

[H.A.S.C. No. 115-93]

HEARING  
ON  
NATIONAL DEFENSE AUTHORIZATION ACT  
FOR FISCAL YEAR 2019  
AND  
OVERSIGHT OF PREVIOUSLY AUTHORIZED  
PROGRAMS  
BEFORE THE  
COMMITTEE ON ARMED SERVICES  
HOUSE OF REPRESENTATIVES  
ONE HUNDRED FIFTEENTH CONGRESS  
SECOND SESSION

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SUBCOMMITTEE ON STRATEGIC FORCES HEARING  
ON  
**FISCAL YEAR 2019 BUDGET REQUEST  
FOR NUCLEAR FORCES AND ATOMIC  
ENERGY DEFENSE ACTIVITIES**

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HEARING HELD  
MARCH 22, 2018



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U.S. GOVERNMENT PUBLISHING OFFICE

30-563

WASHINGTON : 2019

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**FISCAL YEAR 2019 BUDGET REQUEST FOR NUCLEAR  
FORCES AND ATOMIC ENERGY DEFENSE ACTIVITIES**

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HOUSE OF REPRESENTATIVES,  
COMMITTEE ON ARMED SERVICES,  
SUBCOMMITTEE ON STRATEGIC FORCES,  
*Washington, DC, Thursday, March 22, 2018.*

The subcommittee met, pursuant to call, at 9:00 a.m., in room 2118, Rayburn House Office Building, Hon. Mike Rogers (chairman of the subcommittee) presiding.

**OPENING STATEMENT OF HON. MIKE ROGERS, A REPRESENTATIVE FROM ALABAMA, CHAIRMAN, SUBCOMMITTEE ON STRATEGIC FORCES**

Mr. ROGERS. Good morning. The subcommittee will come to order.

I want to welcome you to our hearing, “The Fiscal Year 2019 Budget Request for Nuclear Forces and Atomic Energy Defense Activities.” I want to thank the witnesses for being here today and for your service to our Nation and for the time it took to prepare for this. I know it takes a lot of time and energy, and we appreciate it. It is very helpful to us.

As you know, we have a full witness panel today. Due to the limited time, we are going to cover the waterfront on DOD’s [Department of Defense’s] nuclear forces and all of the defense-related activities in the Department of Energy.

Our witnesses are the Honorable John Rood, Under Secretary of Defense for Policy; General Robin Rand, Commander, Air Force Global Strike Command; Vice Admiral Terry Benedict, Director, Navy Strategic Systems Programs; Honorable Lisa Gordon-Hagerty, NNSA [National Nuclear Security Administration] Administrator under the Secretary of Energy; and James Owendoff, Principal Deputy Assistant Secretary of Energy for the Environmental Management.

Two months ago, the Armed Services Committee held a hearing in this room with Secretary of Defense Mattis on the National Defense Strategy and Nuclear Posture Review [NPR]. The Secretary gave us a sobering assessment of the nuclear threat environment that reflected that, quote, “we must look reality in the eye and see the world as it is, not as we wish it to be,” close quote.

I am pleased to see that the 2018 NPR does exactly that. But back in 2010, the Obama administration’s NPR said, with misplaced hope, that, quote, “Russia is not an enemy and is increasingly a partner,” close quote.

Anyone who watches the news today knows that this is not the case, if it ever was.

We were reminded of the reality just 3 weeks ago when President Trump—or President Putin announced that Russia is developing and fielding four new and horrific nuclear weapons. This includes a nuclear-powered cruise missile of essentially infinite range and a nuclear-powered underwater drone with an enormous salt-the-Earth nuclear payload.

These Russian nuclear weapons have been in development for decades. Former Secretary of Defense Carter has pointed out that a nuclear arms race between the U.S. and Russia has been going on, quote, “for two decades now, but the U.S. has not been running the race,” close quote.

Despite U.S. efforts to reduce both the number of nuclear weapons and their role in the defense strategy, Russia, China, and North Korea have gone in the opposite direction. Despite the U.S. policy to refrain from developing new nuclear capabilities, these countries are spiraling the other way.

Secretary Mattis’ new NPR takes stock of the situation and prudently endorses the nuclear triad modernization program initiated by President Obama. This will recapitalize our existing systems, an effort that was put off for far too long.

The NPR also wisely proposes two capabilities to supplement the program of record. These capabilities will ensure deterrence of adversaries and assurance of allies remains strong. They deserve full support of this committee and Congress.

Finally, let me highlight three issues that this committee has spent considerable time on and that I am happy to see discussed at length in the NPR: Number one, the nuclear command, control, and communications, or NC3, system, which is old but reliable and must be modernized; number two, the infrastructure with NNSA that is literally falling apart and needs considerable attention and resources; and, number three, the people in uniform and civilian clothes across the DOD and NNSA that form the backbone of our deterrent.

Nuclear deterrence is our number one priority defense mission. Forces, warheads, NC3, people, and infrastructure: it is all part of the deterrent. It is time to buckle down and get after all of it.

Thank you again to our witnesses. I look forward to a discussion.

With that, let me turn to our ranking member, my friend and colleague, for any statement that he may have.

[The prepared statement of Mr. Rogers can be found in the Appendix on page 27.]

**STATEMENT OF HON. JIM COOPER, A REPRESENTATIVE FROM TENNESSEE, RANKING MEMBER, SUBCOMMITTEE ON STRATEGIC FORCES**

Mr. COOPER. Thank you so much, Mr. Chairman. And thanks to each one of the witnesses.

I can’t help but note that today, on the day we vote on the fiscal year 2018 appropriations, we are discussing fiscal year 2019, proving, once again, that the authorization committees are almost lapping the appropriators.

There could not be a more complex or consequential subject than the one that each one of you will be addressing today. It is vitally important that we get it right because, literally, the survival of our

Nation, and of the planet, is at stake if we get it wrong. So I thank each one of you for your excellence and diligence.

I note, with appreciation, there is some good news in all this with increased budgets and performance, like with NNSA having had the number of programs come in under budget since 2011—that is excellent—on page 11 of your testimony. We need to see lots more of that because taxpayers, even in this vital area, want to see value received for their dollars.

So I thank the witnesses, and I look forward to the questions. Most of mine will be in closed session.

Mr. ROGERS. I thank the gentleman.

We will ask each of the witnesses, if you could—we are going to be called for votes. We think it is going to be disruptive. So if you could summarize your opening statement in 3 minutes. Your full statement will be accepted into the record, without objection.

Before we get started, I do want to take note of the fact that we have, as a committee, really enjoyed having General Robin Rand and Admiral Terry Benedict before this committee on many occasions. They are both real tributes to this country, and we thank you for your service. I believe this is going to be your last appearance before us, but just know we appreciate you, and we won't be too tough on you today.

But, anyway, let's go to opening statements. We will start with Under Secretary Rood. You are recognized for 3 minutes.

**STATEMENT OF HON. JOHN C. ROOD, UNDER SECRETARY OF  
DEFENSE FOR POLICY, DEPARTMENT OF DEFENSE**

Secretary ROOD. Thank you, Mr. Chairman.

Chairman Rogers, Ranking Member Cooper, and members of the committee, thank you for the opportunity to testify before you today on the President's fiscal year 2019 budget request.

Today, the United States faces an increasingly complex global security environment in which the central challenge to our prosperity and security is the reemergence of long-term strategic competition by revisionist powers in China and Russia. While they pose separate challenges with unique attributes, both China and Russia seek to reshape the world order and change territorial borders. Consequently, they pose increasing security threats to us, our allies, and partners.

Long-term competition with China and Russia requires increased U.S. and allied military investment because of the magnitude of the threats they pose today and the potential that these threats will increase in the future. We must also simultaneously strengthen our efforts to deter and counter the clear and present dangers posed by rogue regimes such as North Korea and Iran.

The U.S. military remains the strongest in the world. However, our advantages are eroding as potential adversaries modernize and build up their conventional and nuclear forces. They now field a broad arsenal of advanced missiles, including variants that can reach the American homeland. As the chairman noted, earlier this month, Russian President Putin claimed publicly that Russia now possesses unprecedented new types of nuclear forces with which to target the United States and our allies.

Our task at the Defense Department is to ensure that the U.S. military advantages endure and, in combination with our other elements of national power, we are fully able to meet the increasing challenges to our national security. Weakness invites challenge and provocation.

The 2018 Nuclear Posture Review reflects DOD's strategic priority to maintain a safe, secure, survivable, and effective nuclear deterrent.

The logic of the NPR was best articulated by Secretary Mattis who said, and I quote, "This review rests on a bedrock truth: nuclear weapons have and will continue to play a critical role in deterring nuclear attack and in preventing large-scale conventional warfare between nuclear-armed states for the foreseeable future. U.S. nuclear weapons not only defend our allies against conventional and nuclear threats, they also help them avoid the need to develop their own nuclear arsenals. This, in turn, furthers global security," end quote.

The 2018 NPR confirms the findings of all previous NPRs that the diverse capabilities of the nuclear triad provide the flexibility and resilience needed for deterrence. Unfortunately, each leg of the triad is now operating far beyond its planned service life. Consequently, we must not delay the recapitalization of the triad started by the previous administration.

I would note that the U.S. commitment to nonproliferation and arms control remains strong and is noted in the NPR. The United States remains committed to all of its obligations under the Nuclear Non-Proliferation Treaty, including Article VI.

Mr. Chairman, let me conclude by stating that, in an increasingly complex and threatening security environment, DOD must sustain the capabilities needed to deter and defend against attacks on our homeland. Along with our allies and partners, we must ensure that we have the capabilities needed now and in the future to protect our people and the freedoms we so cherish and are able to engage potential adversaries diplomatically from a position of strength.

Thank you again for the opportunity to testify. I urge the committee to support the President's fiscal year 2019 budget request.

[The prepared statement of Secretary Rood can be found in the Appendix on page 29.]

Mr. ROGERS. Thank you. The gentleman yields back.

The Chair now recognizes General Rand for 3 minutes.

**STATEMENT OF GEN ROBIN RAND, USAF, COMMANDER, AIR FORCE GLOBAL STRIKE COMMAND**

General RAND. Good morning, Chairman Rogers, Ranking Member Cooper, and distinguished members of the subcommittee. Thank you for allowing me to appear before you today to represent the men and women of Air Force Global Strike Command.

As I conclude my third year as Commander of Air Force Global Strike, I have four fundamental focus areas: First, the fight tonight; next, the fight in 2030; the development of our airmen; and the care and feeding of our families.

I will highlight two of these areas in these opening comments.



In our fight tonight, 2017 was an important year. As we sit here this morning, our airmen are gainfully employed in the missile fields in five States—Colorado, Nebraska, Wyoming, Montana, and North Dakota—pulling intercontinental ballistic missile alert 24/7. At the same time, we have airmen deployed in the Middle East, supporting CENTCOM [U.S. Central Command] and AFRICOM [U.S. Africa Command], fighting violent extremists. Airmen are deterring our adversaries and assuring our partners in the EUCOM [U.S. European Command] and PACOM [U.S. Pacific Command] AOR [area of responsibility], and airmen are supporting counter-narcotic operations in SOUTHCOM [U.S. Southern Command] while we are always postured to support General Hyten's USSTRATCOM's [U.S. Strategic Command's] operational plan 81-X.

At the direction of the Commander of USSTRATCOM, in September 2017, we reorganized to establish one line of authority for USSTRATCOM'S air components under a single four-star commander. This reorganization has established clear lines of authority, simplifying outdated command structure for our bombers and our ICBM [intercontinental ballistic missile] forces.

My position is now dual-hatted as the Commander of Air Force's Strategic Air and Joint Forces Component Commander and the Commander of Air Force Global Strike.

The recently activated Joint-Global Strike Operations Center, headquartered at Barksdale Air Force Base, enables us to focus on operational deterrence and global strike missions, while headquarters Global Strike Command focuses on the organized train-and-equip duties.

Equally important as our ability to fight tonight, is our ability to fight in 2030. The key to Global Strike Command's continued success will remain on our ability to modernize, sustain, and recapitalize our force. I am happy to report today that we are on a good path to moving forward.

I look forward to answering your questions and providing input on the Ground Based Strategic Deterrent; the Long Range Stand-Off weapon; the B-21 Raider; the UH-1N helicopter replacement; infrastructure requirements; nuclear command, control, and communications systems; and other programs within the command.

Modernization of our nuclear force is critical. It is absolutely critical.

Mr. Chairman and subcommittee members, I want to thank you for your dedication to our great Nation and the opportunity to appear before the committee to highlight the important mission of Air Force Global Strike Command. Thank you.

[The prepared statement of General Rand can be found in the Appendix on page 34.]

Mr. ROGERS. I thank you, General Rand.

Admiral Benedict, you are recognized for 3 minutes.

**STATEMENT OF VADM TERRY BENEDICT, USN, DIRECTOR,  
NAVY STRATEGIC SYSTEMS PROGRAMS**

Admiral BENEDICT. Thank you, sir.

Chairman Rogers, Ranking Member Cooper, and distinguished members of the committee, thank you for the opportunity to be

here today and thank you for your continued support of the Navy's deterrence mission.

It has been my greatest privilege to represent the men and women of SSP [Strategic Systems Programs] for the last 8 years. My goal, as the director, has been to ensure that they are properly positioned to execute the mission with the same level of success today and tomorrow as they have done since our program's inception in 1955.

SSP is currently extending the Trident II D5 strategic weapon system to match the *Ohio*-class service life and to serve as the initial weapon system on the *Columbia* class.

I will summarize by saying all of our life extension programs remain on track and on budget. Our life extension efforts will ensure an effective and credible sea-based strategic deterrent on both the *Ohio* and the *Columbia* class until the 2040s.

The Navy is also taking steps to ensure a credible weapon system is available beyond 2040. In fact, the Nuclear Posture Review directs the Navy to, quote, "begin studies in 2020 to define a cost-effective, credible, and effective SLBM, sea-launched ballistic missile, that we can deploy throughout the service life of the *Columbia* SSBN [ballistic missile submarine] through the 2080s," unquote.

In addition to our modernization efforts, our budget request supports the results of the 2018 Nuclear Posture Review. In particular, our budget request includes funding to begin modifying a small number of warheads to provide a low-yield option. This near-term capability is being accomplished in partnerships with the Department of Energy and my counterpart here, Administrator Gordon-Hagerty at the NNSA. It will not increase the overall number of deployed ballistic warheads and will, in fact, bolster our deterrence posture.

Thank you for the opportunity to testify, and I look forward to additional questions.

[The prepared statement of Admiral Benedict can be found in the Appendix on page 54.]

Mr. ROGERS. Thank you, Admiral.

Ms. Gordon-Hagerty, you are recognized for 3 minutes.

**STATEMENT OF HON. LISA E. GORDON-HAGERTY, ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION**

Ms. GORDON-HAGERTY. Chairman Rogers, Ranking Member Cooper, and distinguished members of the subcommittee, thank you for the opportunity to present the President's fiscal year 2019 budget request for the Department of Energy's National Nuclear Security Administration. It is a privilege to appear before you today representing the extraordinary men and women of the DOE [Department of Energy] NNSA and the vital roles we play in executing our national security missions.

Since being sworn in exactly 4 weeks ago today, I have had the opportunity to receive in-depth briefings on NNSA's programs and projects. I still have a great deal more to learn, but what I have seen so far has been impressive.

NNSA has shown steady progress with the support of this subcommittee and Congress. For example, infrastructure modernization, flight testing of the B61-12, removals of highly enriched ura-

niium from Ghana and Kazakhstan, and commissioning of a new class of nuclear-powered aircraft carrier. These are but a few examples of how NNSA has lent its world-class expertise to keeping our Nation safe and secure. But there is much more to be done to meet the challenges posed by the current geopolitical environment.

The President's fiscal year 2019 budget request for NNSA is \$15.1 billion, providing the resources required to help ensure we are able to protect and keep our Nation, allies, and partners safe. This request also moves us forward to a deterrent that is modern, robust, flexible, resilient, ready, and appropriately tailored to meet current and future uncertainties, as outlined in the 2018 Nuclear Posture Review.

The fiscal year 2019 budget clearly demonstrates the administration's strong support for NNSA and our three enduring missions: maintaining the safety, security, and reliability of the U.S. nuclear weapon stockpile; reducing the threat of nuclear proliferation and nuclear terrorism around the world; and providing nuclear propulsion for the U.S. Navy's fleet of aircraft carriers and submarines. These critically important missions are executed in lockstep alignment with our interagency partners, including the Department of Defense, with whom I am privileged to testify before you today.

NNSA's fiscal year 2019 budget request for the weapons activities account as \$11 billion, an increase of 7.6 percent over the fiscal year 2018 request. This funding supports the Nation's current and future defense posture, including infrastructure across the enterprise.

With the subcommittee's support, our fiscal year 2018 NDAA [National Defense Authorization Act]—under the NDAA, we have provided additional flexibility to our infrastructure challenges by increasing minor construction thresholds to \$20 million. Our budget request also includes \$1.9 billion for the defense nuclear non-proliferation account, a 3.9 percent increase. Finally, the budget request for Naval Reactors is \$1.8 billion, a 20.9 percent increase above the fiscal year 2018 request.

The NNSA's fiscal year 2019 budget request is a result of a disciplined process to prioritize funding for validated requirements as designated by this administration. And it sets forth the foundation to implement the policies of the Nuclear Posture Review and the National Security Strategy.

Thank you for your continued strong support and the opportunity to testify before you today. I look forward to answering any questions you may have.

[The prepared statement of Ms. Gordon-Hagerty can be found in the Appendix on page 64.]

Mr. ROGERS. Thank you.

Mr. Owendoff, you are recognized for 3 minutes.

**STATEMENT OF JAMES OWENDOFF, PRINCIPAL DEPUTY ASSISTANT SECRETARY FOR ENVIRONMENTAL MANAGEMENT, DEPARTMENT OF ENERGY**

Mr. OWENDOFF. Good morning, Chairman Rogers, Ranking Member Cooper, and distinguished members of the subcommittee. I am pleased to be here today to represent the Department of Energy's Office of Environmental Management [EM] and to discuss the work

we have already successfully accomplished and what we plan to accomplish under the President's fiscal year 2019 budget request.

The total fiscal year 2019 budget request for the EM program is \$6.6 billion. Of that, \$5.6 billion is for the defense environmental cleanup activities. The fiscal year 2019 request demonstrates the administration's continued commitment to the vital mission of EM to address the environmental legacy of nuclear weapons production and government-sponsored energy research.

DOE and EM are committed to ensuring the safety of our workforce, the public, and the environment. Safety is our top priority for the Office of Environmental Management and its field sites. It is valued above production, budget, and schedule. We are also strongly committed to a workplace where all workers—Federal and contractor—are free to speak out, voice concerns, or lodge complaints without fear of retaliation.

To continue and further build upon our momentum of progress, we have focused on a greater sense of urgency to EM's decision-making process. This approach means more emphasis on engaging with regulators, stakeholders, and communities in making timely decisions which will enhance safety, shorten schedules, increase transparency, and reduce costs.

Going forward, our fiscal year 2019 request will enable us to continue making progress on those capabilities necessary to tackle some of our longer-term challenges while also enabling us to realize concrete accomplishments across the EM program.

In closing, I am honored to be here today to represent the more than 20,000 men and women that carry out the Office of Environmental Management mission. Ensuring a safe work environment at all of our sites is our highest priority. We are committed to achieving our mission in a safe, effective, and cost-efficient manner to serve as good stewards of taxpayer resources.

Thank you for the subcommittee's support of the defense cleanup program and, again, for the opportunity to appear before you today. I look forward to answering your questions.

[The prepared statement of Mr. Owendoff can be found in the Appendix on page 77.]

Mr. ROGERS. I thank all the witnesses for those statements.

I recognize myself for the first set of questions.

This will be for Under Secretary Rood and General Rand.

I understand that the NPR examined a lot of different options, and included in that was de-alerting our ICBMs and possibly adopting a no-first-use policy.

The previous administration, at least on two occasions, considered those and rejected them. Are you concerned that the U.S. may mistakenly launch a nuclear strike, either in a day-to-day posture or defense crisis, and do you believe we should de-alert ICBMs?

Secretary ROOD. Mr. Chairman, we have high confidence in our command and control capabilities for our nuclear arsenal. They have been the same sort of command and control procedures in the system that we have had for quite some time.

