of HEU. The petitioner also requests that applicable regulations governing export of HEU be amended to establish a time table to prohibit further transport and use of HEU.

The NRC has determined that the petition meets the threshold sufficiency requirements for a petition for rulemaking under 10 CFR 2.802. The petition was docketed by the NRC as PRM–50–90 on April 1, 2008. The NRC is soliciting public comment on the petition for rulemaking.

Discussion of the Petition

The petitioner requests that the NRC establish a date to no longer license the civilian use of HEU. The petitioner states that the basis for this request is bolstered by an article written by Thomas B. Cochran and Matthew G. McKinzie, "Detecting Nuclear Smuggling," that appears in the April 2008 edition of Scientific American magazine. The petitioner states that the NRC should not license civilian use of HEU after December 31, 2009 (or an alternative date) except for use as reactor fuel at the MITR–II facility at the Massachusetts Institute of Technology (MIT), the Heavy Water Test Reactor at the National Institute of Standards and Technology (NIST), and the MURR facility at the University of Missouri. The petitioner also states that these facilities should be required to work with the NRC to establish dates when these reactors must be converted to low enriched uranium (LEU) fuel and report annually to NRC the progress toward fuel conversion.

The petitioner also requests that the NRC establish a date when HEU can no

longer be exported, citing the export of HEU to licensees in Canada for Mo-99/Tc-99m medical isotope production during the past five years. The petitioner states that a ban on the NRC-licensed civilian use and export of HEU should apply to all facilities except for blending down of existing HEU to LEU fuel for civilian power reactors and to lower concentrations (20 to 40 percent U–235) of HEU for use at the MIT, NIST, and MURR facilities. The petitioner also states that HEU used for weapons and naval propulsion reactor fuel, spent fuel and radioactive waste regulated by 10 CFR part 72, the use of HEU under exemptions in §§ 70.11–70.17, and small quantities for production of calibration or references sources covered under §§ 70.19 and 70.20 should remain exempt from the proposed amendment.

The petitioner believes its proposed amendment will establish "an urgently needed precedent that HEU is simply too dangerous for continued commercial use." The petitioner also states that other countries will not likely ban civilian use of HEU as long as similar use of HEU is permitted in the U.S. and would signal other countries "the imperative of eliminating vulnerable sources of HEU." The petitioner further states that eliminating civilian HEU use is absolutely necessary because the greatest threat to the U.S. is the risk that terrorists will use HEU to make an improvised nuclear explosive device.

The petitioner notes that it is very easy to construct an improvised nuclear explosive device with HEU in sufficient quantities and that assembly instructions for these devices are widely available by computer. The petitioner states that a one-kiloton surface burst from a nuclear explosion can produce comparable casualties at some U.S. locations as the 21-kiloton airburst over Nagasaki, Japan during World War II. The petitioner is also concerned that HEU cannot be reliably detected by radiation portal monitors currently used at ports and other border crossings, and that monitors are useless if bypassed in noting that millions of illegal aliens and much contraband have entered the U.S. The petitioner states that eliminating HEU at its source should be this country's highest priority because of the high national security risk and that existing Federal programs are moving far too slowly to combat the threat.

The petitioner also notes that no commercial U.S. power reactors use HEU fuel and that no future plans to use HEU in NRC-licensed power facilities exist. The petitioner further states that NRC continues to license the civilian use of HEU to fuel seven existing research and test reactors that have not converted to LEU fuel yet, citing the NRC-licensed BWXT Lynchburg Technology Center that manufactures reactor fuel for several of these reactors. The petitioner is not aware of any other civilian use of HEU other than for the export to Canada for use in producing Molybdenum-99 (Mo-99) for Technetium-99m (Tc-99m) production, the most widely used medical isotope.

The petitioner states that 10 CFR 50.64 prohibits continued use of HEU fuel in domestic non-power reactors if an LEU fuel alternative is available. The petitioner estimates that the three HEU-fueled TRIGA-type research reactors at Oregon State University, the University of Wisconsin and Washington State University, will be converted to LEU during the next two years. The petitioner also notes that the MIST, NIST, and MURR facilities are working with the Department of Energy (DOE) to develop LEU alternatives but is skeptical that DOE's estimate to convert these facilities will occur by 2014. The petitioner does not know if the only other facility in the U.S., a small (100 megawatt-thermal) Nuclear Test Reactor (NTR) at General Electric's Vallectios Nuclear Center used for radiography is scheduled for conversion but notes that the newer and larger LEU-fueled TRIGA facility at the McClellan Nuclear Radiation Center is also used for radiography.

The petitioner notes that the NTR is a joint venture of General Electric Company (GE) and Hitachi and has been permitted to continue to operate on HEU fuel by annually certifying to the NRC that DOE does not have the funding for conversion to LEU. The petitioner states that because GE and Hitachi can afford to promptly convert the NTR to LEU fuel without Federal support, the NTR should be shut down before it is refueled if these firms believe the conversion is not worth the investment. The petitioner also notes that NRC has authorized a two to three year supply of HEU for export to Canada for Mo-99/Tc-99m medical isotope production. The petitioner suggests that the Canadian firm, MDS Nordion, that extracts the Mo-99/Tc-99m from the HEU could use LEU material because at least two other Mo-99 producers have been doing so "for more than 30 years." Although MDS Nordion would incur an additinnal expense associated with the conversion, the petitioner believes it would be "a small price to pay for the elimination of HEU."

The petitioner does not believe that establishing a firm date for ending civilian use of HEU will be detrimental to medical isotope production. However, the petitioner suggests that the NRC could authorize use of 20 to 40 percent-enriched HEU for a limited time if evidence is presented that complete elimination of HEU would not be practical for the MURR and MDC Nordion facilities. The petitioner states that a "reduction from 93.5 percent enriched-HEU to 40 percent would only increase the target material requirement for Mo-99 production by a factor of about 2.3." The petitioner also states that approximately four times more 40 percent-enriched HEU would be required to make a one-kiloton improvised nuclear explosive device than using 93.5 percent enriched-HEU.

The petitioner concludes that because there is no known civilian use of HEU, including use as reactor fuel or for medical isotope production, that cannot be performed by using LEU, and that the high national security risks of HEU use clearly outweigh the benefits, the NRC should no longer license the civilian use and export of HEU.

The petitioner requests that the NRC conduct a rulemaking to establish the proposed amendments as detailed in this petition for rulemaking.

Dated at Rockville, Maryland, this 20th day of May 2008.

For the Nuclear Regulatory Commission.

Annette L. Vietti-Cook,

Secretary of the Commission.

[FR Doc. E8–11727 Filed 5–23–08; 8:45 am]

BILLING CODE 7590–01–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

15 CFR Part 909

DEPARTMENT OF HOMELAND SECURITY

Coast Guard

33 CFR Part 151

[USCG–2007–0164]

RIN 0648–AV68; 1625–AB24

Definition of Marine Debris for Purposes of the Marine Debris Research, Prevention, and Pollution Act

AGENCIES: National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce; Coast Guard, Department of Homeland Security.

ACTION: Notice of proposed rulemaking.

Attachment 5
Cochran Testimony
September 25, 2008

Proposed Rules

Federal Register
Vol. 73, No. 165
Monday, August 25, 2008

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

[Docket No. PRM–50–90; NRC–2008–0279]

Natural Resources Defense Council; Receipt of Petition for Rulemaking; Reopening of Public Comment Period

AGENCY: Nuclear Regulatory Commission.

ACTION: Petition for rulemaking; reopening of public comment period.

SUMMARY: On May 27, 2008 (73 FR 30321), the Nuclear Regulatory Commission (NRC) published for public comment a notice of receipt of a petition for rulemaking, dated March 24, 2008, which was filed with the Commission by Thomas B. Cochran and Matthew G. McKinzie on behalf of the Natural Resources Defense Council. The petition was docketed by the NRC on April 3, 2008, and has been assigned Docket No. PRM–50–90. On August 4 and August 6, 2008, several external stakeholder groups requested a 45 day extension of the public comment period owing to the details provided in the initial petition, short initial comment period, importance of the rulemaking, and the need for directly impacted stakeholders to provide substantive comments to the rulemaking process. The NRC is reopening the comment period on the petition for an additional 45 days from the original August 11, 2008 deadline. The comment period closes on September 25, 2008.

DATES: The comment period has been reopened and now expires on September 25, 2008. Comments received after this date will be considered if it is practical to do so, but the Commission is able to assure consideration only for comments received on or before this date.

ADDRESSES: You may submit comments on this petition by any one of the following methods. Please include *PRM–50–90* in the subject line of your comments. Comments on petitions submitted in writing or in electronic form will be made available for public inspection. Personal information, such as your name, address, telephone number, e-mail address, etc., will not be removed from your submission.

Federal eRulemaking Portal: Go to *http://www.regulations.gov* and search for documents filed under Docket ID [NRC–2008–0279]. Address questions about NRC dockets to Carol Gallagher, 301–415–5905; e-mail *Carol.Gallagher@nrc.gov.*

Mail comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, ATTN: Rulemakings and Adjudications Staff.

E-mail comments to: rulemaking.comments@nrc.gov. If you do not receive a reply e-mail confirming that we have received your comments, contact us directly at 301–415–1677.

Hand deliver comments to: 11555 Rockville Pike, Rockville, Maryland 20852, between 7:30 a.m. and 4:15 p.m. Federal workdays, telephone number 301–415–1677.

Fax comments to: Secretary, U.S. Nuclear Regulatory Commission at 301–415–1101. Publicly available documents related to this petition may be viewed electronically on the public computers located at the NRC's Public Document Room (PDR), Room O1 F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The PDR reproduction contractor will copy documents for a fee. Selected documents, including comments, may be viewed and downloaded electronically via the Federal eRulemaking Portal *http://www.regulations.gov.*

Publicly available documents created or received at the NRC after November 1, 1999, are available electronically at the NRC's Electronic Reading Room at *http://www.nrc.gov/reading-rm/adams.html.* From this site, the public can gain entry into the NRC's Agencywide Documents Access and Management System (ADAMS), which provides text and image files of NRC's public documents. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the PDR Reference staff at 1–800–397–4209, 301–415–4737 or by e-mail to *pdr.resource@nrc.gov.*

A paper copy of the petition may be obtained by contacting Betty Golden, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone 301–415–6663, toll-free 1–800–368–5642, or by e-mail to *Betty.Golden@nrc.gov.*

FOR FURTHER INFORMATION CONTACT: Michael T. Lesar, Chief, Rulemaking, Directives and Editing Branch, Division of Administrative Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone 301–415–7163 or toll-free 1–800–368–5642.

For the U.S. Nuclear Regulatory Commission.

Dated at Rockville, Maryland, this 19th day of August 2008.

Annette L. Vietti-Cook,

Secretary of the Commission.

[FR Doc. E8–19609 Filed 8–22–08; 8:45 am]

BILLING CODE 7590–01–P

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 1

[REG–143544–04]

RIN 1545–BD84

Regulations Enabling Elections for Certain Transactions Under Section 336(e)

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Notice of proposed rulemaking.

SUMMARY: This document contains proposed regulations under section 336(e) of the Internal Revenue Code. These proposed regulations, when finalized, would permit taxpayers to make an election to treat certain sales, exchanges, and distributions of another corporation's stock as taxable sales of that corporation's assets. These proposed regulations will affect corporations and their shareholders.

DATES: Written or electronic comments and requests for a public hearing must be received by November 24, 2008.

ADDRESSES: Send submissions to: CC:PA:LPD:PR (REG–143544–04), room 5203, Internal Revenue Service, P.O. Box 7604, Ben Franklin Station, Washington, DC 20044. Submissions may be hand-delivered Monday through Friday between the hours of 8 a.m. and 4 p.m. to CC:PA:LPD:PR (REG–143544–

Statement of Richard L. Wagner, Jr., Ph.D.
Hearing of the Senate Committee on Homeland Security and Governmental Affairs titled "Preventing Nuclear Terrorism: Hard Lessons Learned from Troubled Investments",
25 September 2008

Chairman Lieberman, Ranking Member Collins, and distinguished members of the Committee, I am honored to be with you today to address the important issues raised in your charge to this panel, which I will summarize below. My brief general biography is attached to this statement, along with some of my experience specific to the topics before us today.

I am currently affiliated, on a part-time basis, with the Los Alamos National Laboratory, although I have lived and worked in the DC area for twenty seven years. I also have the honor to chair the Nuclear Defense Working Group, which is composed of several senior former national-security policy officials and scientists from universities, national labs, and industry. The NDWG is chartered to advise departments and agencies, including DNDO, and the Congress, on nuclear terrorism. It is supported by a grant from a private foundation to the Center for the Study of the Presidency, a non-profit, public interest organization headed by Ambassador David Abshire. Over the past eighteen months, the NDWG has studied many aspects of prevention of, and defense against, nuclear terrorism. I have not, however, had time to discuss what I will say here today with my NDWG colleagues, though my views have been shaped by earlier discussion with them.

Because of this, and because I am partly retired and much of what I do in this area I do on a pro bono basis, I speak to you today as a private citizen.

I will address the three specified topics of interest for this hearing – all related to the efficacy of managing R&D and the transition from R&D to fielded operational capabilities -- both directly, and indirectly. I will start first by saying a few words about the Advanced Spectroscopic Portal (ASP) program. I will then discuss the prospects and programs for developing radiation detection systems more capable than ASP and for a broader array of applications. For both ASP and more advanced R&D, I will address management issues. I will conclude with some comments about the scope and nature of the responsibilities of DNDO, again in the spirit of making the best progress possible in moving the nation toward better capabilities to deal with this threat.

The Advanced Spectroscopic Portal (ASP) program

The first topic posed for this hearing is "DNDO's emphasis on the ASP". One aspect of this is whether DNDO (or DNDO as the implementer of broader administration priorities) has put the right amount of emphasis on ASP – on an absolute scale and relative to other things.

Smuggling nuclear weapons or materials in the cargo flow of international trade is only one way by which weapons could be moved clandestinely. No one can predict what the

most likely attack-path or combination of paths could be, especially when both the attacker's and the defense's operational capabilities, and uncertainties in them, are taken into account.

I believe that cargo-flow – and thus ASP -- was the right place to start. Operational aspects of cargo screening are simpler than for other paths, they are close to home and under our control and thus easier to address first, and lessons will be learned from ASP/cargo-screening that will be applicable to other attack-paths. Over the past eighteen months or so, DNDO and others have correctly begun to put more emphasis on other paths. I would have liked to have seen this done sooner, but an opposing argument is that, within then-available resources, that would have slowed ASP, with the possible result of a net delay in overall protection. Thus it becomes a question of the overall level of resources. In general, I believe that the nation should be putting even more resources on this threat, including but not limited to detection and interdiction of attacks, but to support that position is a much bigger topic than can be covered in this hearing.

What about the ASP program itself? I am not fully current on the most recent developments in ASP, but from past looks at it, I believe I can address some of what this committee wants to explore.

The basic technologies embodied in the ASP developments are not new. But widespread application of them to cargo screening *is* new. Isotope identification using gamma-ray spectroscopy, although not new, is complicated in the particulars of its application. So the ASP development should be, and should have been, understood as more developmental in nature than like quantity procurement of an understood item of hardware.

Getting spectroscopic isotope identification of some sort into the field for cargo screening is absolutely essential. Although some marginal improvement in the currently deployed, non-spectroscopic screening detectors might be possible, they will never be able to do the job that spectroscopic detectors will be able to do. Current screening operations appear to be swamped with false alarms. Isotope identification holds the promise of making cargo screening meaningful. And although ASP, even if fully implemented, would be far from "solving" the cargo-screening problem, it would provide a much better basis for continued improvement. Getting operational experience with spectroscopic screening will also inform and shape the entire R&D program for further mid-term and long-term improvements in radiation detection for all applications.

The wide range of possible threat objects and operations is not easily reduced to a simple specification, and even if it were, a specified test program cannot adequately address performance. The main lesson from the long history of operational detection of radioactive objects in the field is that performance of operational detectors gets much better as the operators gain experience -- maybe even somewhat better than would have been anticipated on paper in advance. For these several reasons, it is more important to understand how a detection system performs against a *range* of threats in actual operations than to demonstrate, in tests, performance against a specification.

Therefore, the approach to ASP should be, and should have been, an "expanding spiral" approach – time-phased procurement and field operation of, at first, small, and then increasing quantities of units, coupled with spiral improvement of the identification software. The early stages of this would do two things: start a process of improving performance of fielded systems, and provide lessons that are fed back into improving the software of succeeding spirals. To make an expanding-spiral approach work, two things are needed: developers must work closely with users in the field in doing real screening operations (and modifying operations as experience is gained), and provision must be made for rapid upgrade of the software in succeeding spirals. I am agnostic on whether the initial, small-scale deployments I suggest should have been started a year ago, or rather should be started perhaps a few months from now.

My impression is that during the past year or so, the ASP program has morphed into something a little like what I suggest here. It would have been good to have understood at the beginning that it should be done this way.

It seems to me that the routine, quantity-procurement-like nature of the ASP contracts has hindered the ability to carry out the approach I describe. The "First Law of R&D" is that one cannot specify -- in advance and together – performance objectives, cost, and schedule. If one could do that, it would not be R&D. The early stages of an expanding-spiral process will be more R&D-like; and the latter stages, more procurement-like. Flexibility in contracting is essential, and I will discuss it more, later. The disparity between 1) the expectation of a one-time, test-then-buy-it-all approach for ASP and 2) the expanding-spiral approach that the realities dictate has introduced both heat and noise into the interactions between DHS and the cognizant committees of Congress, to the detriment of both program progress and Congressional oversight.

An obvious question, and one that has been asked, is whether detection systems with better capabilities than ASP will come along soon enough to make ASP procurements wasteful. I will address that in a minute, in the context of my next topic: detection R&D in general.

For ASP and beyond: Managing advanced development of future radiation detection technologies in general

The role and prospects for radiation detection

Before addressing the *management,* per se, of development of advanced radiation detection technologies, let me say a word about the role of radiation detection in general in defending against smuggled weapons.

Improvement in detectors is very important, but many other things contribute a lot to overall defense effectiveness, including intelligence and law-enforcement operations, surveillance with other types of sensors, preparing to augment defense operations in response to warning, covert/special operations and other military operations, both US and

others, overseas, at sea, and at home, and much more. For short, I will call these other means nuclear counter-terrorism (NCT) operations.

There can be a two-way reinforcing synergy between improved radiation detection and these other means of contributing to discovery and interdiction of these threats. Structuring NCT operations properly can make radiation-detection operations more effective, and better radiation detection can make NCT operations more effective. For a variety of reasons, I cannot go into any detail about such operations here, but understanding them is essential to an understanding of the utility of detector R&D.

Furthermore, improved detection and operational capabilities can increase the very real possibility of discouraging attacks by creating uncertainty about the prospects of success --or, better, certainty that attacks will *not* succeed – in the mind of the (prospective) attacker. ASP itself seems to me to significantly raise the level of uncertainty for an attacker who is trying to assess the performance of a cargo-screening system. Not only will performance be better, but assessing it requires knowing something about the software, which is complicated, with many variables and options. In contrast, any competent physics undergraduate should be able to assess the performance of non-spectroscopic detectors. There is a lot more to be said about discouraging attacks, but – as with operations -- it is beyond the scope of what I can say here.

Three to five (or ten) years ago, when a handful of us were arguing for an expanded national program focused specifically on dealing with this threat, the nation's S&T community had never been harnessed to the detection problem (in part because the threat had seemed to be real only in some conceptual realm outside the actual world, especially before 9/11). Our sense was that, if that community – in universities, national labs, and industry -- were to be energized and supported, a lot might come of it. (We also felt that we would never know until we tried – in part because the other, more operational aspects of detection and interdiction put the prospects beyond the ability of analysis to predict, at least at the time.) Today, DNDO, NNSA in DOE, DTRA in DOD, and others have gone a long ways toward re-vitalizing and expanding the S&T community in this area – a big accomplishment in its own right. There is still a lot more to be done, but a good start has been made.

I believe that large improvements in detector performance beyond ASP are possible, and there is ample supporting evidence for this in the advanced development programs that DNDO, DoD, and DOE have underway. By large improvements, I mean factor-of-ten-ish, although quantitative metrics for detector performance are not yet well developed.

So, overall, my general sense is that sufficient improvement can be made in detectors themselves so that the mutually-reinforcing combination of detector- and operations-improvements can raise the level of defense capabilities high enough so that many prospective attackers will be discouraged, and there will be a substantial capability to interdict those that are not. This is of course not a guarantee, but the combination of the stakes involved and the likelihood of success make a substantial expenditure worth the bet.

So will even better detector technology come along soon enough to make ASP procurements wasted? I hope so, and the agencies involved should be working hard to make that happen. (Contributing to its happening could be experience gained from the early stages of ASP expanding-spiral deployment.) *But I would not count on it.* One merit of the expanding-spiral approach I suggest for ASP is that it can be interrupted whenever it becomes apparent that something better will be along soon.

Managing the progression from advanced research to fielded operational capability.

Whenever better technology comes along – and there will be three or four future "generations" of improvement -- it will be important to get it to the field as quickly as possible. This will require a business model that effectively spans the progression from advanced research to procurement.

Spanning this range is not a new problem, nor is it unique to detector R&D. It has been a constant theme through my career in the science and technology of national security. And it exists for every application of science and technology, within and outside the area of national security. Libraries could be filled with what has been written about it. There is no good way to "solve" it, but there are some approaches that are better than others. The preferred ways are almost always case-specific, but there is a menu of approaches that can be used in different mixes for different cases. That menu includes:

- Involving the work-performers as fully as possible in defining the work to be done.
- Making the work-performers an integrated team, including spanning the range from research to manufacturing.
- Ensuring close connections between the technical developers and the operational users, so that technologies and operations can be improved together.
- Enabling the teams mentioned above to tailor the problem to be solved to the feasibility of solving it.
- Ability to change directions quickly.
- Willingness to carry parallel approaches simultaneously, knowing that most of them will be abandoned and the money spent on them will (seem to) be wasted.
- Sole source contracts; long-term contracts; level-of-effort contracts.
- Being willing to spend money to shorten time – for example by concurrency in component development

Some or many of the things I list – and certainly all of them together -- might come under the rubric "bending the FAR" (Federal Acquisition Regulations). And using tools such as these effectively requires a special kind of government oversight. The government must lead more and manage less, and it must allow others to help it lead and manage.

People often talk about the need for "a Manhattan Project" to solve some particular big national problem, and the term has sometimes been used about what we are talking about here today. It would take a book (and many have been written) to describe what made the Manhattan Project particularly effective. The kinds of things I have listed above are

among them, I believe. (I was in grade-school during the Manhattan Project, but some of my mentors during my early days at Livermore had worked in that world, and the national labs in general were started in that model.)

The way the nation used the national labs, during the first decades of their existence, comports with much of what I am trying to say here. Use of the national labs *as national labs* is eroding – and at an increasing rate -- but some of the art is still there. It is still there in the Navy's nuclear programs, and in a few other places, but it is eroding almost everywhere government is involved.

Some of the things I list above appear to be cost-inefficient. This may be true in the short run. But in the long run, one will get to an ambitious long-term goal sooner and probably cheaper this way. And if one demands short-term cost efficiency, one is likely never to get to where one needs to be. (Similar things could be said using the useful terminology of risk and risk-management.)[1]

A savvy government program manager, today, is hesitant (to say the least) to use such tools because he will judge, usually rightly, that today's "culture of compliance" will extract a price from him and his program that is greater than what he might gain from using them.

(On a personal note, when I say such things about the management of R&D and transitioning it to procurement, as I often do in a variety of contexts, I am usually accused, politely but somewhat dismissively, of living in the past. Today's managers believe that today's realities – the pervasive culture of compliance – are simply unable to accommodate such approaches. That may be true, and no doubt the past was not as rosy in this regard as I may be remembering it. But....)

But I refuse to believe that nothing can be done, and in the area we are addressing today, this committee may be able, in a variety of ways, to help managers who want to manage the transition from advanced research to fielded capability better. I do not have a detailed prescription for how you can do that, but one way is simply to provide top-cover for managers who want to use such tools.

One charge to the panel of which I am a part here today was to address "*near-term* options for improving the outcomes of DNDO's major investments in radiation detection technology". I don't know whether the expanding-spiral approach for ASP can be implemented, contractually or programmatically, in the near term. I hope it can. Nor do I know how long it would take to begin to allow the entire ensemble of R&D programs to

[1] Although it is not the topic for this hearing, I believe, from looking at a small but representative sample of individual R&D projects sponsored by DNDO, DTRA, and NNSA, that this area of R&D is under-funded. Government program managers and principle investigators outside government are too often forced to select among approaches before each has been carried far enough to determine feasibility or suitability, and once a particular approach has been selected, the components needed for it are too often forced to be developed in series rather than in parallel, which hinders design integration and delays the final product.

be managed in the ways I have suggested. But I do believe that it's important to start to try now.

Turning more specifically now to DNDO, one of the three topics announced for this hearing was "the extent to which DNDO has improved government-wide management of federal research and development to improve radiation detection technologies". If this means improved management and contracting *methods* of the sort I have discussed above, then I neither believe that DNDO was charged with this responsibility nor am I aware of any contracting or management innovations that DNDO has developed. But if the question is simply whether radiation-detection R&D is going better now, government wide, because of DNDO, the answer is "Yes". DNDO has been pro-active and generally effective in promoting this R&D across government, in gaining funding for it from the Congress, and in coordinating it among the departments and agencies involved.

Metrics, models, and system analysis

In addition to the right business models and approaches, greatly improved metrics and systematics for detector performance, and better concepts and models of how detector performance plays in the larger array of approaches to preventing successful attacks, including operations and architectures, are needed urgently. DNDO, NNSA, and DoD are working on such things, but it seems to me to be coming slowly. Once again, there is a lot that could be said here, but it differs in tone from what seems to me to be the main thrust of this hearing.

Over the coming years, I believe that acquisition and procurement of detection capabilities will naturally improve – will get more regular -- and thus more "over-seeable" by the Congress. This will happen as system analysis improves, making performance of advanced detectors more predictable, and as detector technology itself gets better, making detector performance less dependent on operator experience.

But this is a very difficult area, and I think that the Congress should expect a substantial fraction of the programs and projects not to be successful. If they were all successful, then they would not be reaching far enough.

The scope and authorities of DNDO

As I saw it at the time, the main reasons for setting DNDO up as it is were to:

- Have an organization in the government focused exclusively on the nuclear terrorism threat.
- Increase the attention paid to that threat.
- Get new technology to the field quickly by spanning the range from exploratory research to procurement, operations, and architectures.
- Connect DHS activities in this area to other departments

I agreed with these goals and with the structure of DNDO at the time. Three or four years later, I see nothing in the performance of DNDO, or in the larger arena it is a part of, that changes my judgment.

Just as contracting models for spanning the range from research to procurement are difficult to optimize, so there is no really *good* way to organize responsibilities for doing it. But I believe that there is more advantage in spanning that full range in a single organization than in splitting it up into several organizations. Of course, in an immense enterprise like DoD, there is a place for organizations like DARPA, which focus mainly on the early stages of R&D. But most acquisition organizations in DoD span most of the range. At the other end of the spectrum, a very small enterprise in a large department might profit from having its researchy things "done for it" by an organization separate from itself which can integrate its R&D with R&D for other enterprises. But DNDO's enterprise is not that small. So, from looking at the problem in this general way, DNDO was correctly set up to integrate the range from research to procurement, and to include architectures as well.

There have clearly been problems in getting the detection-and-interdiction enterprise going. There have also been significant successes, both in R&D and in operations. It is an extremely tough job. (Defense against this threat is conceptually more difficult to grapple with than, for example, missile defense, with which I have been closely involved several times over the past forty years). It is also an extremely important job, and I'd like to see it coming along faster and better. So, is there a way to aggregate or disaggregate responsibilities better in this particular area?

I have refrained, today, from mentioning the views of the NDWG because I have not had time to vet what I am saying here with my colleagues. But on the point of the scope and responsibilities of DNDO, I will mention some of the thinking we have done together. We have discussed various possibilities for re-shaping DNDO or something like it so as to get the overall job, government-wide, done better. Alternatives we discussed include 1) narrowing the focus of DNDO to only advanced development, or perhaps to R&D in general, with reduced or no responsibilities for procurement and/or architectures, and, conversely, 2) retaining DNDO's responsibilities for the full range of R&D, and expanding its authorities for procurements, operations, and architectures. Although we are not unanimous in this, our general consensus is that either of these alternatives loses more than it gains, and that the way DNDO was scoped initially is still about right, at least for the next few years.

From a national perspective, there are serious problems in integrating programs and operations in the area of nuclear terrorism – especially operations -- among/across all of the departments involved. One approach to helping with this, within DNDO, is to populate DNDO with people from other departments. This, and DNDO's efforts in general, are helping, but the problems and approaches to government-wide integration generally lie above the level of DNDO. And many of the integration problems are not unique to countering nuclear terrorism, per se. I have some opinions on how to deal with all of this better, but they do not involve re-structuring DNDO, and this important subject may lie beyond the scope of this hearing.

Post-Hearing Questions for the Record
Submitted to Mr. Rolf Mowatt-Larssen
From Senator Daniel K. Akaka

"Nuclear Terrorism: Assessing the Threat to the Homeland"
April 2, 2008

Q1. You testified that any country with nuclear power and nuclear weapons, including the United States, "could be potentially part of this small network of countries where terrorists can obtain material or expertise."

a. What specific vulnerabilities, if any, have you identified that terrorists could exploit to obtain nuclear materials or expertise within the United States?

b. What must the U.S. do to mitigate this risk, given that the U.S. has no plans to terminate its nuclear power and nuclear weapons programs?

A1. My testimony was not intended to point to specific security vulnerabilities within the United States, but rather to suggest that nuclear materials, facilities, and expertise are potentially attractive targets for terrorist groups seeking destructive capabilities. There are many ways that terrorists could operate in our open society to seek access to nuclear materials and to knowledge that would enable them to exploit any materials they obtain, whether in this country or elsewhere.

Following the recommendations of many experts inside and outside the government, we have built multi-layered protections for our nuclear materials, facilities, and information. This includes upgrades to physical protection measures at DOE laboratories, and an active counter-intelligence and personnel security program. Through consolidation of our own holdings of fissile materials as well as the elimination where possible of the use of highly enriched uranium in research reactors and other civil research programs, we are reducing the number of potential targets for terrorists. These efforts at home are complemented by our extensive efforts overseas to secure weapons-usable nuclear materials, strengthen nuclear accounting, detection, and interdiction efforts, and build cooperation on preventing nuclear terrorism.

Q2. In response to my question about encouraging India's cooperation in nuclear security, you stated that intelligence officials' role is to support "policy-makers with the information they might need to make the right decisions."

Since policy-makers depend on intelligence assessments, please describe what activities intelligence officials have undertaken to support nuclear security in India.

A2. The Department of Energy Office of Intelligence and Counterintelligence regularly provides responses based on all-source intelligence to questions posed by policymakers regarding nuclear issues. As a part of this support to policymakers, DOE manages the interagency Nuclear Materials Information Program, which was created August 28, 2006 to consolidate information from all sources pertaining to worldwide nuclear materials holdings and their security status into an integrated and continuously updated information management system. This effort has helped the intelligence community understand the gaps in our current knowledge and ensure that the existing information on nuclear materials and their security is available to support all appropriate Federal departments' and agencies' nonproliferation, counterproliferation and counterterrorism efforts.

