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HEARING

ON

NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2018

AND

OVERSIGHT OF PREVIOUSLY AUTHORIZED PROGRAMS

BEFORE THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED FIFTEENTH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON STRATEGIC FORCES HEARING

ON

FISCAL YEAR 2018 PRIORITIES FOR NUCLEAR FORCES AND ATOMIC ENERGY DEFENSE ACTIVITIES

HEARING HELD
MAY 25, 2017



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FISCAL YEAR 2018 PRIORITIES FOR NUCLEAR FORCES AND ATOMIC ENERGY DEFENSE ACTIVITIES

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON STRATEGIC FORCES,
Washington, DC, Thursday, May 25, 2017.

The subcommittee met, pursuant to call, at 10:00 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 on "Fiscal Year 2018 Priorities for Nuclear Forces and Atomic Energy Defense Activities."

I want to thank our witnesses for being here today and for your service to our Nation. In uniform or out, your service to the American people is greatly appreciated.

We have a full witness panel today because, due to the compressed schedule for the budget request and defense authorization bill, we are going to attempt to cover the waterfront on all things nuclear. We have the Honorable Frank Klotz, Administrator, Under Secretary for Nuclear Security; Dr. Robert Soofer, Deputy Assistant Secretary of Defense for Nuclear Defense Policy; General Robin Rand, Commander, Air Force Global Strike Command; Vice Admiral Terry Benedict, Director, Navy Strategic Systems Programs; and I know I am going to butcher this one up, but Dr. John Zangardi—is that all right—Acting Chief Information Officer at the Department of Defense; and Ms. Susan Cange—did I pronounce that right—Acting Assistant Secretary of Energy for Environmental Management.

Two and a half months ago, the Vice Chairman of the Joint Chiefs of Staff, General Selva, testified before our full committee that, quote: "There is no higher priority for the Joint Force than fielding all the components of an effective nuclear deterrent, and we are emphasizing the nuclear mission over all other modernization programs when faced with that choice. We in the Joint Force put our nuclear deterrent as the number one priority for modernization and recapitalization," close quote.

This priority has now been clearly stated by three successive Secretaries of Defense: Secretary Hagel, Secretary Carter, and Secretary Mattis. As my friend and ranking member has repeatedly pointed out, this subcommittee agrees with that prioritization on a

bipartisan basis, and I am pleased to say that the fiscal year 2018 budget request put forward by the Trump administration 2 days ago reinforces that priority. This is good news.

As a Nation, we need to put our money where our mouths are. This committee played a key role in building the current broad bipartisan agreement on the importance of the U.S. nuclear deterrent and the urgent need to carry out the full nuclear modernization programs put forth by the Obama administration.

Reflecting on the budget request, let's be clear about one thing. The billion dollar increase for NNSA's [National Nuclear Security Administration's] nuclear weapons activities goes a long way but does not fully fill the gap identified by Secretary of Energy Ernie Moniz in his letter to the OMB [Office of Management and Budget] Director in 2015.

The Secretary said there was over a billion dollar gap between the program of record in fiscal year 2018 and the funding allocated. We are still several hundred million dollars short here. As the Trump administration embarks on its Nuclear Posture Review, in which several of our witnesses are intimately involved, we will take stock today of all the priorities, policies, and programs related to nuclear deterrence and nuclear security more broadly.

Let me briefly highlight two. Of particular concern to this subcommittee are the nuclear advances made by foreign countries and how those impact our own deterrent. As we heard from the Defense Science Board earlier this year, quote, "Nuclear weapons are a steadily evolving threat in both new and familiar directions," close quote. We must understand how the threat is evolving and anticipate what must be done to compensate. The U.S. focus in recent years has been on downplaying the utility of nuclear weapons, but most other nuclear powers have not downplayed that threat. The U.S. will ensure its nuclear deterrent is robust and credible against all potential threats today and for the long term.

Another longstanding concern of this committee has been the state of the infrastructure within the NNSA enterprise. This committee has had several hearings on the topic in the past year, and I am pleased that the budget request provides significantly additional funding here. We will take a look at the projects that are being proposed and make sure they are truly buying down the massive backlog of deferred maintenance and repair needs. We will also look to see what authorities and processes can be provided or streamlined to ensure we are doing this smartly, effectively, and efficiently.

In closing, let me revisit something that General Hyten, Commander of the U.S. Strategic Command, said at our hearing back in March, quote: "At a time when others continue to modernize and expand strategic capabilities, nearly all elements of the nuclear enterprise, our nuclear delivery systems, weapons stockpile, NC3 [nuclear command, control, and communications], and other critical infrastructure are operating well beyond their expected service life"—"planned sustainment and modernization activities must be completed on schedule, as a delay will impact the execution of our strategic deterrence mission and unacceptably degrade our ability, and ultimately our credibility, to deter and assure," close quote.

For our number one priority defense mission, this is a sobering reminder of the tremendously important job facing these witnesses and this subcommittee, so let's get to work.

I want to thank our witnesses for being here, and I look forward to our discussions.

With that, let me turn to my friend, the ranking member from Tennessee, Mr. Jim Cooper, for any opening statement he may have.

[The prepared statement of Mr. Rogers can be found in the Appendix on page 31.]

Mr. COOPER. Thank you so much, Mr. Chairman.

I too want to welcome the witnesses, and in order to save time, I would ask unanimous consent that my opening statement be made part of the record. Thank you.

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

Mr. ROGERS. One of the many reasons I like him: He is short and to the point.