With respect to your question on first use, I would note, no U.S. President, since the dawn of the nuclear age, has provided an assurance against the first use of nuclear weapons. The declaratory policy that you will see in the 2018 NPR is the same in this respect

as the 2010 NPR, produced during the Obama administration, in that it talks about keeping a nuclear threshold at a very high level, stating that the United States would only contemplate the use of nuclear weapons in extreme circumstances.

Of course, the primary purpose of our nuclear force is deterrence. It is our nuclear deterrent force. We are not considering de-alerting our ICBMs and other activities like that because we don't think it would further those objectives.

With respect to first use, as I mentioned, it has not been the policy of any U.S. President, in part because we want to retain some ambiguity around the circumstances in which the United States would respond with nuclear weapons or to employ them.

General RAND. Mr. Chairman, I can only add that I would not be in favor of de-alerting our nuclear ICBMs. The big feature of the ICBMs is its responsiveness. That is one of the features of the different legs of the triad, and we would not have that responsive capability if we de-alerted.

Mr. ROGERS. Well, I just want everybody to remember: Our allies were shaken when this was openly discussed in the past, and we don't need to be concerning them again with these kind of discussions.

Administrator Gordon-Hagerty, with NNSA currently with a projected workload for weapons programs that is very heavy, some folks have expressed concern that the NNSA's enterprise cannot successfully execute the additional work required by the NPR, namely the two supplemental capabilities of, one, a near-term modification to the W-76 to provide a lower yield option, and, two, a longer term effort to develop a sea-launched cruise missile.

Your predecessor, General Klotz, said in an interview on his way out the door, quote: "The other great risk in the life extension programs is we have never done more than one life extension program at a time since the end of the Cold War. We are now doing essentially four. The point is we are working pretty much at full capacity," close quote.

What do you make of these comments? Do you believe the NNSA enterprise has the capacity and the capability to do additions to these supplemental capabilities without risking the current warhead programs, and do you think the men and women in your enterprise can get this done?

Ms. GORDON-HAGERTY. Mr. Chairman, yes, I do believe we can get it done. And, in fact, we are working right now, as General Klotz correctly stated, essentially four LEPs [life extension programs], the three LEPs and the one major Alt [alteration].

We are not running at capacity. In fact, we are planning for a projected—the two additional projected opportunities. In fact, we are, as you well know, are working the W76-1 process right now, the LEP, and we are already making plans of moving as far forward as we can to support the future low-yield ballistic missile requirement as outlined in the Nuclear Posture Review. That, of course, we are waiting for authority and approval from the Nuclear Weapons Council to proceed on that. And, of course, I am a member of the Nuclear Weapons Council. So we will make sure that the schedule supports all of those activities.

Our biggest concern with our workload, however, is people and the cumbersome clearance process that it takes. We need to train and equip personnel in the workforce in order to execute these missions. It is a full mission workload for us, but we believe we have the capabilities and the capacity to do that. And with the continued support of this subcommittee and the full committee, we believe we can do so.

It is also predicated, of course, on our decades-long future modernization and infrastructure strategy that we have. That is also predicated on predictable and stable funding.

Mr. ROGERS. We want to work with you to help you on your deferred maintenance problem as well because you are going to have a hard time keeping those people if we don't deal with that—or recruiting new people.

Ms. GORDON-HAGERTY. I concur. Thank you.

Mr. ROGERS. With that, I yield to the ranking member for any questions he may have.

Mr. COOPER. Thank you, Mr. Chairman.

As I told Mr. Owendoff before the hearing, I appreciated the vividness of your testimony in helping us understand the opportunities for cleanup and the accomplishments that have already occurred.

Administrator Gordon-Hagerty, several years ago, I referred to the MOX [mixed oxide] program in South Carolina as a zombie earmark. And I know that you are new to your job, but I would hope that you and the Department of Energy would have a proposed termination date for that program in the relatively near future now that Congress has repeatedly given you the green light.

It is my understanding in today's omnibus appropriations bill, there will be no obstacles to terminating the program. So I hope that you will be able to make that a priority in your term as Administrator.

Admiral Benedict, General Rand, I would like to echo Chairman Rogers' praise for you as individuals and for your excellent careers and service. We will miss your testimony. I hope you are adequately warning your replacements what to expect from the subcommittee.

The Nuclear Posture Review suggests several modifications to current status and has, I think, special implications for the Navy to have a low-yield D5, to have cruise missiles with nuclear options.

So, Admiral Benedict, in your valedictory public comments here, could you tell me what that would do to change the defense posture of the Navy?

Admiral BENEDICT. Thank you, Mr. Cooper.

With regards to the low yield, if I may, we could very quickly get in a classified regime there. I ask that I be able to answer most of your specific questions in the classified session.

I would tell you that we are beginning planning on the low-yield concept for the 76. That is, from our perspective, well on its way to support the direction out of the NPR.

With regards to the sea-launched cruise missile, we will begin that effort in fiscal year 2019 with the standard analysis of alternatives on what that would actually look like, what the require-

ments would be for that type of a weapon, and where it would be based from sea, either surface or submarine. That work will begin in fiscal year 2019, per the direction of the NPR. The Navy, today, under the direction of the CNO [Chief of Naval Operations] and the Assistant Secretary for Research, Development and Acquisition, are beginning that planning throughout the Navy, so we will be well situated to begin in fiscal year 2019.

Mr. ROGERS. I thank the gentleman.

The Chair now recognizes the gentleman from Georgia, Mr. Hice.

Mr. HICE. Thank you, Mr. Chairman.

Administrator Gordon-Hagerty, let me ask you, are you concerned about the increasing drone activity at NNSA labs, plants, and sites?

Ms. GORDON-HAGERTY. Yes, Representative Hice. We have seen increased activity in UAS [unmanned aircraft system] drone activities at all of our labs, plants, and sites, and we are concerned about that. But thanks to this Congress, and in particular this subcommittee, we now have the resources to look at and be able to put together programs that will address these issues at our locations where special nuclear material is located.

We are in the process of down-selecting from two pilot projects that we have ongoing right now so we can address this better at our sites. Shortly, we will be putting in counter-UAS capabilities at our plants, labs, and sites where we have special nuclear material, Cat I facilities.

Mr. HICE. So the counter-UAS authority that has been granted, has that been implemented?

Ms. GORDON-HAGERTY. We are in the process of down-selecting capabilities to do so, so we can execute those authorities.

Mr. HICE. Do you have a timeframe on when you think that may be?

Ms. GORDON-HAGERTY. In the very near term. I would be happy to bring the team together and provide you with a more detailed briefing about what our down-select activities in our pilot project is showing right now.

Mr. HICE. Okay. I would appreciate that.

When will the engineering analysis and workforce analysis for plutonium pit production be complete?

Ms. GORDON-HAGERTY. We are undergoing the final draft review of the engineering analysis as well as the workforce analysis for our planned path forward for pit production for the 31 to 80 pits, if you will.

Right now, we have an enduring mission, and, thanks to this subcommittee and the appropriations committees, we are putting modernization plans in place for the PF-4, where we will have our existing and enduring pit production capabilities at Los Alamos, Los Alamos being the plutonium center of excellence for our operations. That will be our enduring 30 pits per year requirements.

As far as the engineering analysis is concerned, in the next several weeks, Under Secretary Lord and I will be receiving our final briefings on the final draft product, at which time I will take that information to the Deputy Secretary, who is the responsible party for selecting the best location for the engineering or for the future pit production requirements. We will do that within the timeframe

so that Under Secretary Lord, as the chairman of the Nuclear Weapons Council, can submit her report to Congress by May 11.

Mr. HICE. I know the Savannah River Site is in consideration with that. I will certainly give a plug in that direction. I appreciate that consideration.

So will Congress be kept up to speed on all of this?

Ms. GORDON-HAGERTY. Yes. As soon as we are able to, we will make provisions to brief Members of Congress and their staff.

Mr. HICE. Okay. Thank you very much.

Mr. Chairman, I yield back.

Mr. ROGERS. The gentleman yields back.

The Chair now recognizes the gentleman from California, Mr. Garamendi, for 5 minutes.

Mr. GARAMENDI. Did you say 55?

Mr. ROGERS. No.

Mr. GARAMENDI. I want to go to a recent incident in which it has been reported that Russia has hacked into our critical infrastructure systems—electrical grids, power plants, et cetera—and then refer you to page 21 of the Nuclear Posture Review, the last paragraph: Given the potential of significant nonnuclear strategic attacks, the United States reserves the right to make any adjustment in the assurance that may be warranted by the evolution and proliferation of nonnuclear strategic attack technologies and U.S. capabilities to counter that threat.

Does a cyberattack on our power grid rise to the occasion of using a nuclear weapon in response?

Mr. Rood.

Secretary ROOD. Congressman, the threshold for U.S. nuclear use has been and will remain incredibly high.

As you quoted from on page 21 of the Nuclear Posture Review, you will note the first sentence of our declaratory policy is the United States would only consider the employment of nuclear weapons in extreme circumstances to defend the vital interests of the United States, its allies, and partners.

Mr. GARAMENDI. I did read that.

So is the shutdown of the American power grid an extreme circumstance that would warrant the use of a nuclear weapon?

Secretary ROOD. In the declaratory process, that is one of the things that we would take into account. And, remember, the key word being “consider” in extreme circumstances.

It is really the context in which those type of attacks could occur. There is no automaticity. In our response, we would consider that.

So, for instance, to your hypothetical, if an attack shut down the electricity grid in the United States and it was accompanied by other activities, that would be one of the things we would look at. Are we in a high-threat condition with Russia? Are there other forms of conventional attack underway? What is the context in which that is occurring?

There is nothing in our policy that would automatically require a response, but we would maintain the ambiguity around exactly how we would respond in order to deter attacks on the United States, and we would consider the context in which activities were occurring.



Mr. GARAMENDI. Ms. Gordon-Hagerty, in answer to the previous question, you indicated that you intend to continue to build out the PF-4 facility at Los Alamos.

Have you made a decision on your AOA [analysis of alternatives] as to the ultimate production location for the plutonium pits?

Ms. GORDON-HAGERTY. Representative Garamendi, the discussion that we were having about the engineering analysis, which is the follow-on to the analysis of alternatives, we have down-selected two locations where we are now undergoing the final assessment to make a recommendation to the Deputy Secretary and then, ultimately, to the Nuclear Weapons Council. And that should be completed on or before—the recommendation to Congress should be made on or before May 11, so it is very near term.

Mr. GARAMENDI. And so it appeared to me that, in answering the previous question, that you may have made a decision by the allocation of substantial sums into the Los Alamos facility, and you are saying that is not the case. It is still an open question.

Ms. GORDON-HAGERTY. Well, this is a twofold process. We will continue to fund and support the operations at PF-4, which is where our enduring plutonium pit production capabilities will remain for the foreseeable future for those 1 through 30, if you will, pits. And then building out on that, the strategy, as required by the Nuclear Weapons Council, is to produce up to 80 pits by 2030. That is the parameters under which we are operating and finalizing the engineering analysis.

Mr. GARAMENDI. I appreciate your answer. There is one additional question I will save, but I will state the question here: Why do you need 80 pits? In the classified setting, I will ask that question.

Ms. GORDON-HAGERTY. Okay. Thank you.

Mr. GARAMENDI. I yield back.

Mr. ROGERS. I thank the gentleman.

The Chair now recognizes the gentleman from Alabama, Mr. Byrne, for 5 minutes.

Mr. BYRNE. Thank you, Mr. Chairman.

General Hyten has consistently called for speeding up the process for modernizing our major nuclear programs. There is no doubt that our nuclear national assets require urgent attention.

General Rand, I know you support that priority. What can we do to accelerate the acquisition of the Ground Based Strategic Deterrent [GBSD] and the Long Range Stand-Off [LRSO] cruise missile programs?

General RAND. Thank you for the question.

My first response would be: We need to continue the funding for it. We have to continue to be able to stay on time, on cost. To do that, we need the dollars. Any delays in this funding will certainly result in delayed acquisition of both those two critical systems.

We are in a good place right now with the technology maturation and risk-reduction [TMRR] contracts with our two GBS contracts with Northrop Grumman and Boeing. It is a 3-year plan TMRR cycle. If we stay on track, I think we will be able to meet the requirements that we are shooting for, and that is 2030, to be fielding the GBSD. Delays of the budget would be devastating to the program.

I would say the same thing about our LRSO. We have two contracts right now for down-select. We will take the next 2 years to do this TMRR progress. If we continue to fund appropriately, we will stay on time.

Mr. BYRNE. The fiscal year 2019 unfunded priorities list includes an additional \$69 million and \$85 million, respectively, for the GBSO and LRSO programs. Can you provide more insight, General, on what this additional funding would do to help accelerate those programs?

General RAND. Well, I think one of the things—and to be candid with you: I can't give you specifics as probably the acquisition community can. Our job in Air Force Global Strike is to help define the requirements. I think we have done a good job of that.

I can tell you, any time you are going for these innovative programs that the workforce is very important, and I have to believe that some of those dollars will be going to building up the workforces with both the contractors that we have.

Mr. BYRNE. Admiral, I continue to have my concern—and I know you have concerns—about any slippage in the *Columbia* program. We have been talking about that on the committee for a long time.

If you would—you and I have had this discussion before—bring us up to date. How are we doing on *Columbia*, and what are the risks if we do have slippage in that timeline?

Admiral BENEDICT. Sir, we remain on schedule with the *Columbia*. Specifically, I focus on the common missile compartment, which is our shared effort with the United Kingdom, since both nations have elected to continue the Trident II D5 strategic weapon system as the baseline.

The first four tubes are actually—first four missile tubes, excuse me, are actually on what we call the rotisserie fixture up at Electric Boat. So we are beginning to receive the initial contract allocation of 17 tubes into Electric Boat. And we are on track by the end of this summer, early fall, to deliver the first missile tube down to what is called the Strategic Weapon System Ashore facility down in Florida, where I will use it to do environmental testing for the strategic weapon system. So we continue to make very good progress on that.

I was in London last week with the United Kingdom. Their shipyard in Barrow continues to progress to their schedule and their program efforts. They are installing the fixtures the same as we have at Electric Boat in order to build the quad packs. So we remain on schedule for the submarine force.

We need 12 boats. I think we have explained at length why we need 12 *Columbia* class for the United States. We need them so that we can have the first one on patrol in 2031 in order to ensure that we can support General Hyten and the STRATCOM requirements for strategic deterrence.

Mr. BYRNE. I thank you for your service. I appreciate your testimony and everybody's testimony.

Mr. Chairman, it is clear to me that one of the things we can do to help them is to quit funding them by continuing resolutions, number one.

Number two, we have a very important appropriations bill that will be before the House today that I think contains funding you

all need, to do what you need to do. So for us to do what we are supposed to do to help you do what you are supposed to do, I hope we have success with that bill today.

I yield back.

Mr. ROGERS. The gentleman yields back. And I hope it is successful, as well.

The Chair now recognizes the gentleman from Texas, Mr. O'Rourke, for 5 minutes.

Mr. O'ROURKE. Thank you, Mr. Chairman.

General Rand, let me ask you a question about the Long Range Stand-Off, LRSO, nuclear cruise missile. Is there a need for a conventional variant?

General RAND. Sir, the conventional variant that we have today is called the Joint Air-to-Surface Missile Extended Range, JASSM-ER, vastly improved capability over our conventional air-launched cruise missile. That is what we now are using—I wouldn't even say to bridge the gap. Frankly, we have a need for more long range stand-off conventionally than what we already have. And I think we have to balance the budget with our requirements, and taking on a new now conventional long range stand-off is not something I think should be our priority at this time.

Mr. O'ROURKE. Just help me understand. I believe a previous NDAA calls for that, and tell me the plans to pursue that and develop that.

General RAND. The NDAA, as I understand it, won't let us retire the CALCM, the conventional air-launched cruise missile, until we have plans for, which is most unfortunate, because the CALCM is not a weapon of choice anymore.

Again, I would submit—I can't speak to the larger plans—the Air Force is relying for its conventional long-range strike is JASSM-ER. We need to pursue that, and we need to actually get more than we have. And I think that is where our effort should be versus trying to come up with a new avenue to get a conventional long-range standoff.

Mr. O'ROURKE. Thank you.

Mr. Chairman, I yield back.

Mr. ROGERS. The gentleman yields back.

The Chair now recognizes the gentleman from Colorado, Mr. Coffman.

Mr. COFFMAN. Thank you, Mr. Chairman.

I am concerned about the command and control and communications, given the threats to our satellites.

Do you all have a growing concern about how that affects navigation, targeting, communications, in terms of the triad?

General RAND. Yes, sir. I will start with that.

I think that as we evolve in the contested domains that are out there—we have undersea, we have sea, we have land, and we have air—the two domains that we need to pay particular attention is the space domain and certainly the cyber domain. Those are very, very important domains to anything that I would do in Air Force Global Strike.

I would tell you that those domains are becoming increasingly contested, and absolutely we need to be focused on that.

I won't speak to the specifics because I am not nearly as fluent on the topic as my friend, General Jay Raymond, the Commander of Air Force Space Command, but this is a huge priority for us. I will tell you that cyber and cyber protection is a very big priority. Everything that we are doing in nuclear command, control, and communications are considering how are we going to operate in those two contested domains.

Admiral BENEDICT. If I may, I would echo what General Rand said, specifically with regards to cyber. And then I would just remind this committee that the undersea leg does not rely on GPS [Global Positioning System], either for the missile's performance or for the submarine's position. We have other means to ensure the performance and accuracy of the Trident system.

Mr. COFFMAN. Russia recently announced a new hypersonic missile, and China is pursuing similar capabilities.

According to General Hyten, quote: "We do not have any defense that could deny the employment of such a weapon against us," unquote.

I wonder if you all could comment on that.

General RAND. Sir, he is accurate in that. What we do have, the very premise of deterrence, though, is that we have some very strong capabilities ourselves. That is one of the strong rationales why we need a B-21 Raider, is to deter their even consideration of using a hypersonic weapon against us. That is why we need the three strong legs of our triad. That is why we need to have the conventional long-range stand-off capabilities that we do have. I think that we have to play or consider that deterrence is a big part of how we would respond and like why they wouldn't want to ever use their hypersonics against us.

If the question is, "Should we pursue ways to defend against it," yes. But we have to balance that on everything else that we are trying to do.

Mr. COFFMAN. Admiral, how many nuclear ballistic missile submarines does Russia currently field or have, and how old are they on the average?

Admiral BENEDICT. Sir, I am going to have to take a specific look up on that and get back to you with the actual detailed numbers. I don't have that at my fingertips here, but I will take the action.

Mr. COFFMAN. Has Russia engaged in large-scale modernization of their nuclear triad, including strategic bombers or SSBNs?

Admiral BENEDICT. Absolutely, sir. And I think that is the premise for why we believe so passionately that our life extension programs have to continue to pace, both in terms of cost and schedule, in order to ensure that we can continue to deliver our fundamental aspects of national security, which is the nuclear triad.

Secretary ROOD. Congressman, if I could add. The intelligence community has produced an estimate showing that over the last 20 years the Russians as well as the Chinese have engaged in substantial buildup in their strategic nuclear capabilities. What we saw President Putin announce is just the latest in a discussion of those. During that same period, of course, the United States has been going the opposite direction.

And so they have modernized a very large number of capabilities, both in the strategic area and the so-called nonstrategic nuclear

weapons. These are some of the concerns in the NPR that led us to propose some of the adjustments in our own capabilities.

Mr. COFFMAN. Mr. Chairman, I yield back.

Mr. ROGERS. The gentleman yields back.

The Chair now recognizes the gentleman from Washington, Mr. Larsen, for 5 minutes.

Mr. LARSEN. Thank you, Mr. Chairman.

Mr. Owendoff, I understand no one has asked you any questions.

Looking at the 2018 request and 2019 request, both for the Office of River Protection at Hanford and for the operations office, the administration is requesting less money in 2019 compared to 2018.

Could you try to justify this reduction in the request for the work at the Hanford site?

Mr. OWENDOFF. Yes, sir. We have completed activities, both the vertical pipe unit removal, old burial grounds, and there is other work along the Columbia River that we have completed.

Our focus, though, is for the high-level waste that is in the tanks and getting the low-activity waste facility up and built. The Secretary has placed a high priority on that, with a goal of having it operational by December of 2021, 2 years ahead of the consent decree that is in place.

We believe that, from a priority and a risk standpoint, we are addressing the right thing, certainly on the Central Plateau, as well as other demolitions across the site.