Q3. You testified that you believe that China takes the security of nuclear materials very seriously.

a. Please describe what steps, if any, China has taken to address the security of its nuclear materials.

b. Please state which Chinese agency or agencies you have been working with to facilitate Chinese nuclear security.

A3. China is an original member of the Global Initiative to Combat Nuclear Terrorism, a group of 71 nations committed to sharing and implementing best practices across the full spectrum of measures required to improve nuclear security. Since January 2004, the Department of Energy's National Nuclear Security Administration (NNSA) has cooperated with China to promote the adoption of modern security technologies at civilian nuclear facilities to provide a first line of defense against nuclear material theft, diversion and sabotage. NNSA and the Chinese Atomic Energy Authority (CAEA) have conducted two major nuclear security workshops as well as numerous small group training courses on nuclear material security topics including vulnerability analysis, insider threat mitigation and nuclear material security culture. Additionally, China is a Party to the Convention on the Physical Protection of Nuclear Materials (CPPNM), and participated in the 2005 process to amend the CPPNM to broaden its scope to include nuclear facilities and add new counter-terrorism provisions.

Post-Hearing Questions for the Record
Submitted to Rolf Mowatt-Larssen
From Senator Barack Obama

"Nuclear Terrorism: Assessing the Threat to the Homeland"
April 2, 2008

Q1. Senator Lugar and I introduced legislation that was signed into law in January 2007 to help other nations detect and stop the transfer of weapons of mass destruction. What progress has been made in implementing the Lugar-Obama initiative? What additional steps should be taken to bolster the capabilities of our allies to detect and stop transfers of weapons of mass destruction?

A1. The Department of Energy is taking aggressive steps to interdict illicit transfers of weapons-usable nuclear materials and equipment, and to prevent dissemination of related sensitive nuclear technology via strengthened export controls and cooperation. We currently provide export control and commodity identification training to over 50 countries across the globe, in order to improve nations' capabilities to deter and interdict illicit WMD-related technology transfers. As an important complement to physical security improvements, the Second Line of Defense Program enhances our foreign partners' ability to interdict illicit trafficking in nuclear materials through the deployment of radiation detection systems at high-risk land-border crossings, airports and seaports. These efforts increase the likelihood of interdicting illicit nuclear materials entering or leaving the country. To date, 117 Russian border crossings have been equipped with radiation detection equipment under this program. As part of the Second Line of Defense, the Megaports Initiative, established in 2003, responds to concerns that terrorists could use the global maritime shipping network to smuggle fissile materials or warheads. By installing radiation detection systems at major seaports throughout the world, this initiative strengthens the detection and interdiction capabilities of our partner countries. At the end of 2007, the Megaports program was operational in 12 countries and being implemented at 17 additional ports. In addition, we continue to carry out nonproliferation research and development activities, developing, demonstrating and delivering novel nuclear material and

nuclear detonation detection technologies for nonproliferation and homeland security applications.

Q2. Last year, I joined with Senator Chuck Hagel to introduce a broad bill that seeks to prevent nuclear terrorism, reduce global nuclear arsenals, and stop the spread of nuclear weapons and related technology. One provision, which was signed into law as part of the FY2008 omnibus appropriations bill, requires the President to submit to Congress a comprehensive plan for ensuring that all nuclear weapons and weapons-related material at vulnerable sites around the world are secure by 2012 to keep them out of the hands of terrorists. Which agencies and departments are engaged in preparing the plan? When will the plan be submitted to the appropriate congressional committees?

A2. The National Security Council staff, together with the Departments of Energy, State, Homeland Security, Defense, and the Nuclear Regulatory Commission, is finalizing the submission of this comprehensive plan to ensure adequate security at priority nuclear and weapons-related sites worldwide. While this is a considerable undertaking, we anticipate submitting this report in classified and unclassified forms on, or as close as possible to, the statutory deadline. In addition, agencies are prepared and willing to brief ahead of the report submission.

Q3. Last November, a group of gunmen staged an attack on South Africa's Pelindaba nuclear facility, where large amounts of highly enriched uranium are stored. What was your assessment of the security at the Pelindaba facility prior to this incident? What steps are being taken to ensure that the nuclear material at the facility is secure against the type of threats that terrorists and criminals have shown they can pose? What do we now know about what happened, including the identities of the attackers, their associations, their motives, and whether they had insider help?

A3. We have prepared a classified addendum under separate cover to address this question.

Post-Hearing Questions for the Record
Submitted to Dr. Matthew Bunn
From Senator Daniel K. Akaka

"Nuclear Terrorism: Assessing the Threat to the Homeland"
April 2, 2008

1. Mr. Mowatt-Larssen testified that any country with nuclear power and nuclear weapons, including the United States, "could be potentially part of this small network of countries where terrorists can obtain material or expertise."

   a. Do you agree with this assessment?

   All countries where nuclear weapons, highly enriched uranium (HEU), or plutonium separated from spent fuel exist are potential sources where terrorists might find a way to get access to nuclear bombs or their essential ingredients. Countries with nuclear weapons, countries with former nuclear weapons programs, and other countries with facilities that process uranium or plutonium in metal form are particularly important potential sources for critical expertise – though a terrorist group might be able to construct a crude nuclear bomb without access to classified information or people with prior experience with nuclear weapons. Countries that have nuclear power plants but do not have nuclear weapons, HEU, or plutonium separated from spent fuel may not be especially attractive places for terrorists trying to get the material and expertise to make a nuclear bomb. Nuclear power plants are potential targets for terrorist sabotage, however – a tactic al Qaeda has repeatedly considered.

   b. How should U.S. policy-makers evaluate the relative risk posed by nuclear materials in various countries and prioritize its actions?

The risk of nuclear theft from a particular facility or transport operation is determined by (a) the probability that a theft attempt will occur; (b) the probability that such an attempt would be successful if it did occur; and (c) the probability that a group that received the stolen material would be able to make a nuclear bomb from it. The probability that a theft attempt would be successful is determined by the kinds of insider and outsider capabilities the security system is able to defeat, and the kinds of capabilities adversaries can muster for their theft attempt; where the security systems are stronger, the risk is lower, but where both terrorist threats and insider threats are particularly high (such as in Pakistan), the overall risk may be high even when reasonably strong security measures are in place. The probability that a group could make a bomb from the stolen material depends on the quantity and quality of the material stolen: the terrorists' job would be simplest if they could get 50 kilograms or more of 90% enriched HEU metal (roughly the amount required for a simple gun-type bomb with a substantial yield). Making an implosion-type bomb (as would be necessary if the material stolen was plutonium, or a much smaller amount of HEU) would be more difficult, and the terrorists' probability of success would be lower, but as repeated U.S. government studies have concluded, a crude terrorist implosion device is also a real possibilities, particularly if they got

knowledgeable help. Similarly, if the stolen material were aluminum-uranium research reactor fuel, the terrorists would have to chemically process it to recover the uranium, lowering the probability of success somewhat; but the required chemical processes are fairly simple (likely simpler than producing high-quality heroin from opium poppies), and have been openly published for decades.

As I indicated in my testimony, based on unclassified information about these factors (quality of security systems; magnitude of threats; quality and quantity of materials available to stolen), I believe the highest risks of nuclear theft today are posed by nuclear stockpiles in Russia, in Pakistan, and at HEU-fueled research reactors around the world.

c. What actions should the U.S. take to prevent terrorists from obtaining nuclear materials or expertise within its own borders?

In general, nuclear weapons and materials are more secure in the United States than they are in many other countries – though there is certainly more to be done. As I noted in my testimony, HEU-fueled research reactors regulated by the Nuclear Regulatory Commission (NRC) are exempted from almost all of the NRC's physical protection requirements for HEU. Congress should provide sufficient funds for the Global Threat Reduction Initiative to help these reactors with voluntary security improvements. At the same time, I believe Congress should direct NRC to phase out this research-reactor security exemption, and provide sufficient funding for DOE, which provides most of the operating budget of these reactors, to cover the resulting increased security costs (which would be a tiny fraction of the $1.5 billion being spent each year on DOE security). I believe Congress should also direct NRC and DOE to close the current security gap that allows NRC-regulated facilities handling tons of weapon-grade HEU to be protected against much more limited threats than DOE facilities with identical material are regulated against. At the same time, the recent incidents at Minot and elsewhere make it clear that there is a need to focus on strengthening security culture among all those with important roles to play in nuclear security – not only in the Air Force but throughout the U.S. and world nuclear establishment. Many in the nuclear industry around the world continue to dismiss the threat of nuclear terrorism, and this has to be corrected if we are to succeed in getting security measures put in place that are really effective day-in and day-out.

2. As Mr. Mowatt-Larssen testified, intelligence officials provide policy-makers with the information they need to make policy decisions. Please provide your view on how well policy-makers and intelligence officials are cooperating to ensure nuclear security and what they can do to improve their combined efforts.

This is a fundamental and complex problem. Intelligence support for policies to cope with nuclear theft and nuclear terrorism is clearly better today – and receiving considerably more resources – than it was a decade ago. Nonetheless, I believe there is more to be done. Policy-makers struggling to prioritize which site to ship HEU away from next, for example, are still relying on very sketchy and simplistic information about the characteristics of the HEU at different sites and how hard it would be to make a bomb from those different types of material. Policy-makers grappling with the effort to ensure that effective nuclear security

measures will be sustained for the long haul have, on occasion, been relying on graduate interns for analysis of crucial questions such as how much money Russia is investing itself in improved nuclear security measures, or how well nuclear security regulations there are actually being enforced. There is a great deal of extraordinarily useful information that is not difficult to collect, such as whether staff and guards at particular facilities are grossly underpaid, or whether there have been theft and corruption problems among them, that is often not routinely collected today. Some years ago, for example, two U.S. academics with modest funding, working with individuals who live in the closed nuclear city of Ozersk (home of a facility that processes tons of plutonium and HEU every year) found widespread corruption among the guards and staff, organized crime penetration of the city, and socially isolated, recently hired Central Asian staff at the plutonium facility who were worshipping at Wahhabi mosques set up with Saudi support, potentially increasing the chance that they might be targets for jihadist recruitment. As far as I am aware, U.S. policy-makers were not previously aware of these conditions, which are extremely relevant to judging what priority to assign to nuclear theft risks at that site. Similarly, as far as I am aware, before the Pelindaba break-in in November 2007, few U.S. policy-makers knew that there had been little progress for years in putting in place an effective design-basis-threat-based approach to security at that site, though this fact was available in public South African documents. Finding the best way to collect and analyze this information is not simple. In some cases, this information may be easier for experts from policy agencies or even non-government experts to get than it is for intelligence officers to collect it (in part because people who are not intelligence officers can collect it by what I like to call "ASKINT" – simply going to the facility and asking). In addition, it is essential to separate nuclear security assistance and intelligence collection; nothing would be more likely to cut short access to some sensitive sites requiring security upgrades than convincing states that our nuclear security personnel were spies. I believe there are additional steps that should be taken to facilitate comprehensive and high-quality analysis of nuclear theft threats, nuclear smuggling issues, and policy opportunities to address them – including providing funding to non-government centers to explore these issues in detail. (Additional thoughts on intelligence and nuclear terrorism are available in my presentation to the Intelligence Science Board on this topic, at: http://belfercenter.ksg.harvard.edu/publication/18132/.)

3. Mr. Mowatt-Larssen testified that China takes the security of nuclear materials very seriously. In contrast, your written testimony states, "The promising nuclear security dialogue with China does not yet appear to have led to major improvements in security there."

   a. Please provide the basis for your view that there have not been major improvements in the security of nuclear materials in China.

The National Nuclear Security Administration (NNSA) has an ongoing dialogue with China on many aspects of nuclear security – approaches to carrying out vulnerability assessments to find and fix the most important security weaknesses, ways to cope with insider threats, approaches to effective nuclear material accounting and control, and more. Chinese participants, however, indicate that few Chinese facilities have in fact had in-depth vulnerability assessments performed; those that had such assessments on a pilot basis a

decade ago were found to have significant previously unrecognized vulnerabilities. (The same was found to be true at U.S. facilities when the United States began implementing a systems-engineering approach to vulnerability assessment in the 1970s. Approaches focused on guards patrolling at the perimeter of a site, for example, may look impressive but may offer little protection against attacks in which the perimeter guards would be shot in the opening moments of an assault.) There is no public evidence that China has changed its regulations to require such vulnerability assessments, or to require facilities to be able to demonstrate that they can protect effectively against a specified set of adversary capabilities (the so-called "design basis threat"), an approach that the International Atomic Energy Agency recommends all countries implement.

b. Please describe your view on what actions, if any, the Chinese government is taking to facilitate nuclear security and which Chinese agencies are cooperating in that effort.

The Chinese government does take nuclear security seriously – by its own lights. Chinese nuclear facilities are typically equipped with fences, intrusion detectors, and armed guards. The Chinese approach tends to focus more on people and less on technology than the U.S. approach, as having more security guards is not as expensive in China as it is in the United States. But Chinese policymakers, like those in most other governments around the world, believe the threat of nuclear terrorism is minimal and existing nuclear security arrangements are largely adequate. Until policymakers and nuclear managers around the world are convinced that the threat of nuclear theft and terrorism is real and urgent, worthy of a significant investment of their time and resources, they are unlikely to take all of the steps the United States believes are needed to reduce the risk. Chinese civilian nuclear agencies are actively participating in the nuclear security dialogue with U.S. experts, and are eager to ensure that they are familiar with all the most modern "best practices" for security, control, and accounting of nuclear materials. But participating in a dialogue is a different thing from making major new investments in nuclear security and establishing stringent new nuclear security requirements; there is no public evidence that China has yet taken steps of that kind. Moreover, NNSA has not yet managed to reestablish cooperation with military nuclear agencies in China, which control all of China's nuclear weapons and most of its weapons-usable nuclear materials. China has asked for a formal U.S. statement that China did not spy on U.S. nuclear secrets in the last period of lab-to-lab cooperation in these areas in the 1990s, and the United States has been unwilling to provide such a statement. While various compromise language has been considered, both sides, in my judgment, have been too inflexible. Nevertheless, experts from institutions such as the China Academy of Engineering Physics (the Chinese equivalent of Los Alamos) routinely do take part in the nuclear security and accounting dialogues with the United States, though their institutions are not formally participating.

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May 7, 2008

The Honorable Joseph I. Lieberman
Chairman, Committee on Homeland Security & Governmental Affairs
U.S. Senate
706 Hart Senate Office Building
Washington, DC 20510-6250

Ref: Post-Hearing Questions for the Record submitted to the Honorable Ashton B. Carter from Senator Joseph I. Lieberman: "Nuclear Terrorism: Confronting the Challenges of the Day After" – April 15, 2008

Dear Mr. Chairman,

For the record, here are my responses to the questions included with your letter dated May 1, 2008:

1) *It appears clear that no city or state has the resources necessary to respond adequately to the immediate humanitarian consequences of a terrorist nuclear attack. The medical system in the vicinity of the detonation would be overwhelmed, and our capabilities to shelter and feed evacuated victims would be stretched beyond the breaking point. Countless other crises and challenges would need to be addressed simultaneously to provide the type of effective response that might save tens of thousands of lives. What are the most important actions that you recommend be taken now to improve our ability to respond to the immediate humanitarian consequences of a nuclear detonation in an American city?*

   The most important single life-saver would be to minimize the number of people exposed to large doses of radioactivity in the early hours and days after the detonation. This requires a capability in every city to do prompt radioactive plume prediction, clear plans involving an optimal mix of evacuation and sheltering, and enough training of authorities and government spokespersons that something approaching this optimal mix can be realized in the face of inevitable public panic.

2) *The Department of Defense has tremendous assets that would be vital to responding to a nuclear attack. In your testimony though, you mention DoD's reticence towards involving itself in homeland security response and that DoD should now re-engage on the homeland security front.*

   a) *What role do you see the Department of Defense playing in response to a nuclear event? In particular what are the missions which by necessity will fall to DoD either due to their unique capabilities or their sheer numbers of personnel and resources?*

DOD's role (Guard, Reserve, and active duty) would be to provide transport, logistics, command and control capabilities, and personnel for first response and the maintenance of order, promptly and on a large scale. No other federal agency or combination of state and local agencies has the same capabilities.

b) How could the Department of Homeland Security, which the law establishes as the primary agency for handling the response, best use DoD's resources without relinquishing control of the situation to the military?

DHS's response plans should anticipate and clearly define the DOD role, which DOD would then play under the same incident command structure as other federal agencies. DOD need not and should not be "in the lead" – it just needs a clear lane to run in.

3) The decision of whether to evacuate or shelter in place is arguably one of the most critically important decisions that people will make in the first hours after a nuclear attack. The ability to make that decision will depend in large part on whether the government is able to disseminate timely and accurate information to the public.

a) What must our federal, state, and local governments do to ensure that after a nuclear detonation we can quickly get useful information to people that are in the path of danger?

The first necessity is accurate and timely plume prediction. Second is a thoughtful plan that depends on each city's layout, building types, and road structure. Third is a single authoritative spokesperson (many mass media will still be operating, so the issue is one voice for public authorities, not communications per se).

4) The National Response Framework lays out the relationships between local, state and federal government in a disaster, with the federal government acting in support of a state government. In your testimony you proposed that state and local governments must acknowledge that they cannot be in charge after a nuclear detonation. Director Gibb spoke of the need to integrate command and control across levels of government. These remarks seem to speak to a potentially difficult relationship after such an attack, and perhaps a different relationship than we generally see after a major disaster.

a) What do you envision as the role of the federal government after a nuclear attack?

The advance preparations and knowledge of the local situation possessed by state and local authorities is critical. But a nuclear detonation is of a scale that it will constitute a national security emergency for which the ultimate responsibility lies with the federal government. This is even more evident when one considers, as my testimony emphasized, that the first detonation will usher in a period when further detonations are deemed to be imminent in every other city, so the emergency automatically becomes nationwide.

b) What actions do you think the federal government needs to take in order to be in the best possible position to mitigate the consequences of a nuclear detonation and save lives?

The federal government can add the most value by building capabilities that it does not make sense to try to duplicate 50 times in 50 states, such as plume prediction, forensic analysis of weapons debris, large-scale relief capabilities (including those contributed by the military),

carefully considered and scientifically sound protocols for dealing with radiation, and so on. Things that can only be done well if they are done locally (like specific evacuation and sheltering plans) should be done by state/local authorities using a federally-developed knowledge base of science and best-practice techniques.

c) *What must the next administration do to assure that preparing for a nuclear terrorist attack remains a top priority of our country?*

The top priority must be prevention. Response is important, and a modest amount of preparation can make an enormous difference, as these hearings demonstrate. But nuclear terrorism is preventable and should be prevented.

5) *A number of the issues addressed in the hearing all point to significant requirements for law enforcement.*

a) *What are some of the challenges to law enforcement in maintaining and restoring order that will arise in the wake of a nuclear attack?*

In the aftermath of a nuclear detonation, a small but certain fraction of the population will resort to lawlessness. The scale of the disaster means a law and order breakdown of huge proportions.

b) *How should we prepare in advance to coordinate law enforcement units across local, state, and federal levels of government, as well as the military?*

In my opinion the scale of the law and order problem will be so large that military personnel will necessarily be drawn into it – to protect themselves and their operations, in the course of their emergency response duties, and in their own right.

6) *A significant problem with radiation is people's inability to sense it without proper instrumentation. How will radiation affect our response efforts and what steps can we take now to minimize these effects?*

Radiation is frightening to most people. But its effects on human health are generally well understood, and radiation is easy to measure. There is no technical excuse why people should be unnecessarily exposed to excessive radiation, nor why ungrounded fears or lack of data should impede the overall life-saving and recovery effort.

Thank you for this opportunity.

Sincerely,

Ashton B. Carter

Post-Hearing Questions for the Record
Submitted to Dr. Cham E. Dallas
From Senator Joseph I. Lieberman

"Nuclear Terrorism: Confronting the Challenges of the Day After"
April 15, 2008

1) It appears clear that no city or state has the resources necessary to respond adequately to the immediate humanitarian consequences of a terrorist nuclear attack. The medical system in the vicinity of the detonation would be overwhelmed, and our capabilities to shelter and feed evacuated victims would be stretched beyond the breaking point. Countless other crises and challenges would need to be addressed simultaneously to provide the type of effective response that might save tens of thousands of lives. What are the most important actions that you recommend be taken now to improve our ability to respond to the immediate humanitarian consequences of a nuclear detonation in an American city?

Deficiencies related to the loss of power will be of great consequence to the dense population areas affected to a nuclear detonation, which would include A) lack of potable drinking water, B) no lighting in windowless parts of buildings, and C) the loss of critical hospital functions. Other priorities would include D) Pre-positioning of narcotic stockpiles and E) conversion of military vessels to civilian emergency response. The availability of water will be a critical life-threatening factor in the immediate hours and days after a nuclear event. The high likelihood of the collapse of the power grid in the disaster area will immediately negate the ability to pump water out of wells and subsequently get it to consumers. The lack of lighting in the interiors of buildings will make them incapable of being inhabited, and dangerous sources of crime-related activity. The loss of power in hospitals would be compensated briefly by emergency generators, although the efficiency of this capability is questionable, and dubious in clinics and other ancillary facilities.

These deficiencies related to power loss can be addressed by selected targeted stockpiles of supplies to be available in areas that could be predicted to be at high risk for relatively smaller nuclear detonations, yet have a sufficient surviving population to justify the intervention:

A) Large water tanks should be placed in these urban settings at intervals throughout these selected areas, attached to the sides of buildings at ground level to insure subsequent access in emergencies. Water would be accessible by simple gravity feed from these tanks, with smaller buckets also stored here for transporting water by hand in an emergency. It must be remembered that people in these affected areas may be on their own for days, with many people unable to move out of these areas due to multiple injuries and radiation sickness. Lack of water could result in thousands of deaths in the first 24 hours, and would also result in a critical lack of decontamination in the "hot zones". Even small amounts of water would be of great utility in radiation decontamination.

B) A great proliferation of lanterns, flashlights, and many, many batteries is needed over currently available stockpiles in these targeted areas, so that the huge area of darkened spaces in urban buildings can at least be initially addressed.

C) Finally, the ability of generators to operate in hospitals and clinics must be vigorously tested, and actual stockpiles of fuel for them validated. Testing of these capabilities are often claimed on paper and in tabletop exercises, but rarely actually conducted. The personnel that can actually perform maintenance on these rarely used systems may be very hard to locate in an emergency, and are often underpaid and unappreciated. A priority needs to be made of these systems and the personnel that secure them. The security of these fuel stockpiles in very questionable, especially in view of the daunting prospects for hospital security in many other venues, and the general weakness of hospital security in general (the average age of hospital security guards is 68, and the overwhelming majority of them are unarmed).

D) As noted previously, the pre-positioning of stockpiles of narcotics for use in mass burn care and the training of community workers will be a major priority, if there is any serious intention to aid the thousands of victims who otherwise would not receive these critically-needed medications (especially for burn treatment) until much later. In the anticipated target areas, it will be necessary to develop a plan for housing and securing a stockpile of narcotics for use in the event of a nuclear attack on a major city. Narcotics will have to be stored at military bases, police stations and jails. These places have 24 hour security and are easy to locate. The narcotics will have to be stored in a secure facility and monitored monthly for inventory by a pharmacist.

E) If one were to pick a single new intervention strategy that would have the greatest potential for impacting nuclear attack response in the critical first few days after a detonation, it would be the conversion of military vessels slated for removal from military service to a new role as civilian emergency response vessels dedicated to responding to large scale disasters. In order to maintain cost effectiveness, these platforms should be privately built and operated, while being deployed and supervised at the federal level so as to not adversely affect current disaster planning and operational preparedness. These ships could address a number of problems inherent in the areas of mass casualty/emergency response, including: providing improvements in response capability and care of casualties, consumables provision/distribution, fuel distribution, transportation, safety, and overall disaster site command and control. With more than 60% of American citizens living in coastal counties, the use of these ships will provide much needed and unprecedented support for a number of important laws pertaining to national security such as: P.L. 109-417/The Pandemic and All Hazards Preparedness Act, Homeland Security Presidential Directive #18, and #20, National Security Presidential Directive #51, and the National Communications System Directive #3-10.

2) The decision of whether to evacuate or shelter in place is arguably one of the most critically important decisions that people will make in the first hours after a nuclear attack. The ability to make that decision will depend in large part on whether the government is able to disseminate timely and accurate information to the public.

a) What must our federal, state, and local governments do to ensure that after a nuclear detonation we can quickly get useful information to people that are in the path of danger?

It is interesting to note that most large urban communities make some sort of claim of being able to utilize reverse-911emergency communication systems to inform specific populations of instructions in a crisis. In this approach, telephone systems would be utilized to phone individuals in a certain zone to make rapid, simultaneous and specific instructions to people who respond. It is intended that this informed population would then be able to flee danger, stay in place, and/or follow various instructions that would hopefully improve the outcome for that population. Private evaluations of communications experts in the field are generally unanimous, however, in doubting the efficiency (or even ability) to actually inform a high-risk group under serious crisis conditions. <u>This potential dichotomy of claims by urban management versus reality in crisis response demands resolution in a rigorous exercise format.</u>

3) A number of the issues addressed in the hearing all point to significant requirements for law enforcement.

a. What are some of the challenges to law enforcement in maintaining and restoring order that will arise in the wake of a nuclear attack?

There is also a major dichotomy between the hospitals' expectations of security showing up there and the reality of what is likely to actually appear in a major crisis like a nuclear weapon detonation (and events much smaller). Hospital personnel routinely claim that they are expecting several police and other security personnel will show up in a crisis to their specific hospital, yet the authorities over these security personnel will just as routinely declare that their hands will be very full in a crisis and that the hospitals are not a top priority. This curious widespread myth is going to be devastating in its consequences, especially when the track record of recent disasters like Hurricane Katrina are noted in this regard. The average large hospital has 20 to 30 relatively unsecured (to a determined individual) access points, not counting windows, and inadequate personnel to police them. The lure of the pharmacy in the hospital is particularly attractive to certain elements in our society, as well as numerous other aspects such as expensive equipment and employees and/or patients as objects of sexual harassment. Unless a major effort is undertaken to correct this

deficiency, there is little doubt that the already stressed health care system will quickly succumb to these daunting security threats.

b. How should we prepare in advance to coordinate law enforcement units across local, state, and federal levels of government, as well as the military?

The most critical feature for law enforcement could be summarized as: Which beeper are you going to answer? In other words, the actual deployment of law enforcement at the various levels will have to be coordinated in advance, based on the geographic distribution of the disaster and the jurisdictions of those in authority relative to this data. In the example given previously for hospital security (and its obvious vacuum), it would have to be decided what personnel could be assigned to tasks such as these are obviously going to fall through the cracks, with significant consequences. In this approach, individuals in jurisdictions just outside the immediate disaster area could have individuals assigned to areas inside the disaster jurisdiction that will not be expected to receive adequate security. For instance, deputy sheriffs that are off duty or retired in adjoining rural counties could sign contracts that they would definitely show up at certain urban hospitals in a crisis, no matter what else is going on. Therefore, these hospitals would have at least a few qualified individuals that they know they can count on in a crisis, by contractual arrangement.

4) A significant problem with radiation is people's inability to sense it without proper instrumentation. How will radiation affect our response efforts and what steps can we take now to minimize these effects?

The fear of radioactivity is fundamental, almost primal, in the population, including highly educated medical personnel. This paranoia is fed constantly by media outlets, comedic discussions, and even educational venues. We must begin the process of reversing this mythical treatment of radiation by short, prime-time messaging. A series of upbeat, non-doomsday approaches need to be employed in order to start this process. This will be a very hard educational battle, as the misconceptions run very deep.

a. Can you please describe the challenges of assessing who has been exposed to dangerous amounts of radiation after a nuclear attack?

It is quite difficult to get true quantitative analyses of radiation exposure in individuals, as evidenced by the many approaches attempted by the Soviet authorities after the Chernobyl accident. A simple review of the gamma radiation burden by a radiation dosimeter can be very misleading, especially before decontamination, as most of that signature will be due to contaminants on clothing. After decontamination, the problem of internal radiation exposure, and direct gamma irradiation (such as in the pulse at detonation) will not be evidenced there, either. Some expensive blood tests such as chromosome

painting and various genetic loci have some promise, but these are very unlikely to be available to 99+% of the population in a real crisis.

b. After such an attack, how can we most effectively and efficiently determine who needs priority medical treatment for radiation poisoning?

One chilling data point from the Chernobyl experience was that most of the highly exposed individuals who had expressed the prodromal syndrome soon after exposure were found to be unlikely to survive, and this has led to a low technology, easy approach to triage prioritization. It was found that Soviet workers that received high doses of radioactivity in fighting the reactor fire or in subsequent cleanup activity started showing nausea, vomiting and diarrhea within minutes of exposure. Those individuals who, on average, started showing these symptoms within 30 minutes of initial exposure were almost universally found to die within days or weeks of the exposure. However, when the latent period between initial exposure and the initiation of these symptoms was more than 4 hours, most of these people were found to survive up to years later. Therefore, a useful triage technique was found to be simply asking the question of all those exposed: How soon after exposure did you start to experience nausea, vomiting, and/or diarrhea? This would certainly be useful in screening the tens of thousands of people in urban areas that are showing up at medical treatment areas looking for health care intervention or assurance.

5) In your testimony you pointed out that during the response to the Sarin gas attacks in Tokyo, nearly a quarter of the hospital staff became ill as they spread the contamination amongst themselves. You also noted that a 2004 report by the American College of Emergency Physicians found that most hospital staff had little or no expertise in responding to weapons of mass destruction.

a. To the best of your knowledge, are our hospitals and mass care shelters prepared to decontaminate patients who have been exposed to radioactive fallout? What can be done to improve our hospital's decontamination capabilities?

There has been a lot of progress in the last few years in training among hospital emergency rooms in decontamination procedures, though the high turnover rates in personnel continues to contribute to an overall low level of sophistication in this area. Lest we always cry that the sky is falling concerning radiation, one of the rare pieces of good news in this area is that decontamination of radionuclides from patients is relatively easy, if one has some minimal equipment and training. Indeed, in giving training on all-hazards decontamination procedures in the American Medical Association certification, in comparisons between the various biological, chemical, and radiation hazards we make the point that radiation decontamination would usually be expected to be the least hazardous to medical personnel. This is

because the radionuclide contamination on the patients announce themselves to even low quality radiation monitors, while chemical and especially biological contaminants can be very hard to detect even with sophisticated monitoring (that is very unlikely to be available). Radioactive contaminants can then be removed with soap and water, generally with little hazard to the personnel conducting the decontamination. The decontamination course that we have been teaching as part of our AMA certification, for example, has been very popular in hospital training, especially for radiation.

b. How could the Federal government support this need?

An increase in emphasis and requirements for hospital decontamination certification would be a "low hanging fruit" that could raise the overall level of training in the emergency rooms, and could definitely be achieved. If we demand this of the hospitals, they will be able to achieve it and maintain it. There are also a lot of vendors out there now who can deliver this training, although if we don't give them some business soon many of them will go out of that business and go somewhere else. The timing is right for an increase in requirements, and hopefully also funding to support it from the federal government. Ironically, just as the number of vendors to provide this training is at a peak, funding to support it is declining and the interest is beginning to lag at the hospitals for voluntary training. This is not surprising due to the distance from 9-11 and the lack of major attacks on American soil, but the findings of this hearing are clear in declaring the increased risk that is accruing for a radiation hazard. We really need to move on this one due to these favorable conditions to actually increase the decontamination capabilities.