All right. We are going to be called for votes in about an hour. So, if the witnesses could, your full opening statement will be submitted for the record. If you can summarize in about 3 minutes, then we will get to questions more rapidly.

General Klotz, you are recognized.

STATEMENT OF LT GEN FRANK G. KLOTZ, USAF (RET.), ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION

General KLOTZ. Thank you, Mr. Chairman. I will summarize, hopefully at 3 minutes. Chairman Rogers, Ranking Member Cooper, and other members of the subcommittee, thank you for the opportunity to present the President's fiscal year 2018 budget request for the Department of Energy's National Nuclear Security Administration. We value this committee's strong support for the three pillars of NNSA's mission: the nuclear weapons stockpile, nuclear threat reduction, and Naval Reactors. Our budget request, which comprises approximately half of the DOE [Department of Energy] budget, is $13.9 billion. This represents an increase, as you pointed out, of nearly $1 billion, or 7.8 percent, over the fiscal year 2017 omnibus level.

This budget request is vital to ensuring that the U.S. nuclear force remains modern, robust, flexible, resilient, ready, and appropriately tailored to 21st century threats, and to reassure our allies. It also is indicative of the strong support of the administration for the mission and the people of the National Nuclear Security Administration.

NNSA's fiscal year 2018 budget request for the weapons activity appropriation is $10.2 billion, an increase of nearly $1 billion, or 10.8 percent, over the fiscal year 2017 omnibus level. This increase is needed to both meet our current life extension program commitments and to modernize our research and production infrastructure so we are positioned to address future requirements and future challenges.

The 2018 budget request also includes $1.8 billion for the defense nuclear nonproliferation account, which is consistent with the fund-

ing level in the fiscal year 2017 omnibus. This appropriation continues NNSA's critical and far-reaching mission to prevent, counter, and to respond to nuclear threats.

The request for our third appropriations, the Naval Reactors program, is nearly $1.5 billion. This represents an increase of $60 million, or 4.2 percent, above the fiscal year 2017 omnibus level. Not only does the requested funding support today's operational fleet, it enables Naval Reactors to deliver tomorrow's fleet.

Our budget request for the fourth and final appropriations account, Federal salaries and expenses, is $418 million, an increase of $31 million, or 8.1 percent, over the fiscal year 2017 omnibus level. The request supports recruiting, training, and retaining the highly skilled Federal workforce essential to achieving success in technically complex 21st century national security missions.

In closing, our fiscal year 2018 budget request reflects NNSA's motto: "Mission first, people always." It accounts for the significant tempo of operations at NNSA which in many ways has reached a level unseen since the Cold War. It includes long overdue investments to repair and replace infrastructure at our national laboratories and production plants, and it provides modern and more efficient work space for our highly talented scientific, engineering, and professional workforce.

Thank you for the opportunity to appear before you today, sir, and I look forward to answering any questions the subcommittee may have.

[The prepared statement of General Klotz can be found in the Appendix on page 35.]

Mr. ROGERS. Thank you, General.

Dr. Soofer, you are recognized for the first of many occasions before this committee, I am sure.

STATEMENT OF DR. ROBERT SOOFER, DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR NUCLEAR AND MISSILE DEFENSE POLICY, DEPARTMENT OF DEFENSE

Dr. SOOFER. Thank you, Chairman Rogers, Ranking Member Cooper, and distinguished members of the committee. Thank you for the opportunity to testify on the President's fiscal year 2018 budget request for nuclear forces.

The President directed the Department of Defense to conduct a comprehensive Nuclear Posture Review [NPR], and we expect to complete it by the end of this calendar year. I will not prejudge the outcome of the NPR but will outline some of the challenges and questions that we face.

For decades, U.S. nuclear forces have provided the ultimate deterrent against nuclear attacks on the United States and our allies. Nuclear weapons remain a foundational element of U.S. strategy for deterring strategic attacks and large-scale war and for assuring U.S. allies. Effective deterrence requires a deliberate strategy and forces that are structured and postured to support that strategy within the existing security environment. Strategy, forces, and posture must also be flexible enough to maintain stability while adjusting to both gradual and rapid technological and geopolitical changes.

Recent years have, indeed, brought changes that U.S. policy must address. Russia has undertaken aggressive actions against its neighbors and threatened the United States and its allies. It has elevated strategies for nuclear first use. It is violating the landmark Intermediate-Range Nuclear Forces Treaty and is modernizing a large and diverse nonstrategic nuclear weapons force.

In the Asia-Pacific, China's increased assertiveness suggests a desire to dominate that region. North Korea's leadership has demonstrated a willingness to accept economic countermeasures and international isolation in order to advance its nuclear capability and develop ballistic missiles able to strike the United States homeland as well our allies in the region.

The United States remains committed to ensuring that Iran never acquires a nuclear weapon. As the administration conducts its policy review of the Joint Comprehensive Plan of Action [JCPOA], we will continue to meet our commitments under the deal. Iran continues its ballistic missile program, which is outside of the JCPOA.

It is against this backdrop that the President directed DOD [Department of Defense] to ensure that the U.S. nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st century threats. Each of these characteristics contributes to the effectiveness of our deterrent strategy.

As we conduct the NPR, Secretary Mattis has directed that we continue with the existing program of record for recapitalizing our aging nuclear forces. After decades of deferred modernization, replacement programs must proceed without further delay if we are to retain existing deterrent capabilities.

DOD expects nuclear recapitalization costs to total approximately $230 billion to $290 billion over more than two decades. This includes the total cost of strategic delivery systems that have a nuclear-only mission and a portion of the B–21 bomber, which will have both conventional and nuclear roles. It also includes modernizing nuclear command and control and communication systems.