Mr. LARSEN. Moving on to WTP [Waste Treatment and Immobilization Plant Project], do you believe EM can get that entire system at Hanford operational by 2039?

Mr. OWENDOFF. We are looking at that now, sir. As I mentioned, our focus is on the first of the three process nuclear facilities.

We found that it is very difficult to try to move along on three at once. But we are analyzing the other two—the high-level waste and the pre-treatment—and over the next several months, we will be having information out that we will be certainly sharing with this subcommittee on our approach for those two facilities.

Mr. LARSEN. That would be helpful. As you know, this predates me being on a committee, and I have been on the committee for 18 years. It is described as America's original toxic asset, the waste at Hanford and these other places, and we haven't really dealt with it.

We are expecting to learn something from you in the next couple of months. Will that include some timelines? Well, going back to the WTP. When do you anticipate starting treatment of low-level waste?

Mr. OWENDOFF. We expect, sir, to have hot operations start the end of December 2021. In one way, that seems like a long ways off, but there is a lot of work to do. Certainly this will be the first time that we have brought up a nuclear facility for a low-activity waste class, so there could be problems. But, as I say, we and our contractor are moving forward to get it done by that date. The Secretary has established a goal for us.

Mr. LARSEN. And do you think the dollars in the budget help you do that?

Mr. OWENDOFF. Yes, sir.

Mr. LARSEN. In the budget you proposed.

Mr. OWENDOFF. Yes, sir, we believe that it does. We will need to continue certainly that funding level.

Mr. LARSEN. Can you update us on the status of the ongoing ventilation problems at tank farms that have sickened workers over the past few years?

Mr. OWENDOFF. It has been difficult because of the fumes. Workers experience different things. They smell different things. We have a whole suite of new sensors that we are putting out in the tank farm. Some smell ammonia, some smell like a sweetness, and so it has been very, very difficult.

What we have done is, when workers are out there, we put them in air packs to ensure that they have a supplemental air supply. It slowed the process for retrieving waste in the single shell tanks, but our first priority, as I mentioned in my opening, is worker safety, so that is what we are continuing. We are continuing to look to see if we can find what is the source of those fumes and vapors, sir.

Mr. LARSEN. Thank you. Let me yield back.

I want to apologize to the rest of the panel. I have got a million questions for everybody, but this is really kind of the only time of the year, once a year, where we get a chance to have some conversations on the record in public with the folks at EM, so I appreciate the indulgence of the rest of the panel.

Thank you, Mr. Owendoff.

I yield back.

Mr. ROGERS. The Chair now recognizes the gentleman from Colorado, Mr. Lamborn, for 5 minutes.

Mr. LAMBORN. Thank you.

I have a short question for Ms. Gordon-Hagerty, and then I have another question for Secretary Rood after that.

Administrator Gordon-Hagerty, I am very concerned that the United States no longer enriches uranium for national security purposes. Concerning the implications of that and the cost of delaying a buildout—I think the previous administration wanted a sizable delay—do you share my concerns, and will you consider speeding of this vital acquisition process?

Ms. GORDON-HAGERTY. The National Nuclear Security Administration has a requirement to produce tritium for our national security needs. With that, it is important to us to have a domestic enrichment capability.

We are currently undergoing an analysis, if you will, of two different technologies. One of the technologies is much more mature than the other. In fact, if you are familiar with technical readiness levels, one is at about a 7 or 8; the other is at about a 2 or 3. So we are awaiting for that second capability to be evaluated more specifically.

Then once we decide on looking at those two capabilities, once they become a technical level 7 or 8, we will then make a determination how we are going to proceed with an enrichment capability for our United States.

But, yes, we do agree that we do require a domestic enrichment capability.

Mr. LAMBORN. Okay. Thank you. We will work with you on that. Thank you.

And Under Secretary Rood, it is pleasing to me to realize that senior-most defense officials from the Obama administration have reviewed and support the new Trump national posture review.

I am going to read to you a quote from President Obama's Under Secretary of Defense for Policy, Jim Miller, who was the principal author of the Obama administration's 2010 NPR [Nuclear Posture Review], quote: "Secretary of Defense Jim Mattis' 2018 [Nuclear] Posture Review offers continuity with past U.S. policy and plans, including those in the 2010 NPR. It deserves broad bipartisan support. Its proposal for a low-yield SLBM weapon and a new nuclear tipped sea-launched cruise missile are sensible responses to changed security conditions, especially Russia and North Korea," unquote.

There are also supportive quotes I won't read for the sake of time, but they are from Secretary of Defense Ash Carter and former Deputy Secretary of Energy Liz Sherwood-Randall.

Would you agree with me that that sounds like pretty strong support from prior administration officials for the current NPR?

Secretary ROOD. I would agree with you, Congressman.

We are gratified that, for instance, having spoken myself to former Secretary of Defense Ash Carter, as well as Jim Miller, about this, both went out of their way to praise the work that we had done on the Nuclear Posture Review.

I think you are correct: The programs and policies started during the previous administration, during the Obama administration, much of that has been continued in the present NPR, such as the recapitalization of the nuclear triad. So it is gratifying to see that. And I think they see the global security environment in similar ways in discussing the topic with them. We have just got the hard work ahead of adapting to that new environment and adjusting our posture.

Mr. LAMBORN. I am glad you are adapting to a new environment.

Admiral Benedict, there is an issue that is going to be discussed when it comes to submarines, our nuclear power—not nuclear power but our nuclear warhead submarines and nuclear missile submarines. I think there is a thought that having a low-yield weapon on one or two missiles would put that submarine at risk if it came to the surface, fired a missile, and then tried to disappear, and it would be easier to follow.

If we can talk about it in an open setting, doesn't current doctrine allow for that right now for a tiny salvo?

Admiral BENEDICT. Yes, sir, you are right. The current submarine doctrine does allow for scenarios like you discuss, and I would be happy to address more of the detailed specifics in the classified session.

Mr. LAMBORN. So going to a small salvo is not a change of doctrine or training?

Admiral BENEDICT. No, sir, not at all. In fact, it is currently practiced from a training perspective in the submarine force today.

Mr. LAMBORN. Okay. Thank you very much.

Mr. Chairman, I yield back.

Mr. ROGERS. The gentleman yields back.

The Chair now recognizes the gentlelady from Wyoming, Ms. Cheney, for 5 minutes.

Ms. CHENEY. Thank you, Mr. Chairman. Thank you for the opportunity for non-subcommittee members to attend and ask questions, as well. And thank you to all of our witnesses.

My first question is for you, Under Secretary Rood.

We have heard testimony from others in open session about limitations that our INF [Intermediate-Range Nuclear Forces] Treaty obligations are placing on our research testing of hypersonic weapons.

Could you, to the extent that you can in an open setting, address that and, in particular, talk about how an obstacle like that can rise to the level where we are getting some attention and focus on it, a situation where we now seem to be the only nation, anywhere in the world, that is, in fact, bound by obligations under the INF Treaty given Russian behavior? If that treaty is now also imposing obstacles on our ability to develop the next generation of weapons, how does the Department plan to respond to that?

Secretary ROOD. Congresswoman, as you mentioned, the INF Treaty is between the United States and Russia. During the Obama administration, a little over 4 years ago, the administration determined the Russians were in violation of that agreement. Since that time, those compliance determinations have been made and maintained. During the Obama administration senior officials, up to and including President Obama, and that has continued during the Trump administration, with senior officials raising with their Russian colleagues our concerns about that and trying to persuade the Russians to come into compliance.

We are now in our fifth year of that effort.

Nonetheless, we remain a party to the INF Treaty. We are not violating that in the United States. As you mentioned, we take our obligations very seriously. We are pursuing some research and development on capabilities that would provide us some offensive capabilities in that regard that do not violate the INF Treaty. I think it is something we are going to have to evaluate as we go forward in time, but our current policy is to still try to persuade them to do that.

There are times where those restrictions do limit some of our capabilities in the United States, and right now we are working within the bounds of the treaty, but it is something we evaluate going forward.

Ms. CHENEY. Thank you. I just would reiterate extreme concern that we are in a situation where we are handcuffing ourselves, where we are facing adversaries who are clearly making significant progress that we are not making because of obligations that only we are now fulfilling.

General Rand, I have a question for you. Could you just give us more details on the timeline on the UH-1N replacement, where that stands? Obviously, that is something that we are very focused on at F.E. Warren [Air Force Base].

General RAND. Yes, ma'am, so, right now, the RFP [request for proposal] has been released, and it is in source selection. We are hopeful that that source selection will come before the end of the summer.

Ms. CHENEY. And if it comes before the end of the summer, what are we looking at in terms of if we have got an award? I think in



your testimony you mentioned June of 2018 timeframe beyond that.

General RAND. As far as the actual delivery, this will be an off-the-shelf capability. We will start, obviously, delivering the first aircraft to our training locations, and then we haven't finalized the order, but, obviously, there are 84 UH-1N replacement helicopters. Over 40 of those will be dedicated for Air Force Global Strike, and I am confident to say we will get the first 40 before we replace some of the other missions that we have.

Ms. CHENEY. Thank you very much. Obviously, the concerns about security at the missile fields are preeminent.

General RAND. Ma'am, and that is a fair point. I do want to tell you, though, we have taken excruciating details to mitigate what those security risks are without the new helicopter, and I will happily talk about what we have done in great detail if you would like either offline or in the classified session.

Ms. CHENEY. Thank you. I appreciate that, General.

And I yield back, Mr. Chairman.

Mr. ROGERS. The Chair now recognizes the gentleman from Tennessee, Mr. DesJarlais, for 5 minutes.

Dr. DESJARLAIS. Thank you, Mr. Chairman. And thank you all for being here.

Administrator Gordon-Hagerty, a couple of Y-12 questions and a Watts Bar question for you.

First, what is the status of NNSA's effort to recapitalize and replace uranium capabilities at Y-12?

Ms. GORDON-HAGERTY. Thank you for that question. In fact, we are having robust discussions about that right now, and I am glad to say that we are on schedule and on path to provide a uranium processing facility at a cost no more than \$6.5 billion, and completion by the end of 2025. And we are on that path, and we are progressing forward with that effort.

Dr. DESJARLAIS. So on time and on budget.

Ms. GORDON-HAGERTY. Absolutely.

Dr. DESJARLAIS. Very good. What about plans to recapitalize the lithium production at Y-12?

Ms. GORDON-HAGERTY. As with all of our strategic materials, we are doing a feasibility study right now on lithium. But with all of our strategic materials, we pay very close attention to those important materials and how we are going to process and produce those products now and in the future.

Dr. DESJARLAIS. Okay. And, finally, you touched briefly on the increase of tritium production. Is the continued use of TVA [Tennessee Valley Authority] in the future?

Ms. GORDON-HAGERTY. Yes, it is, and we are working with Watts Bar to continue to produce—to use the TPBARs [tritium-producing burnable absorber rods] and irradiate them for tritium production.

Dr. DESJARLAIS. All right. That is all I have. I yield back. Thank you.

Mr. ROGERS. Okay. There being no further questions in this open session, we will now recess briefly as we walk to the secured session.

[Whereupon, at 10:03 a.m., the subcommittee proceeded in closed session.]



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**A P P E N D I X**

MARCH 22, 2018

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**PREPARED STATEMENTS SUBMITTED FOR THE RECORD**

MARCH 22, 2018

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**Opening Remarks – As Prepared for Delivery  
The Honorable Mike Rogers  
Chairman, Subcommittee on Strategic Forces  
House Armed Services Committee**

**Hearing on “Fiscal Year 2019 Budget Request for Nuclear Forces and Atomic  
Energy Defense Activities”**

**March 22, 2018**

Good morning. The subcommittee will come to order.

Welcome to our hearing on the “Fiscal Year 2019 Budget Request for Nuclear Forces and Atomic Energy Defense Activities.”

Thank you to witnesses for being here today and for your service to the Nation. And for your time preparing for this hearing—we greatly appreciate it.

As usual, we have a full witness panel today. Due to limited time, we’re going to cover the waterfront on DOD’s nuclear forces and all of the defense-related activities at the Department of Energy. Our witnesses are:

- **The Honorable John Rood**  
Under Secretary of Defense for Policy  
Department of Defense
- **General Robin Rand**  
Commander  
Air Force Global Strike Command
- **Vice Admiral Terry Benedict**  
Director  
Navy Strategic Systems Program
- **The Honorable Lisa Gordon-Hagerty**  
Administrator and Under Secretary for Nuclear Security  
National Nuclear Security Administration
- **Mr. James Owendoff**  
Principal Deputy Assistant Secretary of Energy for Environmental  
Management  
Department of Energy

Two months ago, the Armed Services Committee held a hearing in this room with Secretary of Defense Mattis on the National Defense Strategy and Nuclear Posture Review (NPR). The Secretary gave us a sobering assessment of the nuclear threat environment and reflected that:

“We must look reality in the eye and see the world as it is, not as we wish it to be.”

I am pleased to see that the 2018 NPR does exactly that.

But back in 2010, the Obama Administration's NPR said—with misplaced hope—that “Russia is not an enemy and is increasingly a partner.” Anyone who watches the news knows this is not the case today—if it ever was.

We were reminded of reality just three weeks ago, when President Putin announced that Russia is developing and fielding four new—and horrific—nuclear weapons. This includes a nuclear-powered cruise missile of essentially-infinite range and a nuclear-powered underwater drone with an enormous, salt-the-earth nuclear payload.

These Russian nuclear weapons have been in development for decades. Former Secretary of Defense Carter has pointed out that a nuclear arms race between the U.S. and Russia has been going on “for two decades now...but the U.S. has not been running the race.”

Despite U.S. efforts to reduce both the number of nuclear weapons and their role in our defense strategy, Russia, China, and North Korea have gone in the opposite direction. Despite a U.S. policy to refrain from developing new nuclear capabilities, these countries are sprinting the other way.

Secretary Mattis' new NPR takes stock of this situation and prudently endorses the nuclear triad modernization program initiated by President Obama. This will recapitalize our existing systems—an effort that was put off for far too long.

The NPR also wisely proposes two capabilities to supplement the program of record. These capabilities will ensure deterrence of adversaries and assurance of allies remains strong. They deserve the full support of this committee and Congress.

Finally, let me highlight three issues that this committee has spent considerable time on and that I'm happy to see discussed at length in the NPR:

- (1) the nuclear command, control, and communications (NC3) system, which is old but reliable and must be modernized;
- (2) the infrastructure within NNSA that is literally falling apart and needs considerable attention and resources; and
- (3) the people in uniform and civilian clothes, across DOD and NNSA, that form the backbone of our deterrent.

Nuclear deterrence is our #1 priority defense mission. Forces, warheads, NC3, people, and infrastructure—it's all a part of the deterrent. It's time to buckle down and get after all of it.



**HASC-SF Hearing on President's Fiscal Year 2019 Budget Request for Nuclear Forces and Atomic Energy Defense Activities**

Mr. John Rood

Under Secretary of Defense for Policy

March 22, 2018

Chairman Rogers, Ranking Member Cooper, and distinguished Members of the Committee. Thank you for the opportunity to testify on the President's Fiscal Year 2019 Budget Request for Strategic Forces.

**Security Environment and Strategic Priorities**

Today, the United States faces an increasingly complex global security environment, in which the central challenge to our prosperity and security is the reemergence of long-term strategic competition by revisionist powers in China and Russia.

While they pose separate challenges with unique attributes, both China and Russia seek to reshape the world order and change territorial borders. Consequently, they pose increasing security threats to us, our allies and partners.

Long-term competition with China and Russia requires increased U.S and allied military investment because of the magnitude of the threats they pose today, and the potential that these threats will increase in the future. We also must simultaneously strengthen our efforts to deter and counter the clear and present dangers posed by rogue regimes such as North Korea and Iran.

The U.S. military remains the strongest in the world. However, our advantages are eroding as potential adversaries modernize and build-up their conventional and nuclear forces. They now field a broad arsenal of advanced missiles, including variants that can reach the American homeland. For example, earlier this month, Russian President Putin claimed publicly that Russia now possesses unprecedented, new types of nuclear forces with which to target the United States and allies.

While this picture is unsettling and clearly not what we desire, as Secretary of Defense Mattis has pointed out, "We must look reality in the eye and see the world as it is, not as we wish it to be."

The administration has heeded this admonition in recent strategic reviews – the *National Security Strategy*, the *National Defense Strategy*, and the *Nuclear Posture Review*. They reflect a consistent and pragmatic assessment of the threats and uncertainties we face regarding the future security environment.

Our task at the Defense Department is to ensure that U.S. military advantages endure and, in combination with other elements of national power, we are fully able to meet the increasing challenges to our national security. Weakness invites challenges and provocation, but as both George Washington and Thomas Jefferson observed, American strength deters war and promotes peace. It also assures allies and attracts new partners.

Strengthening our alliances and attracting new partners is a critical element of retaining our advantages. As the National Defense Strategy points out, “Mutually beneficial alliances and partnerships are crucial to our strategy, providing a durable, asymmetric advantage that no competitor or rival can match. This approach has served the United States well, in peace and war.”

#### **Nuclear Policy and Posture**

The 2018 *Nuclear Posture Review* (NPR) reflects DoD's strategic priority to maintain a safe, secure, survivable and effective nuclear deterrent.

The logic of the NPR was best articulated by Secretary Mattis: “This review rests on a bedrock truth: nuclear weapons have and will continue to play a critical role in deterring nuclear attack and in preventing large-scale conventional warfare between nuclear-armed states for the foreseeable future. U.S. nuclear weapons not only defend our allies against conventional and nuclear threats, they also help them avoid the need to develop their own nuclear arsenals. This, in turn, furthers global security.”

Effective deterrence is critical to our security, and in a complex and dynamic security environment there is no “one size fits all” deterrence strategy. The requirements for effective U.S. deterrence can vary greatly given the unique perceptions, goals, interests, strengths, strategies, and vulnerabilities of different potential adversaries. The deterrence strategy effective against one potential adversary may not deter another. Consequently, the 2018 NPR calls for the United States to tailor deterrence as necessary across a spectrum of adversaries, threats, and contexts. Tailoring our deterrence strategy requires a diverse set of nuclear capabilities to counter a spectrum of threats, and the flexibility needed to adjust our deterrent to new threats as they emerge over time.

The 2018 NPR confirms the findings of all previous NPRs that the diverse capabilities of the nuclear triad provide the flexibility and resilience needed for deterrence. Unfortunately, each leg of the triad is now operating far beyond its originally-planned service life. Consequently, we must not delay the recapitalization of the triad initiated by the previous Administration.

We are off to a good start. The FY2019 budget request funds all critical Department of Defense (DoD) modernization requirements, helping to ensure that modern replacements will be available before the Nation's legacy systems reach the end of their extended service lives. The FY19 budget request for nuclear forces is \$24 billion, which includes \$11 billion for nuclear force sustainment and operations, \$7 billion for recapitalization programs (including LRSO, B-21,

GBSD, and the Columbia Class SSBN), and \$6 billion for Nuclear Command, Control and Communications (including MILSATCOM).

In addition, the President's budget request includes two supplemental capabilities designed to enhance deterrence against emerging challenges in the near- and mid-term. The Department requests \$22.6M in FY19 to begin work to modify a small number of existing submarine-launched ballistic missile (SLBM) warheads to provide a low-yield ballistic missile option in the near term. We also request limited funds of \$1M in FY19 to initiate an analysis of the performance requirements and costs to pursue a modern, nuclear-armed, sea-launched cruise missile (SLCM) that could be available in the mid-term.

These proposed supplements would contribute to deterrence by raising the threshold for nuclear use. They would do so by denying potential adversaries confidence that their coercive threats of limited nuclear first use, or their actual first use can provide a useful advantage over us and our allies. These supplements do not, and are not, intended to mimic adversary nuclear capabilities. They can, nevertheless, help address the imbalance in U.S. and Russian non-strategic nuclear forces, and may create incentives for Russia to return to compliance with its nuclear arms control commitments.

The DoD request to recapitalize the nuclear enterprise in FY19 is about 1.4% of the total DoD base budget. At its peak in 2029, recent estimates, such as those from the 2018 Nuclear Posture Review project the cost of recapitalizing our nuclear forces at approximately 3.7% of the Department of Defense's budget. When the cost of sustainment and operations of our nuclear forces is added to these recapitalization costs, it is estimated that the total cost of the nuclear triad will account for approximately 6.4% of the Department's budget, again at its peak in 2029 before declining. As Secretary Mattis stated, "America can afford survival."