6) As you mentioned in your testimony, physicians in private practice are an untapped resource in terms of emergency medical capacity. Do you know of any communities that have developed the relationships to engage private practice physicians? Given the widely dispersed nature of private practice offices, do you think that this could be a practical option?

The one widespread organizational structure that has had some success in this approach have been the Medical Reserve Corps. Most of these local groups have incorporated private physicians as their core constituents, in an attempt to build the subsequent organizations around them. Many of these core physicians are ex-military, with the excellent background that entails for leadership, CBRNE training, and emergency response experience. An enhanced effort to recruit private physicians to MRC units could prove very useful, perhaps using some recruiting incentives (not necessarily financial).

Responses to
Post-Hearing Questions for the Record
Submitted to Dr. Roger C. Molander
From Senator Joseph I. Lieberman

"Nuclear Terrorism: Confronting the Challenges of the Day After"
April 15, 2008

1) It appears clear that no city or state has the resources necessary to respond adequately to the immediate humanitarian consequences of a terrorist nuclear attack. The medical system in the vicinity of the detonation would be overwhelmed, and our capabilities to shelter and feed evacuated victims would be stretched beyond the breaking point. Countless other crises and challenges would need to be addressed simultaneously to provide the type of effective response that might save tens of thousands of lives. What are the most important actions that you recommend be taken now to improve our ability to respond to the immediate humanitarian consequences of a nuclear detonation in an American city?

   - To me one action stands out above all others: The Congress should examine those current laws and regulations that inhibit prior planning between the government and the private sector to respond to a nuclear terrorist attack (and many other potential catastrophic events). On the basis of that examination, the Congress, in cooperation with the Executive, should update those laws and regulations to face the realities of today's threat spectrum. A good place to start would be to consider modifications to the Defense Production Act.

2) The decision of whether to evacuate or shelter in place is arguably one of the most critically important decisions that people will make in the first hours after a nuclear attack. The ability to make that decision will depend in large part on whether the government is able to disseminate timely and accurate information to the public.

   a) What must our federal, state, and local governments do to ensure that after a nuclear detonation we can quickly get useful information to people that are in the path of danger?

      - The threat spectrum posed by nuclear terrorism involves one or at most a few nuclear detonations at relatively low yields - as distinct from the threat of posed by a nuclear attack from another nuclear power (multiple detonations at much higher yields). As a consequence, and in light of the uncertainty about the public's confidence in the federal government under the circumstances of a nuclear attack (and because the nuclear attack could be against Washington, DC), this communication problem should be viewed primarily as a state and local challenge. In that context state and local emergency management authorities should be tasked with establishing a program by which individuals in whom the public has confidence (established, for example, thorough focus

groups or other survey means) who could be called upon to deliver critical information relating to a nuclear attack. These individuals might be government officials who are well respected or other individuals with particular expertise relating to nuclear effects.

3) The National Response Framework lays out the relationships between local, state and federal government in a disaster, with the federal government acting in support of a state government. Dr Carter, in his testimony, proposed that state and local governments must acknowledge that they cannot be in charge after a nuclear detonation. Director Gibb spoke of the need to integrate command and control across levels of government. These remarks seem to speak to a potentially difficult relationship after such an attack, and perhaps a different relationship than we generally see after a major disaster.

   a) What do you envision as the role of the federal government after a nuclear attack? What actions do you think the federal government needs to take in order to be in the best possible position to mitigate the consequences of a nuclear detonation and save lives?

      - The role of the government as envisioned in the National Response Plan would appear to be appropriate in many circumstances. However, any one attack will be *sui generis* and it is almost impossible to determine in advance whether the government should have the lead role that Dr. Carter suggests except. In most of the nuclear terrorism scenarios that have been considered the federal government would be acting in support of a state government or local and regional governments in responding to the human disaster that would obtain. In many cases, the federal government, in cooperation with private industry, would need to address the broader regional or national impact of an attack that affects critical infrastructures.

      - See the answer to Question #1 above.

   b) What must the next administration do to assure that preparing for a nuclear terrorist attack remains a top priority of our country?

      - Continue to push for acceptance and adoption of the National Response Plan at the state and local level and acknowledge that this threat is the most important of the catastrophic events on which the Homeland Security Council called on the United States to focus.

4) A number of the issues addressed in the hearing point to significant requirements for law enforcement.

   a) What are some of the challenges to law enforcement in maintaining and restoring order that will arise in the wake of a nuclear attack?

- Law enforcement must be able (technically and with dispatch) to deliver rules of engagement that take into account the panic that would undoubtedly accompany a nuclear attack, and have the communications capability to adapt those rules of engagement in real time as unforeseen circumstances develop.

b) How should we prepare in advance to coordinate law enforcement units across local, state, and federal levels of government, as well as the military?

- There is no substitute for a continual program of exercises in achieving the level of preparedness that is needed. For a nuclear terrorism attack, such exercises need to take place in at least the top 10-20 major metropolitan areas in the United States. Since such exercises will of necessity be infrequent, the broader exercise catastrophic exercise program needs to take into account (e.g., in post-exercise analyses) the particular demands posed by a nuclear terrorism attack.

5) A significant problem with radiation is people's inability to sense it without proper instrumentation. How will radiation affect our response efforts and what steps can we take now to minimize these effects?

- See the answer to Question #2a above. As indicated in my testimony, the major problem of concern in this regard is fallout. Government spokespersons will be key to conveying to people the nature and near-term impact of the attack, in particular as regards fallout. In order that they have good information (e.g., on the likely direction and extant of the fallout cloud) there will need to be prior arrangements (and a program of exercises) with local weather forecasters in the region of the metropolitan areas most likely to be targeted. Minimization of the medical impact on those individuals that are exposed to fallout (or prompt radiation) will require the development of a capacity to do test potentially exposed individuals very early after their evacuation or escape from a the fallout zone.

6) In the aftermath of a nuclear attack, the federal government will undoubtedly need to use the vast capabilities and resources of the private sector to help with the immediate response efforts.

a) What steps do we need to take to engage our private partners, before such an event takes place, so that we are better prepared for the event itself?

- See the answer to Question #1 above. Very little of what needs to be done and what could be done in terms of planning and response coordination with the private sector can take place until the laws and regulations governing private sector cooperation (e.g., within critical infrastructures such as transportation and petroleum) are changed.

b) What are the greatest challenges that we face in this area of private sector and government coordination?

- See the answer to Question #1 above.

7) You have previously written on the affects of a nuclear attack on the nation's infrastructure, with potentially catastrophic consequences. As you noted, much of this infrastructure is in the hands of the private sector.

a) How can we encourage the private sector to build resiliency into their business plans?

- See the answer to Question #1 above. The problem is not individual corporations and their individual plans but rather the opportunity for planning across business sectors that is denied because of the existing legal and regulatory structure.

b) What other steps can we take to improve the resiliency of our nation's infrastructure?

- There is a critical need for a sustained program of exercises at the local/state level in the top 10-20 major metropolitan areas (with federal participation) that identifies and acknowledges shortfalls in capability, capacity, or performance.

Responses to
Post-Hearing Questions for the Record
Submitted to Dr. Roger C. Molander
From Senator Mark Pryor

"Nuclear Terrorism: Confronting the Challenges of the Day After"
April 15, 2008

1. Dr. Molander, you spoke extensively about the practical considerations involved with letting people know how and when to evacuate. What plans are in place to communicate with citizens in the affected areas in the wake of the explosion? If phones and email systems were inoperable, what other resources could people turn to for information?

    - Based on interactions with the emergency response officials in a large number of U.S. metropolitan areas, I am confident that all major U.S. metropolitan areas that are potential targets of a nuclear terrorism attack have disaster communication plans. Whether these plans will be effective in the wake of such a nuclear terrorism attack is uncertain and a matter of execution. As indicated in my testimony, the major problem of concern in this regard is communicating to the public the anticipated fallout pattern and practical steps to minimize exposure if one is caught in the fallout region. Government spokespersons will be key to this communication challenge. In order that they have good information (e.g., on the likely direction and extant of the fallout cloud) there will need to be prior arrangements (and a program of exercises) with local weather forecasters in the region of the metropolitan areas most likely to be targeted. In this context state and local emergency management authorities should be tasked with establishing a program by which individuals in whom the public has confidence (established, for example, thorough focus groups or other survey means) who could be called upon to deliver critical information relating to a nuclear attack. These individuals might be government officials who are well respected or other individuals with particular expertise relating to nuclear effects.

    - Most of the individuals who will need to be responsive to the effects of an attack will likely be able to obtain information from radio and television since the impact of the attack on critical infrastructures such as electricity and telecommunications should be localized to an area not much greater than the blast zone. However, telephone links will probably be jammed.

2. What measures should be taken to ensure order?

    - Except possibly in the event of a small device (e.g., one kiloton) exploded in a city like New York which has well-developed response plans for law enforcement and a large police force, it will almost certainly be necessary for the governor to call out the national guard to maintain order, especially since there will be a large exodus from the city that is attacked with associated problems of determining who among those fleeing has been exposed to radiation

3. You also mentioned the crucial role the private sector will play in logistics after a nuclear explosion. Could you describe in detail what services the private sector could perform that the federal government could not? What, specifically, do you recommend Congress do to facilitate that involvement? Is a "Good Samaritan" law necessary to relive well-intentioned companies of liability? Anti-trust waivers? Pre-catastrophe credentialing?

   - The private sector, if it were permitted to coordinate and cooperate in advance as to how it would parcel geographically its response and recovery efforts, could do a far better job than the government acting alone in coordinating the provision of basic services (for example, water, food, and gasoline) in order that areas that were evacuated could be reoccupied much more quickly, relieving the government of the burden of providing these services for an extended period.

   - To facilitate this greater level of private sector involvement and cooperation in emergency planning and response, the Congress should examine those current laws and regulations that inhibit prior planning between the government and the private sector to respond to a nuclear terrorist attack (and many other potential catastrophic events). On the basis of that examination, the Congress, in cooperation with the Executive, should update those laws and regulations to face the realities of today's threat spectrum. A good place to start would be to consider modifications to the Defense Production Act.

   - It is not clear whether an effective set of "Good Samaritan" laws could be crafted in advance to cover potential contingencies. Rather, a careful examination of existing barriers to private sector cooperation (in effect to provide some relief on anti-trust legislation and regulations) is warranted. Federal legislation to address pre-attack credentialing is warranted although interstate compacts may be a more practical means of alleviating most credentialing problems that have been identified.

Post-Hearing Questions for the Record
Submitted to John R. Gibb
From Senator Joseph I. Lieberman

"Nuclear Terrorism: Confronting the Challenges of the Day After"
April 15, 2008

1) It appears clear that no city or state has the resources necessary to respond adequately to the immediate humanitarian consequences of a terrorist nuclear attack. The medical system in the vicinity of the detonation would be overwhelmed, and our capabilities to shelter and feed evacuated victims would be stretched beyond the breaking point. Countless other crises and challenges would need to be addressed simultaneously to provide the type of effective response that might save tens of thousands of lives. What are the most important actions that you recommend be taken now to improve our ability to respond to the immediate humanitarian consequences of a nuclear detonation in an American city.

Response:
We need to invest in the recruiting, organizing, training and equipping local, regional, state and/or federal (Disaster Medical Assistance Teams – DMATs) medical response teams that can support, supplement or replace local emergency medical capabilities. For this type of disaster we also need plans and radiological monitoring equipment that can quickly be activated to provide monitoring in support if the comprehensive personal decontamination that will need to take place for potentially tens of thousands of people. The CDC's Strategic National Stockpile should be augmented with additional drugs and medical supplies that will be needed to support the response.

2) The decision of whether to evacuate or shelter in place is arguably one of the most critically important decisions that people will make in the first hours after an attack.

   a) How will New York State make the decision on whether to advise its citizens to shelter in place or evacuate after a nuclear attack?

Response:
Our radiological response plans are centered around protective action decisions that result in the lowest possible exposure to the population. Exposure rates at and near "ground zero" would almost certainly require the evacuation of the impacted population, and dose calculations based on field readings and laboratory analysis of air and soil samples would drive downwind evacuation decisions. Sheltering is a temporary remedy if evacuation is not possible, or if we know that the exposure will decrease significantly in less time than it would take to conduct the evacuation.

   b) What information do you need to make that decision?

Response:
Information that is needed to support protective action decisions include the source term of the weapon (amount of radiological material), wind direction, atmospheric stability, downwind exposure rates, air samples and soil samples for lab analysis to

determine the radioactive isotopes present. Realistically downwind exposure rates would be the only information that could reasonably be expected to be available.

c) Who do you expect to provide you with that information? Please describe the level of coordination between the State of New York and the agency or individuals that you expect to provide you with this information?

Response:
Many first responder organizations (fire and law enforcement), and certainly hazmat teams have been equipped and trained to be able to detect the presence of radioactivity. First responder information would be followed up by local health department or State Department of Health radiation monitors who could provide more detailed information. Federal radiation monitoring support could be available in several hours depending on the location of the incident.

d) How confident are you that you will receive this information in the chaos after a nuclear attack?

Response:
I am very confident that there would be initial information. However, it would not be gathered and reported as part of an overall sampling plan early on, therefore limiting the ability of decision makers to see a complete picture of the incident.

3) In your testimony, you describe how New York State has expanded its emergency alert system to incorporate new technology – cell phones, e-mails, blackberries, etc. DHS, through FEMA, runs the federal Emergency Alert System, which was built up around a system of alerts sent out through broadcast television and radio. FEMA now faces the challenge of making the Emergency Alert System interface with as many technologies as possible so that alerts reach as many people as possible as quickly as possible.

a) Please describe the level of coordination between FEMA and the State of New York on emergency alerts.

Response:
While we have had discussion with FEMA regarding NY-ALERT (New York's web based alert and notification system) we have not found substantive ways to date to coordinate our efforts.

b) To what extent do you think FEMA should try to leverage State systems such as your own that have incorporated new technologies?

Response:
As far a NY-ALERT is concerned, we would welcome discussions as to how NY-ALERT could be leveraged to support federal alert and notification requirements and how NY-ALERT could serve as a regional platform for multi-state emergency information system. It is not clear that FEMA's Integrated Public Alert and Notification System (IPAWS) is ready or capable of be implemented nationally. Systems like NY-ALERT, with minimal investment, could fill alert and notification gaps in short order.

c) Do you have recommendations as to specific steps the federal government should be taking to improve the Emergency Alert System?

Response:

The Commercial Mobile Alert System (CMAS) recently announced is flawed in design for local use as it requires local emergency information to find its way to a federal agency before finally be broadcast through local cell towers. The federal government should continue to have a commitment not only to modernizing the Emergency Alert System (EAS), but also be willing to build regional partnerships that will allow current technology to be utilized to the fullest to support federal, state, regional and local emergency alerting needs.

4) The National Response Framework lays out the relationships between local, state and federal government in a disaster, with the federal government acting in support of a state government. Dr Carter, in his testimony, proposed that state and local governments must acknowledge that they cannot be in charge after a nuclear detonation. You spoke of the need to integrate command and control across levels of government. These remarks seem to speak to a potentially difficult relationship after such an attack, and perhaps a different relationship than we generally see after a major disaster.

a) What do you envision as the role of the federal government after a nuclear attack?

Response:

In the aftermath of the detonation of a nuclear device the federal government should make available any and all federal resources to support the state and local response.

b) Do you feel DHS has initiated the necessary discussions to facilitate coordination between New York State and the federal government after a catastrophic attack?

Response:

Our most recent catastrophic emergency planning efforts have focused on the hurricane threat to New York. We do have ongoing planning efforts with FEMA in support of emergency preparedness for the State's nuclear power plant sites. This work most closely approximates the planning necessary to prepare for a nuclear detonation. In addition we are currently working with federal agencies in planning a major exercise scheduled for the Spring of 2009 that will test federal, state, and local response capabilities for a radiological dispersal device.

c) What actions do you think DHS and the federal government need to take in order to be in the best possible position to mitigate the consequences of a nuclear detonation and save lives?

Response:

DHS should support comprehensive prevention efforts such as the Secure the Cities Program. In addition, DHS should make planning guidance available that is commensurate with the level of threat of this hazard, to guide the development of state and local plans. There should be continued flexibility (and emphasis based on the level of threat) in the Homeland Security Grant Program to allow states, urban areas and

local governments to prepare for this type of incident. DHS should work with HHS to ensure that there is consistent federal guidance and emphasis to the homeland security, emergency management and health communities.

5) A number of the issues addressed in the hearing all point to significant requirements for law enforcement.

   a) What are some of the challenges to law enforcement in maintaining and restoring order that will arise in the wake of a nuclear attack?

Response:
Law enforcement agencies will face multiple, and possibly overwhelming challenges in securing the scene, eliminating potential additional threats, facilitating evacuations and providing a presence, in significant enough strength to maintain calm and order, at decontamination centers, hospitals and ad hoc medical treatment sites, shelters and neighborhoods and communities that have not been evacuated but are close enough to the incident to cause public concern.

   b) What considerations need to be incorporated into emergency plans so as to minimize these challenges?

Response:
First responders, including law enforcement, need to be part of a comprehensive exposure control system that will limit exposures in accordance with the concept of ALARA (as low as reasonably achievable). This requires the development of plans and protocols for such a system, the training of responders in the basics of radiation and their roles in an incident of this type, and providing the necessary equipment (dosimetry) to allow responders a reasonable chance to successfully limit their exposures.

   c) How should we prepare in advance to coordinate law enforcement units across local, state, and federal levels of government, as well as the military?

Response:
The Emergency Management Assistance Compact (EMAC) has proven to be a successful vehicle to allow states to share resources including law enforcement personnel and National Guard assets. FEMA should continue to support EMAC in their efforts to further refine the interstate sharing of resources. The Federal government should be able to identify the federal law enforcement and security resources that would be available to support the state and local government response to an event of this type.

6) A significant problem with radiation is people's inability to sense it without proper instrumentation. How will radiation affect our response efforts and what steps can we take now to minimize these effects?

Response:
As stated previously: First responders, including law enforcement, need to be part of a comprehensive exposure control system that will limit exposures in accordance with the concept of ALARA (as low as reasonably achievable). This requires the

development of plans and protocols for such a system, the training of responders in the basics of radiation and their roles in an incident of this type, and providing the necessary equipment (dosimetry) to allow responders a reasonable chance to successfully limit their exposures.

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Post-Hearing Questions for the Record
Submitted to Dr. Irwin Redlener
From Senator Joseph I. Lieberman

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath"
May 15, 2008

1) What should be our expectations in dealing with the extraordinary medical consequences of a nuclear attack? What should be the priorities of our government and society in building this capacity?

Once we understand that single detonation nuclear terrorism is very different than nuclear holocaust that we all feared – and rightly so – during the Cold War with the U.S.S.R., we can and should expect that steps should be taken to prepare for this kind of highly lethal event. Extraordinary medical consequences will certainly require a massive medical response – and not everyone will survive, no matter what we do. But much can be done to *optimize our response capacity.*

The responsibilities of government are manifold with respect to nuclear terrorism. The federal government should be sure that all localities considered to be at significant risk of nuclear terrorism receive the resources necessary to comply with mandatory preparedness efforts. The details of these efforts should be locally implemented, but prescribed by federal, high level expertise. Appropriate planning would include citizen education, crisis communication mechanisms, public shelters, decontamination and a large scale emergency medical contingency plan.

Post-Hearing Questions for the Record
Submitted to Dr. Irwin Redlener
From Senator Susan M. Collins

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath"
May 15, 2008

1. Since the devastating events of Hurricane Katrina, many steps have been taken at all levels of government to identify and close gaps in national catastrophic disaster planning, and for the most part these efforts have been designed to enhance our response capabilities for all hazards. However, you point out an "...apparent failure to grasp, organize or implement plans to mitigate and respond to a terrorist attack based on detonating a nuclear device." What are the most pressing gaps in our urban areas' catastrophic plans which should be made first priority before we could consider ourselves prepared for a nuclear attack?

Nuclear detonations result in catastrophic destruction, high fatality rates from multiple etiologies (blast, burns and radiation), prolonged consequences (fallout and radiation sickness) and massive psychological trauma – all characteristics which, in my opinion, make nuclear terrorism vastly different than other kinds of megadisasters. Functioning under an "all hazards" planning umbrella will not effectively provide appropriate guidance or resources for responding to a nuclear blast.

- We should start by insisting that all urban areas deemed at risk for nuclear terrorism be mandated to develop response plans for such events. The federal government should provide relevant expertise, planning templates and resources to make this feasible, but high risk local jurisdictions should not view such planning as optional.
- Citizens need to understand the basics of nuclear blast survival.
- Redundant communications systems to keep citizens informed in the aftermath of an attack should be developed and tested.
- Large-scale contingency plans for mass decontamination capacity and medical care stations need to be developed that could be deployed in the perimeter if the target zone region.
- First responders and health care personnel who are potentially deployable in the aftermath of a nuclear detonation should be given essential information regarding basic needs of short and medium term casualties.

Post-Hearing Questions for the Record
Submitted to Dr. Ira Helfand
From Senator Joseph I. Lieberman

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath"
May 15, 2008

1) Your testimony before the Committee detailed a number of challenges and proposals for providing medical care after a nuclear terrorist attack. What are the most important actions that you recommend be taken now to improve our medical surge capabilities to respond to the immediate consequences of a nuclear detonation in an American city?

There are several steps we should take:

a) We should increase the number of DMAT teams. To handle the number of casualties expected from a nuclear terrrorist attack we would probably need 200 teams. We should also eliminate bureaucratic obstacles to participation in DMAT teams. I am referring to the recently disclosed situation where federal employees, such as medical personnel from the VA system, are effectively barred from participating in DMAT activities because no one can decide which federal agency will pay them.

b) In cities which are felt to be particularly vulnerable to terrorist attack, such as New York and Washington, we should establish Disaster Medical Care Centers. (see below)

c) We should establish a number of fully equipped mobile field hospitals which can be deployed to disaster sites which do not have Disaster Medical Care Centers or in case the Disaster Medical Care Center in a targeted city is destroyed by the attack.

d) We should establish stockpiles of medical equpment and supplies that can be used to restock hospitals in a disaster area.

e) Most importantly, the Department of Homeland Security should establish a task force charged with evaluating these recommendations, deciding exactly how many DMAT teams we need, which cities should have Disaster Medical Care Centers, how many mobile field hospitals we need, and implementing these plans in a defined time frame so that we do not continue to drift unprepared into an increasingly dangerous future.

2) Your report points out that most of our medical assets are contained in large hospitals located in urban areas that are likely to be targets for terrorist incidents. As a result, in the aftermath of a catastrophic terrorist attack the most easily accessible medical resources will likely become unavailable. To address this problem, you suggest the creation of large Disaster Medical Care Centers located on the periphery of major urban centers, reserving our

remaining hospitals for critically ill patient care. How do you envision that these facilities would be resourced and staffed? Which level of government would be most appropriately responsible for their operation? Do you know if any level of our government has studied or considered such facilities?

Disaster Medical Care Centers would be needed not only because some existing medical facilities might be destroyed in the attack, but also because existing medical facilities, even if they survived the attack, are not designed to receive, triage, and treat the huge numbers of casualties that would be expected. A Disaster Center would need to be accessible to ambulances, private cars, and helicopters; it would need to be able to receive thousands of patients and their families; and it would need to be structured in a way that would allow security for and easy communication with these large crowds of injured and frightened people. Convention centers and sports complexes have been proposed as possible sites that could be prepared to be serve as DMCCs. The supplies and equipment needed to quickly transform these sites into emergency medical facilities would need to be prepositioned at or near the sites with backup available from national stockpiles maintained in more secure locations away from potential target cities. The Disaster Medical Care Centers would be staffed by DMAT teams flown in to the disaster area as well as those local health care personnel who could be mobilized.

I believe that the federal government, through the Department of Homeland Security, is ultimately responsible for providing this kind of emergency capability and would need to work in partnership with local and state governments who simply do not themselves have the means or resources needed for this work.

To my knowledge, no level of government has as yet adequately considered the need for such facilities or begun planning to develop them..

Post-Hearing Questions for the Record
Submitted to Dr. Ira Helfand
From Senator Susan M. Collins

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath"
May 15, 2008

1. Last October, the Committee held a hearing on biological weapons that terrorists might use. One of the witnesses, Dr. Tara O'Toole of the Center on Biosecurity, questioned whether Biowatch was the best use of federal dollars. Biowatch consists of advanced technology sensors placed in high-traffic areas of cities and designed to detect biological agents released in the air as soon as possible. Dr. O'Toole believed that even if the sensors work well and detect toxic agents accurately, that information is meaningless to the medical community until they start seeing their patients exhibit the associated symptoms with such an agent. As someone who practiced emergency care for almost 20 years, do you agree with Dr. O'Toole's assessment of the utility of Biowatch?

In general I do agree with Dr. O'Toole's assessment. Most of the agents that we think might be used in bioterrorism--anthrax, plague, smallpox--are not encountered frequently, if at all, in normal clinical practice. So it is possible that a doctor in the ER would be more likely to suspect such a diagnosis if he or she had been notified that Biowatch sensors had detected the pathogen in the air. But given the very short incubation time of some of these agents, such as inhaled anthrax, it is not clear that Biowatch sensors would have identified a release before patients became ill.

The real question here is the cost benefit analysis. Even if there were a short advance warning that an agent had been released, would there be a big enough improvement in our ability to respond to justify the very large expense involved in this system? Might a minor release of one of these agents, insufficient to cause any cases of human illness, trigger an enormously disruptive "false" alarm? I am afraid that I do not have any special expertise to bring to these particular questions.

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath"
Hearing on May 15, 2008

Post-Hearing Questions for the Record
Submitted to Joseph C. Becker
From Senator Joseph Lieberman
October 8, 2008

1) **In your testimony, you expressed concerns about the Red Cross's ability to respond to a nuclear terrorist attack. What specific consequences do you project if the Red Cross is overwhelmed by such an event? In an instance in which the Red Cross reaches its maximum capacity, how should these gaps be otherwise addressed?**

As stated in my testimony of May 15, 2008, the United States is not ready to respond to an attack involving a nuclear device. While the American Red Cross does have supplies and resources to provide mass care - which includes feeding, sheltering, distribution of supplies, emergency first aid, mental health and family reunification –the scope, scale and challenges of a nuclear event are profoundly different than other mass care events. There are practical limitations to any organization's ability to respond, and nuclear terrorist attacks could easily create demands larger than any one organization could meet.

In instances where the Red Cross's internal resources are overwhelmed, the proper course of action is defined in the National Response Framework. Under the Framework, the Red Cross is in a role that is equivalent to another agency or to a state. Whenever a responsible agency or state requests support, that support is provided by the federal sector using all resources at its disposal. The resources of the entire federal family are mobilized according to the priorities of the Federal Coordinating Officer, the State Coordinating Officer, and the Principle Federal Officer.

2) **It appears clear that no city or state has the resources necessary to respond adequately to the immediate humanitarian consequences of a terrorist nuclear attack. The medical system in the vicinity of the detonation likely would be overwhelmed, and our capabilities to shelter and feed evacuated victims likely would be stretched beyond the breaking point. Countless other crises and challenges would need to be addressed simultaneously to provide the type of effective response that might save tens of thousands of lives. What are the most important actions that you recommend be taken now to improve our ability to respond to the mass care requirements of a nuclear detonation in an American city?**

In addition to improving the government's public communications during and after a nuclear attack, the government must find a way to protect volunteers including but not limited to health care volunteers, mass care workers and others who would be exposed to nuclear radiation. If these key caregivers are to be incorporated in a disaster response plan, they will need to have protections and assurances from the federal government *in advance* of a nuclear attack. As was referenced in the testimony, "This isn't just a Red Cross issue. This is a sector issue and all volunteers that step forward need to be protected. If we want them to show up, we have to provide this."

As referenced earlier, we also need to do a better job in citizen preparedness. To this end, we need to ensure that Americans know what steps to take in case of a nuclear attack. National and local officials should ensure that such a communications plan is a top priority and the American Red Cross is ready and able to partner with the government in effectively conveying and disseminating this information to our nation's citizens.

In addition, our other recommendations include, in part, the following:

- A nuclear attack should trigger a full federal response
- The government should develop a nuclear response plan that clearly delineates a lead federal agency in coordinating and responding to the attack
- Information needs to be shared with mass care providers and others about the location of the nuclear fall out plume and whether individuals should stay in place or evacuate
- Dissemination of accurate information before a nuclear attack and after the event that would outline the location of the nearest shelters and relocation plans
- The plan should recommend how hospitals, first responders and mass care providers need to deal with nuclear decontamination issues for the population, i.e. decontamination centers, disposal of garments etc.
- Medical treatment options—vaccinations and antibiotics.

3) **In the event of a catastrophic nuclear attack, there would likely be thousands of critically injured victims as well as many more with non-life threatening but still serious injuries. These victims, who would normally expect prompt medical care at a hospital, may not be able to receive the necessary treatment at a hospital because hospitals would likely be filled with those whose lives are immediately at risk.**

a) What level of medical care are Red Cross shelters able to provide?

The role of Red Cross health professionals is to assess and treat minor injuries. We generally rely on local medical infrastructure to provide care beyond immediate first aid. We do expect medical capabilities to be compromised in such an event.

Red Cross health professionals conduct health assessments (current signs and symptoms and assessment of acute or chronic medical conditions), obtain medical histories, perform splinting, perform bandaging, administer wound care (excluding suturing), provide health education, and prevent and mitigate disease transmission. Red Cross Health Services Protocols identify the parameters under which licensed health professionals provide assessment/triage, limited medical treatment, and/or referral to an appropriate medical setting when serving as Disaster Health Services staff. The Health Services Protocols are intended as symptom-based treatment guidelines.

Do you recommend that the Red Cross make changes in order to provide basic medical care in congregate shelters, to reduce the burden on hospitals? If so, what changes do you recommend?

We believe that the current state of our nation's medical infrastructure can be overwhelmed by a catastrophic disaster. While the Red Cross meets and plans with partners such as public health, and federal partners (including the NDMS system) for provision of clinical treatment and care in disasters, we believe that our resources will need to be focused on our core responsibilities of sheltering, feeding and providing care at the level of first aid given the potential scale of such an event. The Red Cross is not fundamentally a medical provider outside of our blood services and first aid training. While we acknowledge the issue, the answer will likely need to come from government or medical providers working in concert with us.

While the term "basic medical care" is somewhat subjective in definition, note that our existing protocols do allow for some services that could be categorized as basic medical care. In addition, we currently have local relationships with public health and hospital systems to provide levels of care that are outside of current Red Cross Protocols.

b) Does the Red Cross currently have agreements with clinics, hospitals, or other health care providers to assist with medical care in congregate shelters?

At present, there are no national organizational agreements for medical support for shelters. However, local chapters have developed informal agreements or Memorandums of Understanding (MOUs) for assistance with medical needs at shelters. It is also our expectation that such support could be requested under the national response framework from ESF 8. Under our national plan, coordination of health resources would be assumed by this structure rather than by a series of MOUs, as priorities would need to be established by state and federal officials.

Do you believe that there has been sufficient planning and exercising between our hospitals and the Red Cross to manage integrated patient handling? Do you recommend any improvements in this area?