During this coming period of increased spending for replacement programs, nuclear forces will remain a small fraction of the DOD budget with annual funding levels, including sustainment and operations, projected to range from approximately 3 percent to 6 percent of total defense spending. The President's budget request for fiscal year 2018 fully funds DOD nuclear recapitalization programs and provides for nuclear force sustainment and operations. It also adds more than $3 billion across the Future Years Defense Plan relative to the previous year's request to continue improving the health of the DOD nuclear enterprise. These investments demonstrate the President's commitment to nuclear deterrence and national defense.

The critical mission of ensuring an effective nuclear deterrent is the highest priority mission of the Department of Defense and one it shares with the Department of Energy and the Congress, and we look forward to continuing to work together in faithfully and responsively fulfilling this mission. Thank you again for the opportunity to testify. I look forward to your questions.

[The prepared statement of Dr. Soofer can be found in the Appendix on page 47.]

Mr. ROGERS. Thank you, Dr. Soofer.

General Rand, you are recognized.

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

General RAND. 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. I have testified multiple times for the subcommittee, and I am looking forward to speaking about the progress and the changes that have taken place in our command since our last meeting in July of 2016. I am happy to provide my inputs and answer any questions on the Ground-Based Strategic Deterrent, Long-Range Standoff Weapon and the B–21 Raider, infrastructure requirements, nuclear command and control and communication systems, and other programs within the Air Force Global Strike.

Fiscal constraints, while posing planning challenges, do not alter the national security landscape or the intent of competitors and adversaries, nor do they diminish the enduring value of long-range strategic forces to our Nation.

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 need for modernization and efforts across Air Force Global Strike Command. I look forward to your questions.

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

Mr. ROGERS. That was a record. Like 1 minute. Awesome.

Admiral Benedict, you are recognized.

STATEMENT OF VADM TERRY BENEDICT, USN, DIRECTOR, NAVY STRATEGIC SYSTEMS PROGRAM

Admiral BENEDICT. Thank you, sir. Chairman Rogers, Ranking Member Cooper, distinguished members of the committee, thank you for the opportunity to testify here today representing the men and women of our Navy's Strategic Systems Programs [SSP].

I would like to briefly address the long-term sustainment of the sea-based leg of the triad. While our current life-extension efforts will sustain the D5 [Trident missile] system until the 2040s, the Navy is already beginning to evaluate options to maintain a credible and effective strategic weapons system to the end of the *Columbia*-class service life in the 2080s.

At SSP, we are looking long term and across the spectrum, from our workforce and infrastructure to our industry partners and geographic footprint.

Thank you for the opportunity to testify here today about the sea-based leg of the triad. I am pleased to answer your questions at this time.

[The prepared statement of Admiral Benedict can be found in the Appendix on page 69.]

Mr. ROGERS. He beat you by 10 seconds, General. I am sorry. They won't beat Cooper.

Dr. Zangardi, you are recognized.

STATEMENT OF DR. JOHN A. ZANGARDI, ACTING CHIEF INFORMATION OFFICER, DEPARTMENT OF DEFENSE

Dr. ZANGARDI. Good morning, Mr. Chairman, Ranking Member, and distinguished members of the subcommittee. Thank you for this opportunity to testify before the subcommittee today on the Department's nuclear command and control and communication systems and the risks, challenges, and opportunities within the system and related programs, policies, and priorities for modernization and recapitalization of the NC3 system. I am the Acting Department Chief Information Officer, and I am the senior civilian adviser to the Secretary of Defense for information technology and the information enterprise that supports the DOD command and control, which includes responsibility for policy, oversight, guidance, and coordination for the Department's NC3 system.

My written statement provides more detailed information on these matters, but I want to highlight to you some of the Department's activities in this critical, important mission area. My office's fiscal year 2018 Capabilities Planning Guidance states that we need to strengthen our national leadership command capabilities to meet changing threats and to help the President and national leadership ability to command U.S. forces. I believe this budget will help both these areas, as we identify threats and ways to mitigate them, which in turn helps our Nation's leaders maintain positive control of the U.S. nuclear armed forces.

Specifically, the Council on the Oversight of the National Leadership Command, Control, and Communications Systems has proved to be a crucial element of the Department's strategy. We have been heavily focused on NC3 modernization and sustainment programs. We continue that focus but will operationalize the discussion based upon what our main customers, USSTRATCOM [U.S. Strategic Command], Joint Staff, USNORTHCOM [U.S. Northern Command], and the White House, require to accomplish their mission over the short and long term. Our objective is to ensure with high confidence that the systems provide the operational capability in time of crisis.

Finally, communications is always the key. I believe the two-way communication between your professional staffers and our DOD teams have increased the capability and readiness of our NLCC [National Leadership Command Capabilities] enterprise. This communication's flow has provided clarity to the NC3 mission area, its acquisition process, provided stability for NC3 program offices, and ensured warfighter capabilities. We are not done. We have more work to do, and the Department is actively pursuing modernization while operating within the confines of a constrained budget environment.

Thank you and I look forward to your questions.

[The prepared statement of Dr. Zangardi can be found in the Appendix on page 79.]

Mr. ROGERS. Thank you.

Ms. Cange, you are recognized.