The U.S. commitment to nonproliferation and arms control remains strong. The United States remains committed to all of its obligations under the Nuclear Non-Proliferation Treaty, including Article VI. We will continue to use arms control measures like the New Start Treaty, nonproliferation measures, and counter nuclear terrorism measures to advance the security of the United States and our allies and partners.

### **Conclusion**

Mr. Chairman, let me conclude by stating that in an increasingly complex and threatening security environment, DoD must sustain the capabilities needed to deter and defend against attacks on our homeland, U.S. forces deployed abroad, allies and partners. We must make the investments needed to address the on-going erosion of our advantages and remain the preeminent military power in the world. Along with our allies and partners, we must ensure that we have the capabilities needed, now and in the future, to protect our people and the freedoms we cherish, and are able to engage potential adversaries diplomatically from a position of strength.

To do so, I urge you to support the important capabilities funded in the President's FY19 budget request.

Thank you again for the opportunity to testify. I look forward to your questions.

**John C. Rood**  
**Under Secretary of Defense for Policy**

John C. Rood serves as the Under Secretary of Defense for Policy. He assumed this position on January 9, 2018. In this role he serves as the principal advisor to the Secretary of Defense for defense policy and leads the formulation and coordination of national security policy within the Department of Defense. Mr. Rood oversees integration of defense policies and plans to achieve desired objectives. He is responsible for efforts to build partnerships and defense cooperation with U.S. friends and allies.

Mr. Rood brings more than three decades of public and private sector experience to this position, including over 20 years of service in the U.S. Government at the Department of State, Department of Defense, National Security Council, Central Intelligence Agency, and as a Staff Member in the U.S. Senate. At the Department of State, he served as Acting Under Secretary of State for Arms Control and International Security, and as Assistant Secretary of State for International Security and Nonproliferation. Mr. Rood served in the Department of Defense as the Deputy Assistant Secretary of Defense for Forces Policy. He served twice at the National Security Council where he was a Special Assistant to the President and Senior Director for Counterproliferation, as well as the Director of Proliferation Strategy, Counterproliferation, and Homeland Defense. At the Central Intelligence Agency, he served as an analyst following missile programs in foreign countries. In addition, Mr. Rood worked as a Senior Policy Advisor to U.S. Senator Jon Kyl of Arizona.

In the private sector, Mr. Rood was Senior Vice President of Lockheed Martin International where he led efforts to grow the corporation's international business. He also served as Vice President for Corporate Domestic Business Development at Lockheed Martin. Prior to joining Lockheed Martin, he was a Vice President at the Raytheon Company.

Mr. Rood holds a Bachelor of Science in Economics from Arizona State University.

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HOUSE ARMED SERVICES COMMITTEE  
SUBCOMMITTEE ON STRATEGIC FORCES  
U.S. HOUSE OF REPRESENTATIVES

DEPARTMENT OF THE AIR FORCE

PRESENTATION TO THE HOUSE ARMED SERVICES COMMITTEE-  
STRATEGIC FORCES SUBCOMMITTEE

SUBJECT: FY19 Posture for Department of Defense Nuclear Forces

STATEMENT OF: General Robin Rand, Commander  
Air Force Global Strike Command

MARCH 22, 2018

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**Introduction**

Chairman Rogers, Ranking Member Cooper, and distinguished members of the committee, thank you for allowing me to come before you and represent over 34,000 Air Force Global Strike Command (AFGSC) Total Force Airmen. It is an honor to be here today, and I look forward to updating you on what the command has accomplished and where we are going.

**Air Force Global Strike Command Mission**

Air Force Global Strike Command is a warfighting command responsible for two legs of our nation's nuclear triad and the nation's nuclear command, control, and communications (NC3) capabilities while simultaneously accomplishing the conventional global strike mission. As long as nuclear weapons exist, the United States must deter attacks and maintain strategic stability, assure our allies, and hedge against an uncertain future. At AFGSC, we're especially focused on today's evolving world and tomorrow's emerging threats.

The command's top priority is to ensure our nuclear arsenal is lethal, safe, and secure. This priority underlies every nuclear-related activity in AFGSC, and we must never fail in the special trust and confidence the American people have bestowed on our nuclear warriors. To that end, our nation's leaders must continue to support and advocate for the sustainment and modernization of these weapon systems. Sustaining and progressing these efforts require predictable, sufficient, and flexible budgets. Reinforced in the 2018 Nuclear Posture Review, the nuclear deterrent is at a crossroads, and there is no higher priority for national defense. We must concurrently modernize the nuclear triad and the infrastructure that enables its effectiveness, and we require budget stability to accomplish these efforts.

In 2017, AFGSC significantly reorganized at the direction of the Commander, United States Strategic Command (CDRUSSTRATCOM), the first step in a larger USSTRATCOM restructuring. Under the previous construct, responsibilities for the air, space, and naval strategic missions were spread amongst several lines of authority. The reorganization solved two issues.

First, it cleaned up an outdated and confusing command structure for bomber and intercontinental ballistic missile (ICBM) forces under USSTRATCOM. Second, it allowed AFGSC to reshape the command and stand up a full time air component to USSTRATCOM. Our nation relies on the strategic deterrence AFGSC provides every day. In order to perform this high priority mission, AFGSC needed an organizational structure that allows a portion of the command to focus on supporting day-to-day deterrence, while the rest of the command focuses on OT&E commitments. On September 29, 2017, AFGSC stood up Air Forces Strategic – Air (AFSTRAT-Air) as the full time air component to USSTRATCOM. This gives CDRUSSTRATCOM a single four-star general responsible for USSTRATCOM's air missions.

The Joint-Global Strike Operations Center (J-GSOC) was created to handle the day-to-day responsibilities of the strategic deterrence mission for USSTRATCOM's air component. The J-GSOC consists of the Joint Air Operations Center (JAOC) Joint Nuclear Operations Center (JNOC). The JAOC, already in existence, handles the conventional portion of the command's mission. The two nuclear task forces were combined into the JNOC, and focuses on the nuclear portion of the command's mission. Several additional mission teams were also aligned under the J-GSOC. The National Airborne Operations Center (NAOC), combined with AFGSC's existing responsibility for the E-4B, allows AFSTRAT, through USSTRATCOM, to better organize, train, equip, and present the NAOC mission to support the President and Secretary of Defense. The Standoff Munitions Application Center (SMAC) was stood up to provide expertise in planning and targeting of Air Force standoff weapons. The Cruise Missile Support Activity Atlantic (CMSALANT) and Pacific (CMSAPAC) were also aligned under the J-GSOC, and combined with SMAC, give the J-GSOC the ability to plan and target any standoff weapon in support of any combatant commander.

In addition to standing up the J-GSOC, CDRUSSTRATCOM also designated the AFGSC Commander as the Joint Forces Air Component Commander (JFACC). The dual-hatted Commander, AFSTRAT-Air/JFACC has the ability to monitor, control, and direct all the air assets assigned or attached to USSTRATCOM anywhere in the world. These include the Air Force bomber, tanker, intelligence, surveillance, and reconnaissance, and ICBM forces as well as the USSTRATCOM Airborne Command Post (ABNCP) and Take Charge and Move Out (TACAMO) missions. The JFACC also supplies a common operating picture to



CDRUSSTRATCOM that provides status and locations of all air assets.

These warfighting authorities were immediately tested during USSTRATCOM's Global Thunder exercise, and performed well beyond expectations. We have already achieved initial operating capability and are on track to achieve full operational capability by July 1, 2018. As emphasized in the 2017 National Defense Strategy (NDS), the global security environment is now more complex and volatile than experienced in recent memory, and inter- state strategic competition is now the primary concern in US national security. The AF FY19 budget prioritizes a more lethal and ready force, strengthening alliances and partnerships, and delivering greater performance. AFGSC's bomber, ICBM forces, and NC3 systems support both the NDS strategy and AF priorities by deterring potential adversaries, assuring our allies and partners, and guaranteeing the security of our national interests through cost-effective modernization. If deterrence should fail, AFGSC stands ready to defeat our adversaries through the persistent employment of lethal combat power.

#### **Air Force Global Strike Command Forces**

##### ***Intercontinental Ballistic Missile Forces***

Twentieth Air Force (20 AF), one of two Numbered Air Forces in AFGSC, is responsible for the Minuteman III (MMIII) ICBM, UH-1N helicopter forces, the Kirtland Underground Munitions Maintenance and Storage Complex at Kirtland Air Force Base, New Mexico, and a ground combat training squadron at Camp Guernsey, Wyoming. The 450 dispersed and hardened Launch Facilities (LFs), are controlled, maintained, defended, and supported by AFGSC Airmen every single day, providing the bulk of our day-to-day nuclear alert force, and doing so with precision and professionalism. Our ICBM experts, the silent warriors, are deployed in place, and preserve strategic stability by providing the nation a credible and responsive deterrent in a contested environment and presenting adversaries a nearly insurmountable obstacle of numbers should they consider a disarming attack on the United States.

##### ***Minuteman III***

We continue to sustain and modernize the MMIII ICBM and its command, control, and

communications systems and support equipment. To modernize our existing fleet of large missile maintenance vehicles, we continue moving forward on the \$123M Transporter Erector Replacement Program (TERP) and the \$201M Payload Transporter Replacement (PTR). We currently expect PTR to begin production in FY19.

The ICBM Launch Control Centers (LCC) will be equipped with modernized communications systems to improve and replace aging and obsolete systems. The LCC Block Upgrade, expected to begin full deployment in 2019, is a \$96M modification effort that replaces multiple LCC components to include modern data storage and higher fidelity voice communications capabilities. A significant security upgrade to the remote visual assessment capability at our LFs will increase situational awareness and security. This \$61M program is expected to begin deployment in FY19.

In FY18 we are scheduled to conduct three operational MMIII flight tests and two simulated electronic launch tests that will demonstrate the operational credibility of the nuclear deterrent force and the AF's commitment to sustaining that capability. We conducted four MMIII flight tests and two simulated electronic launch tests in FY17.

In an effort to vastly improve the nuclear capability of our ICBM force, the ICBM Programmed Depot Maintenance program began in FY16. The program places operational LFs and LCCs on an 8-year depot-level maintenance cycle. It greatly increases the effectiveness and lethality of our ICBMs by ensuring their sustainment is done in an engineering-based, systematic way. Successful prototyping of the program was accomplished in FY16, with 26 LFs and LCCs undergoing the maintenance. Thirty nine LFs and LCCs were completed in FY17, and 50 are planned in FY18. This program is key to ensure MMIII viability through the transition to Ground Based Strategic Deterrent (GBSD).

Our effort to remove 50 ICBM boosters from their LFs as part of our effort to meet New Strategic Arms Reduction Treaty (START) limits is complete. The selected LFs are spread across all three ICBM wings and will remain fully operational and capable of receiving boosters, if needed. The final booster was removed in early June 2017, a full nine months ahead of the treaty-mandated suspense of February 2018.

### ***Ground Based Strategic Deterrent***

The Minuteman weapon system was fielded nearly 60 years ago, yet has remained a cornerstone deterrence platform. ICBMs are the sole weapon system capable of rapid global response and impose a time-proven and unpalatable cost to attack by peer, near-peer, and aspiring nuclear nations. The current system, the MMIII, suffers from age-out, asset depletion, and numerous performance shortfalls. Simply put, it will not meet critical mission performance or force requirements by 2030.

To meet these requirements, we're successfully moving forward on developing the GBSD. OSD/AT&L approved the GBSD Acquisition Strategy in July 2016, Milestone A was achieved on 23 August 2016; on 21 August 2017, technology maturation and risk reduction contracts were awarded, initiating a three year acquisition risk reduction activity. When complete, a second cost-reducing, competitive source selection will identify a single provider and initiate material development efforts beginning in the 2020 timeframe. GBSD is fully funded at \$8.0B for FY19-23.

We remain engaged with our Navy partners and have identified promising areas for intelligent commonality between GBSD systems and future Navy weapons. Additionally, we are collaborating with the National Nuclear Security Administration (NNSA) to develop a W78 warhead replacement program starting in 2019. The replacement warhead will use a Mk21 aeroshell and will deploy with GBSD; the Navy will study the feasibility of using the same nuclear explosive package with their flight vehicle. Due to MMIII system age-out, attrition, and commitment requirements, the first priority is to modernize the necessary facilities, replace the missile, and modernize command and control (C2) systems.

### ***UH-1N***

AFGSC is the lead command for the Air Force's Vietnam-era fleet of 63 UH-1N helicopters. The majority of these aircraft support several critical missions: security of our ICBM fields, transport missions in the National Capitol Region and PACOM, and critical Continuity of Operations. Additionally, they support Air Force survival training with rescue

operations. Further, they participate in the Defense Support of Civil Authorities program and are frequently called upon to conduct search and rescue activities for missing or injured civilians. As an example, Malmstrom AFB's UH-1N Airmen have been credited with over 400 saves in their history.

#### ***UH-1N Replacement***

In order to continue supporting these critical national missions and fully comply with Department of Defense (DoD) and United States Strategic Command (USSTRATCOM) requirements, the Air Force has committed \$2.3B in FY19-23 toward replacing the UH-1N fleet, as the platform falls short of missile field operational needs—notably speed, range, endurance, payload, and survivability. The Air Force is pursuing a full-and-open competition to procure 84 replacement helicopters. Vendor proposals were received in September 2017, and contract award is anticipated in June 2018.

#### ***Airborne Launch Control System***

The Airborne Launch Control System (ALCS) is USSTRATCOM's only alternate and survivable launch control system for the MMIII. The ALCS consists of an airborne component onboard 16 Navy E-6Bs and a ground component housed at all 450 MMIII launch facilities. The current ALCS was fielded in 1987 and requires 100% recapitalization of existing architecture and infrastructure as well as full replacement of specific portions of the system. The ALCS Replacement program will replace and modernize the current system through 2035 and will replace both airborne and ground components enabling integration of GBSD command and control requirements through smart, modular design. ALCS-R is funded to \$657.3M in the FY19 Presidential Budget.

#### ***Bomber Forces***

Eighth Air Force (8 AF) is responsible for the B-52H Stratofortress (B-52) bomber, the B-2A Spirit (B-2) bomber, and the B-1B Lancer (B-1) bomber. Bombers provide decision makers the ability to demonstrate resolve through generation, dispersal, and deployment.

Since 1991, the Air Force has conducted continuous combat operations resulting in a growing toll on Airmen, their readiness, and equipment. Bombers have supported operations

through continuous rotations in United States Central Command (CENTCOM), United States Pacific Command (PACOM), United States Africa Command (AFRICOM), United States European Command (EUCOM), and United States Southern Command (SOUTHCOM) areas of responsibility (AORs). Bomber contributions to our national security in the Cold War, Vietnam, and operations DESERT STORM, ALLIED FORCE, IRAQI FREEDOM, ENDURING FREEDOM, and today's INHERENT RESOLVE and FREEDOM SENTINEL are well documented.

At the end of DESERT STORM in 1991, the Air Force had 290 total force bombers, 17 bomb wings, and 22 bomb squadrons. Today the number has dropped to 157 bombers, 5 bomb wings, and 9 bomb squadrons. That is a 46% decrease in our bomber force, a 70% decrease in bomb wings, and a 60% decrease in bomb squadrons. The demand signal for bombers has continued to increase in the last two decades, while long range airpower assets have decreased by 46% during the same timeframe. To assure our allies and partners, and to increase regional stability, AFGSC provides bomber forces arrayed across the globe, providing flexible, responsive options to combatant commanders. The deployments in support of the CENTCOM AOR and the Continuous Bomber Presence in the PACOM AOR send a strong signal to our allies of our commitment to our treaty obligations and their regional concerns. Additionally, AFGSC provides bomber forces to support SOUTHCOM's Joint-Interagency Task Force-South, EUCOM, and AFRICOM through the Joint Staff's Global Force Management process and Bomber Assurance and Deterrence-ordered deployments and missions. These opportunities enhance our support to our allies and display our resolve to potential adversaries. The core of AFGSC assurance and deterrence is our unwavering commitment to USSTRATCOM and our nuclear mission. AFGSC must balance global force posturing with our nuclear mission, while not jeopardizing readiness and fleet health. Arraying bomber forces globally, to increase strategic flexibility and response to a changing global security environment, while doing no harm to our nuclear mission, will further enhance our assurance to allies and partners and posture our forces in such a manner where our adversaries take notice.

***B-1***

The B-1 is a highly versatile, conventional-only multi-mission weapon system that carries

a large payload of both guided and unguided weapons, which it can rapidly deliver in support of combatant commanders around the globe. Multiple wartime employments, high operations tempo, and harsh environment exposure have proven the aircraft's combat effectiveness, but have impacted aircraft availability.

The B-1 will continue to be in service for two more decades and avionics and weapon upgrades are critical for it to remain a viable combatant commander tool. The Integrated Battle Station/Sustainment Block-16 (\$152M FY19-23) includes an upgraded Central Integrated Test System, Fully Integrated Data Link, Vertical Situation Display, and a flight simulator upgrades. These are essential capabilities and they will provide the aircrew with a much more flexible, integrated cockpit.

The stand-off weapons currently employed by the B-1 include the Joint Air-to-Surface Standoff Missile (JASSM), the Joint Air-to-Surface Standoff Missile-Extended Range (JASSM-ER), and very soon the Long Range Anti-Ship Missile (LRASM). This unmatched precision strike capability has guaranteed a critical role for the B-1 in assuring our allies and deterring potential adversaries now and into the future.

### ***B-52***

The B-52 may be the most universally recognized symbol of American airpower, is able to deliver the widest variety of nuclear and conventional weapons, and boasts the best aircraft availability and mission capable rates of all three bomber platforms.

The B-52 will remain a key element of our bomber force until the 2050s and it is paramount that we continue to invest resources into this aircraft. B-52s are still using 1960s radar technology with the last major radar upgrade done in the early 1980s. The current radar on the B-52 will be even less effective in the future threat environment, and without an improved radar system, there will be increased degradation in mission effectiveness. In order to remedy this, the \$817M FY19-23 B-52 Radar Modernization Program now has an approved acquisition strategy, a Joint Staff-validated Capability Development Document, and has entered execution in the pre-Milestone B phase. Furthermore, B-52 training simulators are lagging behind operational

aircraft capabilities. They require integration of various programs such as Combat Network Communications Technology (CONNECT), internal weapons bay upgrade, data link capabilities, air refueling, and information technology refresh. Supporting the revitalization of these critical training tools will create high fidelity training environments and increase the readiness of B-52 crews in support of nuclear and conventional missions.

Additionally, the 1960-era TF-33 engines currently on the B-52 are operating on parts salvaged from aircraft no longer in the inventory. The supply of these parts, no longer made by industry, will be exhausted and leave the engines unsustainable by 2030. The Air Force is now funding efforts (\$1.6B FY19-23) to develop and deploy replacement B-52 engines, which will save fuel, extend the aircraft's range, and improve reliability and sustainment.

Today, we have 35 B-52s converted to the CONNECT configuration. This modification moves the B-52 into the digital age for the first time, providing an on-board local area network, allowing the aircrew to share a common battlespace picture. This modification is installed on every aircraft going through regular program depot maintenance cycle. The Internal Weapons Bay Upgrade increases B-52 smart weapons capacity by 67%. This capability reached its initial operational capability milestone in May 2016 and added Joint Air-to-Surface Standoff Missile (JASSM) and Joint Air-to-Surface Standoff Missile-Extended Range (JASSM-ER) capability in October 2017. Communications remain the cornerstone of our long-range strike capability. The ability to launch bombers and retask and retarget them while enroute to the battlespace is a powerful force multiplier. We will add a critical communications node to enhance the operational picture with Link-16, integrating the aircraft into the warfighter's efforts. Currently, the B-52 is the only Combat Air Forces platform without line-of-site Link-16.

Finally, we have converted 29 operational and 12 stored B-52 aircraft to conventional-only configurations. These conversions were undertaken as a part of New START obligations, and were completed in January 2017, a full year ahead of the treaty-mandated suspense of February 2018.

***B-2***

For nearly 25 years, B-2s have provided the nation with an assured penetrating bomber capability. The B-2's ability to penetrate enemy defenses, holding targets at risk anywhere on the globe, with a variety of nuclear and conventional weapons, has provided deterrence against our enemies and stability for our allies. The B-2's conventional accomplishments are numerous and incontrovertible; the bomber provided precision attacks during the Kosovo and Iraq Wars, strikes on the Taliban and Al Qaeda in Afghanistan, and on forces in Libya.