No, we do not believe there has been sufficient planning and exercising at the local level. In addition, the issue of surge capacity in our medical systems is of significant concern. Most medical institutions are operating at close to maximum capacity on a day to day basis and will be challenged to handle casualties on the magnitude that could be expected.

The Red Cross is in the process of updating a 1989 MOU with the American Hospital Association to update HIPAA-specific guidance for hospitals to collaborate with Red Cross in obtaining disaster related patient information following an event. The updated MOU will also include emphasizing the need to plan and exercise together. An update to this document regarding the HIPAA would benefit both the local chapters and the community hospital(s) in working together in planning, responding and integrated patient handling when a disaster occurs.

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath"
Hearing on May 15, 2008

Post-Hearing Questions for the Record
Submitted to Joseph C. Becker
From Senator Susan M. Collins
October 8, 2008

1. **Organizations such as the Red Cross have substantial experience with moving supplies and marshaling volunteers to respond to catastrophic incidents. This background provides valuable lessons that can inform planning for future mass care responses. However, a nuclear detonation in an American city poses many unique challenges that might undermine what are otherwise very basic assumptions about how these organizations operate. For example, it seems likely that, whereas volunteers frequently flock to areas hit by severe storms or an earthquake, they will not as readily enter the aftermath of a nuclear explosion, leading to a shortage of willing hands to provide care. Are mass care providers such as the Red Cross prepared to handle the unique challenges that a nuclear detonation will present?**

   In the event of a nuclear detonation, both citizens and potential volunteers will be rightly moving away from the affected areas. Our sheltering plans take this into account and call for receiving evacuees away from affected areas, and we have the ability to draw from a national base of trained volunteers to staff those shelters. However, despite this national base of volunteers and our approach to sheltering, neither the American Red Cross nor federal, state or local, or tribal governments are prepared to handle the unique challenges that a nuclear attack will present. In my testimony, I highlighted five specific concerns: public information, decontamination, the national housing strategy, readiness, and citizen preparedness.

   The issue of decontamination and possible exposure is expected to affect volunteer availability and paid staff among emergency workers in unknown ways. We can expect a variety of responses from all responders, but for most responders we expect that the mission will come first. Volunteer participation and other responder participation will also be affected by the availability of timely, consistent, and technically appropriate public information, and yet national and local governments are relatively untested in this regard. Citizen preparedness also affects all responder participation rates, as people are generally not willing to help others until they are confident that their own families are safe. The American Red Cross has made a significant investment in advancing the Be Red Cross Ready campaign. Unfortunately, studies have shown that only a small percentage of individuals and families are truly prepared.

   One key difference in use of a volunteer workforce is that paid responders are covered by a variety of disability protections and their agencies are often indemnified to some degree. It is for these reasons that we have requested effective volunteer protections in our testimony to ensure that there is no hesitation in the response among non governmental organizations.

2. The American Red Cross has been facing considerable financial difficulties, for a variety of reasons. As a result of the issues, your organization is in the process of considerable transformations. What effects will these changes have on the ability of the Red Cross to plan for, exercise for, and respond to major incidents such as a nuclear detonation?

Our most precious resource continues to be our volunteers. While we acknowledge that we are working with increasingly constrained resources, the budget reductions will not stop us from responding to disasters. Our operating deficit is being managed by reducing the footprint of our national headquarters, streamlining our operations, increasing our fundraising efforts, and seeking alternate sources of funding. We have begun to consolidate warehouses, have consolidated back office systems, and have eliminated 1,000 positions.

The staff reduction involved a redesign of the Disaster Services field structure that moved positions from national headquarters to field units. We have reduced some capability overall in long term planning, but we have offset this reduction by improving our abilities to coordinate with local chapters and state government in planning, exercising and responding to disasters. The newly formed field support unit of 37 positions is oriented around a state structure and has a direct reporting relationship into Disaster Services at national headquarters. These are new elements to the organization, and we have seen in our responses to Hurricanes Gustav and Ike that we have retained our capabilities to respond effectively. We are confident that this same structure will serve well in a "no notice" event, within the limits that we described in our testimony.

As with any restructuring, there are risks involved, and we are taking every step to minimize and mitigate those risks. We welcome your input as we move forward with the new structure.

Post-Hearing Questions for the Record
Submitted to John Ullyot
From Senator Joseph I. Lieberman

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath"
May 15, 2008

1) What are the most important actions that you recommend be taken now to improve our ability to communicate with the public in the immediate aftermath of a nuclear detonation in an American city? What are the most important actions that you recommend be taken to improve our ability to communicate with the public *before* such a catastrophe?

In my written and oral testimony, I underscored that our firm was not asked by this Committee to evaluate the current state of communications preparedness of the federal government, but, rather, to give our best thinking, as an agency with global expertise in crisis communications, of how we would advise the government and this Committee on communications planning for an event of this magnitude. Nor, I should note, does Hill and Knowlton currently work with the Department of Homeland Security or other federal agencies on such scenario planning.

For this reason it is difficult to make recommendations of specific steps that DHS or the federal government should take toward improving current communications practices since we have not conducted an audit of those practices.

In general, though, we think it is most helpful for the Committee and other federal planners to focus in detail on the following nine areas, each of which is discussed at length in our written testimony, as it examines strategies for effective governmental communications planning for and execution after a nuclear attack, with the of saving as many lives as possible:

1. *Role of Interagency Coordination*
2. *Pre-event Message Development*
3. *Stakeholder Identification*
4. *Spokesperson Identification and Preparation*
5. *Involving Media and Digital Organizations*
6. *Importance of Public-Private Partnerships*
7. *Importance of Education and Awareness Efforts*
8. *Criticality of Period Immediately After an Event*
9. *Training and Lessons Learned*

2) Your testimony to the Committee highlighted the underlying principles of risk communication and the importance of testing messages for effectiveness. What are the likely weaknesses of a communications plan that has not been tested or exercised?

Once again, it is difficult to evaluate the current state of communications plan testing in the federal government since we have not conducted an audit of such testing; however, as mentioned in my written testimony, message testing is de rigeur in the corporate sector. It ensures the effectiveness of the investment.

The same goes for communications planning – plans must be tested to ensure their effectiveness. The importance of rigorous training to successful communications execution in the event of a nuclear attack or other mass casualty disaster cannot be overstated.

Congress and the Executive Branch have recognized the importance of training for disaster response, including the mandate of major "TOPOFF" exercises every two years that test the coordinated capabilities of emergency personnel at all levels of government, including communicators at the principal levels.

This Committee has recognized the importance of continuing to improve on these and other exercises and it is our hope that some of the ideas we presented will aid the committee in this effort in the area of communications.

END

Post-Hearing Questions for the Record
Submitted to John Ullyot
From Senator Susan M. Collins

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath"
May 15, 2008

1. In your prepared testimony you highlight the constant tension that exists in a crisis situation between providing accurate information and providing information quickly. By releasing information that has not been checked for accuracy, one runs the risk of misleading the public and undermining the credibility of the designated spokesperson, especially when the instructions or information is of a complex and technical nature. Waiting for the information to be complete and verified before releasing it, on the other hand, runs the risk of creating an information vacuum that will easily be filled with rumor and speculation. How do officials tasked with creating and delivering these critical messages mitigate the risk of providing inaccurate information and the peril of providing the information too late?

This is one of the most difficult challenges in communicating in a crisis situation. As our research for this hearing demonstrated, of all the types of information provided in the aftermath of an attack, people place a premium on messages that are, in order: (1) accurate, giving the full facts, no matter how negative, followed by (2) information that is timely. Comparatively few are interested in more abstract, general information such as how the nation will respond to the attack.

This survey data mirrors a key principle in crisis communications: officials should never compromise accuracy for the sake of speed. The most effective communicators provide the facts as they are known at the time, without speculation. In the event there is a gap between information the public needs and what is known by officials at the time, officials should fill that information gap by describing what steps authorities are taking to gather or verify that critical information, rather than by speculating on its accuracy or providing incorrect or incomplete information.

Question#:	1
Topic:	IND
Hearing:	"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath - The Federal Response"
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

Post-Hearing Questions for the Record Submitted to
Hon. R. David Paulison, Administrator, Federal Emergency Management Agency,
U.S. Department of Homeland Security

Question: Secretary McHale's written testimony states that "By this fall, we expect that a Strategic Guidance Statement and Strategic Plan for Scenario #1 (10KT IND) will be completed under the Integrated Planning System (IPS) and that Federal department and agency development of operations plans will be ongoing." However, Committee staff were briefed by DHS on June 24, 2008 that the full planning process, through to the operational level, would be completed through the IPS for first the IED scenario, and then the RDD scenario, before beginning to plan for the IND scenario.

Please clarify the anticipated timeline for the development of plans for the IND scenario and how it relates to the development of plans for other scenarios.

When do you anticipate that FEMA's and DHS's operations plans for the IND scenario will be completed under the IPS?

Answer: The Integrated Planning System (IPS) is the underlying framework for conducting deliberate Federal interagency planning for National Planning Scenarios. Though the IPS is currently in the final stages of interagency review, we now have an interim IPS effective for Federal planning. There are three distinct levels of interagency and Department planning which will follow the approval of a Strategic Guidance Statement: (1) a Strategic Plan, which will define overarching missions and authorities, and delineate Federal roles and responsibilities; (2) a Concept Plan, which will describe a concept of operations for integrating and synchronizing existing capabilities to accomplish mission essential tasks; and (3) Department and agency Operations Plans that identify detailed resource, personnel, and asset allocations in order to execute the objectives of the Strategic Plan.

Upon approval of the IND Strategic Plan, anticipated in late October 2008, FEMA will begin work on the national-level interagency Concept Plan for the IND scenario. Anticipated completion of this effort is January 2009. Department and agency Operations Plans will be developed within 120 days of the Concept Plan's approval. Interagency planning efforts for other scenarios will continue in 2009, approximately two every six months.

Question#:	2
Topic:	grey zone
Hearing:	"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath - The Federal Response"
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

Question: We have learned in previous hearings that one of the factors which could potentially save the most lives in the immediate aftermath of a nuclear detonation is conveying critical information—such as whether to evacuate or to shelter in place--to the population in the "grey zone." This "grey zone" has been defined as the area that is not immediately affected by the blast, but is in imminent danger of the effects of radiation, and witnesses have informed the committee that such a determination must be made within an hour after a detonation.

Is there currently an interagency strategy to quickly determine such life-critical information based on an analysis of plume modeling, and to convey the necessary directions to people in these areas in the event that local and state governments are incapacitated or unable to do so?

Answer: For response to domestic deliberate attacks, DHS/FEMA would provide immediate domestic incident management direction, control and leadership under HSPD-5 and through the NRF Nuclear/Radiological Incident Annex and the Catastrophic Incident Annex/Catastrophic Incident Supplement to support overwhelmed State and local governments. In responding, DHS/FEMA may request specialized assets from the Interagency, especially DoD, DOE, EPA, NASA, and NRC. For example, DOE/National Nuclear Security Administration and EPA assets included in the Nuclear Incident Response Team would be used to carry out critical functions to provide accident and response technical advice.

During an attack, or other catastrophe, FEMA IPAWS Division can disseminate an emergency message from the President to 90% of the American people within 10 minutes though the Emergency Alert System (EAS). A presidential message can be sent to the appropriate radio station designated as a Primary Entry Point stations (which collectively provide direct coverage to 70% of the American population), which then send the message over all broadcast radio and television stations, cable television stations, and satellite radio stations. The EAS also provides a means for the National Weather Service, state, local, tribal, and territorial government officials to send warnings.

DHS/FEMA also coordinates with NOAA. The National Weather Service's Weather Radio network, which covers 98% of the American population, serves as a redundant path for a presidential message. DHS/FEMA and NOAA are currently developing models using weather data and models to predict the shape of hazardous plume clouds

Question#:	2
Topic:	grey zone
Hearing:	"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath - The Federal Response"
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

and to determine the risk of harm for residents in the path of the cloud. Through IPAWS, DHS/FEMA and NOAA will deploy collaborative plume and alert displays to all 50 State Emergency Operations Centers. DHS/FEMA and NOAA may leverage the 122 Weather Forecast Offices (WFO) across the nation have established local communications relationships. Through the Integrated Public Alerts and Warnings System (IPAWS), DHS/FEMA is working with FCC, DoD, Commerce (NOAA, NWS) and other Federal agencies and offices to leverage digital and satellite technology to add additional layers of redundancy and resiliency to the EAS. This will enable alert messages to reach more Americans more quickly in the event of an attack.

DHS also coordinates the all-hazards Interagency Modeling and Atmospheric Assessment Center (IMAAC) that is responsible for developing and disseminating predictive modeling maps that depict areas in which protective actions should be taken to protect public health and safety. The IMAAC provides the single Federal atmospheric prediction of hazardous material concentration to all levels of the incident command. For an improvised nuclear device (IND) incident, IMAAC relies on the National Atmospheric Release Advisory Capability (NARAC) managed for over 30 years by the Department of Energy to provide predictions for radiological plume transport and dispersal. NARAC can provide real-time computer predictions of atmospheric transport of material from radioactive releases and of the downwind effects on health and safety.

The Department of Energy, DHS, IMAAC/NARAC, EPA, and other representatives are developing a set of briefing products to improve our abilities to effectively and quickly communicate radiological hazards (i.e., graphics, maps and summary language) to State and local officials and Federal public affairs officers. These briefing products are intended to improve communication of radiological consequences to key leaders, decision makers and other non-technical users. Each is in plain English and free of jargon. Each cites actionable items derived from the published Protective Action Guidelines (PAGS). Each includes an Explanation Page that reviews key points in concise bullet form. All are laid out to be suitable for video projection and black and white reproduction. Finally, each briefing product has a technical counterpart designed for use by radiation professionals.

Because NARAC and IMAAC models rely on uncertain parameters estimated immediately following a detonation rather than on actual monitoring data, the predictions are less accurate than FRMAC products produced using data collected on scene. However, due to the time criticality of decision making in such events, these predictive models will provide an important resource on which to base initial decisions. Initial modeling will only be able to provide a rough estimate of the direction and extent of the

Question#:	2
Topic:	grey zone
Hearing:	"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath - The Federal Response"
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

radioactive fallout from an IND. It cannot be overly stressed that community preparedness in the form of pre-prepared Protective Action Plans and the existence of a process for disseminating guidance to the public will be the most important elements in saving lives following an IND attack.

Question: Which entities of the federal government are responsible for these critical actions?

Answer: The role FEMA plays in supporting this decision making is primarily during the preparedness and response phases where the agency is responsible for coordinating the development of national level response frameworks and plans, such as the National Response Framework and its Nuclear/Radiological Incident Annex, Catastrophic Incident Annex/Supplement, and scenario specific Concept of Operations Plans, which establish roles and responsibilities in this area along with follow-on response actions. As stated above, interagency partners are supporting FEMA in IND planning and preparedness activities, predominantly the NRF Nuclear/Radiological Incident Annex Coordinating agencies: DoD, DOE, EPA, NASA, and NRC.

Through the Integrated Public Alerts and Warnings System (IPAWS), DHS/FEMA is working with FCC, DoD, Commerce (NOAA, NWS) and other Federal agencies and offices to leverage digital and satellite technology to add additional layers of redundancy and resiliency to the EAS. This will enable alert messages to reach more Americans more quickly in the event of an attack.

Question#:	3
Topic:	Red Cross
Hearing:	"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath - The Federal Response"
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

Question: Under the National Response Framework, FEMA is the primary coordinator of Mass Care, which includes sheltering and feeding of evacuees. In the horrific event of a nuclear terror attack, evacuees could number in the millions, or at least hundreds of thousands. At our last hearing, we heard that the Red Cross is the nation's largest provider of mass care. However, Joe Becker, the Senior Vice President for Preparedness and Response, told the Committee, that in a no-notice event like this, the Red Cross's resources would not be sufficient. This year they made budget and staff cuts of approximately 40 percent. Undoubtedly, this will decrease the Red Cross's capacity to respond to disasters, especially catastrophes.

Does FEMA have operations plans and the necessary capabilities to shelter and care for victims that the Red Cross cannot provide for in the event of a nuclear attack?

Answer: The responsibility for providing shelter to and caring for the victims of disasters, of any type, has traditionally been and continues to remain with State and local governments, and heavily supported by the American Red Cross (ARC) under their Congressionally-chartered authority. FEMA monitors shelter availability across the nation and, if requested by a State following a Presidential disaster declaration, has procedures in place to support evacuation efforts and, where State and local capabilities are overwhelmed, provide shelter management/support through existing contracting mechanisms.

The ARC continues to support FEMA, focusing on mass care activities. ESF-6 provides basic, life-sustaining assistance to individuals and households that have been adversely affected by disaster, including nuclear terrorist attacks.

To further enhance disaster response capabilities, FEMA is developing national and regional-level Incident Management Assistance Teams (IMATs), to rapidly deploy interagency emergency response teams, these teams are designed to provide a forward Federal presence to facilitate managing the national response to catastrophic incidents. Teams will include an Individual Assistance expert trained in Mass Care roles and responsibilities. The Mass Care specialist will assist the impacted state emergency management agencies in organizing the appropriate level of response.

Question: As the primary coordinator of Mass Care, what is FEMA doing to make up the gap in mass care capability left by the Red Cross staff cuts?

Question#:	3
Topic:	Red Cross
Hearing:	"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath - The Federal Response"
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

Answer: Currently, FEMA coordinates mass care operations and planning with Federal, state and Tribal agencies. On the federal side, FEMA ESF-6 is coordinating with all partners covered within the NRF to enlist their resources including staff, equipment, facilities etc. Further more, for catastrophic events or when other resources are overwhelmed, the Individual Assistance Division of the Disaster Assistance Directorate has established the Individual Assistance Technical Assistance Contract Branch and has developed and implemented contracts with major companies that can provide basic Mass Care services, including sheltering feeding, transportation and distribution of emergency supplies.

The members of the National Voluntary Organizations Active in Disasters (NVOAD), the Red Cross, and the FEMA Mass Care Unit are coordinating at all levels (field, headquarters, etc.) to ensure that essential mass care resources are provided to the affected population during relief operations.

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Topic:	nuclear attack
Hearing:	"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath - The Federal Response"
Primary:	The Honorable Joseph I. Lieberman
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Question: Has FEMA and DHS conducted a detailed analysis of the estimated resources that would be necessary to fully meet its responsibilities in response to a nuclear attack on our country?

Answer: Recognizing the importance of being prepared to respond to an Improvised Nuclear Device (IND) attack on the country, FEMA, along with other DHS components, has been working collaboratively with Federal departments and agencies to better define what resources would be needed to respond to an IND event and to identify steps and actions that can be taken to better prepare the nation and respond in the event an attack were to take place.

The DHS Office of Policy is currently leading a major "requirements" planning process designed to identify and develop strategic capabilities, objectives, and resource needs for responding to an IND event and to support lifesaving activities in a post-detonation nuclear environment. This initiative, referred to as the Requirements Planning Teams (RPT), is part of a broader DHS initiative to aid the Department in developing strategic level planning to help develop future budget requirements. FEMA has been significantly involved in this initiative. One of the pilot areas selected for this fiscal year was examination of a response to an IND attack on the United States.

The DHS Integrated Planning System (IPS) is the underlying framework for conducting all deliberate Federal Interagency incident planning. Though the IPS is currently in the final stages of interagency review, we now have an interim IPS effective for Federal planning. Upon approval of the IND Strategic Plan, anticipated in October 2008, FEMA will begin work on the national-level interagency Concept Plan for the IND scenario. Anticipated completion of this effort is January 2009. Department and agency Operations Plans will be developed within 120 days of the Concept Plan approval. Other scenario planning efforts will continue in 2009, approximately two every six months. In an effort to identify and validate all United States Government Responsibilities in response to a nuclear attack, the National Integration Center's National Exercise Division has conducted a variety of exercises over the past several years utilizing nuclear scenario.

In May 2007, the National Exercise Division, in conjunction with other federal departments and agencies, states and local officials, participated in Ardent Sentry-Northern Edge 07, a Chairman, Joint Chiefs of Staff directed, U.S. Northern Command sponsored Homeland Defense and Defense Support to Civil Authorities exercise. In the

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state of Indiana venue, the full range of domestic incident management procedures, media relations and public information response to National Planning Scenario One, a detonation of an improvised nuclear device, was exercised.

In November 2006, the National Exercise Division, in conjunction with other federal departments and agencies, state and local officials, participated in Positive Response-Vigilant Shield 07, an event designed to exercise the Department of Defense, Joint Staff procedures in Homeland Defense, Continuity of Operations and the National Military Command System. The detonation of a one-kiloton improvised nuclear device and the accidental crash of a military cargo airplane with nuclear weapons, resulting in two low-level (with no nuclear yield) explosions and led to the release of radioactive material, was used as the exercise scenario.

In June 2006, the National Exercise Division sponsored an exercise with federal, state and local participating departments and agencies, referred to as the Top Officials 4 Command Post Exercise, which validated policies, plans, and procedures related to pre- and post-detonation of a weapon of mass destruction. The exercise objectives included terrorism prevention, incident management, intelligence-handling and investigation, and public information.

In February 2006, National Exercise Division conducted an Improvised Nuclear Device Mass Casualty Tabletop Exercise, focusing on the mass casualty medical response to casualties generated by a 10-kiloton improvised nuclear device. The objective was to draft a concept of operations plan for mass casualty events.

In July 2005, the National Exercise Division conducted a Senior Officials Exercise, Vulcan Warrior. The exercise objective included the examination of interagency coordination issues associated with a credible threat of an attack involving an IND within the United States and with the subsequent discovery, disarmament, and removal of the IND.

In fiscal year 2004, the National Exercise Division conducted two Senior Officials Exercises, Orange Blossom (January) and Crimson Dawn (August), which were related to pre- and post-detonations of nuclear devices. The objectives of these exercises were to exercise federal response plans relating to large-scale, no-notice WMD incidents (Orange Blossom), and to clarify procedures relating to the Homeland Security Advisory System (HSAS) (Crimson Dawn).

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Question: Do you feel that your agency has adequately determined where it should be in terms of preparedness and how it will get there?

Answer: In September of 2007, FEMA announced the publication of two important tools to organize and synchronize national efforts to strengthen preparedness: (1) the National Preparedness Guidelines, which establish a vision for national preparedness and provide a systematic approach for prioritizing preparedness efforts across the Nation; and (2) the Target Capabilities List (TCL), which describes the collective national capabilities required to prevent, protect against, respond to and recover from terrorist attacks, major disasters and other emergencies. The TCL defines 37 specific capabilities that states and communities and the private sector should collectively develop in order to respond effectively to disasters, including these catastrophic nuclear events.

The National Preparedness Guidelines identify eight national priorities that guide preparedness efforts that meet the nation's most urgent needs. The priorities reflect major themes recurring in national strategies, presidential directives, state and urban area homeland security strategies the Hurricane Katrina reports and other lessons learned. Among these national priorities are two that address medical care with respect to nuclear terrorism: Strengthen Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) detection, response and decontamination capabilities and Strengthen Medical Surge and Mass Prophylaxis capabilities.

The relevant capabilities that are specifically linked to these two priorities are CBRNE Detection, WMD/Hazardous Materials Response and Decontamination and Medical Surge. These capabilities were developed through an extensive process that involved more than 1,500 federal, state and local officials, and more than 120 national associations. They also integrate lessons learned following Hurricane Katrina and a 2006 review of states' and major cities' emergency operations and evacuation plans.

In January of 2008, FEMA began a three year initiative to review all 37 target capabilities. Among the first to be reviewed in FY 2008 was the WMD/Hazardous Materials Response and Decontamination. FEMA conducted two WMD/Hazardous Materials Technical Working Group (TWG) sessions involving subject matter experts and practitioners form the stakeholder community. The first session was conducted in Kenmore, Washington on June 5-6, 2008. The second was conducted in Boston, on July 29-30, 2008. The focus of the TWGs was to establish a common methodology for defining risk factors, develop measurable, and outcome-oriented performance objectives, and define resource requirements needed to build a capability, FEMA expects to distribute a draft of the enhanced WMD/Hazardous Materials capability in the first

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quarter of FY 2009. Also in FY 2009, FEMA will be reviewing the suite of Medical capabilities in the TCL, will include the Medical Surge.

This initiative is intended to develop implementation frameworks that clarify which measures are required for various sized jurisdictions. The specific measures and frameworks are again being reviewed within the preparedness community. Within each of the capabilities specific planning elements are integrated. FEMA has paid very close attention to this element and is integrating planning efforts.

Working with FEMA Disaster Operations and DHS Operations we are addressing the overall integration between IPS and CPG-101 to ensure integrated planning and synchronized plans to address IND events and other hazards across all levels of government. Several advances have been made in overall preparedness in our effort to address IND preparedness. CPG-101, an All-Hazard Emergency Planning Guide for State, Tribal, Local and Territorial Governments, was released on August 1st as an interim document. CPG-101 provides a basic planning structure and process for all hazards, with a process that is consistent with the process in IPS. Additionally, CPG-301 (released as an interim on 8/15) provides guidance on Emergency Planning for Special Needs Populations. Finally, there is in development a guide to discuss the unique planning considerations for both IND and RDD events, to be completed by the end of the calendar year.

Question: Do you believe that FEMA and DHS have adequately and realistically assessed what resources they currently have that could deploy in response to a nuclear attack on our country?

Answer: While DHS and FEMA operations and programs reflect the lessons learned from the past and are based on a collaborative approach to developing disaster response and recovery capabilities, we continue to work closely with state and local governments, as well as the Interagency community, non-governmental organizations, and voluntary agencies to further assess and improve capabilities to protect the American people from all types of hazards, including an IND event. The National Planning Scenarios, including the IND scenario, were developed to represent the gravest dangers facing the United States and have been accorded the highest priority for coordinated Federal planning, training, exercises, and grant investments. These scenarios have been systematically employed as tools to aid in establishing a National Preparedness System that includes rigorous analysis of national prevention, protection, response and recovery missions and development of a Target Capabilities List. The National Response Framework (NRF) is part of the overall preparedness system and two of its Incident Annexes, the Catastrophic

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Incident Annex (CIA)/Catastrophic Incident Supplement (CIS) and the Nuclear-Radiological Incident Annex, specifically outline the approach for responding to a nuclear attack and are in the process of being revised and updated. The CIS actually identifies available federal resources and capabilities and establishes a coordinated strategy for accelerating the delivery and application of these resources and capabilities in response to a no-notice or short-notice catastrophic mass victim/mass evacuation incident, such as a nuclear terrorism attack. The CIS establishes an execution schedule and implementation strategy, and, in the supporting appendices, provides functional capability overviews and outlines key responsibilities.

DHS has the lead role in enabling the President to ensure that each Federal agency with responsibilities under the NRF is prepared to meet its assigned roles and responsibilities against the broad spectrum of hazards that the Nation faces, including readiness for responding to a nuclear incident. Homeland Security Presidential Directive 5 requires the Secretary of Homeland Security to coordinate and unify the Federal operations within the U.S. to prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies. Also, under the Post-Katrina Emergency Management Reform Act of 2006, the FEMA Administrator is required to lead a multi-agency effort to build coordinated preparedness across the Federal Government. NIMS and the NRF exemplify how DHS and FEMA have recalibrated plans, policies, and procedures to facilitate enhanced preparedness.

In order to continue to determine resource availability and capability, the DHS Office of Policy is leading a major requirements planning process designed to identify and further develop strategic capabilities, objectives, and resource needs to respond to an IND event and to support lifesaving activities in a post-detonation nuclear environment. This initiative, referred to as the Requirements Planning Teams (RPT), is part of a broader DHS initiative to aid the Department in developing strategic level planning to help develop future budget requirements. FEMA has had significant involvement in this initiative.

In addition, States and local governments have received approximately $23 billion in preparedness grants to build all-hazards capabilities, including the capability to respond to an IND attack. In the past four years alone, some $350 million in DHS grant programs has been invested in projects related to radiological and nuclear preparedness, as well as decontamination. More than 33,000 students have been trained in IND-related courses, numerous major exercises have been conducted, and a National Level Exercise is planned in 2010 involving an IND.

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Question: Have FEMA and DHS analyzed the gaps between their current capabilities to respond to a nuclear attack and the resources that are necessary to fully meet its responsibilities after a nuclear detonation in our country?

Answer: Part of the RPT initiative mentioned above will use the information that is collected to define response needs and conduct a gap analysis. This portion of the initiative is currently under way and a draft is expected to be ready for DHS senior leadership review in September 2008.
Additionally, the Integrated Planning System (IPS) planning process will help analyze gaps between current capabilities and needed resources. One of the key pieces of information to be derived from completing the IPS planning process is an assessment of existing Federal authority and funding, as well as potential Federal capability and resource gaps relative to responding to a nuclear incident. We anticipate that, once completed, these plans will be exercised and further evaluated to provide more insight into existing federal and likely state capabilities and/or resource shortfalls, which can then be translated into more specific requests to increase and/or expand applicable Federal authority and funding. For example, we are currently aware that the Department possesses only one computer terminal that is accredited to handle nuclear restricted data. Once the overall planning process for nuclear scenarios is completed, it will be possible to identify broader, more significant authority and resource shortfalls.

Another process that will complement the above initiatives is the GAP Analysis Program (GAP), inaugurated by FEMA for the 2007 Hurricane Season to provide FEMA as well as state and local partners in hurricane-prone regions with an estimate of potential shortfalls to determine the level of federal support potentially needed in responding to a Category 3 hurricane. GAP is a critical operational planning capability from which a common operating picture can be derived, analyzed, and used by FEMA and its partners to achieve the highest level of preparedness across the all-hazards emergency spectrum. The Gap Analysis Program was developed to determine potential shortfalls at the state level and identify potential federal support. The initial focus in 2007 was on seven areas: debris, interim housing, sheltering, evacuation, commodity distribution, medical, and communication/fuel in the 18 hurricane-prone states. The critical areas were revised in 2008 focusing on the first 72 hours of response to include commodities distribution, emergency debris clearance, transportation and evacuation, sheltering/mass care (general population, companion animals, special needs), search and rescue, fuel and emergency power, medical (in collaboration with HHS), and communications. A key objective of the program is to strengthen the capabilities of states and reduce their reliance on federal support by developing solutions that leverage the capabilities of state and local jurisdictions, the private sector, and NGOs.

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Question: What steps are FEMA and DHS taking to narrow that gap?

Answer: The ultimate goal of the RPT initiative is to aid federal departments and agencies in establishing future budget needs to fill resource gaps that have identified by the teams. There are significant resources available throughout the country at every level of government that could be brought to bear in an IND event. There is no doubt that additional work is needed to more completely identify where all of these resources reside and develop improved means to apply them to major events with the appropriate management and coordinating structures to provide oversight.

Post-Hearing Questions for the Record
Submitted to the Honorable W. Craig Vanderwagen
Assistant Secretary for Preparedness and Response
US Department of Health and Human Services

From Senator Joseph I. Lieberman

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath - The Federal Response"
June 26, 2008

1) You testified that much progress has been made to address the challenge of decontamination and that our nation now has the ability, within 3 hours after such an event, to decontaminate approximately 400,000 people.

   a. Please provide a breakdown of who possesses these capabilities and where these capabilities are located.

   The HHS Assistant Secretary for Preparedness and Response (ASPR) Hospital Preparedness Program (HPP) grantees estimate the amount of personal protective equipment each hospital will need during a terrorist nuclear event. ASPR/HPP estimates that HPP hospitals can decontaminate approximately 402,028 ambulatory and non-ambulatory persons within a three-hour period nationwide.