STATEMENT OF SUSAN M. CANGE, ACTING ASSISTANT SECRETARY FOR ENVIRONMENTAL MANAGEMENT, DEPARTMENT OF ENERGY

Ms. CANGE. Good morning, Chairman Rogers, Ranking Member Cooper, and members of the subcommittee. I am pleased to be here today to represent the Department of Energy's Office of Environmental Management and to discuss the important work we have recently accomplished, as well as what we plan to achieve under the President's fiscal year 2018 budget request.

The total budget request for the EM [Environmental Management] program is $6.5 billion, and of that, $5.5 billion is for defense environmental cleanup activities.

Before discussing this request, I would like to take a brief moment to update you on a recent incident at the Hanford site. As you know, there recently was a partial collapse of one tunnel near the PUREX [plutonium uranium extraction] facility that has been used since the 1950s to store contaminated equipment. Based on extensive monitoring, there was no release of radiological contamination from the incident, and no workers were injured. Workers have filled in the collapsed section with soil and placed a cover over the tunnel. We are working closely with the State of Washington for a more permanent solution. We take this event very seriously and are looking closely at lessons learned. Maintaining and improving aging infrastructure is a priority for EM, and this incident emphasizes the need to continue to focus on these efforts.

With regard to recent accomplishments, we continue to demonstrate our ability to make significant progress through achievements like resuming shipments of transuranic waste to the Waste Isolation Pilot Plant, or WIPP. Our fiscal year 2018 budget request will enable us to build on this momentum. The request allows EM to continue to make progress in addressing radioactive tank waste, as well as continuing other important work, such as deactivation and decommissioning, soil and groundwater cleanup, and management and disposition of special nuclear materials, spent nuclear fuel, and transuranic and solid waste.

Our request also includes funding to support the National Nuclear Security Administration by tackling some of their high-priority excess contaminated facilities in Oak Ridge and at the Lawrence Livermore National Lab.

In particular, the 2018 request supports continued waste and placement at WIPP. At the Savannah River Site, the request supports continuing the tank waste mission through commissioning the startup of the Salt Waste Processing Facility. And at Hanford, the budget request supports continued site remediation along the river corridor, and it supports beginning to treat low-activity tank waste by 2023.

In closing, I am honored to be here today representing the Office of Environmental Management. We are committed to achieving our mission safely and successfully. Thank you, and I am pleased to answer any questions.

[The prepared statement of Ms. Cange can be found in the Appendix on page 83.]

Mr. ROGERS. I thank all the witnesses, and I will recognize myself first for questions.

General Klotz, you talked about the $1 billion increase that is in your budget, and while it looks like a lot—and it is a lot—there is a lot of deferred maintenance in NNSA. This is something that the Obama administration recognized early.

And, without objection, I would like to introduce a letter to that effect from Secretary Moniz in December 2015 that clearly states an extra billion dollars a year is needed starting in fiscal year 2018.

[The letter referred to can be found in the Appendix on page 95.]

Mr. ROGERS. In that letter, Secretary Moniz says, quote: "We estimate that an additional $5.2 over the fiscal year 2018 through 2021 is needed. Failure to address these requirements in the near term will put the NNSA budget in an untenable position beginning in fiscal year 2018 and will provide a misleading marker to the next administration as to the resource needs of the nuclear security enterprise," close quote.

General Klotz, is this billion dollar increase for NNSA's weapon activities just filling a gap, or is it an essential part of a long-term recovery from your current circumstance?

General KLOTZ. Thank you very much for that question, Mr. Chairman, and I appreciate all the support that this committee has provided to dealing with the infrastructure issues that we have within NNSA. And I also appreciate the broad bipartisan support for that effort that you outlined in your opening statement. We are very grateful for the level of spending that has been proposed in the President's fiscal year 2018 budget. It will allow us to tackle some of our very important infrastructure recapitalization projects, such as the Uranium Processing Facility at Y–12 in Oak Ridge, Tennessee, which we expect a complete design this year and actually start construction next year. But we didn't get into the situation we face with aging and, in some cases, crumbling infrastructure overnight, and we are not going to get out of it in a day. So expect us to come forward next year and in subsequent years with requests to begin funding some other very important recapitalization efforts in the area of restoring our ability to produce plutonium pits and restoring our ability to process the lithium which we need for our nuclear weapons program and investments to replace our ability to fabricate trusted microsystems that we need to ensure that we have the radiation-hardened electronics for our nuclear forces.

Mr. ROGERS. It is fair to say, and my question is, is it fair to say that this is the first year of 5 years funding that was a program of record by the Obama administration as being essential that was presented to this Congress?

General KLOTZ. I think it is fair to say that the new administration came in and took a look at our requirements and our needs with a fresh set of eyes, and that they agree that ensuring that we can complete our life-extension programs in order to deliver systems to the Air Force and the Navy on time, on schedule, and on budget is essential and also fixing our infrastructure so that we are flexible and responsive to the needs of our nuclear deterrent, both now and well into the future.

Mr. ROGERS. General Rand, the GBSD [Ground-Based Strategic Deterrent] and LRSO [Long-Range Standoff Weapon], TMRR [tech-

nology maturation risk reduction] contracts are supposed to be hitting their targets in August or September of this year. Is that accurate?

General RAND. Yes, sir, that is accurate.

Mr. ROGERS. So you don't see a problem with that slipping?

General RAND. No, sir. I have no indication that will be delayed.

Mr. ROGERS. There are many critics that believe LRSO is destabilizing. Is that your opinion?

General RAND. No, sir.

Mr. ROGERS. Can you tell us why?