B-2 modernization efforts are addressing a nuclear command and control need by bringing a survivable very low frequency communication capability to the aircraft. Additionally, with the proliferation of anti-access/area denial threats, we are ensuring the B-2's ability to penetrate enemy defenses is maintained with the Defensive Management System Modernization program. Finally, the B-2 is upgrading to carry the B61-12 nuclear gravity weapon. This upgrade is currently programmed for \$144M in RTD&E and is critical to ensuring the bomber leg of the nuclear Triad remains a visible deterrent to those who wish us harm.

Small fleet dynamics continue to challenge our sustainment efforts primarily due to vanishing vendors and diminishing sources of supply. We are striving to maintain the proper balance of fleet modernization and sustainment while maintaining combat readiness. Lessons learned from the difficulty of sustaining and modernizing the B-2's small fleet, and an ever-decreasing technological advantage, are some of the drivers for the planned minimum B-21 requirements.

***B-21***

Technology gaps between the US and potential adversaries are closing. The B-21 Raider will support the nuclear triad by providing an advanced and flexible deterrent capability and the ability to penetrate modern and future air defenses. Further, the B-21 will provide flexibility across a wide range of joint military operations using long range capabilities, large and mixed payloads, and survivability. From the outset, the B-21 has been designed to have an open architecture, which enables it to integrate new technology and respond to future threats. The B-



21 program is a national security imperative that will extend American air dominance and lethality against next generation capabilities and advanced air defense environments.

The B-21 is fully funded in the FY19 budget submission, and initial capability is projected for the mid-2020s. Extensive campaign and mission level analysis will determine the minimum number of B-21s required to meet combatant commander needs in the face of closing technology gaps and increasing threat capabilities.

As the B-21 development progresses, the Air Force is conducting the strategic basing process. While B-21 fielding will include new construction and facility renovation, current bomber bases have infrastructure for operations, maintenance, munitions storage, security, and training. Additionally, base operating support and off-base community support are well-established at current bomber bases. While conducting B-21 bed down, our primary focus will be providing safe, secure, and lethal bomber operations in a cost-efficient manner.

#### ***Air Launched Cruise Missile***

The AGM-86B Air Launched Cruise Missile (ALCM) is an air-to-ground, winged, subsonic nuclear missile delivered by the B-52. Fielded in the 1980s, the ALCM is over 30 years old, well beyond its life expectancy, and is involved in its third life extension program (LEP). While the ALCM remains effective today, we must replace it due to its aging subsystems, the shrinking stockpile of operational missiles (546), and advances in enemy defenses. We plan to invest \$374M in FY19-23 to continue LEPs, including critical telemetry, encryption, and flight termination components until the Long Range Stand-Off (LRSO) missile reaches operational capability in 2030.

#### ***Conventional Air Launched Cruise Missile***

The AGM-86C, Conventional Air Launched Cruise Missile (CALCM) is a conventional variant to the ALCM. Its only employment platform is the B-52 and unlike the ALCM, CALCM has not received any LEPs to maintain reliability or viability against enemy defenses. NDAA language prevents the service from removing this aging and obsolete weapon system from operational use pending the development, testing, and initial fielding of a LRSO conventional

variant. The conventional long range stand-off capability currently resides in JASSM-ER and is a more survivable weapon system with low observable characteristics. JASSM-ER is capable of employment from the B-52 and B-1, with B-2 capability projected for FY19. It is prudent that when our bomber force continues to make advancements in capability, that we divest ourselves of CALCM and focus our training and maintenance resources towards the use of more capable weapons.

#### ***Long Range Stand-Off Missile***

The Air Force dedicated \$2.7B in FY19-23 for the LRSO to replace the aging ALCM. The ALCM has significant capability gaps that will only worsen through the next decade. The LRSO will be a reliable, long-range, and survivable weapon system and is absolutely an essential element of the nuclear triad. It will be flexible and compatible with B-52 and B-21 platforms. The LRSO missile will ensure the bomber force continues to hold high value targets at risk in an evolving threat environment, including targets deep within an area-denied environment. I cannot overemphasize this point: B-21 and B-52 without LRSO greatly reduces our ability to hold adversaries at risk, increases risk to our aircraft and aircrew members, and negatively impacts our ability to execute the mission. Additionally, AFGSC is synchronizing efforts with NNSA to fully integrate the W80-4 nuclear warhead with LRSO. This weapon will retain nuclear penetrating cruise missile capabilities through 2060. To meet operational, testing, and logistics requirements, the Air Force plans to acquire approximately 1,000 LRSO cruise missile bodies. This quantity will provide spares and supply sufficient non-nuclear missile bodies throughout ongoing flight and ground testing. The number of nuclear-armed LRSO cruise missiles (i.e., mated to a nuclear warhead) is expected to be equivalent to the current ALCM nuclear force. Milestone A for LRSO was declared in July 2016.

#### ***B61***

The B61 family of gravity nuclear weapons supports the airborne leg of the triad and is the primary weapon supporting our NATO allies under extended deterrence. The B61 is currently undergoing a LEP that results in a smaller stockpile, reduced special nuclear material in the inventory, modernized safety and security features, and reduced lifecycle costs by consolidating four weapon versions into one version, the B61-12. The B61-12 includes the

addition of a digital weapons interface and a guided tail kit assembly. AFGSC is the lead command for the \$435M FY19-23 B61-12 Tail Kit Assembly program, a DoD-developed system providing reduced maintenance, reduced cost and increased sustainability. The B61-12 Tail Kit Assembly program is in Engineering and Manufacturing Development Phase 2 and is synchronized with NNSA efforts. The Tail Kit Assembly design and production processes are on schedule and within budget to meet the planned FY20 First Production Unit date, and support the lead time required for the inclusion of the Department of Energy (DoE) warhead service-life extension completion date of March 2020. This joint DoD and DoE endeavor allows for continued attainment of our strategic requirements and regional commitments.

#### ***GBU-57***

AFGSC assumed responsibility as the lead MAJCOM for the GBU-57 Massive Ordnance Penetrator (MOP) in the summer of 2015. The MOP is a 30,000-pound guided conventional bomb designed to defeat hardened and deeply buried targets and is exclusively employed from the B-2. It has received several upgrades and enhancements based on warfighter requirements. AFGSC, PACOM, and the Air Force Life Cycle Management Center Program Office are currently validating a requirement to expand the weapon's operational capabilities.

#### **Security & Infrastructure**

Nuclear security is a key function of the command's mission, and a major AFGSC security initiative continues to be new weapon storage facilities. These new facilities will consolidate nuclear maintenance, inspection, and storage into a single, modern and secure facility, replacing deficient 1960s-era weapon storage areas. Additionally, this initiative mitigates security, design, and safety deficiencies and improves our operational lethality.

One of our growing concerns is the impact that degraded and unpredictable infrastructure funding is having on our missions, our Airmen, and their families. Our bases are power projection platforms, and should be viewed as 3-D weapon systems. This is particularly true for our ICBM and B-2 bomber bases, which stand in continuous readiness to initiate global strike missions directly from these locations. For years, the Air Force has been forced to make deliberate decisions to take risk in infrastructure funding, in order to apply scarce dollars toward

higher readiness and modernization priorities. The cumulative effect has been a steady erosion of our facilities and core infrastructure, and a huge growth in costs to address our exponentially-growing repair and replacement backlogs. As we bring new systems online such as Weapon Storage Facilities, the B-21 Raider, and GBSB, some of our installation infrastructure will receive much-needed recapitalization. However, it will be several years before those systems are in place, and will not address much of the infrastructure where our Airmen work and live. We are seeing a growing risk in facilities and infrastructure reliability, higher overall costs due to accelerated deterioration, and increasing potential for unexpected catastrophic, mission-impacting failure. Our innovative Airmen have, and will continue to, focus limited resources on “mission critical, worst first” facilities and infrastructure while accepting risk in the recapitalization of facilities with less-direct mission impact such as community and base support. But there is without question a link between facility condition and quality of life, as well as quality of service. Without your support of the FY 2019 President’s Request for MILCON and facility sustainment, restoration and modernization funding, we will not only continue to increase our risk of mission interruption or degradation, but will also be unable to adequately address the quality of life of our Airmen and their families. Providing a predictable, stable budget will not only enhance our lethality, but will go far in providing our Airmen with working and living environments that directly enhance their readiness.

#### **Nuclear Command, Control, and Communications**

Air Force nuclear command, control and communications (NC3) systems connect the President to senior advisors and the nuclear forces. Receiving presidential orders and converting them into actionable directives are critical to having a strong strategic deterrent. AFGSC is the Air Force’s lead command for National Leadership Command Capabilities (NLCC)/NC3 which establishes a single focal point for the NC3 weapon system.

AFGSC is aggressively working to maintain and sustain the NC3 weapon system. Through the Nuclear Enterprise Review process and a cross-MAJCOM internal Air Force study, we identified multiple areas that have atrophied through decades of low prioritization. In a major organizational effort, AFGSC stood up the USAF NC3 Center in April 2017. The NC3 Center oversees interoperability, standardization, and configuration control of the Air Force’s NC3

weapon system, and will plan and program for NC3 investment, sustainment, and operations.

In its first year, the NC3 Center has taken great strides in cross-MAJCOM governance to ensure strong advocacy as NC3 programs compete for resources within the Air Force Corporate process. An outstanding example of the Air Force's increased emphasis on NC3 includes the \$275M allocated for E-4B modernization programs, which is in the FY19 Presidential Budget for the FY19-23 FYDP. Additionally, the E-4B replacement program, the Survivable Airborne Operations Center is programmed to receive \$182M to begin the effort to replace the aircraft itself. For nuclear planning and execution analysis, \$72.6M is allocated to complete the Mission Planning Application System Increment 5 program at USSTRATCOM. The Global Aircrew Strategic Network Terminal Increment 1 program for Advanced Extremely High Frequency (AEHF) capability at nuclear-tasked command posts receives \$246M to complete terminal procurement. To ensure connectivity with our B-52 fleet, \$132.6M is programmed to integrate the Family of Advanced Beyond Line of Sight Terminals onto the aircraft. The B-52 will also integrate a new very low frequency receiver (\$175.6M), and we have allocated \$73.9M to upgrade our oldest system, the Strategic Automated Command Control System. To ensure connectivity with our ICBMs via USSTRATCOM's only alternate and survivable launch control system for the MMIII, the Airborne Launch Control System-Replacement has been funded \$83M in FY19. Collectively, these NC3 efforts add \$1.20B over the FY19-23 FYDP to assure the President connectivity to the nation's nuclear forces.

In addition to modernization efforts, the NC3 Center is standardizing the training of Airmen who operate and maintain NC3 equipment. The Center built new courseware and developed "hands-on" simulators for Airmen coming out of technical school to gain experience before arriving at operational bases. For more experienced personnel, the Center also secured distance learning systems to grant engineering graduate degrees through universities such as Harvard, Stanford, and Portland State University. Additionally, the Center has streamlined the reporting of communication system outages so combatant commanders receive real-time status and impact updates of temporary NC3 capability degradations and worked with Defense Logistics Agency to improve processes to provide a reliable, secure supply chain.

**Ongoing Initiatives**

Since 2014, the Air Force has applied deliberate and sustained focus to address shortfalls. AFGSC's ongoing efforts—spanning the full-range of personnel, management, oversight, mission performance, training, testing, and investment—continue to produce tangible and lasting improvements. As this committee is well aware, the Air Force and AFGSC have undertaken monumental shifts build a more lethal force.

AFGSC initiated an effort to invigorate Security Forces (SF), specifically in the critical function of nuclear security. This initiative focuses on increasing SF lethality and readiness by enhancing leadership, proficiency, and effectiveness of personnel guarding our strategic deterrence capabilities. Changes have included increasing manning, especially in supervisory positions, increasing training cadre, investing in SF leadership through focused professional development, and implementing a Missile Security Operating Concept. This squadron deployment model, implemented across all three ICBM wings, optimizes core skill presentation in the field, keeps leadership with their Airmen, and provides stable, work-rest- train cycles. While the command has achieved early success with this program, we still have improvements to make in modernizing equipment and infrastructure, and decreasing position vacancies. Finally, Secretary Wilson directed a follow-on review, led by AFGSC, which is expected to result in external recommendations for cross-cutting improvements to Air Force Security Forces that will enhance the nuclear mission by providing world-class security forces with world-class equipment.

In 2017, we stood up an Independent Strategic Assessment Group (ISAG), comprised of former DoD leaders. The ISAG conducted a deep dive into numerous key areas, including current management structure and practices of the Nuclear Enterprise, and how AFGSC can field a more lethal force. The assessments produced nearly 50 action items the command is tackling so we can more effectively accomplish our deterrence and global strike missions. Going forward into this year, I've asked the group to look into additional key areas and provide recommendations. We will continue using this independent look to help shape innovation, change, and improvement throughout the command.

**Priorities**

My priorities remain the same and are relatively simple. They guide every decision I make. They are Mission, Airmen, and Families...rooted in our Air Force Core Values and reinforced by our rich heritage. We exist to serve the nation by providing strategic deterrence and global strike; we are ready to fight tonight, and are planning for the fight in 2030. The Airmen in this command make this possible and I have charged my staff to emphasize professional development and provide more opportunities for every rank. I truly believe that while we recruit Airmen, we retain families, which is why one of my initiatives is a new focus on quality of life. I declared 2017 the Year of the Family in AFGSC. We stood up the Human Weapon System Team to identify ways we can improve where our Airmen live, learn, and receive medical care. We will continue to build upon this and other initiatives throughout 2018.

**Conclusion**

Although we account for less than one percent of the overall federal budget, AFGSC forces represent two-thirds of the nation's nuclear triad and oversee approximately 75% of the nation's NC3 systems. This is especially profound when considering these forces deliver U.S. national security 24 hours a day, 365 days a year, while also providing joint commanders rapid global combat airpower. AFGSC will continue to seek innovative, cost-saving measures to ensure our weapon systems are operating as efficiently and effectively as possible; however, as stated in the NDS, we cannot expect success fighting tomorrow's conflicts with yesterday's weapons.

Modernization is mandatory. Great power competition has reemerged. AFGSC is operating a bomber force averaging over 40 years of age; operating ICBMs with 1960s infrastructure; and utilizing 1960s-era weapon storage areas. We cannot afford to delay modernization initiatives. The best way to avoid unthinkable conflict is to deter our adversaries and be prepared to fight with modern and reliable forces. Any American weakness emboldens competitors to subvert the rules-based international order and challenge the alliance and partnership network that underpins it. We cannot continue to do what the nation requires without a stable budget; the American people and our allies are counting on congressional action to fund our nuclear enterprise modernization efforts.

### **General Robin Rand**

Gen. Robin Rand is Commander, Air Force Global Strike Command and Commander, Air Forces Strategic - Air, U.S. Strategic Command, Barksdale Air Force Base, Louisiana. AFGSC provides strategic deterrence, global strike and combat support to USSTRATCOM and other geographic combatant commands. The command is comprised of more than 33,700 professionals operating at two numbered Air Forces; eleven active-duty, Air National Guard, and Air Force Reserve wings; the Joint Global Strike Operations Center; and the Nuclear Command, Control and Communications Center. Weapons systems assigned to AFGSC include all U.S. Air Force Intercontinental Ballistic Missiles and bomber aircraft; UH-1N helicopters, E-4B National Airborne Operations Center aircraft, and the remaining U.S. Air Force NC3 weapons system.

General Rand entered the Air Force in 1974 and graduated from the U.S. Air Force Academy in 1979. He's had multiple flying assignments; air liaison officer duty with the U.S. Army; and staff tours on the Joint Staff, Office of the Secretary of Defense, and Air Staff. His previous commands include the 36th Fighter Squadron, USAF Weapons School, 8th Fighter Wing, 56th Fighter Wing, 332nd Air Expeditionary Wing, 12th Air Force (Air Forces Southern), and Air Education and Training Command.

General Rand is a command pilot with over 5,100 flying hours, including more than 480 combat hours.

#### **EDUCATION**

1979 Bachelor of Science degree in aviation science, U.S. Air Force Academy, Colorado Springs, Colo.  
 1983 Squadron Officer School, Maxwell AFB, Ala.  
 1986 Air Command and Staff College, by seminar  
 1988 Master of Science degree in aeronautical science, Embry-Riddle Aeronautical University, Fla.  
 1990 U.S. Air Force Fighter Weapons Instructor Course, Nellis AFB, Nev.  
 1998 Master of Arts degree in national security policy, Naval War College, Newport, R.I.  
 2010 Joint Flag Officer Warfighter Course, Maxwell AFB, Ala.  
 2012 Pinnacle Course, National Defense University, Fort Lesley J. McNair, Washington, D.C.

#### **ASSIGNMENTS**

1. July 1979 - July 1980, student, undergraduate pilot training, Williams AFB, Ariz.
2. August 1980 - December 1980, T-37 Pilot, pilot instructor training, Randolph AFB, Texas
3. January 1981 - May 1984, T-37 Instructor Pilot, 82nd Flying Training Wing, Williams AFB, Ariz.
4. May 1984 - July 1984, AT-38 Pilot, fighter lead-in training, Holloman AFB, N.M.
5. August 1984 - January 1985, F-16 Pilot, F-16 training, 63rd Tactical Fighter Squadron, MacDill AFB, Fla.
6. January 1985 - December 1986, F-16 Pilot, 612th Tactical Fighter Squadron, Torrejon Air Base, Spain
7. December 1986 - June 1988, Air Liaison Officer, 3rd Brigade, 1st Armor Division, Bamberg, West Germany
8. July 1988 - October 1988, F-16 Pilot, F-16 training, 311th Tactical Fighter Squadron, Luke AFB, Ariz.
9. October 1988 - December 1989, F-16 Flight Examiner, 432nd Tactical Fighter Wing, Misawa AB, Japan
10. January 1990 - April 1990, F-16 Pilot, USAF Fighter Weapons Instructor Course, Nellis AFB, Nev.
11. April 1990 - July 1992, F-16 Weapons Officer, 13th Fighter Squadron; and Weapons and Tactics Flight Commander, 432nd Operations Support Squadron, Misawa AB, Japan
12. August 1992 - September 1994, F-16 Operations Officer, USAF Weapons School, Nellis AFB, Nev.
13. September 1994 - July 1995, Operations Officer, 36th Fighter Squadron, Osan AB, South Korea
14. July 1995 - July 1997, Commander, 36th Fighter Squadron, Osan AB, South Korea
15. August 1997 - June 1998, student, Naval War College, Newport, R.I.
16. June 1998 - May 2000, Policy Planner, Directorate for Strategic Plans and Policy (J5), Joint Staff, the Pentagon, Arlington, Va.
17. May 2000 - March 2001, Deputy Commander, 56th Operations Group, Luke AFB, Ariz.



18. April 2001 - April 2003, Commandant, USAF Weapons School, Nellis AFB, Nev.
19. May 2003 - May 2004, Commander, 8th Fighter Wing, Kunsan AB, South Korea
20. June 2004 - June 2006, Commander, 56th Fighter Wing, Luke AFB, Ariz.
21. June 2006 - July 2007, Commander, 332nd Air Expeditionary Wing, Balad AB, Iraq
22. August 2007 - August 2009, Principal Director for Middle East Policy, Office of the Secretary of Defense, the Pentagon, Arlington, Va.
23. August 2009 - October 2010, Director, Legislative Liaison Office of the Secretary of the Air Force, the Pentagon, Arlington, Va.
24. October 2010 - November 2011 Special Assistant to the Vice Chief of Staff, Headquarters Air Force, the Pentagon, Arlington, Va.
25. December 2011 - September 2013, Commander, 12th Air Force, Air Combat Command, and Commander, Air Forces Southern, U.S. Southern Command, Davis-Monthan AFB, Ariz.
26. October 2013 - Jul 2015, Commander, Air Education and Training Command, Joint Base San Antonio-Randolph.
27. July 2015 - September 2017, Commander, Air Force Global Strike Command, Barksdale AFB, La.
28. September 2017 - present, Commander, Air Force Global Strike Command, and Commander, Air Forces Strategic- Air, U.S. Strategic Command, Barksdale AFB, La.