   Under HPP, each grant recipient should ensure that adequate portable or fixed decontamination system capability exists statewide for managing adult and pediatric patients, as well as healthcare personnel, who have been exposed during all hazards and health and medical disaster events. The level of capability should be in accordance with the number of required surge capacity beds expected to support the events of highest risk identified through a state-based Hazard Vulnerability Analysis (HVA) or assessment. All decontamination assessments shall be based on how many patients/providers can be decontaminated on an hourly basis. The HPP grant recipients should incorporate the Occupational Safety and Health Agency (OSHA) Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances found at: http://www.osha.gov/dts/osta/bestpractices/firstreceivers_hospital.pdf. In addition, HPP hospitals should consider the American Society for Testing and Materials (ASTM) International Subcommittee Decontamination Radionuclide and Nuclear Decontamination standards (E54.03.03) that can be found at http://www.astm.org.

b. What are the nation's capabilities to provide mass decontaminations on scene in the national capital region within 24 hours after a detonation?

The best decontamination method for radiological or nuclear materials is to remove as much radioactive material as possible, as quickly as possible, to prevent its spread to other areas and to prevent its uptake into the body. Once contaminated, it is important to stay in the area, alert others in the area of the problem, and request assistance. All fire departments within the National Capital Region have some level of capability to provide on scene mass decontamination. The level of decontamination support is dependant upon the size and location of the fire department. All fire departments have trained personnel available during normal business hours and after hours to respond to an incident. Response times will vary depending upon the location of the incident, traffic, weather, and other potential impediments to getting to the scene. Additionally, there are several federal fire departments that have decontamination capabilities and, through memoranda of understanding and mutual aid agreements, they may be available to respond to the scene. The capacity of hospitals within the National Capital Region to provide mass decontamination of both ambulatory and non-ambulatory victims is significant. Most facilities maintain permanent/fixed sites, temporary/portable sites, or a combination of both. The average length of time that the hospitals can operate these facilities is approximately seven (7) hours.

The Hospital Preparedness Program (HPP) does not capture data from individual hospitals but receives aggregately-reported data from its State level grantees. The term "National Capital Region" means the geographic area located within the boundaries of (A) the District of Columbia, (B) Montgomery and Prince Georges Counties in the State of Maryland, (C) Arlington, Fairfax, Loudoun, and Prince William Counties and the City of Alexandria in the Commonwealth of Virginia, and (D) all cities and other units of Government within the geographic areas of such District, Counties, and City. Section 7302(a)(7) of the Intelligence Reform and Terrorism Prevention Act of 2004 (Pub. L. 108-458), December 17, 2004, has since amended the definition of the National Capital Region. The term "National Capital Region" or "Region" means the area defined under section 2674(f)(2) of Title 10, United States Code, and those counties with a border abutting that area and any municipalities therein.

c. Do you believe that the decontamination capabilities that are readily available in the national capital region will be enough to handle the region's decontamination needs?

As stated above, the best decontamination method for radiological or nuclear materials is to remove as much radioactive material as possible, as quickly as possible, to prevent its spread to other areas and to prevent its uptake into the

body. Once contaminated, it is important to stay in the area, alert others in the area of the problem, and request assistance. Self-decontamination by removing outer garments, placing them in a plastic bag outside the house away from people, and showering will be the most efficient means of decontamination for those who happen to be exposed to the radioactive fallout. Please see Table II attached and the responses to Questions 1) a. and 1) b. for specific information regarding hospital capacity.

2) Under existing plans and strategic documents, such as the National Response Framework, what are HHS' responsibilities in decontaminating individuals?

Under the National Response Framework (NRF), HHS has no direct responsibilities in providing external decontamination. Under the NRF Emergency Support Function (ESF) #8 – Public Health and Medical Services Annex, it is stated that "while State and local governments retain primary responsibility for victim screening and decontamination, ESF #8 can, at the request of a State or another Federal agency, deploy teams with limited capabilities for victim decontamination (e.g., National Disaster Medical System (NDMS), or Department of Energy (DOE) assistance for nuclear/radiological incidents). These teams typically arrive on scene within 24-48 hours."

HHS is responsible for providing technical assistance to States and localities. The goal of external decontamination is to remove the contamination as quickly as possible. The best possible response to assure that contamination is removed promptly is to instruct the public in self-decontamination. The longer the contamination remains in place on individuals, the more likely they will suffer long-term consequences from exposure. Because of the possible long-term consequences of prolonged exposure to contamination, the tracking of exposed individuals is important. HHS is assisting local and State health departments to establish a registry of potentially exposed individuals, perform dose reconstruction, and conduct long-term monitoring of the exposed population for potential long-term health effects. In cooperation with other HHS agencies and private organizational partners, the Centers for Disease Control and Prevention (CDC) developed an introductory guide to population monitoring in radiation emergencies for public health officials and emergency preparedness planners at the State and local levels entitled "Population Monitoring in Radiation Emergencies: a Guide for State and Local Public Health Planners." This guide is found on the Radiation Event Medical Management Web site at http://remm.nlm.gov/.

Under the Nuclear/Radiological Incident Annex of the National Response Framework, CDC has been responsible for assisting State, local, and tribal governments in monitoring people for external and internal contamination. CDC is also responsible for supporting State, local, and tribal governments in decontaminating people who are internally contaminated by providing guidance on giving medicine that can speed up the removal of radioactive material from people's bodies. CDC will also help local and State health

departments create a registry (list) of people who might have been exposed to radiation from the incident. As part of the work on the registry, CDC will help the local and State health departments determine how much radiation people were exposed to and follow people for as long as necessary to see whether they develop health effects from radiation exposure or from the stress of being involved in an attack.

In support of ESF #8 CDC/Agency for Toxic Substances and Disease Registry (ATSDR) would do the following:

- Engage and coordinate CDC/ATSDR's emergency response system; immediately notify CDC/ATSDR leadership and activate the CDC/ATSDR Director's Emergency Operations Center (DEOC) Incident Management System and Emergency Communication System
- Convene the A Team and obtain information from DOE's Consequence Management Home Team and the Interagency Modeling and Atmospheric Assessment Center as soon as the locations are functional
- Activate and deploy the Strategic National Stockpile for the distribution of countermeasures, as directed by the Secretary
- Identify CDC/ATSDR staff to supplement State efforts to address identified public health issues or concerns and deploy as directed by the HHS Emergency Management Group (EMG) manager.
- Assist the EMG to establish and maintain contact with key public health, healthcare and community partners, including partners serving at-risk populations

On its Web site (http://www.bt.cdc.gov/radiation/cdcrole.asp), CDC states that in the hours and days following a radiological incident, CDC would assist and advise the State and local health departments on recommendations that the community would need to:

- Protect people from radioactive fallout
- Protect people from radioactive contamination in the area
- Safely use food an water supplies from the area
- Assess and explain the dangers in the area of the incident
- Monitor people for contamination with radioactive materials and exposure to radiation.

Additionally, the NRF lists HHS responsibilities in decontaminating individuals on the following website: http://www.globalsecurity.org/security/systems/decontamination.htm.

3) What are HHS' capabilities and resources to provide decontamination in the event of a nuclear detonation?

HHS is responsible for providing technical assistance to States and localities. The goal of external decontamination is to remove the contamination as quickly as possible. The best possible response to assure that contamination is removed promptly is to instruct the public in self-decontamination. The longer the contamination remains in place on individuals, the more likely they will suffer long-term consequences from exposure. Because of the possible long-term consequences of prolonged exposure to contamination, the tracking of exposed individuals is important. HHS is assisting local and State health departments to establish a registry of potentially exposed individuals, perform dose reconstruction, and conduct long-term monitoring of the exposed population for potential long-term health effects. In cooperation with other HHS agencies and private organizational partners, the Centers for Disease Prevention and Control (CDC) developed an introductory guide to population monitoring in radiation emergencies for public health officials and emergency preparedness planners at the State and local levels entitled "Population Monitoring in Radiation Emergencies: a Guide for State and Local Public Health Planners." This guide is found on the Radiation Event Medical Management Web site at http://remm.nlm.gov/.

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- Monitor people for contamination with radioactive materials and exposure to radiation.

Additionally, the NRF lists HHS responsibilities in decontaminating individuals on the following website: http://www.globalsecurity.org/security/systems/decontamination.htm.

In the event of a nuclear detonation, HHS has no capabilities that could be used to provide external decontamination. HHS provides technical assistance to States and localities on gross decontamination and self-decontamination, which are the most effective means of quickly removing the contamination.

HHS does provide guidance for internal decontamination for medical personnel. This guidance is found on the Radiation Event Medical Management Web site at http://remm.nlm.gov/. The goal of this Web site is to (1) Provide guidance for health care providers, primarily physicians, about clinical diagnosis and treatment during mass casualty radiological/nuclear (rad/nuc) events, (2) Provide just-in-time, evidence-based, usable information with sufficient background and context to make complex issues understandable to those without formal radiation medicine expertise, (3) Provide web-based information that is also downloadable in advance, so that it would be available during an event if the Internet is not accessible.

There will be a limited HHS role for internal decontamination following an IND as the number of people with significant internal contamination would be very small compared to the much larger number who need treatment for external exposure. Those individuals would probably be the few people who were to inhale or ingest fallout. People with wound contamination would primarily need external decontamination of wounds. Priority for medical care would be given to those with physical injury and acute radiation syndrome. However, if significant ingestion or wound contamination were suspected, some form of internal decontamination would be needed. Evaluation might include a nuclear medicine scan or a radiobioassay of urine of the exposed person to identify the

radionuclide so that appropriate medical countermeasures and treatment might be given. The latter would be similar to how victims from an Radiological Dispersal Device would be evaluated and treated and demonstrate the benefit to the comprehensive medical response approach for all radiation hazards used by HHS and its interagency partners.

a. What is the estimated rate at which HHS could decontaminate citizens that have been exposed to radioactive fallout?

HHS is responsible for providing technical assistance to States and localities. The goal of external decontamination is to remove the contamination as quickly as possible. The best possible response to assure that contamination is removed promptly is to instruct the public in self-decontamination. The longer the contamination remains in place on individuals, the more likely they will suffer long-term consequences from exposure. Because of the possible long-term consequences of prolonged exposure to contamination, the tracking of exposed individuals is important. HHS is assisting local and State health departments to establish a registry of potentially exposed individuals, perform dose reconstruction, and conduct long-term monitoring of the exposed population for potential long-term health effects. In cooperation with other HHS agencies and private organizational partners, the Centers for Disease Prevention and Control (CDC) developed an introductory guide to population monitoring in radiation emergencies for public health officials and emergency preparedness planners at the State and local levels entitled "Population Monitoring in Radiation Emergencies: a Guide for State and Local Public Health Planners." This guide is found on the Radiation Event Medical Management Web site at http://remm.nlm.gov/.

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- Activate and deploy the Strategic National Stockpile for the distribution of countermeasures, as directed by the Secretary
- Identify CDC/ATSDR staff to supplement State efforts to address identified public health issues or concerns and deploy as directed by the HHS Emergency Management Group (EMG) manager.
- Assist the EMG to establish and maintain contact with key public health, healthcare and community partners, including partners serving at-risk populations

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- Safely use food an water supplies from the area
- Assess and explain the dangers in the area of the incident
- Monitor people for contamination with radioactive materials and exposure to radiation.

Additionally, the NRF lists HHS responsibilities in decontaminating individuals on the following website:
http://www.globalsecurity.org/security/systems/decontamination.htm.

In the event of a nuclear detonation, HHS has no capabilities that could be used to provide decontamination. HHS provides technical assistance to States and localities on gross decontamination and self-decontamination, which are the most effective means of quickly removing the contamination.

HHS does provide guidance for internal decontamination for medical personnel. This guidance is found on the Radiation Event Medical Management Web site at http://remm.nlm.gov/. The goal of this Web site is to (1) Provide guidance for health care providers, primarily physicians, about clinical diagnosis and treatment during mass casualty radiological/nuclear (rad/nuc) events, (2) Provide just-in-time, evidence-based, usable information with sufficient background and context to make

complex issues understandable to those without formal radiation medicine expertise, (3) Provide web-based information that is also downloadable in advance, so that it would be available during an event if the Internet is not accessible.

There will be a very limited HHS role for internal decontamination as the number of people with significant internal decontamination would be very small. Those individuals would probably be the few people who were to inhale or ingest fallout. People with wound contamination would primarily need external decontamination of wounds. Priority for medical care would be given to those with physical injury and acute radiation syndrome. If significant ingestion or wound contamination were suspected, some form of internal decontamination would be needed. Evaluation might include a nuclear medicine scan or a radiobioassay of urine of the exposed person to identify the radionuclide so that appropriate medical countermeasures and treatment might be given.

Following the detonation of a nuclear device in the U.S., CDC/ATSDR's response would begin immediately upon notification of such an incident, and many of these activities have imposed timelines (e.g. certain actions would occur within the first 12 hours after an incident).

b. What is the estimated number of individuals that HHS assets could decontaminate if deployed following a terrorist nuclear attack? What is the timeframe in which this could be accomplished?

The HHS Assistant Secretary for Preparedness and Response (ASPR) Hospital Preparedness Program (HPP) grantees estimate the amount of personal protective equipment each hospital will need during a terrorist nuclear event. ASPR/HPP estimates that HPP hospitals can decontaminate approximately 402,028 ambulatory and non-ambulatory persons within a three-hour period nationwide.

Under HPP, each grant recipient should ensure that adequate portable or fixed decontamination system capability exists statewide for managing adult and pediatric patients, as well as healthcare personnel, who have been exposed during all hazards and health and medical disaster events. The level of capability should be in accordance with the number of required surge capacity beds expected to support the events of highest risk identified through a state-based HVA or assessment. All decontamination assets shall be based on how many patients/providers can be decontaminated on an hourly basis. The HPP grant recipients should incorporate the Occupational Safety and Health Agency (OSHA) Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances found at: http://www.osha.gov/dts/osta/bestpractices/firstreceivers_hospital.pdf. In addition, HPP hospitals should consider the American Society for Testing and Materials

(ASTM) International Subcommittee Decontamination Radionuclide and Nuclear Decontamination standards (E54.03.03) that can be found at http://www.astm.org.

HHS is responsible for providing technical assistance to States and localities. The goal of external decontamination is to remove the contamination as quickly as possible. The best possible response to assure that contamination is removed promptly is to instruct the public in self-decontamination. The longer the contamination remains in place on individuals, the more likely they will suffer long-term consequences from exposure. Because of the possible long-term consequences of prolonged exposure to contamination, the tracking of exposed individuals is important. HHS is assisting local and State health departments to establish a registry of potentially exposed individuals, perform dose reconstruction, and conduct long-term monitoring of the exposed population for potential long-term health effects. In cooperation with other HHS agencies and private organizational partners, the Centers for Disease Prevention and Control (CDC) developed an introductory guide to population monitoring in radiation emergencies for public health officials and emergency preparedness planners at the State and local levels entitled "Population Monitoring in Radiation Emergencies: a Guide for State and Local Public Health Planners." This guide is found on the Radiation Event Medical Management Web site at http://remm.nlm.gov/.

Under the Nuclear/Radiological Incident Annex of the National ResponseFramework, CDC has been responsible for assisting State, local, and tribal governments in monitoring people for external and internal contamination. CDC is also responsible for supporting State, local, and tribal governments in decontaminating people who are internally contaminated by providing guidance on giving medicine that can speed up the removal of radioactive material from people's bodies. CDC will also help local and State health departments create a registry (list) of people who might have been exposed to radiation from the incident. As part of the work on the registry, CDC will help the local and State health departments determine how much radiation people were exposed to and follow people for as long as necessary to see whether they develop health effects from radiation exposure or from the stress of being involved in an attack.

In support of ESF #8 CDC/Agency for Toxic Substances and Disease Registry (ATSDR) would do the following:

- Engage and coordinate CDC/ATSDR's emergency response system; immediately notify CDC/ATSDR leadership and activate the CDC/ATSDR Director's Emergency Operations Center (DEOC) Incident Management System and Emergency Communication System
- Convene the A Team and obtain information from DOE's Consequence Management Home Team and the Interagency Modeling and Atmospheric Assessment Center as soon as the locations are functional

- Activate and deploy the Strategic National Stockpile for the distribution of countermeasures, as directed by the Secretary
- Identify CDC/ATSDR staff to supplement State efforts to address identified public health issues or concerns and deploy as directed by the HHS Emergency Management Group (EMG) manager.
- Assist the EMG to establish and maintain contact with key public health, healthcare and community partners, including partners serving at-risk populations

On its Web site (http://www.bt.cdc.gov/radiation/cdcrole.asp), CDC states that in the hours and days following a radiological incident, CDC would assist and advise the State and local health departments on recommendations that the community would need to:

- Protect people from radioactive fallout
- Protect people from radioactive contamination in the area
- Safely use food an water supplies from the area
- Assess and explain the dangers in the area of the incident
- Monitor people for contamination with radioactive materials and exposure to radiation.

Additionally, the NRF lists HHS responsibilities in decontaminating individuals on the following website:
http://www.globalsecurity.org/security/systems/decontamination.htm.

In the event of a nuclear detonation, HHS has no capabilities that could be used to provide decontamination. HHS provides technical assistance to States and localities on gross decontamination and self-decontamination, which are the most effective means of quickly removing the contamination.

HHS does provide guidance for internal decontamination for medical personnel. This guidance is found on the Radiation Event Medical Management Web site at http://remm.nlm.gov/. The goal of this Web site is to (1) Provide guidance for health care providers, primarily physicians, about clinical diagnosis and treatment during mass casualty radiological/nuclear (rad/nuc) events, (2) Provide just-in-time, evidence-based, usable information with sufficient background and context to make complex issues understandable to those without formal radiation medicine expertise, (3) Provide web-based information that is also downloadable in advance, so that it would be available during an event if the Internet is not accessible.

There will be a very limited HHS role for internal decontamination as the number of people with significant internal decontamination would be very small. Those

individuals would probably be the few people who were to inhale or ingest fallout. People with wound contamination would primarily need external decontamination of wounds. Priority for medical care would be given to those with physical injury and acute radiation syndrome. If significant ingestion or wound contamination were suspected, some form of internal decontamination would be needed. Evaluation might include a nuclear medicine scan or a radiobioassay of urine of the exposed person to identify the radionuclide so that appropriate medical countermeasures and treatment might be given.

4) Existing federal plans depend almost entirely on State and local first responders to carry out decontamination after a nuclear attack.

   a. Have any assessments been undertaken to assess the capabilities of State and locals (such as New York and D.C.) to accomplish decontamination in the aftermath of a nuclear attack?

   In New York and New Jersey, we know the status of decontamination knowledge and equipment in the Emergency Planning Zone areas around the (5) commercial nuclear power plants in those states. FEMA's Radiological Emergency Preparedness (REP) program evaluates this capability on a regular 2-year-cycle, and meeting our standards is a requirement for the affected State and local governments. However, there are only 10 "nuclear counties" in New York State and New Jersey, allowing several counties to remain without specific requirements to maintain monitoring and decontamination activities for radiological contamination. The nuclear counties in New York State consist of the four counties located around the Indian Point Energy Center (Westchester, Rockland, Orange and Putnam counties), the counties around the Ginna Nuclear Plant (Wayne and Monroe counties), and Oswego County, site of the Nine Mile Point Nuclear Generating Station. In New Jersey, the Oyster Creek Generating Station affects Ocean County, and the Salem Nuclear Power Plant and Hope Creek Nuclear Generating Station affect Cumberland and Salem counties.

   b. Given the large number of citizens that will need to be decontaminated, do you think it is feasible to rely so heavily on the States and locals to provide decontamination after a nuclear attack?

   Relying on the States and individual cooperation is the only effective way to quickly decontaminate large numbers of people. Effective crisis communications will be critical in engaging the population to conduct effective self-decontamination.

c. Does any other department beyond HHS have responsibility for decontamination if the State and locals can't do it?

HHS, through ESF #8 and in consultation with the coordinating agency, coordinates Federal support for population decontamination. State, local, tribal, and territorial officials retain primary responsibility for victim screening and decontamination operations. Through ESF #8 HHS can provide technical assistance regarding how local responders can expand their capability to meet their decontamination requirements.

5) You testified that two new medical surge forces with 160,000 members were created to address some of problems we saw in the response to the attacks on 9/11. Following those horrific events, a surge of medical volunteers descended on New York City. However, the city's health care system didn't know what to do with the medical volunteers as they did not have a means by which to ensure their identity, credentials, or medical skill level.

a. Are you confident that these volunteer organizations will be able to integrate into the response to a nuclear detonation and provide effective medical surge capability?

The Medical Reserve Corps (MRC) is a national network that includes over 780 local units (in 49 States and several territories) and more than 165,000 volunteers. Since the MRC is community-based, much of its capacity will depend on the nature and scope of the local emergency response plan. However, a major aspect of the MRC "concept" is to provide a ready pool of medical, public health, and other volunteers to assist when needed to improve the local medical surge capability. The Office of the Civilian Volunteer Medical Reserve Corps (OCVMRC), which is housed in the Office of the Surgeon General, strongly encourages MRC units to prepare for events, such as nuclear detonation, in coordination with local and State response partners.

OCVMRC has strongly encouraged MRC units to coordinate and integrate with the HHS Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP), an essential element of the Department's preparedness program designed to assure an adequate supply of healthcare personnel to meet medical surge capacity and capability needs. The mission of the ESAR-VHP Program is to establish a national network of State-based programs to facilitate the use of volunteers at all tiers of response (local, regional, State, and federal). Each State ESAR-VHP program allows for the advance registration and credential verification of volunteer health professionals who are willing to respond to an emergency or mass casualty event. In FY 2008, ASPR finalized the ESAR-VHP compliance requirements to ensure the effective

management and inter-jurisdictional movement of volunteer health professionals in emergencies. The compliance requirements were included in the FY 2008 ASPR Hospital Preparedness Program (HPP) Funding Opportunity Announcement and the CDC Public Health Emergency Preparedness (PHEP) continuation guidance. By the end of 2008, ASPR will release the next version of the Interim ESAR-VHP Technical and Policy Guidelines, Standards and Definitions (Guidelines), which will provide technical information and standards for 20 healthcare professional occupations and ensure standardization and interoperability of the State-based ESAR-VHP programs.

b. What has been done to ensure the identity, credentials, and medical skill level of these volunteers?

Local MRC units have established mechanisms to ensure the identity, credentials, and medical skill level of their volunteers. At a minimum, all MRC units verify that the licenses and/or certifications of their members are current and unencumbered.

In some States, the integration of local MRC units with State ESAR-VHP programs has already been established, and credentialing mechanisms are being carried out in coordination with the State-level registry.

c. Are there operational or tactical plans to assemble these volunteers into functional units? If so, please identify the names of these plans.

The concept of the MRC was specifically developed to establish functional units of volunteers who can assist with ongoing public health activities as well as emergency preparedness and response efforts. These MRC units are organized and utilized through local planning efforts, under the direction of a local organization (such as a local health department, health system or emergency management agency).

d. What is needed for them to be useful anywhere across the nation if they are called upon to deploy?

OCVMRC provides guidance and technical assistance to local MRC units regarding the potential for inter- and intra-State deployments of MRC volunteers through mutual aid and other agreements. In addition, the OCVMRC has established an MRC Deployment Operations team to oversee the development of the mechanisms, policies, and procedures that will be necessary to ensure a federal deployment capability for the MRC. This team is looking at issues related to identifying, screening, credentialing, training, and activating MRC members who would be willing, able, and approved to assist HHS in a federal response. Funding for this capability has been requested, but has yet to be included in

appropriations. In order to fully develop this capability, HHS requested $15M in FY 2009 for these activities.

It is anticipated that all 50 States will have operational ESAR-VHP programs by the end of 2008. In FY 2009, ASPR is planning to award a contract to assess the existing systems' architecture to identify interface solutions for linking the State ESAR-VHP systems.

e. How will these volunteers be transported to the location of the attack?

If MRC members are called upon to support a local, State or State-to-State response, their transportation will be handled by the appropriate local or State agency.

If MRC members are called upon to assist with an HHS/federal response, mechanisms are being developed to hire them as (unpaid) Intermittent Disaster Response Personnel and their transportation arrangements will be made by HHS/ASPR.

f. What is being done to ensure that they have the appropriate equipment, medical supplies, and logistical support that will enable them to be useful to the response?

If MRC members are called upon to support a local, State or State-to-State response, the appropriate local or State agency should provide equipment, supplies, and logistical support.

If MRC members are called upon to assist with an HHS/federal response, HHS/ASPR should provide equipment, supplies, and logistical support.

g. How many of these volunteers do you expect would actually deploy in the event of a terrorist nuclear attack?

It is very difficult to predict the number of volunteers who would be willing to deploy in the event of a nuclear attack. Some surveys have indicated that volunteer organizations have an approximate response rate of 25% during emergencies; however, other studies suggest that volunteer response rates will be significantly decreased in nuclear or contagious bioterrorism events versus a natural event such as a hurricane. Key activities for improving volunteer response rates include proper training and education regarding potential and perceived threats/risks, and provision of appropriate personal protective equipment.

h. Have these programs ever been exercised in which they deploy to another State?

Yes, MRC members were actually deployed through local, in-State, State-to-State and federal mechanisms following hurricanes Katrina and Rita in 2005. This deployment shaped the current protocol for the deployment of MRC and other volunteers to support an HHS/federal response. Several tabletop and "call-down" exercises have been conducted since 2005. In FY 2009, OCVMRC envisions sponsoring an on-site training and exercise for a targeted number of MRC volunteers who have indicated that they would be interested in a federal deployment.

i. Are there additional protections and authorities that legislatively need to be granted to make effective use of these professional volunteers?

No. Section 2813 of the Public Health Service Act, as added by the Pandemic and All-Hazards Preparedness Act (PAHPA), authorizes HHS to appoint select MRC members as (unpaid) intermittent disaster response personnel during a public health emergency, and provides Federal Tort Claims Act (FTCA) and Federal Employee Compensation Act (FECA) coverage for those MRC members.

6) Has HHS conducted a detailed analysis of the estimated resources that would be necessary to fully meet its responsibilities in response to a nuclear attack on our country?

a. Do you feel that your agency has adequately determined where it should be in terms of preparedness and how it will get there?

Preparing for an Improvised Nuclear Device (IND) is an enormous challenge and the aftermath of such an event will be chaotic and overwhelming. In preparation for as effective a response as possible to an IND, we are using models for a 10-kiloton event, recognizing that the situation can vary greatly based on factors including, but not limited to, the size of the device, the city, location, and time of day of the detonation, and meteorological conditions.

We have a comprehensive plan based on a 10-kiloton event that includes ongoing processes to define resources and gaps. With potential casualties in the tens of thousands, there will be significant shortfalls and scarce resources, particularly close to the event's epicenter. In addition to the existing systems such as the CDC Strategic National Stockpile and the National Disaster Medical System, we are developing new models for resources using distributed networks, the Department of Veterans Affairs system, the Radiation Injury Treatment Network, and the private sector. Steady progress is being made, including an increase in outreach to responders and regional/State and local response coordinators. Novel models

for triage, transport, and treatment specific to a nuclear event have been developed. HHS has also developed a web-based, downloadable just-in-time medical management system called Radiation Event Medical Management which can be found at http://remm.nlm.gov/ (see Question 3) above).

b. Do you believe that HHS has adequately and realistically assessed what resources it currently has that could deploy in response to a nuclear attack on our country?

Yes, we have assessed both the resources and the gaps. Beyond the resources from the government, filling the gaps will require substantial support from non-government community resources including hospitals, personnel, supplies, and transportation. We have systems, programs, and plans in place to continue to build up both HHS and non-governmental resources; these include the Hospital Preparedness Program, Medical Reserve Corps, National Disaster Medical System, and Radiation Injury Treatment Network.

c. Has HHS analyzed the gaps between its current capabilities to respond to a nuclear attack and the resources that are necessary to fully meet its responsibilities after a nuclear detonation in our country?

Yes, we have analyzed the capabilities and resources using the 10-kiloton model. Given the disastrous consequences of an IND event, it is important to recognize the impossibility of "fully meeting" the needs of all the victims as these needs will be overwhelming. We are working to identify resources, including novel approaches that utilize non-governmental sectors. We also work closely with government partners, in particular, the Department of Homeland Security (DHS), the Department of Defense (DoD), and DOE, all of which will play instrumental roles in the response.

d. What steps is your agency taking to narrow that gap?

We are:

- Working within HHS and with other agencies to refine the casualty models and to understand the impact of structural damage as well as the impact of radiation on the response.
- Working with a range of healthcare systems to increase response capacity, including the National Disaster Medical System, Department of Veterans Affairs, and Radiation Injury Treatment Network.

- Developing novel approaches for the distributed countermeasure supply network (currently called the "Virtual SNS') that would augment the capability of the CDC Strategic National Stockpile.

- Working closely with basic researchers, including the National Institute of Allergy and Infectious Diseases - Medical Countermeasures Against Radiological and Nuclear Threats, National Cancer Institute, Armed Forces Radiobiology Research Institute, Biomedical Advanced Research and Development Authority, and industry, to develop medical countermeasures and guidance.

- Continually examining and enhancing our Concept of Operations to optimize response and updating the HHS Improvised Nuclear Device Playbook to include new resources, partners, and plans as they are developed.

7) Do you believe that our National Disaster Medical System has the necessary resources to adequately respond to the detonation of a nuclear weapon in the United States?

The National Disaster Medical System (NDMS) is not intended to provide the complete response to a nuclear detonation. This type of event requires a response involving the entire nation. While the initial response will be local, an event of this size will require rapid activation of regional partnerships and the influx of Federal resources.

a. How many NDMS teams are trained and equipped to respond to a catastrophic radioactive incident?

   There are no NDMS teams currently trained and equipped to respond to such an incident.

b. How many of the NDMS teams are equipped to handle citizens that have been exposed to radioactive fallout?

   There are no NDMS teams currently equipped to handle patients exposed to radioactive fallout.

c. Do you think that our NDMS teams are at the numbers we need them to be to handle a catastrophic radioactive incident? What do you see as the future of the program?

NDMS has no plans to expand its capabilities to handle such an incident.

Post-Hearing Questions for the Record
Submitted to the Honorable W. Craig Vanderwagen
From Senator Susan M. Collins

"Nuclear Terrorism: Providing Medical Care and Meeting Basic Needs in the Aftermath – The Federal Response"
June 26, 2008

Question: In this Committee's investigation of Hurricane Katrina, we found that one of the biggest gaps was adequate planning for the evacuation and sheltering of the elderly and disabled. A few months ago, I met with representatives of home healthcare professionals, who pointed out that they are probably the best able to fill this gap if they were included in emergency planning. They know where home-bound, disabled, or elderly people live in a community and they know the medical needs that will need to be met while sheltering somewhere else. This group was frustrated that no one in the federal government seemed to recognize what they had to offer in the emergency planning setting. Do you agree that this group of professionals represents an untapped resource?

Response: The Department of Health and Human Services has a long-standing record of commitment to the needs of people with disabilities, children, senior citizens, and other at-risk individuals (i.e., special needs or vulnerable populations).