General RAND. Well, we have had a nuclear cruise missile since the 1960s. This is not a new capability. It is an improved capability over the ALCM that we currently have, the air-launched cruise missile. And when you have bombers and you take off, first of all, there is a visible presence. And as we fly today, the enemy, potential adversaries, don't know if we are conventional or nuclear, and I don't view that as destabilizing at all.

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

Mr. COOPER. Thank you, Mr. Chairman.

There are many good parts and many bad parts to the recent budget that was submitted to Congress. I thought one of the good parts was the termination of the MOX [Mixed Oxide] facility in South Carolina.

General Klotz, would you like to reflect on that?

General KLOTZ. Thank you, Representative Cooper. As I indicated, the new administration came in and looked at a lot of programs that are within the scope of the Department of Energy and the National Nuclear Security Administration, and came to the conclusion that the MOX Fuel Fabrication Project in Savannah River, South Carolina, ought to be terminated. The conclusion was based on the fact that this is an extraordinarily expensive program: $5 billion have already been invested in it. We estimate it would take an additional $12 billion to go, just to complete the project, and that doesn't even begin to address the costs, long-term costs, of operating the program.

We have developed an alternative strategy for disposing of excess weapons-grade plutonium. It is called the dilute and dispose approach, which we briefed to this committee last year. It is a proven technology. We have already emplaced diluted plutonium at the Waste Isolation Pilot Project, the WIPP facility, in New Mexico. It is proven technology. The risks are lower. The costs are lower. And it gets plutonium out of the State of South Carolina far faster than the MOX project would.

Mr. COOPER. Thank you, General. I hope my colleagues will pay attention to the general's comments because this is an annual issue in the defense authorization bill. So I hope that we can come to a sensible resolution. This issue has hung fire for many, many years now.

Ms. Cange, regarding Hanford and the tunnel collapse, it is my impression that, in the Trump budget, we are reducing the appropriation or the authorization for Hanford by over $100 million. Is that right?

Ms. CANGE. Yes, sir. The fiscal year 2018 budget request for the Richland Operations Office is reduced from what the 2017 omnibus amount was.

Mr. COOPER. So you mentioned we are going to be cooperating with the State of Washington on fixing that tunnel problem, other than just putting dirt on it.

Ms. CANGE. Yes.

Mr. COOPER. So what is likely to be the resolution?

Ms. CANGE. There is a number of alternatives that have been developed and are currently being evaluated. They range from potentially filling the tunnel with a fillable grout material to stabilize the tunnel and the contamination until such a time that a permanent remedy will be implemented to, at the upper end, constructing a structure over the tunnel. So the various alternatives are still under evaluation.

Mr. COOPER. So we are really not talking about a fix. We are talking about covering up the problem or stabilizing it?

Ms. CANGE. We are talking about ensuring that we stabilize the tunnel and the material that is contained within the tunnel in a way that this type of incident will not occur again until a final remedy is reached between the parties.

Mr. COOPER. But no one will be able to use the tunnel in the meantime.

Ms. CANGE. The tunnel has not been used since the early 1950s.

Mr. COOPER. Dr. Zangardi, many of the NC3 programs are delayed or over cost. In fact, when you look at the long list of those that are delayed and/or over cost, it is almost hard to find one that is working on time as expected. What are we going to do to improve the performance record here?

Dr. ZANGARDI. Yes, sir. Thank you for the question. Regarding NC3 programs, breaking the answer down into two parts: First, I run the national, the NLCC, and as part of the NLCC, we have taken a review of these programs and understand your concerns and recognize the delays to the program. The Air Force has been tasked by the chairs of the NLCC—AT&L [Acquisition, Technology, and Logistics] is one of the chairs, along with the Vice Chairmen of the Joint Chiefs of Staff—to review these programs, look for areas of causality—is there a common cause or root cause between all these problems—and develop solutions to get the programs back on track. The Department is very focused on correcting these issues.

Additionally, we were in Omaha, where we had a group meeting of about 30 seniors to look at the NC3 enterprise several weeks ago. Tasks came out of that to begin looking at things we can do to improve the overall operational resilience of the systems that are currently out there. So we are looking at it in two ways: one, with the NLCC, figuring out how we can improve the programs' performance as they come on in the future; and, two, dealing with the systems that are out there that we must currently maintain.

Mr. COOPER. So is your answer consistent with the number one priority that the nuclear mission has within the Department of Defense?

Dr. ZANGARDI. Yes, sir, it is. We have stated very clearly in meetings with my leadership that this is the highest priority. We have

stated that very clearly in the NLCC Council meetings, and it was very clear when we met at Omaha that this is the highest priority. I am in lockstep agreement with General Hyten on these issues, sir.

Mr. COOPER. So we are going to be performing better in the future, and I can hold you to that?

Dr. ZANGARDI. Our objective is to perform better in the future, sir, and I will be glad to come back and answer any questions in the future if problems arise or to talk to you about performance.

Mr. COOPER. Well, I think that sounds a little bit like accountability, but I am not sure that that is full accountability, the willingness to answer questions. Presumably you would be willing to answer questions anyway.

Dr. ZANGARDI. Yes, sir. It is accountable. I am working these areas. I report directly to the DSD [Deputy Secretary of Defense] on these areas and keep him apprised of it. The accountability is very clear as it is defined in recent legislation in the NDAA [National Defense Authorization Act] about DOD's CIO having responsibilities in the NLCC area.

Mr. COOPER. As you well know, without command and control, the weapons systems are largely useless.

Dr. ZANGARDI. Yes, sir.

Mr. COOPER. Thank you, Mr. Chairman. I have no questions until the closed session.

Mr. ROGERS. I thank the gentleman.