#### **SUMMARY OF JOINT ASSIGNMENTS**

1. June 1998 - May 2000, policy planner, Directorate for Strategic Plans and Policy (J5), Joint Staff, the Pentagon, Arlington, Va., as a lieutenant colonel
2. July 2006 - July 2007, Commander, 332nd Air Expeditionary Wing, Balad AB, Iraq, as a brigadier general
3. August 2007 - August 2009, Principal Director for Middle East Policy, Office of the Secretary of Defense, the Pentagon, Arlington, Va., as a brigadier general and major general
4. December 2011 - September 2013, Commander, Air Forces Southern, U.S. Southern Command, Davis-Monthan AFB, Ariz., as a lieutenant general
5. September 2017 - present, Commander, Air Forces Strategic - Air, U.S. Strategic Command, Barksdale AFB, La., as a general

#### **FLIGHT INFORMATION**

Rating: command pilot  
 Flight hours: More than 5,100  
 Aircraft flown: Various, but primarily F-16

#### **MAJOR AWARDS AND DECORATIONS**

Distinguished Service Medal with two oak leaf clusters  
 Defense Superior Service Medal  
 Legion of Merit with two oak leaf clusters  
 Bronze Star Medal  
 Air Medal with four oak leaf clusters  
 Korea Defense Service Medal  
 Iraq Campaign Medal with two bronze stars  
 Republic of Korea Order of National Security Merit (Samil Medal)  
 Colombian Air Force Cross of Aeronautical Merit (Grand Cross)  
 Brazilian Air Force Order of Aeronautical Merit (Grand Officer)

#### **EFFECTIVE DATES OF PROMOTION**

Second Lieutenant May 30, 1979  
 First Lieutenant May 30, 1981  
 Captain May 30, 1983  
 Major July 1, 1990  
 Lieutenant Colonel February 1, 1995  
 Colonel February 1, 2001  
 Brigadier General January 1, 2006  
 Major General June 1, 2009  
 Lieutenant General December 1, 2011  
 General October 10, 2013

NOT FOR PUBLICATION UNTIL RELEASED BY  
THE HOUSE ARMED SERVICES COMMITTEE  
STRATEGIC FORCES SUBCOMMITTEE

STATEMENT  
OF  
VICE ADMIRAL TERRY BENEDICT, USN  
DIRECTOR, STRATEGIC SYSTEMS PROGRAMS  
BEFORE THE  
SUBCOMMITTEE ON STRATEGIC FORCES  
OF THE  
HOUSE ARMED SERVICES COMMITTEE  
ON  
NUCLEAR FORCES  
22 MARCH 2018

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STRATEGIC FORCES SUBCOMMITTEE

**Introduction**

Chairman Rogers, Ranking Member Cooper, distinguished Members of the subcommittee, thank you for this opportunity to discuss the sea-based leg of the triad. It is an honor to testify before you this morning representing the Navy's Strategic Systems Programs (SSP).

The nation's nuclear triad of intercontinental ballistic missiles, strategic bombers, and submarine launched ballistic missiles (SLBM) is essential to our ability to deter major warfare with adversaries and assure our allies. Each leg provides unique attributes and provides an effective hedge. The 2018 Nuclear Posture Review reaffirms that the nuclear triad is the bedrock of our ability to deter aggression, assure our allies, and hedge against an uncertain future. It also reaffirms the need to recapitalize each component of the triad.

The Navy provides the most survivable leg of the triad with our OHIO Class ballistic missile submarines (SSBNs) and the Trident II (D5) strategic weapon system (SWS) they carry. SLBMs are responsible for a significant majority of the nation's operationally deployed nuclear warheads. The Chief of Naval Operations (CNO) has made clear the priority the Navy places on the maintenance and modernization of the undersea leg of the triad, saying it "is foundational to our survival as a Nation."

SSP's mission is to design, develop, produce, support, and ensure the safety and security of the Trident II (D5) SWS. The men and women of SSP and our industry partners remain dedicated to supporting the mission of our Sailors on strategic deterrent patrol and our Marines, Sailors, and Coast Guardsmen who stand watch, ensuring the security of the weapons we are entrusted with by this nation.

Our Fiscal Year (FY) 2019 budget request provides the required funding to support the program of record for the Trident II (D5) SWS. To sustain this capability, I am focusing on my top priorities: Safety and Security; the Trident II (D5) SWS Life Extension Program; Trident II (D5) SWS Long-Term Sustainment; the COLUMBIA

Class Program; the Solid Rocket Motor Industrial Base; and my Navy Nuclear Deterrence Mission Oversight responsibility.

The men and women of SSP and their predecessors have provided unwavering and single mission-focused support to the sea-based leg of the triad for over six decades. As an organization, SSP is facing a bow wave of critical work, as most recently evidenced by the 2018 Nuclear Posture Review. The organization must be prepared to sustain and modernize a credible and effective strategic weapon system to support our ballistic missile submarines and our strategic deterrent mission until the 2080s. It has been my highest honor to represent the men and women of SSP for the past eight years, and my goal, as the Director, is to ensure they are properly positioned to execute the mission with the same level of success today and tomorrow as they have done since our program's inception in 1955.

#### **Safety and Security**

The first priority, and the most important, is the safety and security of the Navy's nuclear weapons. Accordingly, Navy leadership delegated and defined SSP's role as the program manager and technical authority for the Navy's nuclear weapons.

At its most basic level, this priority is the physical security of one of our Nation's most valuable assets. Our Marines and Navy Master at Arms Sailors provide an effective and integrated elite security force at our two Strategic Weapons Facilities within their area of operations to include the Limited Area, Convoy Route, and the Waterfront Restricted Areas in Kings Bay, Georgia, and Bangor, Washington. U.S. Coast Guard Maritime Force Protection Units have been commissioned at both facilities to protect our ballistic missile submarines. Together, the Navy, Marine Corps, and Coast Guard team form the foundation of our security program, while headquarters' staff ensures that nuclear weapons-capable activities comply with safety and security standards.

We thank the Congress for the authorities provided in the FY 2017 National Defense Authorization Act allowing the Services to use technological means to counter unmanned aerial systems (UAS) at our installations. This authority has enabled us to

deploy systems that give our security forces a greater ability to identify, track, and defeat unauthorized small UAS.

The Navy and SSP maintain a culture of self-assessment in order to ensure safety and security. This is accomplished through formal biennial self-assessments, periodic technical evaluations, formal inspections, and continuous on-site monitoring and reporting at the Strategic Weapons Facilities and on submarines. We also strive to maintain a culture of excellence to achieve the highest standards of performance and integrity for personnel supporting the strategic deterrent mission and continue to focus on the custody and accountability of the assets entrusted to the Navy. SSP's number one priority is to maintain a safe and secure strategic deterrent.

#### **D5 Life Extension Program**

The Trident II (D5) SWS has been deployed on the OHIO Class ballistic missile submarines for nearly three decades and is planned to be deployed more than 50 years. This is well beyond its original design life of 25 years and more than double the historical service life of any previous sea-based strategic deterrent system. As a result, SSP is extending the life of the Trident II (D5) SWS to match the OHIO Class submarine service life and to serve as the initial SWS for the COLUMBIA Class SSBN. This is being accomplished through an update to all the Trident II (D5) SWS subsystems: launcher, navigation, fire control, guidance, missile, and reentry. Our life extension of missile and guidance flight hardware components is designed to meet the same form, fit, and function of the original system, maintain the deployed system as one homogeneous population, control costs, and sustain the demonstrated performance of the system.

The Navy's D5 life extension program remains on track. In 2017, the Navy deployed 24 life-extended missiles to the Fleet and remains on track to complete deployment by FY 2024. Later this year, we will begin the Commander Evaluation Test (CET) program on life-extended missiles to measure the performance and capability of the system against the demonstrated performance.

Another major initiative to ensure the continued sustainment of our SWS is the SSP Shipboard Systems Integration (SSI) Program, which manages obsolescence and modernizes SWS shipboard systems through the use of open architecture design and commercial off-the-shelf hardware and software. The SSI Program refreshes shipboard electronics hardware and upgrades software, which will extend service life, enable more efficient and affordable future maintenance of the SWS, and ensure we continue to provide the highest level of nuclear weapons safety and security for our deployed SSBNs while meeting U.S. Strategic Command (STRATCOM) requirements. Twelve installations were completed in 2017; and two have been completed so far this year with an additional twelve planned.

The Navy also works in partnership with the Department of Energy's National Nuclear Security Administration (NNSA) to sustain our reentry systems. The Trident II (D5) is capable of carrying two types of warheads, the W76 and the W88. Both warheads are being refurbished. Deliveries of life-extended W76 warheads to the Navy are over 85 percent complete and on track to finish by the end of FY 2019. The W88 major alteration program remains on track to support a first production unit in calendar year 2019 with production scheduled to complete in FY 2024.

In accordance with the Nuclear Posture Review, the Navy's FY 2019 budget request supports two near-term additional efforts. The budget request supports investigating the feasibility of fielding the nuclear explosive package from the Air Force's W78 warhead replacement in a Navy reentry body. It also includes funding to begin efforts to modify a small number of SLBM warheads to provide a low-yield option. The Nuclear Posture Review directed that the modification to the existing warheads will not increase the overall number of deployed ballistic missile warheads. This near-term capability will bolster our deterrence posture by helping ensure that no adversary perceives an advantage through the use of limited nuclear escalation.

**Trident II (D5) SWS Long-Term Sustainment**

The Trident II (D5) SWS continues to demonstrate itself as a credible deterrent and exceeds operational requirements established more than 30 years ago. Our life extension efforts will ensure an effective and credible SWS on both the OHIO Class and COLUMBIA Class SSBNs until the 2040s. The Navy is also beginning an approach to maintain a credible and effective SWS beyond 2040, leveraging the work that is being done today to extend the life of the Trident II (D5) SWS as well as investigating opportunities to innovate, such as through the application of model-based engineering. In fact, the Nuclear Posture Review directs that the Navy “begin studies in 2020 to define a cost-effective, credible, and effective SLBM that we can deploy throughout the service life of the COLUMBIA SSBN.”

SSP has a history of more than 60 years of developing, producing, and supporting SWSs to support the undersea leg of the triad. We have optimized our SWS by applying lessons learned from six generations of missiles and will continue to do so until the 2080s.

**COLUMBIA Class Program**

The Navy’s highest priority acquisition program is the COLUMBIA Class Program, which replaces the existing OHIO Class submarines. The continued assurance of our sea-based strategic deterrent requires a credible SWS, as well as the development of the next class of ballistic missile submarines. The Navy is taking the necessary steps to ensure the COLUMBIA SSBN is designed, built, delivered, and tested on time with the right capabilities at an affordable cost.

To lower development costs and leverage the proven reliability of the Trident II (D5) SWS, the COLUMBIA SSBN will enter service with the life-extended Trident II (D5) SWS. Life-extended missiles will be shared with the OHIO Class submarines until their retirement. Maintaining a common SWS during the transition to the COLUMBIA Class is beneficial from a cost, performance, and risk reduction standpoint.

A critical component of the COLUMBIA Class program is the development of a Common Missile Compartment (CMC) with the United Kingdom. The U.S. and the UK, one of our closest allies, have maintained a shared commitment to nuclear deterrence through the Polaris Sales Agreement since 1963. Today, the Trident II (D5) SWS is shared with the UK. Like the U.S. Navy, the UK is recapitalizing her four Vanguard Class submarines with the Dreadnought Class. The CMC will allow the life extended Trident II (D5) SWS to be deployed on the COLUMBIA and the UK Dreadnought Class SSBNs. It will also support production of two new classes of SSBNs in both the U.S. and UK build yards. We have begun construction of missile tubes to support building the U.S. prototype Quad-pack module, the SWS – Ashore (SWS Ashore) integration test site, and the UK’s first Dreadnought SSBN.

To manage and mitigate technical risk to both the U.S. and UK programs, SSP is leading the development of the SWS Ashore integration test site at Cape Canaveral, Florida. This is a joint effort with the Navy and the state of Florida investing in the redevelopment of a Polaris site to conduct integration testing and verification for COLUMBIA and UK Dreadnought programs. We reached a programmatic milestone last year when test bay one, which will be used to test the Missile Service Unit first article, achieved initial operational capability. In 2019, test bay two will achieve initial operational capability for verifying and validating the SWS support systems for the COLUMBIA and UK Dreadnought programs.

To mitigate the risk in the restart of launcher system production, SSP developed a surface launch test facility at the Naval Air Warfare Center Weapons Division, China Lake, California. This facility will prove that the launcher industrial base can replicate the performance of the OHIO Class Trident II (D5) launcher system. Last year, we started launching refurbished Trident II (D5) test shapes originally used in the 1980s. Ten evaluation launches were conducted in 2017 and we have conducted four of sixteen planned this year.

The OHIO Class SSBNs will begin decommissioning in the late 2020s and the COLUMBIA Class must be ready to start patrols in FY 2031 to maintain a minimum



operational force of 10 SSBNs. The Navy has already extended the OHIO Class service life from 30 years to 42 years and there is no engineering margin left. Recapitalizing our SSBNs is a significant investment and something that happens every other generation, making it critically important that we do it right. Any delay has the potential to impact not only our ability to meet operational requirements, but also the UK's ability to maintain a continuous at sea deterrent.

#### **Solid Rocket Motor Industrial Base**

The defense and aerospace industrial base – in particular the solid rocket motor industry and its sub-tier supplier base – remains an important priority. While the Navy is maintaining a continuous production capability of rocket motors, the demand from both National Aeronautics and Space Administration (NASA) and the Air Force has precipitously declined. This decline has resulted in higher costs for the Navy and has put an entire specialized industry at risk. Though future Air Force modernization will provide some much needed relief beginning in the mid-2020s, our Nation cannot afford to lose this capability.

While the efforts of our industry partners and others have created short-term cost relief, the long-term support of the solid rocket motor industry, including its sub-tier supplier base, and maintenance of critical skills remains an issue that must be addressed. For example, we are concerned with ensured access to and affordability of certain critical solid rocket motor constituents, such as ammonium perchlorate. At SSP, we will continue to work with our industry partners, the Department of Defense, senior NASA leadership, Air Force, and Congress to do everything we can to ensure this vital national security industry asset is preserved.

#### **Navy Nuclear Deterrence Oversight Responsibility**

In 2014, the CNO directed establishment of a centralized Navy oversight authority for nuclear force readiness. As the Director of SSP, I have been assigned accountability, responsibility, and authority to serve as the single Flag Officer to monitor performance and conduct end-to-end assessments of the Navy Nuclear Deterrence

Mission (NNDM) elements and report issues to the NNDM Oversight Council and the CNO. As the NNDM regulatory lead, I am tasked with developing, coordinating, and implementing policies approved by the CNO, and conducting end-to-end assessments of the Navy's nuclear weapons and nuclear weapons systems and personnel, including Nuclear Command, Control, and Communications (NC3), for safe, reliable, and effective execution of the NNDM. In October of 2017, I submitted the second annual end-to-end assessment report to the CNO, and I assessed that the NNDM execution was effective and sustainable with some areas for improvement.

### **Conclusion**

SSP ensures a safe, secure, and effective strategic deterrent and focuses on the custody and accountability of the nuclear assets entrusted to the Navy. Sustaining the sea-based strategic deterrent capability is a vital national security requirement. Our nation's sea-based deterrent has been a critical component of our national security since the 1950s and must continue to assure our allies and deter potential adversaries well into the future. I am privileged to represent this unique organization as we work to serve the best interests of our great Nation. I thank the committee for the opportunity to speak with you about the sea-based leg of the triad and the vital role it plays in our national security.

**Vice Admiral Terry J. Benedict**  
**Director, Strategic Systems Programs**

Vice Adm. Benedict is assigned as director of the Navy's Strategic Systems Programs (SSP). His previous flag assignment was as program executive officer for Integrated Warfare Systems, Office of the Assistant Secretary of the Navy (Research, Development and Acquisition) in Washington, D.C.

Benedict transferred to the engineering duty officer community in 1985 then reported to SSP in 1988 as a lieutenant. He has had nine previous billets within SSP in numerous technical branches including a field tour at the Missile Manufacturing Facility and as the deputy director/technical director.

Benedict also had three tours in Naval Sea Systems Command as a systems engineer, as the executive assistant to the commander and Program Executive Office Integrated Warfare Systems (PEO IWS).

He graduated from the U.S. Naval Academy in 1982 with a bachelor's degree and holds a Master of Science in engineering science and a Master of Business Administration. He is a graduate of the Advanced Program Management Course at the Defense Acquisition University, the Executive Leadership Course at Carnegie Mellon, and is a certified project management professional.

Benedict assumed command as the 13th director of Strategic Systems Programs May 7, 2010 and was promoted to Vice Admiral May, 28 2013.

**Statement of Lisa E. Gordon-Hagerty  
Administrator  
National Nuclear Security Administration  
U.S. Department of Energy  
on the  
Fiscal Year 2019 President's Budget Request  
Before the  
Subcommittee on Strategic Forces  
House Committee on Armed Services**

**March 22, 2018**

Chairman Rogers, Ranking Member Cooper, and Members of the Subcommittee, thank you for the opportunity to present the President's Fiscal Year (FY) 2019 budget request for the Department of Energy's (DOE) National Nuclear Security Administration (NNSA). NNSA deeply appreciates the Committee's strong support for the nuclear security mission and for the extraordinary people and organizations that are responsible for its execution.

The President's FY 2019 budget request for NNSA is \$15.1 billion, an increase of \$1.2 billion or 8.3% over the FY 2018 request. The request represents approximately 50% of DOE's total budget. This budget request demonstrates the Administration's strong support for NNSA and reinforces the recently released Nuclear Posture Review (NPR) and National Security Strategy (NSS). We will continue to work with the Department of Defense (DoD) to determine the resources, time, and funding required to address policies laid out in the NPR, including the potential low yield ballistic missile warhead, sea launched cruise missile, and B83-1 gravity bomb. We live in an evolving international security environment that is more complex and demanding than any since the end of the Cold War, which necessitates a national commitment to maintain modern and effective nuclear forces and infrastructure. To remain effective, however, recapitalizing our Cold War legacy nuclear forces is critical.

NNSA's enduring missions remain vital to the national security of the United States: maintaining the safety, security, reliability, and effectiveness of the nuclear weapons stockpile; reducing the threat of nuclear proliferation and nuclear terrorism around the world; and providing nuclear propulsion for the U.S. Navy's fleet of aircraft carriers and submarines. The President's FY 2019 budget request is reflective of this Administration's strong support for NNSA and ensures that U.S. nuclear forces are modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure America's allies.

Attracting, training, and retaining a skilled and experienced workforce is critical to NNSA's ability to accomplish its diverse missions. NNSA's dedicated and highly talented cadre of Federal employees and Management and Operating (M&O) contract partners must be supported with the tools necessary to support the complex and challenging responsibilities found only within NNSA's nuclear security enterprise. NNSA's infrastructure is in a brittle state that requires significant and sustained investments over the coming decade to correct. There is

no margin for further delay in modernizing NNSA's scientific, technical, and engineering capabilities, and recapitalizing our infrastructure needed to produce strategic materials and components for U.S. nuclear weapons.

The FY 2019 budget request also reflects the close partnerships between NNSA and other federal departments and agencies. NNSA collaborates with DoD to meet military requirements, support the Nation's nuclear deterrent, and modernize the nuclear security enterprise. NNSA also partners with a range of federal agencies, to prevent, counter, and respond to nuclear proliferation and nuclear terrorism.

NNSA is mindful of its obligation to be responsible stewards of the resources entrusted by Congress and the American taxpayers. Our FY 2019 budget request is the result of a disciplined process to prioritize funding for validated requirements as designated by the Administration and sets the foundation to implement policies from the NPR and NSS.

#### **Weapons Activities Appropriation**

The FY 2019 budget request for the Weapons Activities account is \$11.0 billion, an increase of \$777.7 million or 7.6% over FY 2018 request levels. Nuclear deterrence remains the bedrock of America's national security. Given the criticality of effective U.S. nuclear deterrence to the safety of the American people, allies, and partners, there is no doubt that NNSA's sustainment and replacement program should be regarded as both necessary and affordable. The programs funded in this account support the Nation's current and future defense posture and the associated nationwide infrastructure of science, technology, and engineering capabilities.