In fulfilling the mandates of section 2814 of the Public Health Service Act, as added by the Pandemic and All-Hazards Preparedness Act (PAHPA), the Department has strengthened its capacity to address the needs of at-risk individuals during a public health emergency and has engaged in several notable efforts:

1) On July 8, the Department's Office of the Assistant Secretary for Preparedness and Response (ASPR) and Agency for Healthcare Research and Quality (AHRQ) released a report on the findings of an expert panel on home healthcare planning and preparedness (http://pandemicflu.gov/plan/healthcare/homehealth.html). Findings emphasized that it is critical that home healthcare agencies be actively involved in planning and collaboration across all sectors of the health care continuum;

2) ASPR hosted the PAHPA Stakeholders Meeting and a series of listening sessions on pandemic influenza planning for at-risk populations. Numerous non-governmental and community-based organizations attended, including groups representing pediatrics, disabilities, nurses, and aging;

3) The Association of State and Territorial Health Officials received funding from the Department's Centers for Disease Control and Prevention to develop planning guidance for state, territorial, tribal, and local health departments on at-risk populations and pandemic influenza. Development of the guidance involved several public engagement meetings and the guidance includes an entire chapter on the importance of collaboration with at-risk individuals and community- and faith-based organizations;

4) ASPR is currently working the Federal Emergency Management Agency (FEMA) on the coordination and advanced planning for federal medical needs evacuation, using an approach that includes a coalition of community-based organizations;

5) ASPR is currently working with FEMA to develop a strategy that will provide better functional support for at-risk individuals during sheltering;

6) AHRQ and the Department of Defense are currently implementing the Mass Evacuation Transportation Planning Model, a project funded by FEMA and ASPR. The Web-based Mass Evacuation Transportation Planning Model will allow Federal, State, and local emergency planners to estimate, before an emergency, the transportation resources necessary for evacuations from health care facilities and other locations. The primary output of the model is the number of hours necessary to transport patients from the evacuating facilities to the receiving facilities. In addition to the total hours for evacuation, the model shows the number of trips made by each vehicle type, thus indicating which vehicles are most in demand. All project products and tools will be released at the end of 2008.

The Department remains committed to promoting and facilitating the inclusion of the home healthcare sector, as well as other stakeholder groups, in local, state, and federal levels of emergency planning and preparedness activities. We encourage all groups, including those you reference, to participate in planning activities at all levels.

CHARRTS No.: SG-08-001
Senate Committee on Governmental Affairs
Hearing Date: June 26, 2008
Subject: Nuclear Terrorism
Witness: HON McHale
Senator: Senator Lieberman
Question: #1

Post-Nuclear Attack DoD Capabilities

Question. During our investigation we have frequently encountered a perception among many levels of the government (including the Department of Defense (DoD)) that after a nuclear attack the considerable resources of DoD will be adequate to fill in the gaps of civilian response efforts. Do you agree that even with its considerable resources, DoD will NOT be able to adequately fill in the gaps of civilian response efforts when responding to a nuclear attack?

Answer. That this perception exists is a tribute to our men and women in military uniform, who are well prepared to provide substantial life-saving assistance, with a sense of urgency, when needed. As noted in my testimony before the Committee, the Department's chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE) response capabilities are the best funded, best equipped, and best trained in the world. During the past 7 years, the Department has developed unprecedented CBRNE response capabilities and has trained to employ these capabilities in rapid support to civil authorities to help save lives. These are capabilities that did not exist on the day of the terrorist attacks in New York and Washington, D.C., on September 11, 2001.

Although we appreciate recognition of the Department's substantial capabilities and ongoing improvements, the daunting requirements associated with the response to a nuclear attack leave zero room for complacency. Readiness to respond to a nuclear attack is, because of such an attack's horrific character, a process of urgent improvement, not a static end state. No matter how good we are, no matter how much better we have become, we must get better. We are well prepared, but we are not yet adequately prepared.

Improving our capabilities to meet the challenge of the appalling and unprecedented catastrophe that we would face in the aftermath of a nuclear attack on an American city requires that we think about the unthinkable and calculate the incalculable. Our nation needs realistic, detailed, and coordinated planning at the Federal, State, and local level to eliminate organizational, jurisdictional, and operational seams and gaps, solve shortfalls in needed resources, and ensure a unity of effort in future responses.

We have, in partnership with the Federal Emergency Management Agency, begun an initiative that addresses this need for realistic, detailed, and coordinated planning: the "Task Force for Emergency Readiness" or "TFER." A TFER will be a planning activity, operating under the authority and direction of a Governor, supported by the Secretary of Homeland Security and Secretary of Defense and augmented by the expertise of the National Guard, that will (a) support participating States' Hazard Identification and Risk Assessment processes to

identify threats/hazards, vulnerabilities, and consequences; (b) develop State operations plans for the national planning scenarios; (c) synchronize and integrate, as appropriate, State operations plans with Federal operations plans for the national planning scenarios; (d) synchronize and integrate such State operations plans with those of other States; (e) support the use of State operations plans for training and exercises consistent with section 648 of the Post-Katrina Emergency Management Reform Act of 2006 (6 U.S.C. § 748); and (f) support State efforts to monitor and improve their operational readiness consistent with the national preparedness system required by sections 641-647 of the Post-Katrina Emergency Management Reform Act of 2006 (6 U.S.C. §§ 741-747). Initially, the TFER initiative will be launched as a pilot program in five States; in the future, we hope to see a TFER established and planning in every State. With a TFER in every State, we will have taken a revolutionary step in moving beyond asking questions about needed capabilities and resources, proper response actions, and responder readiness to having the answers.

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Hearing Date: June 26, 2008
Subject: Nuclear Terrorism
Witness: HON McHale
Senator: Senator Lieberman
Question: #2

Strategic Guidance Statement and Strategic Plan for Scenario #1 (10KT IND)

Question. Your written testimony states that "By this fall, we expect that a Strategic Guidance Statement and Strategic Plan for Scenario #1 (10KT IND) will be completed under the Integrated Planning System (IPS) and that Federal department and agency development of operations plans will be ongoing." However, Committee staff were briefed by DHS on June 24, 2008 that the full planning process, through to the operational level, would be completed through the IPS for first the IED scenario, and then the RDD scenario, before beginning to plan for the IND scenario.

a. Please clarify the anticipated timeline for the development of plans for the IND scenario and how it relates to the development of plans for other scenarios.

b. When do you anticipate that DoD's operations plans for the IND scenario will be completed under the IPS?

Answer.

Please clarify the anticipated timeline for the development of plans for the IND scenario and how it relates to the development of plans for other scenarios.

Since March 2006, the Department of Defense and other Federal partners have supported the Department of Homeland Security in the planning effort for Scenario #1 (10KT IND). The development of this plan has continued while the Department of Homeland Security adapts to the new Interagency Planning System construct and standards established by Annex I (National Planning) to Homeland Security Presidential Directive-8 (HSPD-8), *National Preparedness*.

According to the milestones approved by interagency partners in the Homeland Security Council's Domestic Readiness Group:

- The Strategic Guidance Statement for Scenario #1 was released for initial review on July 25, 2008. Final interagency approval of this Strategic Guidance Statement is expected by mid-September 2008.

- The Strategic Plan for Scenario #1 is scheduled to be developed August 11-28, 2008, and reviewed by interagency partners from August 29, 2008, to approximately October 6, 2008.

- Upon approval of the Strategic Plan, interagency development of the Concept Plan for

Scenario #1 will officially begin. This Concept Plan, in accordance with Annex I of HSPD-8, is required to be completed within 180 days (approximately April 2009). However, based on interagency work carried out over the last two years, the Federal Emergency Management Agency already initiated development of this Concept Plan, which will be adapted consistent with the Strategic Plan, when completed and approved.

The current fifteen scenarios have been grouped into eight key scenario sets that reflect common characteristics in order to integrate planning for like events, and to conduct cross-cutting capability development.[1] The order of planning, as agreed upon by interagency partners in the Homeland Security Council's Domestic Readiness Group, for the eight national planning scenario sets described in the National Response Framework is as follows:

- Period of Heightened Alert, which addresses the period of heightened alert encompassing the period of the 2008 presidential campaign, the presidential election, and the subsequent transition in administrations;

- Scenario Set #1 (Explosives Attack), which addresses Scenario #12 (Terrorist Use of Explosives, which was formerly known as Bombing Using Improvised Explosive Device);

- Scenario Set #2 (Nuclear Attack), which addresses Scenario #1 (Nuclear Detonation - 10-kiloton Improvised Nuclear Device);

- Scenario Set #3 (Radiological Attack), which addresses Scenario #11 (Radiological Attack - Radiological Dispersion Devices);

- Scenario Set #4 (Biological Attack), which will, at a minimum, have annexes addressing Scenario #2 (Biological Attack - Aerosol Anthrax), Scenario #4 (Biological Attack - Plague), Scenario #13 (Biological Attack - Food Contamination), and Scenario #14 (Biological Attack - Foreign Animal Disease (Foot-and-Mouth Disease));

- Scenario Set #5 (Chemical Attack), which will, at a minimum, have annexes addressing Scenario #5 (Chemical Attack - Blister Agent), Scenario #6 (Chemical Attack - Toxic Industrial Chemicals), Scenario #7 (Chemical Attack - Nerve Agent), and Scenario #8 (Chemical Attack - Chlorine Tank Explosion);

- Scenario Set #6 (Natural Disaster), which will, at a minimum, have annexes addressing Scenario #9 (Major Earthquake) and Scenario #10 (Major Hurricane);

- Scenario Set #7 (Cyber Attack), which will address Scenario #15 (Cyber Attack); and

- Scenario Set #8 (Pandemic Influenza), which will address Scenario #3 (Biological Disease Outbreak - Pandemic Influenza).

When do you anticipate that DoD's operations plans for the IND scenario will be completed under the IPS?

Upon completion of the Concept Plan, all Federal departments and agencies with a role in homeland security, including the Department of Defense, have 120 days (until approximately August 2009) to develop an Operations Plan or, as in the case of the Department of Defense, to adapt existing Operations Plans. I am assured by the Joint Staff that we will be able to meet this deadline.

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[1] Department of Homeland Security, National Response Framework, January 2008, page 73

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Senate Committee on Governmental Affairs
Hearing Date: June 26, 2008
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Witness: HON McHale
Senator: Senator Lieberman
Question: #3

Details of 10 KT IND OPLAN

Question. HSPD 8 Annex I defines an "operations plan" as including "detailed resource, personnel and asset allocations in order to execute the objectives of the strategic plan and turn strategic priorities into operational execution."

a. Will the operations plans that DoD will develop for the 10 KT IND scenario under this requirement include such detailed allocations?

b. Will DoD ensure that these resources, personnel, and assets are available so as to ensure that the operations plans will be executed?

c. Please explain the process by which the need to execute operations plans under this requirement will be balanced against the need to maintain military readiness.

Answer.

Will the operations plans that DoD will develop for the 10 KT IND scenario under this requirement include such detailed allocations?

Annex I to HSPD-8 requires the head of each Federal agency with a role in homeland security to develop an operations plan to execute the roles and responsibilities assigned to that agency in each Concept Plan.[1] Annex I defines an "operations plan" as "a plan that identifies detailed resource, personnel and asset allocations in order to execute the objectives of the strategic plan and turn strategic priorities into operational execution. An operations plan contains a full description of the concept of operations, to include specific roles and responsibilities, tasks, integration, and actions required, with supporting support function annexes as appropriate."[2] As required by Annex I to HSPD-8, the Department of Defense will develop operations plans, or adapt its existing operations plans, to support each Concept Plan.

Will DoD ensure that these resources, personnel, and assets are available so as to ensure that the operations plans will be executed?

The National Strategy for Homeland Security, which was published in October 2007,

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[1] President of the United States, Homeland Security Presidential Directive-8, *National Preparedness*, Annex I, *National Planning*, December 2007, section 38
[2] President of the United States, Homeland Security Presidential Directive-8, *National Preparedness*, Annex I, *National Planning*, December 2007, section 30-(f)

states, "While defending the Homeland is appropriately a top priority for the Department of Defense, the country's active, reserve, and National Guard forces also must continue to enhance their ability to provide support to civil authorities, not only to help prevent terrorism but also to respond to and recover from man-made and natural disasters that do occur."[3]

The new National Defense Strategy, which was published in June 2008, reflects these priorities. In accordance with the National Defense Strategy, "The core responsibility of the Department of Defense is to defend the United States from attack upon its territory at home and to secure its interests abroad. The U.S. Armed Forces protect the physical integrity of the country through an active layered defense. They also deter attacks upon it, directly and indirectly, through deployments at sea, in the air, on land, and in space."[4] However, the National Defense Strategy also provides that: "While defending the homeland in depth, the Department must also maintain the capacity to support civil authorities in times of national emergency such as in the wake of catastrophic natural and man-made disasters. The Department will continue to maintain consequence management capabilities and plan for their use to support government agencies."[5]

Implementing the National Defense Strategy and its objectives "requires balancing risks, and understanding the choices those risks imply. We cannot do everything, or function equally well across the spectrum of conflict. Ultimately we must make choices."[6]

The Department uses, and will continue to refine, a risk management approach to ensure that military capabilities and resources are available to carry out its top priority -- its core responsibility -- and to maintain its capacity to support civil authorities in times of national emergency such as in the wake of catastrophic natural and man-made disasters. As stated in the National Defense Strategy, "The challenges before us will require resourcefulness and an integrated approach that wisely balances risks and assets, and that recognizes where we must improve, and where others are better suited to help implement aspects of the strategy."[7] This is a commitment, however, not a guarantee.

Although the Department's risk management approach will ensure its capacity to support civil authorities in times of national emergency in most scenarios, the demands of future contingencies, including military responses to catastrophic attacks on the United States, could seriously stress this capacity and render some capabilities unavailable for use to support civil authorities. To the extent available and consistent with the law and the directions of the President, the significant capabilities of the Department of Defense can, should, and will answer the call to *assist civil authorities* in the response to national emergencies, but these significant capabilities should never be allowed to become *the response* to national emergencies. This is why the Department, in accordance with its Strategy for Homeland Defense and Civil Support, "aims to decrease long-term risk by improving the capabilities of our interagency and

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[3] National Strategy for Homeland Security, October 2007, page 51
[4] Department of Defense, National Defense Strategy, June 2008, pages 6-7
[5] Department of Defense, National Defense Strategy, June 2008, page 7
[6] Department of Defense, National Defense Strategy, June 2008, page 20
[7] Department of Defense, National Defense Strategy, June 2008, page 18

international partners."[8]
Please explain the process by which the need to execute operations plans under this requirement will be balanced against the need to maintain military readiness.

The President and the Secretary of Defense, advised by the Chairman of the Joint Chiefs of Staff, the Combatant Commanders, the Secretary of Homeland Security, the Administrator of the Federal Emergency Management Agency, and others, as appropriate, will balance the risks and assets and make choices based on the circumstances at hand.

[8] Department of Defense, The Strategy for Homeland Defense and Civil Support, June 2005, page 39

CHARRTS No.: SG-08-004
Senate Committee on Governmental Affairs
Hearing Date: June 26, 2008
Subject: Nuclear Terrorism
Witness: HON McHale
Senator: Senator Lieberman
Question: #4

CBRNE CCMRF

Question. As you testified, the first CBRNE Consequence Management Response Force (CCMRF) will be established in October 2008, and 16 National Guard CBRNE Emergency Response Force Packages (CERF-P) are currently certified.

a. Please describe in detail the medical capabilities that this first CCMRF will be able to provide, when fully deployed, and the time frame in which these medical capabilities would arrive on-scene.

b. What are the capabilities of a CCMRF to provide decontamination and what is the estimated rate at which a CCMRF can decontaminate citizens that have been exposed to radioactive fallout?

c. Of the existing CERFP units, how many of these regionally-based units does DoD plan to deploy to a single nuclear detonation, and what are the total medical and decontamination capabilities of those that would deploy?

d. Understanding that the specific availability of DoD resources at any given time will depend on operational commitments, what additional medical and decontamination capabilities can DoD be expected to deploy to support the response to a nuclear detonation, and what is the expected time frame for these capabilities to arrive?

Answer.

Please describe in detail the medical capabilities that this first CCMRF will be able to provide, when fully deployed, and the time frame in which these medical capabilities would arrive on-scene.

Most details of CCMRF capabilities are classified. I am advised that my staff has briefed the Committee staff on these capabilities. I welcome the opportunity to brief you on these capabilities.

Depending on the alert posture, CCMRFs will be ready to deploy to an incident site in at little as 24 hours or as much as 120 hours. CCMRF response times, like those of any other response force, will actually depend on a variety of factors. First, response time will depend on the alert status of CBRNE CM forces. The response time for a "no notice" CBRNE incident will be longer that that for an incident "with warning" (based on credible intelligence). Second,

response time also will depend on the distance from the home station or deployed location of CBRNE CM capabilities and the site of the incident. I welcome the opportunity to discuss with you the anticipated deployment times of the CCMRFs.

What are the capabilities of a CCMRF to provide decontamination and what is the estimated rate at which a CCMRF can decontaminate citizens that have been exposed to radioactive fallout?

CCMRFs provide chemical, biological, radiological, and nuclear decontamination capabilities with a multitude of units, e.g., chemical decontamination companies and CBRNE incident response forces (IRFs). IRFs can respond to all decontamination hazards. Radioactive decontamination is obviously very difficult and rate of care during a radiological event will depend on many factors, e.g., level of radiation, weather, and other environmental conditions.

The IRF is among the first CCMRF responders and provides the principal decontamination capability. There are two IRFs per CCMRF to provide for sustained operations. At peak operational levels, a single IRF can decontaminate 65-75 non-ambulatory and 200-225 ambulatory casualties in an hour. It must be noted that this rate of care is not sustainable over long periods of time and will vary mostly on the amount of radiation at the response site.

Of the existing CERFP units, how many of these regionally-based units does DoD plan to deploy to a single nuclear detonation, and what are the total medical and decontamination capabilities of those that would deploy?

How many CERFPs does DoD plan to deploy? The CERFPs would normally provide assistance in State Active Duty (State control / State funding). If approved by the Secretary of Defense, CERFPs may also provide assistance in Title 32, U.S. Code, status (State control / Federal funding). In either status, CERFPs may, at the direction of their State's Governor, provide assistance to their home State or, through a mutual aid and assistance agreement such as the Emergency Management Assistance Compact, to other States. Therefore, unless federalized, the decision to deploy CERFPs and, if so, how many CERFPs should be deployed would be made by the Governors of the States with CERFPs (California, Colorado, Florida, Georgia, Hawaii, Illinois, Massachusetts, Minnesota, Missouri, Nebraska, New York, Ohio, Pennsylvania, Texas, Virginia, Washington, and West Virginia). It should be noted that CERFPs are separate and distinct from the CCMRF. In most instances, CCMRF capabilities will augment State and local capabilities, like the CERFP, already present at an incident site.

If necessary and appropriate, the President may authorize the Secretary of Defense to order any Reserve Component (i.e., the Army National Guard of the United States, the Air National Guard of the United States, the Army Reserve, the Navy Reserve, the Marine Corps Reserve, and the Air Force Reserve) unit (including the CERFPs) or member to active duty to provide assistance in responding to an emergency involving a use or threatened use of a weapon of mass destruction.[1] When federalized, the decision to deploy CERFPs and, if so, how many CERFPs should be deployed, would be made by the President or the Secretary of Defense. This

[1] 10 U.S.C. § 12304, Selected Reserve and certain Individual Ready Reserve members; order to active duty other than during war or national emergency

decision will be informed and guided by the specific circumstances of the attack, including requests of the affected Governors for assistance and the potential risk of additional attacks. This decision could be made more quickly and decisively if it is based upon realistic, detailed, and coordinated Federal, State, and local plans, as described in the response to Question #1.

What are the total decontamination and medical capabilities of the CERFPs?

A CERFP is comprised of four elements staffed by personnel from already established National Guard units. Elements include: search and extraction, decontamination, medical, and command and control.

The decontamination element, which is comprised of 75 Army National Guard personnel, conducts site selection; establishes log-in and log-out procedures; conducts clothing removal; and provides ambulatory and non-ambulatory decontamination. The decontamination element is estimated to have a maximum throughput capacity of 75 non-ambulatory and 225 ambulatory patients per hour. This rate of care, like the IRFs in a CCMRF, is not sustainable over long periods of time.

The medical element, which is comprised of 45 Air National Guard personnel, performs medical triage and initial treatment; provides emergency medical treatment; provides medical transport; stages for military and civilian evacuation; and provides medical support to patient decontamination and search and extraction.

Understanding that the specific availability of DoD resources at any given time will depend on operational commitments, what additional medical and decontamination capabilities can DoD be expected to deploy to support the response to a nuclear detonation, and what is the expected time frame for these capabilities to arrive?

National Guard CBRNE Enhanced Response Force Packages (CERFPs). The CERFPs are task-organized units with combat support and service support mission essential tasks that, in conjunction with Weapons of Mass Destruction - Civil Support Teams, assist local, State, and Federal authorities in CBRNE consequence management (e.g., casualty search and extraction, medical triage, casualty decontamination, and emergency medical treatment). CERFPs, which operate on State Active Duty, on duty under Title 32, U.S. Code, or, in extraordinary circumstances, on duty under Title 10, U.S. Code, are designed to fill the 6-72 hour gap in capabilities between the first response and the Federal response following a CBRNE incident. There are currently 17 CERFPs (California, Colorado, Florida, Georgia, Hawaii, Illinois, Massachusetts, Minnesota, Missouri, Nebraska, New York, Ohio, Pennsylvania, Texas, Virginia, Washington, and West Virginia), of which 16 are trained and ready to respond to CBRNE incidents in each of the 10 FEMA regions.

U.S. Marine Corps Chemical-Biological Incident Response Force (CBIRF). The CBIRF is a deployable force capable of responding to a CBRNE incident in support of local, State, or Federal authorities and designated Combatant Commanders' consequence management operations by providing capabilities for agent detection and identification; casualty search and rescue; personnel decontamination; emergency medical care; and stabilization of contaminated

personnel. The CBIRF consists of two Incident Response Forces (117 personnel, 21 vehicles, and necessary equipment each) and follow-on forces (200 additional personnel and 22 additional vehicles and equipment).

U.S. Army Chemical Battalions. The U.S. Army has 19 chemical battalion headquarters, 28 combat support chemical companies, 22 chemical companies (heavy), and 9 other chemical companies with decontamination capabilities. U.S. Army Chemical Battalions receive, employ, and command and control task-organized forces in support of military operations. They are prepared to provide command and control of joint CBRNE response forces in support of civil authorities. U.S. Army Chemical Battalions employ various techniques and available equipment to extract and collect chemical, radiological, and/or biological samples from munitions, devices, material, and the environment.

U.S. Army Chemical Companies. The U.S. Army has 59 chemical companies capable of conducting mass personnel decontamination.

Armed Forces Radiobiology Research Institute (AFRRI) Medical Radiobiology Advisory Team (MRAT). The MRAT can provide health physics, medical, and radio-biological advice to military and civilian command and control operations in response to a nuclear and radio-biological incident.

Global Patient Movement Requirements Center (GPMRC). Located at Scott Air Force Base, Illinois, the GPMRC coordinates execution of DoD's responsibility to lead National Disaster Medical System (NDMS) patient evacuation. The GPMRC moves patients from airfield to airfield while our partner agencies assist by moving patients from airfields to hospitals.

Mortuary Affairs (MA). DoD maintains a unique MA capability. DoD currently has approximately four companies (three U.S. Army companies and one U.S. Marine Corps company) of MA specialists specifically trained to process contaminated remains. DoD MA Units can provide the following support to domestic catastrophic incident response and recovery operations, when authorized by the Secretary of Defense:

- Search for remains. Set up appropriate search methodology and prepare the necessary documentation for later research or use.
- Recover remains. Use any means available to recover all remains and portions of remains.
- Provide tentative remains identification assistance to the local Medical Examiner or Coroner. (NOTE: The local Medical Examiner or Coroner is the office that provides positive identification of remains. DoD can only assist in this process).
- Set up a Personal Effects (PE) depot.
- Evacuate remains to a collection point.
- Perform DNA testing through the Office of the Armed Forces Medical Examiner to assist civilian authorities with positive identification.
- During mass-fatality incidents, the Dover Air Force Base (Delaware) military port mortuary can be activated to process remains. Federal, State, and local governments may

request DoD assistance in a mass fatality incident that does not involve mass military fatalities.

National Guard Fatality Search and Recovery Teams (FSRTs). The FSRTs are Air National Guard response teams that may be activated, in State Active Duty, Title 32, U.S. Code, or Title 10, U.S. Code, status, to support local, State, or Federal responses mass fatality or CBRNE incidents. In addition to supporting responses to natural or man-made disasters, the FSRTs may also provide support to military aircraft mishaps and military mass casualty incidents. The FSRTs provide fatality management, including recovery and transportation of fatalities to designated casualty collection points for further processing (e.g., identification and decontamination) by civilian and/or military mortuary affairs personnel. The FSRTs are a follow-on capability to the National Guard CERFPs. Currently, there are ten FSRTs -- one in each of the 10 FEMA regions -- with plans to establish seven more, thereby aligning one FSRT with each of the seventeen CERFPs.

General Purpose Forces. DoD general purposes forces, when directed by the President or the Secretary of Defense, can provide valuable Total Force medical and decontamination capabilities in response to a nuclear attack. In the case of the use or threatened use of weapons of mass destruction, or in the case of terrorist attacks or threatened terrorist attacks that result, or could result, in significant loss of life or property, the President may order to active duty members and units of the Reserve Components for up to 365 days to provide assistance in the national response (10 U.S.C. § 12304(b)). The Reserve Components are capable of contributing significant capabilities, e.g., 30 U.S. Army Reserve, 52 U.S. Air Force Reserve, and 4 U.S. Marine Corps Reserve medical units.

Immediate Response. Under "Immediate Response Authority," DoD military commanders and other responsible DoD officials are authorized, when faced with imminently serious conditions resulting from any civil emergency or attack that may require immediate action, and when time does not permit prior approval from higher headquarters, to take necessary action to respond to requests of civil authorities to save lives, prevent human suffering, or mitigate great property damage.

Mutual Aid and Assistance. Military installation commanders are authorized to enter into a reciprocal agreement, a mutual aid and assistance agreement, with any fire organization maintaining fire protection facilities in the vicinity of such property, for mutual aid in furnishing fire protection for such property and for other property for which such organization normally provides fire protection, including equipment required for fire prevention, the protection of life and property from fire, fire fighting, and emergency services, including basic medical support, basic and advanced life support, hazardous material containment and confinement, and special rescue events involving vehicular and water mishaps, and trench, building, and confined space extractions.

Depending on the alert posture, DoD CBRNE Consequence Management capabilities will be ready to deploy to an incident site in at little as 24 hours or as much as 120 hours. As noted, actual response times for DoD CBRNE Consequence Management (CM) capabilities will depend on a variety of factors. First, response time will depend on the alert status of CBRNE CM forces. The response time for a "no notice" CBRNE incident will be longer that that for an incident "with warning" (based on credible intelligence). Second, response time will also depend on the distance from the home station or deployed location of CBRNE CM capabilities and the site of the incident.

CHARRTS No.: SG-08-005
Senate Committee on Governmental Affairs
Hearing Date: June 26, 2008
Subject: Nuclear Terrorism
Witness: HON McHale
Senator: Senator Lieberman
Question: #5

Further Resources Needed

Question. Considering the staggering numbers of the anticipated consequences of a nuclear attack-whether it is a ½ KT or a 10 KT-what further resources do you believe DoD needs to develop to support the nation's response to a nuclear detonation?

Answer. Our nation needs to move beyond asking questions about needed capabilities and resources, proper response actions, and responder readiness to developing the answers to these questions. The vehicle necessary to make this move is realistic, detailed, and coordinated planning at the Federal, State, and local level. The engine of this vehicle is the Task Force for Emergency Readiness (TFER).

A State-run TFER, supported by the Department of Homeland Security and the Department of Defense and augmented by the expertise of the National Guard, will quicken the sound development of State plans for responses to incidents such as a nuclear attack, synchronize and integrate these plans with those of neighboring States and the Federal Government, support effective training and exercises, and improve the operational readiness of responders at all levels of government. The realistic, detailed, and coordinated planning effort of the TFERs will enable the elimination of organizational, jurisdictional, and operational seams and gaps; contribute to addressing the shortfalls in needed resources; and lead to the realization of a true Federal, State, and local unity of effort to save lives and property in the aftermath of a nuclear attack on an American city.

Responses to Questions for the Record Submitted to

Gene Aloise, Director, Natural Resources and Environment, GAO,

from Senator Joseph I. Lieberman

1. In your view, what are the most important lessons that can be drawn from the three-year history of the Advanced Spectroscopic Portal (ASP) acquisition program about the importance of technology assessment, requirements, acquisition planning, investment review and testing and evaluation? In responding to this question, please describe what you view as the most important questions, policy options, or organizational limitations that Congress and the next Administration should consider to improve the outcome of large investments managed by DNDO.

   Response: From the beginning of our work reviewing ASPs, we have emphasized that there were three key questions that DNDO should have a sound basis to answer:

   (1) Do the ASPs work?
   (2) How much do the ASPs cost?
   (3) Is any increase in the ASPs detection/identification capability over current deployed radiation detectors (PVTs) worth the additional cost?

   In our view, DNDO still does not yet have a sound basis to answer these questions. First, while DNDO has ASP testing ongoing that may address whether the ASPs work as intended, we have previously reported on serious shortcomings of the testing conducted in 2007. (See our response to question 3 for our specific concerns regarding the 2007 testing of ASPs.) Secondly, our testimony for this hearing and our September 2008 report (GAO-08-1108R) both demonstrate that DNDO does not yet have credible and reliable documentation to support its life cycle cost estimate of procuring, deploying, and maintaining ASPs. Finally, without reliable information on the capabilities or the cost of ASPs, DNDO is not yet in a position to conduct a cost/benefit analysis to determine whether the investment required to move forward with its planned acquisition of these machines is justified.

   Furthermore, in terms of lessons learned, it is clear that the ASP testing process would benefit by having an independent group within DHS that is not aligned with the ASP procurement process conducting the testing of ASPs. This is what we recommended in 2007, and the DHS Independent Review Team also agreed with the need for greater independence in the testing process. Such independence would add greater credibility and transparency to the ASP testing process. However, DHS decided not to implement this recommendation as DNDO continues to manage the ASP testing campaign of 2008.

2. DNDO's recent decision to forego development of all but one variation of the Advanced Spectroscopic Portal (ASP) radiation monitor could have significant cost and schedule implications for the Radiation Portal Monitor Inspection System and the Non-Intrusive Inspection System. Based on your prior audit work focused on the threat of nuclear

terrorism, what is your present understanding of the radiation detection requirements of the Bureau of Customs and Border Protection, the U.S. Coast Guard, and the Transportation Security Administration? In responding to this question, please identify the critical budgetary, policy, technology, operational, and implementation issues that the next Congress and Administration are likely to face as to the domestic portion of the nuclear detection architecture or system.

Response: DNDO's planned acquisition of ASPs has changed considerably over the past few years. While it originally planned to acquire several different variations of ASPs to scan cargo, DNDO now plans to procure only variant of ASP—it's standard cargo variant which is designed principally to scan trucks. While DNDO has decreased the number and types of ASPs, the cost of the program to procure and deploy these machines has continued to rise, and we estimate the life cycle costs of this program will likely exceed $2 billion.