The Chair now recognizes the gentleman from the great State of Alabama, Mr. Byrne.

Mr. BYRNE. Thank you, Mr. Chairman.

Admiral Benedict, I am concerned about the tight timeframe for the *Columbia* class, and I know you are too. In looking at it, I know that there is not too much wiggle room there, so I would like to ask you this question: If the *Columbia*-class program is delayed or slips by just one year, will there be a gap in the sea-based leg of the triad?

Admiral BENEDICT. Yes, sir. Today, the current program has basically one *Columbia* class entering service as one *Ohio* replacement platform departs service. So, if there was a slip, although we believe firmly that we can execute the program of record, there would be a gap, yes, sir.

Mr. BYRNE. I appreciate your saying it as clearly as you did because we need to hear that as we go forward into budgets, not just this year, but as you know, in the entire cycle that we have got here, we just don't have any room for not hitting the mark each year. Is that a fair statement?

Admiral BENEDICT. That is a fair statement. We have already taken a 2-year slip in the *Columbia* class, which pushed us basically line on line with the *Ohio*'s retirement. Yes, sir, that gap has been eroded.

Mr. BYRNE. Admiral, thank you for your candor. Mr. Chairman, I yield back.

Mr. ROGERS. I thank the gentleman.

The Chair now recognizes the gentlelady from California, Mrs. Davis, for 5 minutes.

Mrs. DAVIS. Thank you, Mr. Chairman. Thank you all for being here as well.

We are aware that, in this budget, there is a 5 percent decrease for defense nuclear nonproliferation. And I am just wondering how we justify that. I know you mentioned it was consistent, I believe, with the 2017 omnibus. But at the same time, we are requesting increasingly large sums of money for our own nuclear arsenal.

Is there a disconnect here? And how do you translate this to the general public?

General KLOTZ. Thank you very much for that question. My explanation will be a little lengthy perhaps because I think the misunderstanding has to do with how the budget appropriations accounts are laid out in the budget. Under the line that we call defense nuclear nonproliferation, I would bend them in three different ways. First of all, there are things that we do in the traditional nonproliferation mission space. Then there are dollars that we pay for our ability to counter nuclear terrorism and respond to, God forbid, a radiological or nuclear incident anywhere in the United States or abroad. And then there is also the construction project under the defense nuclear nonproliferation account, which includes the MOX Fuel Fabrication Facility that Representative Cooper just asked about. So the bulk of the reduction in that appropriations account reflects the administration's proposal that we terminate the MOX project. So the total amount of money going to MOX goes from the fiscal year 2017 omnibus level of about 345, I believe, down to 279. So that accounts for a lot of it.

And we have also seen an increase in our ability, the spending that we want to have for nuclear counterterrorism and incident response in order to recapitalize all the equipment, the radiation detectors, the secure wireless telephones, that our people would use with other domestic partners in responding to it.

In the pure defense nuclear nonproliferation area, the funding is relatively flat. It would have been exactly flat if the Congress had appropriated what we requested in fiscal year 2017, but you plussed us up a little bit a week or two before the budget went to press, and so there is a very, very slight decrease in the overall spending floor that we are proposing for defense nuclear nonproliferation. It is still a very robust program: $1.8 billion is a very robust program.

Mrs. DAVIS. Thank you for that. I appreciate it.

And I think, Dr. Soofer, to you as well, would you agree that the nuclear deterrent is our number one priority?

Dr. SOOFER. Yes, ma'am, I would. Deterring nuclear attack and assuring our allies has been a fundamental and enduring goal of the United States Government during the Cold War and over the last three Nuclear Posture Reviews.

Mrs. DAVIS. Would it be a better, I guess, example or demonstration of that if we did, as the NNSA did, a long-term plan for nuclear weapons modernization? It is my understanding that the Department of Defense doesn't really submit a 25-year plan for its nuclear weapons plan. Is that accurate, and how do we, again, connect that?

Dr. SOOFER. Well, we currently have plans to modernize each leg of the nuclear triad, as well as the nuclear command and control

system, and that modernization will take us out until about 2040. We provide Congress an annual report on funding over the next 10 years, the section 1043 report.

But you are correct, Congresswoman, we don't do a 25- or 30-year plan, but we have forces planned that will last over those years.

Mrs. DAVIS. I think my time is up, but perhaps there is a way to better frame that so that there is a sense of more consistency. Thank you.

Thank you, Mr. Chairman.

Mr. ROGERS. I thank the gentlelady.

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

Mr. LAMBORN. Thank you, Mr. Chairman. Thank you all for being here and your service.

Dr. Soofer, if we studied the technical feasibility of mobile-capable ICBMs [intercontinental ballistic missiles], along with the advantages and disadvantages of those possible weapons, would we learn possible useful information?

Dr. SOOFER. I will ask General Rand to comment on that, but I can assure you that, as we conduct a Nuclear Posture Review, everything is on the table, and that is something that we will have to look at.

General RAND. Sir, we have looked at that with the GBSD, and it is our best judgment that we do not go to mobile. I can talk more in the closed session on the reasons why.

Mr. LAMBORN. Okay. Thank you. I am going to ask General Klotz and Dr. Soofer another question. I am not a fan of the New START [Strategic Arms Reduction] Treaty. For one thing, it is a relic of the Cold War. It did not address emerging powers like China, just ourselves and the former Soviet Union. When it was passed, we now know the Russians were cheating on the INF [Intermediate-Range Nuclear Forces] Treaty. And whether or not the Obama administration knew this, the Senators who voted on it did not know that fact. So I have been distressed because the Obama administration was quick to start the dismantling of our nuclear forces that were called for under the New START Treaty but slow to do the modernization that was promised as a hedge against losing capability.