The Weapons Activities account supports the maintenance and refurbishment of nuclear weapons to maintain safety, security, and reliability; investments in scientific, engineering, and manufacturing capabilities to certify the enduring nuclear weapons stockpile; and the fabrication of nuclear weapon components. This account also includes investments in enterprise-wide infrastructure sustainment activities, physical and cybersecurity activities, and the secure transportation of nuclear materials.

#### **Maintaining the Stockpile**

This year, the work of the science-based Stockpile Stewardship Program again supported the Secretaries of Energy and Defense in certifying to the President for the 22nd consecutive year, that the U.S. nuclear weapons stockpile remains safe, secure, and reliable without the need for nuclear explosive testing. This remarkable scientific achievement is made possible through the work accomplished by NNSA's world-class scientists, engineers, and technicians, and through investments in state-of-the-art diagnostic tools, high performance computing platforms, and modern facilities.

For Directed Stockpile Work (DSW), the FY 2019 budget request is \$4.7 billion, an increase of \$689.0 million or 17.3% over the FY 2018 request. Included within this request is funding to

support the life extension programs (LEPs) for the W76, B61, and W80, and a major alteration of the W88; and advance the ground based strategic deterrent, by one year to 2019, and investigate feasibility of interoperable aspects for other types of warheads. These LEPs are aligned with the needs outlined in the NPR and with the approved Nuclear Weapons Council strategic plan.

- **W76-1 LEP:** The \$113.9 million requested for the W76-1 LEP directly supports the sea-based leg of the nuclear triad by extending the service life of the original W76-0 warhead. With continued funding, the W76-1 LEP will remain on schedule and on budget to complete production in FY 2019.
- **B61-12 LEP:** NNSA continues to make progress on the B61-12 LEP that will consolidate four variants of the B61 gravity bomb. This LEP will meet military requirements for reliability, service-life, field maintenance, safety, and use control while also addressing multiple components nearing end of life in this oldest nuclear weapon in the stockpile. With the \$794.0 million requested, NNSA will remain on schedule to deliver the First Production Unit (FPU) of the B61-12 in FY 2020. NNSA is responsible for refurbishing the nuclear explosives package and updating the electronics for this weapon. The Air Force will provide the tail kit assembly under a separate acquisition program. When fielded, the B61-12 gravity bomb will support both Air Force long-range nuclear-capable bombers and dual-capable fighter aircraft and bolster central deterrence for the United States while also providing extended deterrence to America's allies and partners.
- **W88 Alteration 370 Program:** Currently in the Production Engineering Phase (Phase 6.4), the W88 Alt 370 is on schedule, with FPU planned in December 2019. The budget request for this program, which also supports the sea-based leg of the nuclear triad, is \$304.3 million in FY 2019.
- **W80-4 LEP:** The current air-launched cruise missile delivers a W80 warhead first deployed in 1982. Both the missile and the warhead are well past planned end of life and are exhibiting aging issues. To maintain this vital deterrent capability, NNSA requests \$654.8 million in FY 2019, an increase of \$255.7 million or 64.1% over the FY 2018 request to extend the W80 warhead, through the W80-4 LEP, for use in the Air Force's Long Range Stand-Off (LRSO) cruise missile. This funding supports a significant increase in program activity through the Design Definition and Cost Study Phase on a timeline consistent with the DoD's LRSO missile platform modernization schedule.
- **Interoperable Warhead 1 (IW1):** The IW1 program will replace one of the oldest warheads in the stockpile, and provide improved warhead security, safety, and use control. To replace the Air Force employed W78 warhead, NNSA is requesting \$53.0 million to support the scheduled restart of the feasibility study and design options work suspended in 2014. Technology development efforts are focused on supporting the W78 warhead replacement and investigate the feasibility of interoperable aspects for

other types of warheads. To reduce risk, investments will initially be made against technologies that are less than technology readiness level 5.

Within DSW, the FY 2019 budget request includes \$619.5 million for Stockpile Systems. This program sustains the stockpile in accordance with the Nuclear Weapon Stockpile Plan by producing and replacing limited-life components such as neutron generators and gas transfer systems; conducting maintenance, surveillance, and evaluations to assess weapon reliability; detecting and anticipating potential weapon issues; and compiling and analyzing information during the Annual Assessment process.

The DSW also requests \$1.1 billion for Stockpile Services to support the modernization of capabilities to improve efficiency of manufacturing operations to meet future requirements. The Stockpile Services request supports all DSW operations by funding programmatic and infrastructure management, and maintaining the core competencies and technologies essential for reliable and operable stewardship capabilities.

Strategic Materials are key for the safety, security, and effectiveness of the Nation's nuclear deterrent and are used for addressing national security concerns such as nuclear nonproliferation and counterterrorism missions. The requested funding is necessary to maintain NNSA's ability to produce the nuclear and other strategic materials associated with nuclear weapons as well as refurbish and manufacture components made from these materials. The program includes Uranium Sustainment, Plutonium Sustainment, Tritium Sustainment, Domestic Uranium Enrichment (DUE), and other strategic materials, such as lithium.

- **Strategic Materials Sustainment:** The \$218.8 million for the Strategic Materials Sustainment program will develop and implement strategies to maintain the technical base for strategic materials in support of NNSA's nuclear weapons, non-proliferation, and naval reactors activities at NNSA's eight sites.
- **Uranium Sustainment:** Funding for Uranium Sustainment supports the program to maintain existing enriched uranium capabilities through enhanced equipment maintenance while preparing to phase out mission dependency on Building 9212, a Manhattan Project-era production facility at the Y-12 National Security Complex (Y-12) in Oak Ridge, Tennessee. The funding request of \$87.2 million will assist NNSA in sustaining uranium manufacturing capabilities while accelerating planning and execution of the Building 9212 Exit Strategy to reduce risks associated with transitioning enriched uranium capabilities to the Uranium Processing Facility (UPF) that is under construction.
- **Plutonium Sustainment:** The \$361.3 million requested for Plutonium Sustainment supports continued progress to meet pit production requirements. The requested funding increase would support efforts to begin the long term plan to develop a capability to produce no fewer than 80 W87-like war reserve pits per year by 2030, as directed in the NPR.

- **Tritium Sustainment:** The FY 2019 budget request of \$205.3 million will support the Nation's capacity to provide the tritium necessary for national security requirements. Tritium will be produced by irradiating Tritium Producing Burnable Absorber Rods in designated Tennessee Valley Authority nuclear power plants and by recovering and recycling tritium from gas transfer systems returned from the stockpile at the SRS Tritium Extraction Facility.
- **Lithium Sustainment:** The FY 2019 budget request establishes a separate Lithium Sustainment Program of \$29.1 million that supports a Lithium Bridging Strategy to maintain the production of the nation's enriched lithium supply in support of the nuclear security mission, DOE's Office of Science, and DHS.
- **Domestic Uranium Enrichment:** The DUE program, with a request of \$100.7 million in FY 2019, will continue efforts to make available when needed the necessary supplies of enriched uranium for a variety of national security needs.

For Research, Development, Test, and Evaluation (RDT&E), the FY 2019 budget request is \$2.0 billion, a decrease of \$33.0 million or 1.6% below the FY 2018 request.

Increases for the Science Program (\$564.9 million) provide additional funding to support subcritical experiments for pit reuse and advanced diagnostics for subcritical hydrodynamic integrated weapons experiments that produce key data for stockpile certifications.

The Engineering Program (\$211.4 million) sustains NNSA's capability for creating and maturing advanced toolsets and technologies to improve weapon surety and support annual stockpile assessments.

The Inertial Confinement Fusion Ignition and High Yield Program in FY 2019 (\$418.9 million) will continue to build upon prior accomplishments. These efforts continue to provide key data to reduce uncertainty in calculations of nuclear weapons performance and improve the predictive capability of science and engineering models in high-pressure, high-energy, high-density regimes.

The RDT&E request for FY 2019 includes \$703.4 million for the Advanced Simulation and Computing (ASC) Program, and continues NNSA's program of collaboration with DOE's Office of Science to implement DOE's Exascale Computing Initiative. NNSA's ASC Program will support stockpile stewardship by developing and deploying predictive simulation capabilities for nuclear weapons systems. NNSA is taking major steps in high-performance computing by deploying increasingly powerful computational capabilities at both Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory.

The Secure Transportation Asset (STA) program provides safe, secure movement of nuclear weapons, special nuclear material, and weapon components to meet projected DOE, DoD, and



other customer requirements. The Office of Secure Transportation has an elite workforce performing sensitive and demanding work; agents are among the most highly trained and dedicated national security personnel operating within the United States. The FY 2019 budget request of \$278.6 million continues our efforts to modernize and replace the existing fleet of transporters and efforts to hire and train an additional 40 agents. The FY 2019 funding also supports the Safeguards Transporter (SGT) risk reduction initiatives to extend the life of the SGT to meet the STA mission capacity.

NNSA's Office of Defense Programs also maintains the vitality of the broader nuclear security enterprise that supports other agencies' nuclear missions. An important aspect of this effort is investment in Laboratory, Site and Plant Directed Research and Development. As confirmed by independent reviews, this type of defense research and development investment provides basic research funding to foster innovation and to attract and retain scientific and technical talent and is critical to the long-term sustainment of our national laboratories.

#### **Improving Safety, Operations, and Infrastructure**

NNSA's diverse national security missions are dependent upon the safety and reliability of its infrastructure. More than half of NNSA's facilities are over 40 years old, and roughly 30% date back to the Manhattan Project era. If left unaddressed, the condition and age of NNSA's infrastructure will put NNSA's missions, the safety of its workforce, the public, and the environment at risk. As reaffirmed in the NPR, "An effective, responsive, and resilient nuclear weapons infrastructure is essential to the U.S. capacity to adapt flexibly to shifting requirements. Such an infrastructure offers tangible evidence to both allies and potential adversaries of U.S. nuclear weapons capabilities and can help to deter, assure, hedge against adverse developments, and discourage adversary interest in arms competition." The FY 2019 budget request for Infrastructure and Operations is \$3.0 billion, an increase of \$199.6 million or 7.1% above the FY 2018 request. The FY 2018 National Defense Authorization Act provided NNSA and its M&O partners with additional flexibility to address the challenges of modernizing the enterprise by increasing the minor construction threshold to \$20 million. This reform supports efforts to address deferred maintenance through recapitalization projects that improve the condition and extend the design life of structures, capabilities, and systems to meet NNSA's nuclear weapons and nonproliferation program needs.

The FY 2019 budget request for Infrastructure and Operations includes \$1.1 billion for Line Item Construction projects. The requested amount provides the remaining funding of \$48.0 million for the Albuquerque Facility, supports UPF at Y-12 (\$703.0 million), and continues the Chemistry and Metallurgy Research Replacement project at LANL (\$235.1 million). The FY 2019 budget also includes \$19.0 million in funding to begin the first steps toward the construction of a new lithium production facility and \$6 million for the 138kV Power Transmission System Replacement project to replace and upgrade the current power transmission system for the Mission Corridor at NNSS. Delivering these projects on budget and schedule is contingent upon stable and predictable funding profiles, and the President's budget request being supported.

Many of NNSA's excess process-contaminated facilities will ultimately be transferred to DOE's Office of Environmental Management for disposition. In the interim, NNSA is focusing on reducing risks where possible. For example, NNSA has made critical investments to stabilize high-risk process contaminated facilities until ultimate disposition, including at Y-12's Alpha 5 and Beta 4 facilities. NNSA also remains committed to reducing the risk of non-process contaminated facilities by dispositioning facilities where possible. In late 2017, NNSA, with the support of Congress, completed the transfer to a private developer of over 200 acres of the aging Bannister Federal Complex in Kansas City, Missouri, eliminating \$300 million of repair needs.

Later this spring, completion of the Pantex Drummond Office Building (formerly known as the Administrative Support Complex) at the Pantex Plant outside of Amarillo, Texas will allow NNSA to move nearly 1,000 employees into a modern, energy efficient workspace. After completion of the Pantex Drummond Office building NNSA will also be able to dispose of dilapidated, 1950s-era buildings and eliminate approximately \$20 million in deferred maintenance.

Defense Nuclear Security's (DNS) FY 2019 budget request is \$690.6 million, an increase of \$3.7 million or 0.5% over the FY 2018 Request. To execute its enterprise security program, DNS provides funding to the sites for: protective forces, physical security systems, information security and technical security, personnel security, nuclear material control and accountability, and security program operations and planning. The request manages risk among important, competing demands of the physical security infrastructure and includes planning and conceptual design funds for a series of future projects to sustain and recapitalize the Perimeter Intrusion Detection and Assessment Systems at the Pantex Plant and Y-12. Preliminary estimates are included within the recently completed *10-year Physical Security Systems Refresh Plan*. Future budget requests will reflect refined and detailed funding requirements.

Information Technology and Cybersecurity enable every element of NNSA's missions. The FY 2019 budget request is \$221.2 million, an increase of \$34.4 million, or 18.4% over the FY 2018 request. The cybersecurity program continuously monitors enterprise wireless and security technologies to meet a wide range of security challenges. The requested funding increase will be used to continue working toward a comprehensive information technology and cybersecurity program to deliver secure crucial information assets. The funding will continue to mature the cybersecurity infrastructure, comprising almost 100 sensors and over 70 data acquisition servers located across the nation.

#### **Defense Nuclear Nonproliferation Appropriation**

The FY 2019 budget request for the Defense Nuclear Nonproliferation account is \$1.9 billion, an increase of \$69.5 million or 3.9% above the FY 2018 request. Defense Nuclear Nonproliferation account activities address the entire nuclear threat spectrum by helping to prevent the proliferation of nuclear weapons, counter the threat of nuclear terrorism, and respond to nuclear and radiological incidents around the world. The FY 2019 budget request funds two program mission areas under the Defense Nuclear Nonproliferation account: the Defense

Nuclear Nonproliferation (DNN) Program and the Nuclear Counterterrorism and Incident Response (NCTIR) Program.

**Nonproliferation Efforts**

The Office of Defense Nuclear Nonproliferation works with international partners to remove or eliminate vulnerable nuclear material; improve global nuclear security through multilateral and bilateral technical exchanges and training workshops; help prevent the illicit trafficking of nuclear and radioactive materials; secure domestic and international civilian buildings containing high-priority radioactive material; provide technical reviews of U.S. export license applications; conduct export control training sessions for U.S. enforcement agencies and international partners; strengthen the International Atomic Energy Agency's ability to detect and deter nuclear proliferation; advance U.S. capabilities to monitor arms control treaties and detect foreign nuclear programs; and maintain organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide.

The Material Management and Minimization (M3) program provides an integrated approach to addressing the risk posed by nuclear materials. The FY 2019 budget request is \$332.1 million. The request supports the conversion or shut-down of research reactors and isotope production facilities that use highly enriched uranium (HEU) and acceleration of new, non HEU-based molybdenum-99 production facilities in the United States, which recently contributed to the approval of the first Food and Drug Administration-approved U.S.-origin technology to produce the medical isotope. Additionally, the request for M3 supports the removal and disposal of weapons usable nuclear material and continues the transition to the dilute and dispose strategy for surplus plutonium disposition, including the completion of the independent validation of lifecycle cost estimate and schedule for the dilute and dispose strategy.

The Global Material Security program works with partner nations to increase the security of vulnerable nuclear and radioactive materials and improve ability to deter, detect, and investigate illicit trafficking of these materials. The FY 2019 budget request for this program is \$337.1 million and includes efforts to secure the most at-risk radioactive material in U.S. high-threat urban areas by 2020.

The Nonproliferation and Arms Control program develops and implements programs to strengthen international nuclear safeguards; control the spread of nuclear and dual-use material, equipment, technology and expertise; verify nuclear reductions and compliance with nonproliferation and arms control treaties and agreements; and address enduring and emerging proliferation challenges requiring the development of innovative policies and approaches. The FY 2019 budget request for this program is \$129.7 million. This increase serves to improve the deployment readiness of U.S. nuclear disablement and dismantlement verification teams and to enhance export control dual-use license and interdiction technical reviews.

The Defense Nuclear Nonproliferation Research and Development program supports innovative

unilateral and multilateral technical capabilities to detect, identify, and characterize foreign nuclear weapons programs, illicit diversion of special nuclear material, and nuclear detonations worldwide. The FY 2019 budget request for this program is \$456.1 million.

Nonproliferation Construction consolidates construction costs for DNN projects. The FY 2019 budget request is \$279.0 million. As in FY 2018, the Administration proposes termination activities for the Mixed Oxide (MOX) Fuel Fabrication Facility project and continuing to pursue the dilute and dispose option to fulfill the United States' commitment to dispose of 34 metric tons of plutonium. The \$220.0 million for the MOX Facility will be used to continue terminating the project and to achieve an orderly and safe closure. The scope and costs will be refined in subsequent budget requests when the termination plan for the MOX project is approved. The request also includes \$59.0 million for the Surplus Plutonium Disposition project to support the dilute and dispose strategy.

**Nuclear Counterterrorism and Incident Response (NCTIR)**

The FY 2019 budget request for NCTIR is \$319.2 million, an increase of \$41.8 million or 15.1% over the FY 2018 request. NNSA's Counterterrorism and Counterproliferation (CTCP) program is part of broader U.S. Government efforts to assess the threat of nuclear terrorism and develop technical countermeasures. The scientific knowledge generated by this program underpins the technical expertise for disabling potential nuclear threat devices, including improvised nuclear devices, supports and informs U.S. nuclear security policy, and guides nuclear counterterrorism and counterproliferation efforts, including interagency nuclear forensics and contingency planning.

The Counterterrorism and Counterproliferation program provides a flexible, efficient, and effective response capability for any nuclear/radiological incident in the United States or abroad by applying the unique technical expertise across NNSA's nuclear security enterprise. Appropriately trained personnel and specialized technical equipment are ready to deploy to provide an integrated response for radiological search, render safe, and consequence management for nuclear/radiological emergencies, national exercises, and security operations for large National Security Special Events.

The CTCP program maintains an operational nuclear forensics capability for pre-detonation device disassembly and examination, provides operational support for post-detonation assessment, and coordinates the analysis of special nuclear materials. Readiness is maintained to deploy device disposition and device assessment teams, conduct laboratory operations in support of analysis of bulk actinide forensics, and to deploy subject matter expertise and operational capabilities in support of ground sample collections that contribute to conclusions in support of attribution.

NNSA's Aerial Measuring System (AMS) provides airborne remote sensing in the event of a nuclear or radiological accident or incident within the continental United States, as well as in support of high-visibility national security events.

The AMS fleet consists of three B200 fixed-wing aircraft with an average age of 33 years and two Bell 412 helicopters with an average age of 24 years. The age of the current aircraft leads to unscheduled downtime resulting in reduced mission availability. A recently concluded Analysis of Alternatives on the AMS aircraft determined that recapitalization of the aging aircraft fleet is necessary to continue to provide Federal, state, and local officials with rapid radiological information following an accident or incident. The FY 2019 budget requests \$32.5 million as part of a two-year replacement process for the five aircraft.

The equipment used by NNSA's emergency response teams is aging, resulting in increasing maintenance costs and increasing risks to the emergency response mission. This budget includes funding for incremental recapitalization of incident response equipment consistent with lifecycle planning to maintain operational readiness. This budget also includes funding for state-of-the-art, secure, deployable communications systems that are interoperable with the Federal Bureau of Investigation and DoD mission partners that will help provide decision makers with real-time technical recommendations to mitigate nuclear terrorist threats.

The Emergency Operations program's FY 2019 budget request includes \$36 million under NCTIR to support NNSA's Office of Emergency Operations. This funding will support NNSA's all hazard emergency response capabilities, such as providing incident management training and exercise planning, and managing the Emergency Communications Network capability for the Department.

#### **Naval Reactors Appropriation**

##### **Advancing Naval Nuclear Propulsion**

Nuclear propulsion for the U.S. Navy's nuclear-powered fleet is critical to the security of the United States and its allies as well as the security of global sea lanes. NNSA's Naval Reactors Program remains at the forefront of technological developments in naval nuclear propulsion by advancing new technologies and improvements in naval reactor performance. This preeminence provides the U.S. Navy with a commanding edge in naval warfighting capabilities.