Our work for this testimony focused on DNDO's planned acquisition of ASPs that would be used at ports of entry managed by Customs and Border Protection (CBP) in order to prevent the smuggling of nuclear and radiological materials into this country. We have previously testified before this committee on the status of DNDO's global nuclear architecture program. The goal of that program is to coordinate the prevention of nuclear smuggling into this country through any path—whether that be by air, sea, or land borders. DNDO has also identified gaps in this architecture, such as land border crossings into the United States between formal points of entry, small maritime vessels, and international general aviation. These gaps represent areas that are vulnerable to nuclear smuggling. In our view, an updated cost-benefit analysis, based on the latest information on ASP costs and test performance, could help policymakers address any trade-offs in addressing these gaps versus spending billions of dollars on ASPs to replace current generation radiation detection equipment already deployed at ports of entry.

3. As you are aware, DNDO staff recently presented certain information to members of the Committee – with GAO present - that were said to be based in part on results from tests DNDO conducted at the Nevada Test Site in 2007 that compared the performance of the ASP system with that of the Polyvinyl Toluene (PVT) system. Previously, GAO had criticized the same 2007 tests as unreliable and designed to ensure better performance scores from the ASP system. Subsequently, DNDO agreed to conduct additional test and evaluation activities comparing the ASP and PVT systems. In light of GAO's earlier findings--and without disclosing classified information--what is GAO's assessment of the reliability of the presentation that DNDO provided on Sept. 24 and what bearing, if any, should test data acquired from the 2007 tests have on the ASP certification process?

Response: In our view, DNDO should not be using the results from its 2007 testing of ASPs as a basis for procuring these machines or for the Secretary certifying that the ASPs represent a significant increase in operational effectiveness over currently deployed radiation detectors. For the reasons discussed below, the 2007 testing was not a reliable assessment of the capabilities of the ASPs. In fact, the flaws in the testing were one of the reasons that certification did not occur in 2007 and that an entire new campaign of

ASP testing was developed for 2008. For its 2008 testing, DNDO took constructive steps to correct problems we had previously identified. Because of this, in our view, DNDO should complete its ongoing testing and analyze its results prior to making a decision on whether to move forward with procuring ASPs.

We have previously reported that DNDO's 2007 tests did not provide an objective and rigorous assessment of the ASPs' capabilities. As a result of DNDO's flawed test methods, the agency's evaluation likely overstated the ASPs' capabilities. For example, DNDO used biased test methods that enhanced the performance of the ASPs. Specifically, DNDO conducted numerous preliminary runs of almost all of the materials, and combinations of materials, that were used in the formal tests and then allowed ASP contractors to collect test data and adjust their systems to identify these materials. It is highly unlikely that such favorable circumstances would present themselves under real world conditions.

Similarly, DNDO's 2007 tests did not provide an objective assessment of the capabilities of the PVTs or the radioactive isotope identification devices (RIID) largely because DNDO did not follow CBP's standard operating procedures for detecting and identifying radioactive materials. DNDO's flawed test methods likely resulted in the PVTs' and RIIDs' capabilities being understated.

While DNDO disagreed with our findings in 2007, it nonetheless took steps to correct the issues we identified in conducting its 2008 testing of ASPs. Specifically, DNDO did not use the same sources during preliminary runs that it used during the actual tests, DNDO did not permit the contractors to adjust their ASP systems during the tests, and DNDO deployed actual CBP officers who used most of CBPs standard operating procedures in testing the performance of the RIIDs.

4. The Department has provided the Committee and GAO with the criteria for ASP certification and with several associated documents, including the test analysis plan. What is GAO's preliminary assessment of the strengths, weakness, and limitations of the ASP certification criteria and the assumptions and methodologies that are incorporated into the test plans and the analysis plans for the current testing? In responding to this question, please indicate whether GAO believes that the current approach to ASP certification incorporates the recommendations of the Independent Review Team that DNDO focus on the probability of a missed threat.

Response: During the hearing, we provided our preliminary observations regarding DHS's criteria for "significant increase in operational effectiveness." These criteria were among the potential areas of concern we noted based on our ongoing review of the 2008 ASP testing program and the process leading to a decision by the Secretary of Homeland Security on certification of ASPs. Specifically, the criteria appear to set a low bar for improvement—for example, by requiring in some cases that ASPs perform at least as well as current generation equipment but not specifying an actual improvement.

The audit objectives for our ongoing review of the 2008 ASP testing program specifically include examining the criteria for significant increase in operational effectiveness, as well

as the test plans and analysis of test results that will support each of the criteria. We are currently analyzing additional information collected since the hearing—including DNDO's elaboration regarding the criteria for significant increase in operational effectiveness—and we will be prepared to brief you or your staff by December 2008.

With regard to DHS's Independent Review Team (IRT), while this team did not make specific recommendations, we have met with the head of the IRT and carefully reviewed the IRT report, including the section on minimizing the probability of missed threats. We have incorporated the insights of the IRT report into the scope and objectives of our ongoing review as appropriate.

5. The prepared testimony that GAO presented during the hearing referred to difficulties and delays that GAO auditors have encountered in gaining access to information and documents needed to complete the ASP cost estimate audit. Previously, the Committee was informed of similar difficulties during earlier DNDO-related audits. What actions did GAO auditors report that, in their view, delayed or disrupted work on audits related to the ASP cost estimate and for other DNDO-related audits that focused on ASP testing and evaluation, ASP certification and the design and development of the Global Nuclear Detection Architecture? In responding to this question, please provide a detailed chronology of key events that incorporates significant efforts by GAO staff took.

   Response: It is important to note, that while we had difficulty and delays in getting the information and documents we needed for our work on ASP life cycle costs (GAO-08-1108R), we eventually collected sufficient information to answer our objectives and support the findings conclusions and recommendations of our work. That being said, the delays in obtaining all the information we needed ultimately delayed the issuance of our report to the Congress.

   We encountered our first delays shortly after we started the assignment. In October 2007, GAO sent e-mails to DNDO, Pacific Northwest National Laboratory (PNNL), and all three ASP contractors (Raytheon, Thermo-Fisher, and Canberra) requesting information and data to support our independent cost estimate of the radiation portal monitor program (RPMP). Among other things, GAO asked for the ASP contractors' responses to DNDO's request for proposals, as well as final contracts and various agency/contractor analyses and estimates of program costs. DNDO responded to this request later that month stating that GAO's request for contractor proposals "are not relevant to the GAO engagement…" and that the proposals contained proprietary information. We responded to DNDO by noting that much of the material in contractor proposals *is* relevant to cost estimating (as provided for in GAO's *Cost Assessment Guide*), and that such information is not usually found elsewhere. We provided specific examples of such data, e.g., the structure and content of the contractors' work breakdown structure, the contractors' actual cost history on other similar projects, and subcontracted items, among others. We also noted that GAO routinely reviews proprietary data and pledged to use all necessary safeguards to protect it. DNDO responded by making the subject contractor proposals available, but only in hard-copy form and only in DNDO office space. We requested the

proposals in electronic format—the RFP required that contractors submit proposals electronically—but DNDO officials stated that they had only paper copies. GAO analysts made numerous visits to DNDO offices to review and analyze these voluminous documents. However, this process was difficult, and substantially delayed our efforts to get all of the information we needed to complete our work. (It should be noted that during our reviews of the contractors' documents at DNDO offices, we found evidence that electronic copies of the proposals were available to DNDO staff.)

DNDO also withheld providing or producing information critical to our independent cost estimate until very late in the engagement, and then provided only a small fraction of what it agreed to. In September 2006, DNDO issued its fourth project execution plan (PEP) for the RPMP. The PEP represents DNDO's guidepost for completing the RPMP. It contains detailed information on the program's objectives, scope, cost, deployment schedules, and equipment needs (PVTs and ASPs). Our basic methodology was to estimate the cost of executing the PEP. However, during our entrance conference on October 18, 2007, DNDO officials informed us that the September 2006 PEP was outdated. We requested an updated PEP at that time, and DNDO agreed to provide it. In the meantime we continued to develop our cost estimates based on the 2006 PEP. In March 2008, we briefed DNDO on our preliminary findings and the agency once again objected to our use of the 2006 PEP as the basis of our work. We reminded DNDO of its October 2007 commitment to provide an updated PEP. Once again, DNDO agreed to provide us with an update to its 2006 PEP. Finally, by June 2008 we had largely completed our life cycle cost estimate and DNDO still had not provided updated PEP data. At our exit conference on June 12, 2008, DNDO again agreed to provide an updated PEP by late-June and an updated ASP cost estimate by mid-August. This would enable us to better estimate DNDO's current program and it would provide an opportunity to reconcile our cost estimate with DNDO's. However, it would also cause us to delay our product issuance date. After consultations with the requesters' staffs, we agreed to DNDO's offer, and delayed our issuance date to September 2008. Unfortunately, DNDO failed to provide the documents as agreed. Instead, on July 22, 2008, DNDO provided a one-page summary of its current deployment plans. This submission was well short of the data needed to execute fully our cost estimating methodology. Nonetheless, we performed an abbreviated analysis, appropriate to the level of data DNDO supplied.

DNDO's inability to provide us with the documentation that we requested raises questions about the reliability of DNDO's own cost estimates. Such documentation is necessary, according to OMB, DHS, and GAO guidelines to establish the basis of estimates and to provide assurances that the estimates are credible.

Responses to Questions for the Record Submitted to
Gene Aloise, Director, Natural Resources and Environment, GA0,
from Senator George Voinovich

1. The GAO and DNDO arrive at different conclusions with respect to the life cycle costs for the ASP system. Please explain the discrepancies, where possible.

Response: As we discuss in our report, our independent cost estimate suggested the total cost of DNDO's program to equip U.S. ports of entry with radiation detection equipment will likely be about $3.1 billion. We based our estimate on the anticipated costs of DNDO implementing its 2006 project execution plan (PEP), the most recent official documentation of the radiation portal monitor project's objectives, scope, schedule, costs, and funding requirements.

In March 2008, DNDO estimated that it would cost about $2.1 billion to procure and deploy the radiation detection equipment. However, we believe this estimate is unreliable because it omits major project costs and relies on flawed methodology. As a result, DNDO's cost estimates and budget requests for the radiation portal monitor project are too low, which could lead to significant cost overruns later in the project.

In our view, DNDO's cost estimate contains a number of significant deficiencies. For example DNDO's estimate considers only 8 years rather than 10 years, the operational life expected by the ASP manufacturer. DHS cost guidance maintains that a project's life cycle can be estimated over that period of time during which equipment will remain available before it is exhausted, that is, decayed or deteriorated. DNDO officials agreed that a 10-year life cycle cost estimate would have been more appropriate and said that they would have used a 10-year estimate had they not been constrained by OMB budget submission software, which limits the number of years of costs that can be included.

In addition, DNDO's cost estimate does not include all of the elements of the ASPs' life cycle, including significant costs such as maintenance or operational sustainment. Furthermore, DNDO did not have detailed documentation of the costs to support its estimates. According to OMB, DHS, and GAO guidelines, such documentation is necessary to establish the basis of the estimates and to provide assurances that the estimates are credible.

Question#:	1
Topic:	lessons learned
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

Post-Hearing Questions for the Record
Submitted to Vayl S. Oxford
From Senator Joseph I. Lieberman

Question: What are the most important lessons that you've learned from the Advanced Spectroscopic Portal (ASP) radiation monitor acquisition and the Cargo Advanced Automated Radiography System (CAARS)? What do you view as the three most difficult challenges that you faced as a program manager? In your view, what changes, if any should the next Congress and President consider in the near-term as to DNDO's organizational alignment, roles, responsibilities, authorities, or funding?

Response:

The most important lessons learned from the ASP program are that:
1) the end-user requirements and operational environment should be completely understood prior to development of a complex system.
2) Clear roles and responsibilities between the technology developing organization and the end-user ought to be established before the project begins. Unresolved issues related to user requirements and defined roles become magnified over time and can result in major challenges as the program nears production and deployment decisions.
3) A robust and complete Test and Evaluation methodology is critical to understanding the technology across all aspects of capability. ASP would have been better served to implement the rigorous approach that has been followed during the past year from the beginning of the project.

When the CAARS program was initiated in 2006 it was known to be a high risk program. The largest risk to the CAARS program at its inception was that automated detection of high-Z (nuclear and shielding materials) had never been demonstrated outside of a controlled laboratory environment. The original purpose of the CAARS program was to progress from laboratory concepts to deployable systems in a two year period. Typically, such an endeavor, especially with inherently large systems like CAARS, would require five or more years. Each of the chosen CAARS vendors had specific technical risks, but overall, it was the aggressive schedule that made the CAARS program high risk. However, these risks were determined to be manageable and acceptable due to the critical mission need to protect the homeland from nuclear and radiological threats. Over the life of the program these risks were regularly assessed and in late calendar year 2007 it was determined that a CAARS course correction was needed for the following reasons:

1. CAARS technology is more difficult to implement than originally anticipated, making it critical that the technology be demonstrated so that its full performance capability can be established prior to acquisition.

Question#:	1
Topic:	lessons learned
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

2. Since the release of the CAARS solicitation, radiography screening technology has advanced, pointing the way to physically smaller and less complex solutions that might be available in the near-term with only minor modifications to existing commercial-off-the-shelf (COTS) equipment.
3. CAARS systems, as currently designed, are too large and complex to be operationally effective in most environments.

The largest challenge and the most important lesson learned from the CAARS program is that it is essential to manage the expectations of all stakeholders involved in a program. This is especially true in programs such as CAARS that are high-risk and have a large potential cost. Managing expectations is typically done through more frequent and candid communication.

Question#:	2
Topic:	strategic plan
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

Question: During the hearing, you testified that the U.S. Government has a layered strategy for protecting the nation from nuclear terrorism. In your view, does the U.S. Government also have a government-wide strategic plan to manage, integrate, and improve the capabilities of federal agencies to detect, prevent, and interdict nuclear smuggling or a planned nuclear terrorist attack? Also, please state whether the following agencies have approved an agency-specific investment and implementation plan in support of any government-wide strategic plan for preventing a nuclear terrorist attack that included concrete performance metrics: (1) Bureau of Customs and Border Protection, (2) U.S. Coast Guard, (3) Transportation Security Administration, (4) Federal Bureau of Investigation, (5) National Nuclear Security Administration, (6) Defense Threat Reduction Agency.

Response:

As discussed at the July 16 hearing on the Global Nuclear Detection Architecture (GNDA), progress has been made toward the development of an enhanced GNDA. Plans currently exist for some portions of the GNDA, but there is not yet a government-wide, overarching strategic plan that fully integrates the more than 70 federal programs that support the GNDA. DNDO agrees that an overarching strategic plan to protect the nation from nuclear terrorism should be developed. A similar recommendation was made by the Government Accountability Office (GAO) at the July 16 hearing.

With regard to the second part of the question, agency-specific investment and implementation plans, including concrete performance metrics, in support of a government-wide strategic plan do not yet exist. Although some of these elements exist for specific agencies or programs, further efforts are needed to develop, and in some cases extend, agency-specific plans with concrete performance metrics for managing, integrating and improving the detection, prevention and interdiction capabilities of all the responsible agencies.

In order to improve coordination and integration of government-wide efforts, DNDO is initiating an overarching strategic planning effort for the GNDA in Fiscal Year 2009.

Question#:	3
Topic:	MD 1400
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

Question: In 2005 and 2007 DHS Management Directive 1400 (Investment Review Process) required that acquisition programs valued over $50 million be reviewed and approved by the DHS Investment Review Board at milestones known as Key Decision Points. In preparation for a request for Key Decision Point 2 approval (Capability Development and Demonstration), a Program Manager was required to "review and update" the basic acquisition planning documents, including the (1) Program Plan, (2) Acquisition Plan, (3) Operational Requirements, (4) Alternatives Analysis, (5) an Acquisition Program Baseline, and (6) a Cost Benefit Analysis. Did DNDO prepare or update each of these documents in advance of a Key Decision Point 2 decision for the Advanced Spectroscopic Portal (ASP) acquisition, the Cargo Automated Advanced Radiography System (CAARS), and the Joint Analysis Center Information System (JACIS)? In responding to these questions please state whether any MD 1400 requirements were waived or deferred for the ASP or CAARS acquisition during 2005 and 2006 and provide the rationale of DHS management of any such waiver.

Response:

DNDO followed the MD 1400 requirements for both ASP and CAARS. In April 2005, DNDO briefed the Joint Requirements Council (JRC) Review and Investment Review Board (IRB) on the plan for acquiring ASP, including the requirements, alternatives, and estimated costs. This briefing and accompanying documentation, which were previously submitted to the Committee, was accepted as sufficient for KDP2.

The CAARS Program similarly followed the Investment Review Process called out in the DHS Management Directive 1400. No waivers were requested to deviate from the Investment Review Process. The CAARS program did achieve the initial major milestones (JRC) Review and IRB Review) of Management Directive 1400. The JRC Review was presented to Vice Admiral Allen on 17 August 2005. Vice Admiral Allen authorized DNDO to proceed to the IRB. The IRB review was presented to Deputy Secretary Jackson on 04 February 2006. Deputy Secretary Jackson authorized DNDO to proceed with CAARS through the issuance of the Acquisition Decision Memorandum (ADM) which was signed 11 May 2006. The ADM stated that DNDO should work with CBP to develop a Concept of Operations (CONOPS), Operational Requirements Document (ORD), and Acquisition Program Baseline (APB).

Finally, although MD-1400 was suspended in 2007, the required JACCIS documents have been updated prior to a Key Decision Point 2 decision, and the JACCIS execution is being coordinated through controls and approvals from the DHS Office of Procurement Operations and the DHS CIO, who is overseeing all information technology investments.

Question#:	4
Topic:	schedule changes
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

Question: Please provide a detailed assessment of the operational, economic, and programmatic impact the Advanced Spectroscopic Portal (ASP) acquisition or the Cargo Automated Advanced Radiography System (CAARS) have had during the last two years on the Radiation Portal Monitor Inspection System and the Non-Intrusive Inspection System. In responding to this question, please describe DNDO's current plans for mitigating the impact of schedule changes in the ASP program and termination of the CAARS acquisition and to what extent these changes will alter the acquisition baseline or delay the completion of either border security system.

Response:

The Radiation Portal Monitor program (RPMP) has continued to deploy current-generation RPMs while ASP is being developed. The overall ability to scan containerized truck and sea-borne cargo at our nation's ports of entry (POEs) for rad/nuc threats has increased to 98% of all containerized truck and sea-borne cargo entering the US. The border security system will continue to be deployed using existing technology and ASP will be inserted in the locations where it makes sense to do so when ready.

The course correction of the CAARS contracts means that it will take longer for the CAARS capability – automated detection of small amounts of nuclear and shielding materials – to be deployed at the border. Radiography systems currently deployed and soon to be deployed by CBP can be used to detect larger amounts of nuclear and shielding material through manual analysis of the images. However, the manual analysis process will be time consuming and may result in delays at the border ~~and will~~ due in part to a greater number of exams if the threat size is reduced to match the size listed in the CAARS specification. DNDO is working with CBP to automate the detection process of current systems for nuclear and shielding material of larger threat sizes (compared to CAARS) through algorithmic means. This automated detection of larger threats would enhance the capability of fielded systems while the CAARS technology matures and is evaluated for field deployment.

Question#:	5
Topic:	estimate
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

Question: At this juncture in the development of DNDO, it is essential that Congress obtain a realistic, crosscutting estimate of what it is likely to cost over the next five fiscal years to complete initial deployment of a first generation radiation detection system that provides a moderate level of detection capability for each layer of the domestic nuclear detection system. Based on the three year effort by DNDO and its interagency partners to document the Global Nuclear Detection Architecture, what is DNDO's current estimate of the time and funding that would be required in FY 2009, FY 2010 and FY 2011 to equip the Border Patrol, the Coast Guard, the CBP Air and Marine Division, and relevant elements of the Transportation Security Administration (TSA) with current generation mobile, portable, and large-scale radiation detection equipment? In responding to this question, please state whether, for the radiation detection mission, these agencies had, as of September 25, developed an (a) operational requirements document, (b) alternatives analysis, (c) implementation plan, (d) acquisition plan, and (e) deployment plan.

Response:

In FY 2009, DNDO has a $6.1 million dollar joint acquisition plan with the Coast Guard that will equip and train boarding teams, procure communications equipment, and maintain current rad/nuc detection equipment being used in the field. We anticipate additional funding requests in future budgets to continue these efforts. These funds will be required to address new equipment requirements and ongoing replacement of older rad/nuc detection equipment. Additional funding will be used to develop standoff radiation detection/identification capabilities for use against small vessel threats. These capabilities may be suitable as boat-mounted or rotary wing aircraft-mounted detection systems. DNDO and the Coast Guard have further established a Joint Acquisition Strategy (JAS) to expedite the procurement of human portable radiation detectors and the Rad Relay satellite communication equipment for maritime boarding teams. Currently, the Coast Guard maintains its own deployment plan for rad/nuc detection equipment.

In FY 2009, DNDO also has a joint acquisition plan with TSA to will equip and train eight permanent TSA Visible Intermodal Prevention and Response (VIPR) teams, at a cost of approximately $2.65 million. (Two additional teams were trained and equipped with FY 2008 funding.) We anticipate additional funding requests in future budgets to continue these efforts. Additionally, as deployments of the first 10 teams are analyzed, DNDO will work with TSA-VIPR to explore the feasibility of expanding preventive rad/nuc detection (PRND) operations to ad-hoc VIPR teams in other areas of the country.

Question#:	5
Topic:	estimate
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable Joseph I. Lieberman
Committee:	HOMELAND SECURITY (SENATE)

If such operations are found feasible for ad-hoc VIPR teams, funding would be required for training, equipment, and other operational support needs.

DNDO and CBP are currently working on a Phased Deployment Implementation Plan (PDIP) for FY 2008-2012. This plan will equip all 20 Border Patrol sectors, including the HQ Office, with radiation detection equipment for permanent checkpoints, tactical checkpoints, and patrol operations. Equipment deployments through FY 2012 will be conducted in a phased manner to each sector as prioritized by CBP representatives and will include personal radiation detectors (PRDs) and radiation isotope identification devices (RIIDs).

DNDO is also working to formulate a Joint Acquisition Strategy (JAS) with CBP (Air and Marine) that will achieve similar goals as the DNDO-USCG JAS, including a field evaluation of capabilities for CBP Air and Marine, as well as, the CBP Border Patrol riverine units.

By FY 2009, DNDO will have developed acquisition strategies in partnership with each operational organization that will ultimately be responsible for implementing acquisition strategies. These include:

- Recapitalization of equipment for Customs and Border Protection Officers at ports of entry;
- Recapitalization of equipment for USCG boarding teams;
- Initial procurements for Border Patrol agents;
- Additional procurements for the Puget Sound and San Diego regions as part of the West Coast Maritime PRND Pilot program; and
- Additional procurements for Customs Officers scanning general aviation flights.

Handheld personal radiation detector systems (HPRDS) acquisition funding for FY 2009 provides approximately 200 NaI, LaBr3, and HPGe handheld units and 10 backpack units to CBP officers at the POEs and 64 handhelds to the Border Patrol who work between the POEs. In addition, DNDO will begin to recapitalize USCG handheld and backpack units at a rate of approximately 20% per year. These systems will be used as law enforcement tools in detecting, identifying, and initiating response actions against terrorist nuclear devices and RDDs.

Question#:	6
Topic:	drugs
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable Mark Pryor
Committee:	HOMELAND SECURITY (SENATE)

Post-Hearing Questions for the Record
Submitted to Vayl S. Oxford
From Senator Mark Pryor

Question: The Department of Homeland Security has a factsheet on its website titled "DHS Announces Major Investment in Advanced Radiography Equipment for Radiological and Nuclear Detection" released on 13 September 2006 stating that the Cargo Advanced Automated Radiography System (CAARS) will also "be capable of the detection of traditional contraband such as high explosives and drugs." Can you explain how the system would be able to detect drugs? Could a pared-down system be used by U.S. Immigration and Customs Enforcement or U.S. Customs and Border Protection?

Response:

CBP uses non-intrusive inspection (NII) technology during field operations to ensure that our borders are secure from potentially dangerous cargo or individuals entering the country. NII systems, in many cases, give CBP officers the capability to perform thorough examinations of cargo without having to resort to the costly, time consuming process of unloading cargo for manual searches or intrusive examinations of conveyances by methods such as drilling and dismantling. DNDO is currently working on the enhancement of current systems and development of new systems with regard to the detection of rad/nuc threats.

The DHS Science & Technology Directorate (S&T) is developing next generation NII systems including, but not limited to, NII for the detection of other types of threats and contraband such as undeclared passengers, explosives, narcotics and commercially smuggled goods. This technology development was established by Technology Transition Agreements (TTA) between DHS S&T, TSA, and CBP.

CAARS is being developed to scan cargo containers or other conveyances of interest and provide an automated alert based upon the threat. These units are anticipated to be the next stage of evolution from the high energy x-ray systems that are near-term and provide manual or low-sensitivity detection of rad/nuc and shielding materials. Specifically, the technology that is under development will automatically distinguish between low density non-threat materials such as aluminum and steel and higher density materials that indicate the possible presence of threat or threat shielding materials such as lead, uranium, or plutonium. DNDO is also working closely with DHS S&T to insure that knowledge gained in detecting undeclared passengers and traditional contraband such as explosives will be integrated with other DHS NII R&D programs.

Question#:	7
Topic:	acquisition programs
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable Mark Pryor
Committee:	HOMELAND SECURITY (SENATE)

Question: The Senate Armed Services Committee and the Homeland Security and Governmental Affairs Committee recently had hearings on the Defense Department acquisition process and the concern about programs initiated without sufficient knowledge about systems requirements, technology and design maturity. It seems like the same concerns could be applied to the Homeland Security nuclear detection acquisition program. What are your thoughts on the Homeland Security acquisition process for nuclear detection equipment? What are you doing to resolve the cost overruns, missed schedule and requirements for these nuclear detection programs? Have you looked into other nuclear detection acquisition programs in Homeland Security? What has made them successful/unsuccessful?

Response:

The objective of DNDO's development and acquisition programs is to evaluate and deploy equipment that can detect rad/nuc threats and will be operationally effective for the end-user. However, nuclear detection is technically very challenging. Not only must systems be able to detect threats, but equipment must be usable in diverse operational environments. DNDO executes rigorous test campaigns to evaluate the detection capabilities, performance and operational suitability for rad/nuc detection equipment. When DNDO was stood up, our mission was categorized as a DHS priority and programs were inherited and executed with urgency. DNDO took on high-risk projects in order to develop next-generation systems and conduct transformational research and development. Changes in requirements and delays in schedule for programs like ASP and CAARS are a result of the technical challenges and many requirements that DNDO faces when moving forward at a brisk pace to develop cutting edge systems, as well as the depth of the test campaigns DNDO conducts for each system. Throughout the development process, DNDO has remained committed to working with our customers and evaluating the cost-effectiveness of systems.

Question#:	8
Topic:	cost/benefit
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable George V. Voinovich
Committee:	HOMELAND SECURITY (SENATE)

Post-Hearing Questions for the Record
Submitted to Vayl S. Oxford
From Senator George V. Voinovich

Question: During the hearing, Dr. Cochran indicated that ASPs will fail to adequately rectify problems encountered with the RPMs and that ASPs have yet to represent a significant enough cost-benefit improvement to merit full-scale deployment. Given the short life of the ASP program, how will ASP systems improve our security against nuclear terrorism?

Response:

The performance and sensitivity requirements of the ASP are focused on detecting a nuclear explosive device or components that can be assembled into a nuclear weapon. This task is considerably more difficult than just detecting potential radioactive dispersal devices or "dirty bombs." Whereas current generation RPMs only detect the presence of radiation, ASP systems are intended to identify the source of detected radiation through spectroscopic isotope identification. This allows the systems to distinguish naturally occurring radioactive materials (NORM), such as granite tiles, ceramics and kitty litter, from actual threat materials.

The ASP program represents our next generation RPM technology that is currently being tested, prior to seeking certification from the Secretary of Homeland Security for full scale production. CBP currently scans cargo entering at our Nation's ports of entry (POEs) using polyvinyl toluene (PVT)-based RPMs to detect radiation and then adjudicates alarms by sending conveyances to a secondary inspection area and manually scanning them with a hand-held radiation isotope identification device (RIID).

Next generation technology will improve upon the capabilities of currently deployed PVT-RPMs by collecting spectroscopic data that is automatically analyzed to detect radiation and identify the isotopic content of the radioactive source. This isotopic information is the key to distinguishing between threat and innocent objects. This will be especially important for POEs that have a high volume of containers, or those that see a high rate of naturally occurring radioactive material (NORM). The ASP detection equipment will potentially arm homeland protection personnel with the technology needed to rapidly weed out NORM false-positives from real-life radiation threats. We expect ASP detection equipment to enable CBP to direct only those containers we should be concerned about are sent to secondary inspection.

Most importantly, next-generation technology will address known limitations of current systems by improving the capability to identify threats.

Question#:	9
Topic:	complete system
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable George V. Voinovich
Committee:	HOMELAND SECURITY (SENATE)

Question: According to Dr. Cochran, "the United States is spending billions of dollars on "scarecrows," hoping the deployment of these ineffective systems" will dissuade individuals attempting to smuggle illicit nuclear material into the country. In addition to the low-scale procurement of ASPs for testing at ports of entry, what is DNDO doing to develop a complete system that covers not just ports but also general aviation, small-craft maritime activities, and land border areas?

Response:

DNDO's early work has been focused largely on container scanning at sea and land POEs. As DNDO's plans for deployments to these pathways have been completed, we are increasingly directing efforts toward other vulnerabilities.

Guided by the analysis of the baseline global nuclear detection architecture, we have expanded into the aviation pathway. We have equipped every CBP location where officer who meets an international general aviation (IGA) flights arrive with detection equipment. In the Spring of 2008, DNDO, in partnership with CBP, began testing detection equipment for effectiveness in the GA environment and in controlled laboratory tests using next generation human portable devices. Focusing on IGA applications, the testing was conducted at Andrews AFB from March through June 2008. Five test sessions were conducted at Andrews AFB to baseline the performance of currently-deployed systems for scanning of small, medium, and large IGA aircraft to determine if any CBP operational procedure changes are necessary, and to evaluate performance of other human-portable scanning equipment. Test results will be utilized in preparing a Joint Assessment for the Secretary of Homeland Security, and will feed subsequent research and development efforts as appropriate.

Another important threat pathway identified in the architecture work is the maritime vector. We have acquired and delivered rad/nuc detection equipment to all USCG boarding teams. DNDO has also collaborated with USCG, CBP, and other agencies to develop the recently approved DHS Small Vessel Security (SVS) Strategy. DNDO's small maritime initiatives align with this DHS SVS Strategy. DNDO is also partnering with Federal, State, and local agencies to create a layered, "defense-in-depth" maritime PRND Program to address this vulnerability. Rad/nuc pilot projects have been initiated in the Puget Sound and San Diego with the goal of designing, fielding, and evaluating a radiation detection architecture (specific to each selected region) that reduces the risk of rad/nuc threats that could be illicitly transported on recreational craft or small commercial

Question#:	9
Topic:	complete system
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable George V. Voinovich
Committee:	HOMELAND SECURITY (SENATE)

vessels. To determine the best equipment for the maritime environment, we conducted the Crawdad test campaign to characterize the performance of rad/nuc detection and are currently analyzing the data from this test.