So, for either General Klotz or Dr. Soofer, please give an update on what we have left to do, what is remaining to be done to update our nuclear enterprise, which remains unfinished.

General KLOTZ. Thank you, Congressman.

On the NNSA, Department of Energy side, our priorities as far as sustaining and modernizing our nuclear enterprise, at the moment are focused on four major weapon systems that ride on either the Navy sea-launched ballistic missiles or the Air Force, two legs of the triad. So a level of effort, as I think I suggested in the opening comments, that we have not seen since the end of the Cold War.

So we are also focused on making sure that, within the NNSA, within our nuclear enterprise, we have the scientific, technical, and engineering base, and the production infrastructure that is necessary to continue to sustain a moderate and effective nuclear arsenal, and also to be able to adapt or respond to any unexpected chal-

lenges, whether they are technical challenges or whether they are political military challenges. And our budget request for fiscal year 2018, I think, reflects the importance of making, continuing to make investments in this area.

Mr. LAMBORN. Okay. Let me follow up on that, and then we will get to Dr. Soofer. Even if we do everything in the budget that you recommend, and I hope we do, how much of a gap will we still have? I am just asking in general terms, not specific terms, for the public at large.

General KLOTZ. I still think, as I was responding to Chairman Rogers' remarks, I still think we have underinvested in the nuclear enterprise since the end of the Cold War. It is almost as if, when the Berlin Wall went down and the Soviet Union collapsed, we all heaved a sigh of collective relief and said, "Thank goodness, we don't have to worry about that anymore." And so, for the subsequent years, we didn't make the investments we needed. It was not a high priority, either in the services or, for that matter, in the Department of Energy.

We have been trying to rectify that for a number of years now on both sides of the Potomac. But as I indicated, it took us a long time to get into this situation. It is going to take us a while to get out of it, but we are working it very, very hard. And with this particular budget, we make a huge down payment in some key critical areas that we need to continue sustaining our nuclear weapons stockpile and our infrastructure. There will be more to follow as we go through our process of deciding how best to recapitalize that. So I would expect, in next year's budget and in subsequent budgets, you will continue to see us place an emphasis on restoring our infrastructure.

Mr. LAMBORN. I know time is limited, Dr. Soofer.

Dr. SOOFER. I am sorry. Sir, your comments about the New START Treaty are well taken. In fact, when the Congress considered the New START Treaty, particularly the Senate, they realized that the disparity in tactical nuclear weapons, right, nonstrategic nuclear weapons, between Russia and China was something of great concern and that that needed to be addressed. And since then, Russia has actually increased the numbers of its nonstrategic nuclear weapons, and the INF Treaty violation is just one example.

Mr. LAMBORN. Thank you, Mr. Chairman. I yield back.

Mr. ROGERS. The Chair now recognizes Mr. O'Rourke for 5 minutes.

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

Admiral Benedict, I would like to get your comments and your thoughts on commonality between Navy and Air Force. My understanding is that you could have similar components for land-based deterrence and sub-launched deterrence. Do you feel that you have the level of cooperation with the Air Force necessary to do that? And, also, could you talk about just what that means in numbers in the budget? My understanding is we would, in a strategy like this one, likely spend a lot more upfront to save a lot more down the road. What are we looking at in terms of numbers? And any comments or thoughts you would like to share with us so that we are aware in the fiscal year 2018 budget and also, as we look ahead

to future budget years, the kinds of factors that we need to be looking at to make sure this is a success.

General BENEDICT. Yes, thank you for the question.

I will provide my answer, and then I would like to offer, if it is okay with you, General Rand's comments on the subject. Commonality is an initiative that I have been pushing for a number of years through the concurrence of, at that time, Admiral Haney, out at STRATCOM [U.S. Strategic Command], and the two RDAs [research, development, and acquisition], the two assistants in the Navy and the Air Force. The Navy and the United States Air Force were directed to do a commonality study. That took about a year. We looked at a spectrum from totally common missile, to piece parts, to the programs of record.

Obviously, we came through a technical analysis that said total commonality had a number of major technical challenges, as well as infrastructure challenges, which made doing that in today's environment financially—and from a schedule standpoint—unfeasible. The concern is the budget, and we all understand the budget to recapitalize. That has been discussed here. So what we came up with, at a fairly deep technical analysis, is opportunities in all the major subsystems. We worked those together, and we pushed that back up through the leadership chain.

In parallel with that, the United States Air Force was running its preps for the Ground-Based Strategic Deterrence program. Their acquisition strategy was to turn that over to industry. All that information was passed to industry in a bidder's library. And so the industry partners who bid on the GBSD had the opportunity to draw from that library and submit that as part of their proposals.

Those proposals are actually in process of review by the United States Air Force, and General Rand can talk to that. I think, once we see the results of that down-select as part of the Air Force process, then we are prepared with the Air Force to reengage and share and continue down the path of commonality. But right now, we are—I will say we are paused as the Air Force goes through its acquisition down-select, which is appropriate.

Mr. O'ROURKE. And I will allow General Rand to answer the question as well. So, if I understand, you have decided that total commonality doesn't make sense for the reasons that you gave. There will be some level of partial commonality.

What I would like to know from General Rand and from you, Admiral, is the year in which we can expect the answer to the question that you are trying to get to that is currently paused.