The Naval Reactors FY 2019 budget request is \$1.8 billion, an increase of \$308.9 million or 20.9% above the FY 2018 request. In addition to supporting today's operational fleet, the requested funding is the foundation for Naval Reactors to deliver tomorrow's fleet and recruit and retain a highly-skilled workforce. One of Naval Reactors' three national priority projects, continuing design and development of the reactor plant for the COLUMBIA-Class submarine, featuring a life-of-ship core and electric drive, will replace the current OHIO-Class fleet and provide required deterrence capabilities for decades. The project to refuel a Research and Training Reactor in New York will facilitate COLUMBIA-Class reactor development efforts to provide 20 more years of live reactor-based training for fleet operators. Funding will also be used to support construction of a new spent fuel handling facility in Idaho that will facilitate

long term, reliable processing and packaging of spent nuclear fuel from aircraft carriers and submarines.

Naval Reactors has requested funding in FY 2019 to support these projects and fund necessary reactor technology development, equipment, construction, maintenance, and modernization of critical infrastructure and facilities. By employing a small but high-performing technical base, the teams at Bettis Atomic Power Laboratory in Pittsburgh, Knolls Atomic Power Laboratory and Kesselring Site in greater Albany, and the spent nuclear fuel facilities in Idaho can perform the research and development, analysis, engineering, and testing needed to support today's fleet at sea and develop future nuclear-powered warships. The laboratories also perform the technical evaluations that enable Naval Reactors to thoroughly assess emergent issues and deliver timely responses to provide nuclear safety and maximize operational flexibility.

#### **NNSA Federal Salaries and Expenses Appropriation**

The NNSA Federal Salaries and Expenses FY 2019 budget request is \$422.5 million, an increase of \$3.9 million or 0.9% over the FY 2018 request. The FY 2019 budget request provides funding for 1,715 full-time equivalents for the effective program and project management and appropriate oversight of the nuclear security enterprise. Since 2010, NNSA's program funding has increased 50%, while staffing has decreased 10%. NNSA has partnered with the Office of Personnel Management to develop a staffing analysis, now in its second phase, of a Human Capital Management Plan that assesses current personnel levels compared to mission needs. The results of the staffing analysis will be used to inform future recommendations on appropriate staff size and provide the type and number of scientists, engineers, project managers, foreign affairs specialists, and support staff needed to accomplish the mission. Part of the evaluation includes a review of current staff skill sets and areas where skills are needed for project and program management, applicable oversight, and day to day operations of the nuclear security enterprise.

Thanks to the support of Congress, NNSA received a 10-year extension to continue to use the Demonstration Project personnel system. The pay for performance personnel system provides an important tool to retain and attract top talent for NNSA's national security missions. With the pay to perform personnel system, we are able to compete for personnel with other highly technical federal and private organizations, motivate and retain high-performing employees, and deal with poor performers. NNSA uses the Demonstration Project in conjunction with the Excepted Service hiring authorities to hire key personnel for the current and next generation workforce with critical nuclear security expertise.

#### **Management & Performance**

Since 2011, NNSA has delivered approximately \$1.4 billion in projects, a significant portion of NNSA's total project portfolio, 8% under original budget. This past February, the High Explosive Pressing Facility at Pantex achieved CD-4 and was completed \$25 million under the approved baseline. We are committed to encouraging competition and increasing the universe of

qualified contractors by streamlining major acquisition processes. NNSA will continue to focus on delivering timely, best-value acquisition solutions for all programs and projects, by using a tailored approach to contract structures and incentives that is appropriate for the special missions and risks at each site. The Office of Acquisition and Project Management continues to lead improvements in contract and project management practices; provide clear lines of authority and accountability for program and project managers; improve cost and schedule performance; and ensure Federal Project Directors and Contracting Officers with the appropriate skill mix and professional certifications are managing NNSA's work.

#### **Conclusion**

NNSA's diverse and enduring national security missions are crucial to the security of the United States, the defense of its allies and partners, and global stability. The U.S. nuclear deterrent has and will continue to remain the cornerstone of America's national security, and NNSA has unique responsibilities to maintain and certify the continued safety, security, reliability, and effectiveness of that nuclear deterrent.

Nuclear nonproliferation and nuclear counterterrorism activities are essential to promoting the peaceful use of nuclear energy and preventing malicious use of nuclear and radiological materials and technology around the world. Providing naval nuclear propulsion to the U.S. Navy is crucial to the United States to defend interests abroad and protect the world's commercial shipping lanes. Each of these critical missions depends upon NNSA's capabilities, facilities, infrastructure, and world-class workforce.

**Lisa E. Gordon-Hagerty**  
**Under Secretary for Nuclear Security and NNSA Administrator**

Lisa E. Gordon-Hagerty serves as the Under Secretary for Nuclear Security of the U.S. Department of Energy (DOE) and Administrator of the National Nuclear Security Administration. She was confirmed by the U.S. Senate on February 15, 2018. With more than 30 years of national security experience, Ms. Gordon-Hagerty is responsible for the management and operations of NNSA in support of President Trump's and Secretary Perry's nuclear security agenda.

Ms. Gordon-Hagerty served previously in several U.S. Government leadership positions, including as the Director of Combating Terrorism, National Security Council staff, directing overseas crisis and consequence management and responsible for coordinating the U.S. Government's activities to deter, disrupt, prevent, and respond fully to conventional, biological, chemical, nuclear or radiological WMD attacks, through research and development, special operations, intelligence, and exercises/contingency planning. She also served at DOE as the Director, Office of Emergency, Defense Programs, administering and directing the Nation's technical nuclear emergency response programs and assets utilized in response to nuclear terrorism, radiological accidents, nuclear weapons accidents and major radiological emergencies worldwide, and as Acting Director, Office of Weapons Surety. Ms. Gordon-Hagerty was a professional staff member on the U.S. House of Representatives Committee on Energy and Commerce, providing technical support to Committee Members on issues related to DOE national security issues. She began her professional career as a health physicist at DOE's Lawrence Livermore National Laboratory.

Prior to joining the Trump Administration, Ms. Gordon-Hagerty was president of Tier Tech International, Inc., a Service Disabled Veteran Owned Small Business providing professional expertise to combating weapons of mass destruction terrorism worldwide. She was also president and CEO of LEG, Inc., a consulting firm focusing on national security issues. Ms. Gordon-Hagerty served as the Executive Vice President and Chief Operating Officer of USEC, Inc.

Ms. Gordon-Hagerty holds a Master of Public Health degree in Health Physics and a Bachelor of Science, both from the University of Michigan.



**Written Statement of James Owendoff**  
**Principal Deputy Assistant Secretary for Environmental Management**  
**Before the**  
**Subcommittee on Strategic Forces**  
**Committee on Armed Services**  
**U.S. House of Representatives**  
**March 22, 2018**

Thank you for the opportunity to appear before you today to represent the Department of Energy's (DOE) Office of Environmental Management (EM). I would like to provide you with an overview of the EM program, key accomplishments during the past year and what we plan to accomplish under the President's \$6,601,366,000 Fiscal Year (FY) 2019 budget request, which includes \$5,630,217,000 in Defense Environmental Cleanup. This request demonstrates the Administration's continued commitment to the vital mission of EM to address the environmental legacy of nuclear weapons production and government-sponsored nuclear energy research.

**Overview of the EM Mission**

The federal government's nuclear weapons production programs have made significant contributions to our nation's defense for decades – helping end World War II and the Cold War. In addition, government-sponsored nuclear energy research also made significant contributions to domestic energy growth and prosperity. The legacy of these programs is a massive amount of radioactive and chemical waste and contaminated facilities at sites across the country. It is the mission of DOE's Office of Environmental Management to clean up or remediate this legacy waste.

This legacy includes 90 million gallons of radioactive liquid waste stored in aging underground tanks. That's enough to completely fill the Capitol Rotunda nearly 10 times.

This legacy also includes five thousand contaminated facilities, 700,000 tons of depleted uranium, millions of cubic meters of contaminated soil, billions of gallons of contaminated water, used nuclear fuel and other nuclear materials.

EM must execute its mission as safely, efficiently and cost-effectively as possible. This involves constructing new infrastructure like waste storage facilities and waste treatment plants. This mission also involves the management and retrieval of liquid tank waste as well as the decommissioning and demolition of deteriorating facilities that ultimately reduce maintenance and monitoring costs.

The nature and length of the EM mission, coupled with the sheer technological complexity of cleanup means that we will always face challenges – some anticipated and others unexpected.

These obstacles certainly warrant our careful attention, but EM also has a proven ability to achieve tangible results.

When the program began in 1989, EM was responsible for a total of 107 sites covering 3,100 square miles. That's an area larger than Rhode Island and Delaware combined. During early years, work focused on characterizing waste. Since then, EM's accomplishments have included 1) cleanup and closure of major sites in Colorado, Ohio, Missouri and Florida; 2) decommissioning of a gaseous diffusion enrichment plant in Tennessee; 3) vitrification of more than 4,000 canisters of high-level waste in South Carolina; and 4) removal of all the plutonium metal and oxides from Washington state.

Today, EM has 16 sites remaining, with an active cleanup footprint of less than 300 square miles. These 16 sites are home to some of our toughest and most complex challenges.

The best value does not mean taking short cuts and it does not always mean choosing the cheapest option. It means getting the job done as safely, efficiently and cost-effectively as possible. It requires a sustainable, risk-informed approach centered on reducing the greatest amount of risk with the resources available, while maximizing opportunities to shorten schedules and lower lifecycle costs.

That is why we have focused on a greater sense of urgency to EM's decision-making process. This approach means more emphasis on engaging with regulators, stakeholders, and communities in making timely decisions which will enhance safety, shorten schedules, increase transparency, and reduce costs – achieving the best value for all taxpayers, while at the same time, protecting our workers, members of the public in the communities surrounding our sites, and the environment.

EM's first priority is worker safety, as well as protection of the public health and the environment. These are essential components of our cleanup objectives. EM will continue to discharge its responsibilities by conducting cleanup within a "Safe Performance of Work" culture that integrates protection of the environmental, safety, and protection of worker and public health into all work activities.

The December spread of contamination that occurred during demolition activities at the Plutonium Finishing Plant at the Hanford site demonstrate the continued need to ensure a safe working environment at all of our sites. We will continue to engage with the workforce at Hanford and our other EM sites to solicit their input and ideas to further strengthen our safety performance.

#### **EM Cleanup Objectives and Priorities**

Taking many variables into account, such as risk reduction and compliance agreements, EM has the following priorities:

- Radioactive tank waste stabilization, treatment, and disposal;
- Used nuclear fuel receipt, storage, and disposition;
- Special nuclear material consolidation, stabilization, and disposition;

- Transuranic and mixed/low-level waste treatment and disposal;
- Soil and groundwater remediation; and,
- Excess facilities deactivation and decommissioning.

In particular, the FY 2019 budget request will allow EM to:

- Ramp up efforts to address the largest environmental risk at the Savannah River Site-- radioactive tank waste.
- Implement key infrastructure improvements at the Waste Isolation Pilot Plant (WIPP), integral to the cleanup activities at a number of EM sites.
- Complete design and begin site preparations for the Oak Ridge Mercury Treatment Facility, which will help address mercury contamination at the site and aid in the eventual deactivation and decommissioning (D&D) of aging facilities at the Y-12 National Security Complex.

#### **Key Recent Accomplishments**

While some cleanup projects will extend decades, stable steady progress is being made right now. In 2017, the EM workforce achieved the resumption of transuranic waste shipments to WIPP, enabling continued cleanup progress at several sites across the country.

At Savannah River, workers successfully completed construction of the latest Saltstone Disposal Unit, which is integral to the tank waste cleanup mission, ahead of schedule and under budget. We also completed cleanup activities at Hanford's 618-10 burial ground; demolition of one of the last remaining buildings at the Separations Process Research Unit in New York state; and the safe treatment of remediated nitrate salt drums at the Los Alamos National Laboratory. At the Portsmouth site, we are continuing work to deactivate the former enrichment plant's massive process buildings to prepare them for eventual demolition. And at the Paducah site, we have optimized a system to control and mitigate the migration of groundwater contamination on the east side of the site ahead of schedule and under budget.

Our successes have been recognized by the Project Management Institute (PMI). Our work to complete waste retrieval activities at the AY-102 double-shell tank at Hanford was awarded PMI's Project of the Year award. In addition, PMI also issued awards for efforts to upgrade a ventilation system at one of Hanford's tank farms and for work to close one of the underground waste tanks at the Savannah River Site. We are proud that the PMI chose to recognize the important work underway to address one of our largest environmental challenges — radioactive tank waste. These awards are a recognition of the dedicated and talented workforce we have at the Hanford and Savannah River sites, and across the entire EM program, and illustrate how the EM program is working to serve as a good steward of taxpayer resources. We are committed to building upon this cleanup momentum.

#### **Highlights of the FY 2019 Budget Request**

The FY 2019 budget request for EM is \$6,601,366,000, which includes \$5,630,217,000 for defense environmental cleanup activities, \$218,400,000 for non-defense environmental cleanup activities, and \$752,749,000 for Uranium Enrichment Decontamination and Decommissioning Fund cleanup activities. This request is the highest for the EM program in a decade, and is an increase of \$93,031,000 from the FY 2018 request, which was also a record request.

EM's FY 2019 request provides resources to make progress on cleanup activities across the complex, including tackling the largest environmental challenge at the Savannah River Site — radioactive tank waste; and executing key infrastructure improvements at WIPP, integral to the cleanup activities at a number of EM sites.

At Savannah River, the request will enable DOE to significantly increase production of canisters of vitrified high-level waste at the Defense Waste Processing Facility, as well as support planned operation rates for the Salt Waste Processing Facility, and continued construction progress for Saltstone Disposal Units. As a result, Savannah River will be able to significantly build on its record of successfully emptying and closing underground waste tanks. The WIPP request will have wide-ranging benefits across the EM program, with the planned infrastructure improvements at WIPP intended to enable increased transuranic (TRU) waste shipments from other EM sites.

We will continue to advance those portions of the Hanford Waste Treatment and Immobilization Plant necessary to initiate tank waste treatment through the Direct Feed Low Activity Waste (DFLAW) approach; and complete design and launch site preparations for the Oak Ridge Mercury Treatment Facility, which will help address mercury contamination at the site and aid in the eventual D&D of deteriorating facilities at the Y-12 National Security Complex. We also will complete targeted buried waste exhumation at the Idaho site and continue with preparations to transfer cesium and strontium capsules at Hanford from wet storage to a safer dry storage configuration; and implement of an interim measure to address chromium groundwater contamination at the Los Alamos National Laboratory.

**Budget Authority and Planned Accomplishments by Site****Office of River Protection, Washington (Dollars in Thousands)**

<b>FY 2018 Request</b>	<b>FY 2019 Request</b>
\$1,504,311	\$1,438,513

Key Accomplishments Planned for FY 2019

- Continue construction, startup and commissioning activities for the Low Activity Waste (LAW) Facility, Analytical Laboratory, Effluent Management Facility, and Balance of Facilities to complete hot commissioning of the LAW Facility by December 31, 2023., per the 2016 Amended Consent Decree;
- Continue design activities for the Low Activity Waste Pretreatment System (LAWPS);
- Pursue a complementary pretreatment capability using tank-side cesium removal equipment to provide initial feed by December 2023 per the 2016 Amended Consent Decree; and
- Continue retrieval of single-shell tanks in A/AX Farm.

**Richland Operations Office, Washington (Dollars in Thousands)**

<b>FY 2018 Request</b>	<b>FY 2019 Request</b>
\$800,422	\$747,097

Key Accomplishments Planned for FY 2019

- Continue cesium and strontium capsules activities to move capsules currently stored at the Waste Storage Encapsulation Facility to dry storage;
- Continue waste site remediation and groundwater treatment; and
- Continue focus on canyon and waste site risk mitigation.

**Savannah River Site, South Carolina (Dollars in Thousands)**

FY 2018 Request	FY 2019 Request
\$1,447,591	\$1,656,180

Key Accomplishments Planned for FY 2019

- Package 135 to 175 canisters of vitrified high-level waste at the Defense Waste Processing Facility;
- Support start-up activities for the Salt Waste Processing Facility;
- Continue construction of Saltstone Disposal Unit #7, #8, #9;
- Operate Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit and Tank Closure Cesium Removal system to process 200,000 gallons of salt solution;
- Complete D Area Ash Project including closure of the 488-1D Ash Basin and the Coal Pile Runoff Basin;
- Continue to receive foreign research reactor and domestic research reactor used nuclear fuel for safe storage and management; and
- Disposition used nuclear fuel in H-Canyon by processing.

**Idaho National Laboratory, Idaho (Dollars in Thousands)**

FY 2018 Request	FY 2019 Request
\$359,226	\$359,226

Key Accomplishments Planned for FY 2019

- Continue commissioning and startup of the Integrated Waste Treatment Unit;
- Characterize, repackage and certify contact-handled transuranic waste for shipment to the Waste Isolation Pilot Plant;
- Complete exhumation of targeted buried waste at the ninth and final retrieval area; and
- Transfer Experimental Breeder Reactor-II and Advanced Test Reactor used (used) nuclear fuel from wet to dry storage.

**Oak Ridge Site, Tennessee (Dollars in Thousands)**

FY 2018 Request	FY 2019 Request
\$390,205	\$408,526

Key Accomplishments Planned for FY 2019

- Complete design and begins site preparation of the Outfall 200 Mercury Treatment Facility;
- Continue demolition of remaining facilities at East Tennessee Technology Park;
- Continue modifications to Building 2026 to support processing of U-233 material; and
- Initiate design for a new On-Site Waste Disposal Facility.

**Carlsbad Field Office, New Mexico (Dollars in Thousands)**

FY 2018 Request	FY 2019 Request
\$323,041	\$403,487

Key Accomplishments Planned for FY 2019

- Continue waste emplacement activities, increasing transuranic waste shipments to ten per week ;
- Address major repair or replacement of critical infrastructure; and
- Continue work on the Safety Significant Confinement Ventilation System.

**Los Alamos National Laboratory, New Mexico (Dollars in Thousands)**

FY 2018 Request	FY 2019 Request
\$191,629	\$191,629

Key Accomplishments Planned for FY 2019

- Continue execution of New Mexico Environment Department approved ground water remedies for the high explosives (RDx) plume in Canon de Valle; and
- Continue activities for chromium plume investigation through modeling, hydrology studies, installation of extraction and injection wells, and interim measure activities progressing towards an approved corrective measure evaluation.

**Nevada National Security Site, Nevada (Dollars in Thousands)**

FY 2018 Request	FY 2019 Request
\$60,136	\$60,136

Key Accomplishments Planned for FY 2019

- Continue soil and groundwater remediation activities; and
- Continue safe disposal operations for low-level and mixed low-level radioactive waste.

**Conclusion**

I am honored to be here today representing the more than 20,000 men and women that carry out our Office of Environmental Management mission. Ensuring a safe work environment at all of our sites is our highest priority. We are committed to achieving our mission in a safe, effective and cost-efficient manner to serve as good stewards of taxpayer resources.

At the end of the day, EM progress means safer, cleaner sites in the communities that hosted defense nuclear activities for decades. This kind of progress is not possible without our workforce, Members of Congress, regulators, cleanup community leaders and other partners. Thank you again for the opportunity to appear before you today and I look forward to your questions.



**James Owendoff**

James M. Owendoff is currently serving as the Principal Deputy Assistant Secretary for the Department of Energy's Office of Environmental Management (EM). In this role he works to enable the safe and successful execution of the EM mission, while providing management oversight of activities, operations, and program integration across 16 DOE field sites.

From September 1995 to November 2003 and November 2005 to July 2017, Mr. Owendoff served in various capacities in the Office of Environmental Management, to include Acting Assistant Secretary, Principal Deputy Assistant Secretary, Chief Operations Officer, Deputy Assistant Secretary for Environmental Restoration, Deputy Assistant Secretary for Science and Technology, Chief Office of Project Recovery, and Senior Advisor. Mr. Owendoff also served in the Department of Energy's Office of Civilian Radioactive Waste Management from November 2003 to November 2005 as the Associate Director for Integration.

Prior to his appointment in the Department of Energy and his retirement from active duty in the U.S. Air Force, Mr. Owendoff served in the Office of the Deputy Under Secretary of Defense for Environmental Security and served as Chief of the Air Force Environmental Restoration Division. These assignments followed a series of successively responsible leadership positions during his 25- year career in the U.S. Air Force, which included assignments throughout the United States and overseas.

Mr. Owendoff was commissioned in the U.S. Air Force as a 2nd Lieutenant, immediately following his graduation from Virginia Polytechnic Institute where he earned a Bachelor's of Science Degree in Mechanical Engineering. He also holds a Master's of Engineering Degree in Mechanical Engineering from Cornell University.