A third initiative driven by the architecture study and still in its formative stages is a focus on non-POE land crossings. We are working closely with CBP to develop options and conduct field evaluations of re-locatable and personal detectors for use by the Border Patrol along our Nation's borders. Based on the results of these field evaluations, DNDO will continue to work with CBP to implement a prioritized radiation detection strategy. Eventual results of this cooperative work between DNDO and CBP will be to select the best detectors for deployment by Border Patrol agents patrolling our Nation's borders and performing immigration inspections at checkpoints.

Question#:	10
Topic:	conclusions
Hearing:	Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments
Primary:	The Honorable George V. Voinovich
Committee:	HOMELAND SECURITY (SENATE)

Question: The GAO and DNDO arrive at different conclusions with respect to the life cycle costs for the ASP system. Please explain the discrepancies where possible.

Response:

The Department is committed to evaluating systems performance against the threat and in conformance with operator needs before making production and deployment decisions, as is the case with the ASP program. DNDO is currently undertaking a comprehensive test and evaluation program on ASP systems and is developing a detailed life cycle cost estimate for the ASP program based on these test results. However, until testing and evaluation is complete, it is premature at this stage to assess the validity of the GAO numbers. The Department has been following a prudent path leading to certification of ASP systems and a full-rate production decision. We take our responsibility very seriously and will ensure that our taxpayer dollars are spent wisely on meaningful programs.

That said, the GAO has made some fundamental errors in its life cycle cost analysis—for example, it includes in its DNDO estimate operation and maintenance costs that will actually be assumed by CBP, as well as costs for ASP variants that are not presently part of the joint DNDO/CBP deployment plan. Again, once testing and evaluation is complete, we will factor the results into our life cycle cost estimate, as well as our cost benefit analysis. Then we will be in a better position to compare our numbers with those calculated by GAO

6 November, 2008

Senator Joseph I. Lieberman
Chair, Senate Committee on Homeland Security and Governmental Affairs

Dear Chairman Lieberman,

Attached is my response to your Post-Hearing Questions for the Record for the 25 September, 2008 hearings titled "Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments", as they were sent to me on 14 October, 2008.

There is some overlap among the questions you pose, so I will answer in a way that crosscuts them to some extent. I trust that the answers to all will be found in what I say. Your questions are also quite comprehensive, leading beyond the specific issues covered in the hearing, so my answers will also be somewhat comprehensive – and thus lengthy, for which I apologize.

A disclaimer

In at least three places in my response, I will urge that the national laboratories be used in a more comprehensive way in both planning and executing the programs to deal with this threat. I have been hesitant to raise this matter, because of the possibility of perception of a personal conflict of interest, but I believe that it is important that I do raise it.

I have worked at either Livermore or Los Alamos for two-thirds of my career. I have seen what the national labs can do when they are given broad, mission-like responsibilities, as partners with government, in areas related to national defense/security. During the five years I was in the Pentagon, I was responsible for oversight of large programs that involved both the national labs and defense contractors, and I later worked for ten years for a private defense contractor. I know the very considerable capabilities of private industry, but I also know that industry cannot do many of the kinds of things that the national labs can do when the labs are broadly chartered.

In a formal sense, I am fully retired, as a former employee of the University of California, not of the companies that now manage the labs. I do continue to be paid on a "casual", part time basis by Los Alamos, mainly for work related to the US nuclear weapon program. My relationship with Los Alamos will not be affected one iota by any outcome that might develop from what I say in my response. So I have nothing to gain in terms of personal financial interest by urging better use of the labs.

Thank you for the opportunity to make my views known on these important matters. I am ready to try to help more, if needed.

Sincerely,

Richard L. Wagner, Jr.

Post-Hearing Questions for the Record
Submitted to Dr. Richard L. Wagner Jr.
From Senator Joseph I. Lieberman

"Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments"
September 25, 2008

1. I recognize that your information about the Advanced Spectroscopic Portal (ASP) monitor program is limited. Nevertheless, I would appreciate your general diagnosis of the choices that, in retrospect, strike you as having contributed to the schedule delays and, further, what you view as the most significant lessons that Congress and the Administration can draw from the outcome. In responding to this question, please provide your personal views about how the Department of Homeland Security could use existing authorities and stock of ASP monitors to restart the ASP acquisition program as a more focused spiral, evolutionary development program.

2. In 2004, you chaired a Defense Science Board Task Force that produced a forward-looking report, *Preventing and Defending against Clandestine Nuclear Attack.* That report made the public case for developing the equivalent of a Global Nuclear Detection Architecture. In presenting this analysis, the report contended that it would likely cost several tens of billions of dollars and require a significant leadership role by the Department of Defense. Based on the experience of the last three years, what are your present views as to the report's recommendations and what steps can the next Congress and President take in the near-term to further develop a system of global defenses against nuclear smuggling and nuclear terrorism?

3. During a hearing before the Committee on July 16, 2008, a witness from the Government Accountability Office (GAO) testified that "According to our preliminary work to date, DNDO has taken steps to develop a global nuclear detection architecture, but it lacks an overarching strategic plan to help guide how it will achieve a more comprehensive architecture." In your view, does the U. S. Government need an overarching strategic plan to guide the nation's investments in research, development, testing, evaluation, and deployment of advanced radiation detection technologies and to coordinate these detection capabilities with intelligence, law enforcement and interdiction programs? If so, who in your judgment should develop such a strategic plan and what elements should it contain? In responding to this question, please describe the strengths and weakness of the present, government-wide approach to managing government investments in nuclear detection research and development and any near-term recommendations for dramatically improving the contributions of the Departments of Defense and Energy and the National Laboratories.

4. In your prepared statement, you described the contributions of the Nuclear Defense Working Group, an organization sponsored by the Center for the Study of the Presidency, and the working group's role in the formation of the Domestic Nuclear Detection Office (DNDO). What guidance did you offer the White House about the need for a new

organization to focus on the threat of nuclear terrorism? In responding to this question, please the recommendations you conveyed, the extent to which those recommendations were adopted and, in retrospect, your personal assessment of the extent to which the working group's recommendations were implemented.

5. During the hearing, you described the contributions of the Nuclear Defense Working Group, an organization sponsored by the Center for the Study of the Presidency, and the group's recent deliberations about the future roles and responsibilities of DNDO. I realize you were testifying as an individual. Nevertheless, I would appreciate having the benefit of any facts or analysis developed by the working group that would assist the next Congress and Administration in helping the Department of Homeland Security build upon the foundation laid during first three years of DNDO operations. To that end, please describe how you and your colleagues assessed (1) the present strengths and weaknesses of DNDO, (2) the policy choices reflected in DNDO's investment decisions, (3) the near-term options for dramatically improving DNDO's performance, and (4) what you view as the critical factors associated with funding, implementation, organizational configuration, legislative authorities, and interagency coordination.

Response to Post-Hearing Questions for the Record for the 25 September, 2008 hearings titled "Preventing Nuclear Terrorism: Hard Lessons Learned From Troubled Investments".

– Richard L. Wagner, Jr., Ph.D.

Some history

First, let me clarify some history related to your Question 3. In the summer of 2004, I briefed then-Secretary of Defense Rumsfeld on the results of the DSB Task Force I then chaired, which had started in 2002. In addition to some action-items within DoD, Secretary Rumsfeld also urged me to take the Task Force's results and recommendations outside DoD, and he spoke and wrote to a number of cabinet-level officials to help set that up. Over the ensuing weeks and months, I spoke to senior officials and staffs in DHS, DOE, the HSC and the NSC, OSTP and OVP. This came at a time when these organizations were themselves already working hard on how to address the threat of smuggled nuclear weapons, and my report seemed to fall on attentive ears.

At around this same time, Amb. David Abshire, founder and CEO of the Center for the Study of the Presidency (CSP), was advising senior officials in the fledgling DHS on WMD issues in general. His work and mine coincided in a meeting at CSP in the summer of 2005 attended by senior officials from DHS and other agencies, at about the time that the government was closing in on further decisions about what to do. (Efforts to deal with threats like this date back decades, and some decisions made many years ago still have an impact today. More decisions were made in the immediate aftermath of 9/11. The 2005 decisions were to close the deal, so to speak.) I was not privy to all of the approaches that were being considered at the time – the options and the bureaucratics were very complicated. The outcome, though not exactly what my Task Force had recommended, was generally satisfactory to me at the time. Later, I will discuss in more detail the correspondences between the DSB recommendations, what was done at the time, and what I now believe should be done today.

The Nuclear Defense Working Group (NDWG) grew out of the 2005 meeting at CSP, but it was not actually formed until Spring of 2007, with the intent to take stock of progress over the previous two years. Although several of its members had been in government in 2005 and had shaped the decisions of that year and earlier, the NDWG, per se, played no part in them. The NDWG has now come to the end of its tenure, and my next step, as chair, will be to write a report on our work. Coordinating it with my colleagues will take some time, and it will not be available for a few months. Accordingly, my answers here to your questions are, once again, my own views, although they have been considerably shaped by NDWG discussion.

Correspondence between what was recommended in 2004/2005 and what has happened since.

Based on the findings and recommendations of the 2002-2004 DSB Task Force and on our discussion with Secretary Rumsfeld, I took four basic recommendations into my discussions outside/beyond DoD in 2004/2005.

- A significant national program should be implemented to develop and deploy defenses against clandestine nuclear attack.
- A major aspect of that program should be to develop and deploy, domestically and overseas, very large numbers of greatly improved radiation detectors, to augment and enable operations to counter this threat.
- An urgent R&D program should be implemented to develop detectors with greatly improved capabilities, which the Task Force believed to be feasible. The DSB Task Force had scoped this program at a recommended level of about $250M per year for several years.
- DoD should be the "executive agent" for the national program, to coordinate and integrate it. (This recommendation was not explicitly featured in the written report of the Task Force, although the need for integration was discussed. The specific proposal for DoD to act as "executive agent" grew out of our discussions with Secretary Rumsfeld and his senior aides.)

The Task Force also recommended a significant effort within DoD itself, consonant with the recommended national program. This DoD effort included R&D, and training of a large cadre for military operations for discovery and interdiction of such attacks, including the use of improved radiation detectors and other kinds of sensors, but also including many other things.

As of today, there has been considerable progress toward such a national capability.

- There is, in fact, a significant national program. It consists of some seventy individual projects or programs spread across several departments and agencies. (And the several R&D programs among these seventy consist of well over a hundred individual R&D projects.) DNDO has estimated the total annual expenditure for this national program -- including R&D, procurement, and O&M -- at between $2B and $3B per year. (Accurate estimates are difficult because of overlap with operations and capabilities that have other purposes.)
- A rudimentary global architecture for deployment and operation of large numbers of improved detectors has been developed and is being refined, and some beginnings have been made toward implementing it.
- Detector R&D is now funded at perhaps half to three-quarters of a billion dollars across all departments involved. Although this is two to three times the level we recommended in 2004/5, my personal view is that it may not be enough, for reasons that I will develop later. And the R&D is producing results much more slowly than I personally feel it should be, again for reasons discussed below.
- The proposal for DoD to act as executive agent for the national program was not adopted. ("Executive agent" is a term of art within DoD, and can mean a number of things. We intended it to be taken broadly, with particulars to be worked out as the role was implemented.) Coordination and integration is being done in a way

that appears to me to be less clean and effective than what we had in mind with DoD as executive agent. But I am certain that I am not aware of everything that is being done, and the coordination and integration of such programs, especially in the crucial area of operations, is extremely complicated. So I am prepared to be somewhat agnostic about the matter. I discuss this too, in more detail, later. Here, let me say, though, that DNDO is chartered to play a cross-cutting role of a certain sort, and I believe that the scope of that role has been, and is, about right. Full integration and coordination of the national program in all its aspects was not intended for DNDO, and it is unreasonable to expect DNDO to be able to do that, although DNDO is working hard to do the parts of it that it is able to undertake.

But all of this, and especially development of new technology, is going considerably slower than we thought was necessary and possible in 2004/2005.

In the following, I will both discuss some of what I just summarized in more detail, and also respond more specifically to your questions. I will address: strategic planning, management and funding of R&D, some specifics on ASP, and integration and coordination, in that order. The very last section of my reply addresses a couple of things that you did not ask about but which should be included, given the comprehensive intent of your questions.

Summary recommendations

Strategic planning.

The government does indeed need a comprehensive strategic plan to guide investment and further development of operational capabilities, and strategic planning in this area should be institutionalized in some way. (See comments, below, on coordination and integration.)

The plan should integrate technology development, architectures, and operations. It should include preparations to allow operations to be augmented ("surged") in response to warning of various kinds, when it is available. It should include how the defense posture itself – operations, architecture, technology – and what we say and do not say about it, will be used to shape perceptions of potential attackers to dissuade or mislead them.

The plan should be explicitly time-dependent, showing capability-development milestones for spiral improvement of overall defense capability (which includes detectors but also much more) over at least the next decade. Its initial versions should cover all of the major elements involved in dealing with this threat, and their inter-relations, though little depth of detail can be expected at first in most areas. As detail is developed and added, you should expect that even the broad architectures in the plan could change.

The plan should be in the nature of a "net assessment" – "net" both in the sense of including everything that is relevant, and in the sense of offense/defense, "who wins?". It

should show how, over time, the defense will improve to progressively close off adversaries' attack options. It should be scenario-based. It should *model* the threat and its possible evolutions into the future – including possible attack modes, paths, objectives, etc. -- using intelligence evidence where it is available and in the time-frames in which current intelligence is relevant, but not unduly relying on it otherwise.

The plan should contain the funding profiles, over time, needed to implement it. It should be risk-management based, in the sense that it should include funding for hedges – i.e. preparations, made now, to respond to risks and changes in the threat or the global security environment that might arise in the future, within the warning time of those risks..

The plan will have to be classified, though broad, unclassified versions of it should be developed.

Systems-analysis and system-engineering tools – models and simulations, and metrics – will have to be improved to support development of the plan. More emphasis should be put immediately on developing those tools.

Later, I will discuss the question of how and by whom, within the government, the plan should be developed. Here, however, let me say that the plan and the planning process would be much improved if the national labs were made partners with government in developing it, and especially in developing system-analysis tools for planning. There are no other institutions, in or out of government, where the full range of knowledge – from the threat and its capabilities to the science and technology for dealing with it – is so concentrated.

In closing on this subject of strategic planning, let me say that I believe that you should not have expected to see much in the way of such a plan before now. This topic is extremely complex, and it is early days for it. It takes years for thinking to develop across the community of those engaged in a subject like this one, and to percolate into government, and that community has only been fully engaged for a few years. (My view on this comes from having participated in the early strategic planning for missile defense in the 1960s and early 1970s – a much less complex subject, especially in terms of operations.) But you should expect to see a strategic plan soon.

R&D management and funding

Your questions asked, and I address here, three basic things: 1) organizational structures and responsibilities for R&D, 2) the business arrangements – e.g. contract structures – between the government and the work-performers of the R&D, and 3) funding for R&D.

Organizational structures:

R&D should continue to be carried out along the current organizational lines – i.e. (mainly) by DNDO, DoD, and DOE. I see no merit in consolidating it, and there is merit

in an approach, like the current one, that could be a little competitive. It is also crucial that R&D be done in the departments where it will be implemented operationally. Coordination of this R&D among those departments is generally good, although it would be improved by development of a strategic plan as discussed above.

I believe that the current scope of DNDO's responsibilities is about right, considering the difficult realities of coordination and integration across the USG that I address in a later section. To paraphrase what I said in my prepared statement:
"Alternatives (to DNDO's current responsibilities)..... *include 1) narrowing the focus of DNDO to only advanced development, or perhaps to R&D in general, with reduced or no responsibilities for procurement and/or architectures, and, conversely, 2) retaining DNDO's responsibilities for the full range of R&D, and expanding its authorities for procurements, operations, and architectures. .....[E]ither of these alternatives loses more than it gains, and..... the way DNDO was scoped initially is still about right, at least for the next few years.".*

The national labs should be more heavily involved, as partners with government, in both planning and executing the R&D programs in this area. They already do work for all three of the main departments involved (although it is done much more on a piece-work basis than it should be), and the labs can help more than they currently do with coordination and integration of the work. The weapons labs, and to some extent other national labs, have demonstrated for sixty years that they know how to integrate technology development across the full range from basic research to serial production, including both engineering to meet the grubby requirements of operational environments and engineering for production and of production tooling. In addition to their own in-house capabilities for basic research and for production-engineering, the labs have demonstrated many times that they know how to work closely with both universities and private industry, to bring the best of what these types of institutions can do to bear on developments.

The labs are often criticized on several grounds – high cost, lack of responsiveness, competing improperly with private industry or universities -- and some of the criticisms have merit. When the labs are tasked on a piece-work basis, they respond in a piece-work way, which is not their strength, and they sometimes do not do well (although often they do superbly.) The labs' strengths are in doing large, difficult, long-term programs that integrate and trade among many different projects; that integrate across the range from basic science to production engineering, with a very heavy proportion of science; and in which defining the problems to be solved, and balancing effort among problems and among solutions -- and flexibly re-balancing it, based on new understanding as it emerges -- is part of the charter . Developing technologies for defenses against this threat demands that approach, and only the labs can do it.

I suggest that you might want to explore, with the lab directors and NNSA -- perhaps eventually in hearings -- how the national labs can be better used.

Business arrangements between the government and the work-performers:

As I said both in my prepared statement and in my verbal testimony, business arrangements, including contracting, should be more flexible. For completeness, I include here the core of what I said in my prepared statement:

"……there is a menu of approaches that can be used in different mixes for different cases. That menu includes:

- *Involving the work-performers as fully as possible in defining the work to be done.*
- *Making the work-performers an integrated team, including spanning the range from research to manufacturing.*
- *Ensuring close connections between the technical developers and the operational users, so that technologies and operations can be improved together.*
- *Enabling the teams mentioned above to tailor the problem to be solved to the feasibility of solving it.*
- *Ability to change directions quickly.*
- *Willingness to carry parallel approaches simultaneously, knowing that most of them will be abandoned and the money spent on them will (seem to) be wasted.*
- *Sole source contracts; long-term contracts; level-of-effort contracts.*
- *Being willing to spend money to shorten time – for example by concurrency in component development*

Some or many of the things I list – and certainly all of them together -- might come under the rubric "bending the FAR" (Federal Acquisition Regulations). And using tools such as these effectively requires a special kind of government oversight. The government must lead more and manage less, and it must allow others to help it lead and manage."

Beyond this, I am not in a position to give a detailed prescription for better business arrangements. The most useful thing I can say, instead, is to contrast two points of view characterized by differences in how two objectives are weighted in getting to results – getting results as *quickly* as possible, on the one hand, and *cost-efficiency* and avoidance of "fraud, waste, and abuse" on the other.

The Manhattan Project was focused on getting results as quickly as possible. Accordingly, its leaders, in and out of government, used business practices that would seem wasteful from an accounting point of view – at the time, and perhaps more so today. The Project took many large technical risks; it carried many parallel approaches; it had backups in work for everything that could go wrong; it did things concurrently that might have been more cost-effectively done in series.

In contrast, almost everything the government does today is focused on cost-efficiency – including, I believe, the (tacitly assumed) way that R&D for this area is done -- including for ASP, and including the way the Congress exercises its oversight. (ASP was and is, I believe, viewed in the administration, and perhaps in the Congress, as being urgent. The

disconnect between the urgent need and the business-as-usual business-arrangements has been a large part of the problem.)

Emphasizing cost-efficiency is of course necessary for the vast bulk of what government does. But for this program, the business-approach should emphasize urgency. (Of course, everyone says that about what he or she is interested in. I will obviously have to leave it to you and others to decide whether this area is important enough to warrant the approach I suggest.)

With regard to DNDO's programs, perhaps DHS's acquisition executive should sit down with you and develop jointly a set of business practices that are better suited to the problem. I believe there is provision for this in the charter for DNDO, and perhaps for DHS in general.

R&D funding:

As I also said in my prepared statement, my personal impression is that considerably more funding should be provided for R&D, especially for so-called transformational R&D. This judgment is based on two considerations – 1) the need to shift to a business model focused more on urgency than on cost-efficiency (as I discussed above), and 2) the fact, as I believe it to be, that there is more that needs to be worked on.

But a decision to increase funding should be based on much better analysis of the needs and opportunities than I – or the agencies responsible -- are able to give today. The kind of strategic plan that I referred to earlier should be the basis of a decision to substantially increase funding. I suggest that your committee – and of course the appropriations committees -- should set for themselves an explicit action to explore this possibility in depth in the FY 2011 budget cycle. By that time, you should expect that the responsible offices should have developed a better basis for justifying whatever level of funding they request.

The 2002-2004 DSB Task Force recommended spending about $250M for several years on detector R&D. This estimate was based on a rather extensive canvass of the ideas then emerging at the national labs, universities, and in industry. It was also mainly in the category of what, in DNDO's parlance today, is called "transformational research"; as I remember it, it did not include the later stages of engineering-development. But today, because of the increased R&D funding available since 2004, many more people in more places are working in this area, and many more ideas that may deserve funding have emerged.. I see no inconsistency between what we recommended in 2004 and my belief that R&D funding should be increased even beyond today's levels. But, as I said earlier, a decision to increase funding substantially should be based on a deeper analysis by the offices responsible.

So, in summary, three things need to be done: use the national laboratories better, adopt a business model that values urgency over cost-efficiency, and (plan to consider) increased funding for R&D.

ASP

The case of ASP can be used to illustrate both the need for flexibility in contracting and using the national labs better.

First, let me re-iterate that the right approach to ASP should be (or should have been) an "expanding spiral", as I said in my prepared statement and at your Hearing. The right approach to doing an expanding spiral for ASP would have started with the national labs, in some combination, developing the detector designs and doing some preliminary testing, and for the manufacturing contractors to have fabricated detectors "to print", as specified by the labs, with limited procurement and field use feeding back to the next (larger) spiral. As the spirals continue, and the design and operations are both improved, the labs play a progressively smaller role, and the manufacturing contractors a greater one. The labs should also have had a strong hand, subject to government oversight, in determining what parts of the spectrum of threat-capabilities and attack modes should be covered by ASP, and what should be left for future generations of further-improved detectors.. (My impression is that both the expanding spiral approach and the relation between labs and fabrication-contractors is what PNNL and perhaps other labs had in mind at the beginning of the ASP program.)

(Over the longer term, for the generations of improvement beyond ASP, it is in the interest of the nation for fabrication-contractors to build up their in-house detector-development capability, especially for the later field- and production-engineering phases of development. Much of this capability would be transferred to them by the labs, starting with ASP. But for the "first-off" ASP design, it was a mistake to assume that the contractors who would manufacture the detectors could also design them.)

A second thing should also have been done, or done to a greater extent. The labs and the contractors should have been enabled to work more closely with CBP to iterate, for each spiral, between 1) the ASP design itself and 2) development of CBP cargo-screening operations best suited to working with spectroscopic detectors, in order to progressively better meet the competing requirements of threat detection and flow of commerce. An expanding spiral model for development would have allowed for field-validation of performance by CBP, somewhat similar to OT&E but more connected to feedback and improvement.

To make a spiral approach work – perhaps for ASP and certainly for future generations of detectors -- CBP should develop a dedicated, standing, operational test-bed for integrating detectors and CBP operations at POEs. I can't specify exactly how this test-bed should be structured, but the approach would be to designate one or a few specific POEs as "developmental/operational POEs". The CBP operators at these sites would

know that their very challenging job is to both keep the flow of commerce going smoothly and, at the same time, to develop better ways of handing that flow and integrating it with detection operations. There are precedents for this approach in DoD.

The role of "formal" Operational Test and Evaluation (OT&E) in an expanding spiral approach, such as for ASP, is different from its role in a straight-line, spec/design/test/buy-it-all approach. Field operation of early-design units is the essence of the early stages of a spiral program, but it is more like development testing, and is probably not as extensive or structured as formal OT&E. In fact, formal OT&E in the early spirals may defeat the purpose of a spiral program. I believe there is still a role for formal OT&E, but it will probably be later in the sequence of spirals, and may merge with some sort of "red-teaming" (which I believe is also essential).

I understand that there are some forty-eight ASP detectors that have been built and stored. If they are suitable in a basic reliability sense, some or maybe all of them should be used in the field, perhaps at a CBP operational test-bed site or sites, to move ahead on the expanding spiral approach. Any use of these detectors seems to have been prohibited by the appropriations committees. I believe that both your committee and DNDO should urge relaxation of this prohibition..

Coordination and integration of programs, plans, and operations across departments and agencies

Coordination and integration of *operations* is key. Operations is the essence of "architecture", and the glue that holds an architecture together. No architect would design a building without first determining how it would be used – as a home, a factory, a hospital – that is, what operations the architecture must be designed to support. But the centrality of operations is one of the main things that make coordination difficult, in part because many of the operational capabilities needed for dealing with clandestine nuclear attacks are shared with operational capabilities for other purposes – "conventional" counter-terrorism, bio-terrorism, border security, other kinds of overseas military operations – the list is long.

This is such a complicated matter that I am sure that I don't know everything that has already been done or is being done. However, my impression is that there is already a considerable degree of coordination and integration across departments and agencies, including intelligence agencies. My impression is also that it is ad hoc and spotty, and that much of it is based more on adaptation of operations and operational capabilities for other purposes to these needs, than on "purpose-built" operational needs specific to this area. The kind of scenario-based strategic plan that I discussed earlier would be a useful basis for developing integration in this area.

But it would be unreasonable to expect that integration and coordination in this area can be treated separately from cross-department integration and coordination for many other things. Many other things, from disaster-relief to peace-keeping operations, demand

better cross-department integration and coordination. This area will have to be a part of that to a significant extent. The real question is how to strike the balance between the needs integration for this area and for all of the others.

There have been calls for some sort of "czar" to lead the efforts to defend against clandestine nuclear attack across the government. I am skeptical of the utility of such an approach. I think proper integration will have to develop in a more organic way.

In its essence, coordinating and integrating in this and other areas is a problem of developing operational "jointness" across many departments and agencies of government, similar to the problem of developing joint operational capabilities in the Department of Defense. Capabilities to do truly joint operations among the military services took decades to develop, and there was and is more inherent similarity among the military services than there is among the departments and agencies involved here. It will take years, but let us hope that it doesn't take decades, as it did for DoD. Using the history of the steps in the evolution of joint capabilities in DoD as a template for this development might be a way to begin to look at the problem. A key milestone for DoD was the Goldwater-Nichols Act. After considerable deliberation, something similar might be needed here.

You asked who should be responsible for cross-department development of an integrated strategic plan. In the long term, that plan should be owned at the national level, by whatever entities and processes are developed for cross-department integration across the board. The real question is how to start. Here, I would return to the idea of DoD as executive agent for the first versions of such a plan (a narrower executive-agent role than the DSB Task Force had originally suggested for DoD). This is not mainly because DoD operations are the lion's share of the overall defense capability, although they are very important, but because DoD is good at planning. DNDO is beginning to develop the rudiments of such a plan (in part stimulated by members of the NDWG), and those should be included.

Congressional oversight

You ask about "critical factors associated with.....legislative authorities". The Congress decides how it chooses to do its own business, but I will offer one suggestion. It is based on the fact, noted several times earlier, that dealing with nuclear terrorism cuts across many areas – intelligence, military operations, conventional counter-terrorism, flow of commerce, research and development, etc. The kind of strategic plan I describe above must cross-cut many of these. The ability of the Congress to authorize, appropriate, and exercise oversight must necessarily also be broadly cross-cutting. I suggest some kind of caucus – somewhat more formalized than that word usually connotes -- that could bring together key Congressional leaders, and form a sounding-board for mutually developing deeper understanding of everything involved in dealing with this threat.

In my own experience, the Joint Committee on Atomic Energy (JCAE) had many features of such a body, albeit in a different (but related) sphere, during about two

decades before about 1977. The JCAE dealt extremely effectively with the dominant nuclear issue of that era – nuclear weapons in the Cold War. Its members were as much the leaders of the nation's Cold War nuclear strategy as anyone in the executive branch or in think-tanks or universities. The JCAE was, as I remember, joint in three senses: it was bipartisan, it included members from both the Senate and the House, and it included members from both authorization and appropriations committees. I do not necessarily recommend replicating the structure of the JCAE in any detail. I do suggest looking at the JCAE and how it worked as a point of departure for developing, over the next few years, some forum in the Congress tailored to today's needs for integrating the many capabilities involved in this area. In the end, the scope of such a forum might well be broader than "just" nuclear terrorism, in part because of the multi-application aspect of operational capabilities mentioned several times already.

Additional/related observations: 1) planning to respond better to warning, and 2) "deterrence"

Response to warning

In planning for operations and new technologies, more emphasis should be put on preparing to respond to warning, when it is available. My sense is that the default assumption is that there will be no warning that an attack is or may be in progress – or rather that the first warning will be when a detector at a border crossing registers a "positive". But I believe that in many cases there will be warning of some other kind. Many "conventional" terrorist attacks are successfully interdicted, and that interdiction is often based on indicators that can be thought of as warning. There is a wide range of other kinds of strategic or tactical warning, with varying degrees of specificity as to time and path of the attack.

At one end of the warning spectrum, failure of a state that possesses nuclear weapons would be one kind of strategic warning. At the other end of the spectrum, a nuclear explosion in an American city would be warning to surge to prevent a second. In between, many other warning-and-response scenarios can be imagined. With preparations made in advance, defenses could be augmented – "surged" – over hours, days, weeks or months, so as to be made much more extensive and effective. For example, flow-of-commerce operations at POEs could be modified to improve likelihood of detection. US and allies' military capabilities could be deployed forward. Active detection could be used more freely. But all of these would need advance preparations, including perhaps significant funding. These possibilities should be an integral part of strategic planning.

"Deterrence"

It is highly unlikely that even the best defense could completely preclude success of all possible attempted attacks. But one value of any defense is that it may appear more formidable to a prospective attacker than it may be known to be to the defenders. If we can exploit this effect, we can further reduce the likelihood of a successful attack by reducing the likelihood of attempted attacks. For short, I will call this "deterrence",

although a more apt term is "discouragement". Deterrence has come to have the connotation of deterrence by the prospect of retaliation. Terrorists may not be concerned about retaliation, but they may be quite concerned about the possibility of failure. They have obtained a valuable item – a nuclear explosive – and they will not want to waste it.

There is substantial (tho' mainly anecdotal, as opposed to analytic) evidence, in the annals of terrorism and counter-terrorism, that this kind of deterrence can work in some or many cases.

This program (and the strategic plan for it) should contain an element expressly devoted to enhancing this kind of deterrence – to shaping the perceptions of the attacker about the prospects of success, by creating the kinds of certainties and uncertainties in the mind of the attacker that we desire. The attacker's view of his prospects can be shaped by the defense posture itself – how we operate the defense and what its technical capabilities are – by what we say and don't say about it, by what we allow to be learned by the attacker and by what we protect, by how we exercise, etc. All of these things should be treated as things we can adjust deliberately to do this.

One aspect is the classification policy in this area. Members of the NDWG feel that more should be classified than currently is. Changes in classification policy should be done in the context of a deliberate review of how we will enhance deterrence.

Obviously, deterrence by the prospect of retaliation can play a role in some scenarios, and it is here that attack attribution comes in.

To better deal with both deterrence and response to warning, the extensive data base represented by decades of US and allies' experience of terrorism and in counter-terrorism should be exploited to develop a better analytic basis for understanding and planning for 1) preparing to respond to warning of various kinds and 2) structuring the posture to deter and discourage attacks.