Admiral BENEDICT. If I may, I will just finish and then turn it over to General Rand. In terms of dollar cost savings, sir, I, again, I am going to contend that, based on the Air Force decision of down-select to two from the three potential bidders today to the final solution, I think we need to get to that final solution working through this down-select before we will be able to provide you a definitive dollar savings in the year.

Mr. O'ROURKE. When can we expect to get there?

General RAND. Yes, sir. We are right now hopefully going to have a down-select to two competitors this summer. That will give us more fidelity. We will run the TMRR, the Technology Maturation

Risk Reduction process, for 3 years with those two competitors, and then we will further down-select to the source in 2021. So it will take a little while to get some of this fidelity.

If I may, sir, first of all, I am the requirements guy. I am not the acquisition. I don't drive acquisition strategy. We have set the requirements, and we have delivered those requirements as we see for GBSD. However, I do think there is a misconception, as Terry was talking about, of what commonality is. A D5 is not going to work in the land-based missile. It is not going to fit in our launch facilities. It would take a major overhaul to do that.

So when you define "commonality," the term that we have used is "smart commonality" and where can we have synergy together. We are looking at repair facilities, manufacturing processes, test capabilities. All those could significantly reduce redundant and multiple kind of platforms. And those are where the savings will be. So we are very supportive of commonality, but we believe in open competition, and that is where the acquisition strategy is driving us right now.

Mr. O'ROURKE. Thank you very much.

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

Mr. BROOKS. We just passed in the House Foreign Affairs Committee a resolution dealing with Venezuela and the economic circumstances that they face, and quite frankly, what Venezuela is going through is devastating. Seventy-five percent of their population has experienced a weight loss of at least 19 pounds over the past year because they cannot get enough calories and food to sustain their body weight. Medicines are now in short supply because the people can't afford them. The government can't afford them. You have got diseases that were once eradicated coming back, and the reason I bring up these topics is we have been warned by the Congressional Budget Office and by the Comptroller General of the United States of America and by the Government Accountability Office, that America's current financial path is unsustainable, which means that, in the future, we are risking a similar collapse. And you can imagine the adverse effect that would have on our military capabilities in particular if we go through the same thing that economic reality dictates is going to happen if we don't change our trajectory.

That being the case, and I don't know if any of you all are in a position to answer this question, but what can you do in the areas that you oversee to increase efficiency so that taxpayers can get more bang for the buck, or in the alternative, what can you eliminate if the need arises, thereby saving money, that might reduce the dangers associated with our deficit? And if you can't do anything in the fields that you personally oversee, what do you think we should be doing on a larger scale to minimize our risk of a debilitating insolvency and bankruptcy that our financial gurus warn us is in our future?

Admiral BENEDICT. Sir, thank you for the question, and I understand your point—Trident has been a program, Strategic Systems Programs has been in existence for 61 years, and as we build the new *Columbia* class, the Navy's number one priority in shipbuilding, that boat will be in the water through 2084. As I have looked

at my contribution to that program, the strategic weapons system, we recently in discussions with Lockheed endorsed their plan to move our workforce out of an extremely high-cost area to two other locations within the United States which——

Mr. BROOKS. I hope Alabama is on that list?

Admiral BENEDICT. No, sir.

Mr. BROOKS. You might want to look at the cost of doing business in Alabama. Go ahead. I am sorry. Go ahead.

Admiral BENEDICT. But, once we do this, and it is a very fast-paced move—we will move to Colorado and to Florida—the returned savings to the program is somewhere in excess of $55 million a year. So we understand our contribution to the strategic deterrent, to the triad, to the Nation. We also understand our responsibility to do so in the most cost-effective manner possible. So that is I would say one of the solution spaces that we constantly review and invoke within the program, given the long-term future that we have in support of this mission.

Mr. BROOKS. Vice Admiral Benedict, that is wonderful news. Does anybody else have any suggestions as to what we can do to try to protect America's financial status?

Dr. ZANGARDI. In the area that I work in the, sir, in the CIO [Chief Information Officer] area, I am specifically tasked to look at effectiveness and efficiency, and I work very closely with the DCMO [Deputy Chief Management Officer] for the Department of Defense. And we are looking at competition, more importantly in the IT [information technology] space, if you will, much of what we procure is commercial off-the-shelf technology, so increased use of commercial off-the-shelf technology where we don't engage in making changes to it. So imposing and using change management to constrain costs in the procurement of business systems is very important, I know not directly related to this, but the savings you generate from those systems can be used for other purposes. For example, we are looking at the Defense Travel System right now, and we are looking at moving to commercial applications. I am currently assessing pilots to put in place about 15,000 to 30,000 users to see how it goes and eventually to move to something that is commercial with very little change management.

Mr. BROOKS. Thank you, Dr. Zangardi.

We are running out of time. I have got 10 seconds. I would strongly encourage each of you to do whatever you can to try to put more efficiency into the Federal acquisition process, particularly the Federal acquisition regulatory process. In my experience and observation over the decades, it seems that the procurement process has gotten drawn out more and more at higher and higher cost, and there has to be a way to fix that. Thank you for your time and insight.

Mr. ROGERS. I thank the gentleman.

The Chair now recognizes the gentleman from New Jersey, Mr. Norcross, for 5 minutes.

Mr. NORCROSS. Thank you, Mr. Chairman. Mr. Klotz, I want to follow up on your comments on MOX. I was down there last year, and some of the numbers that you were quoting are in direct contradiction to what we saw and what we heard in terms of the percentage finished of the plan. Literally, a few weeks ago, we allo-

cated $345 million, and you said, in year 2018, we had $279 million. What is that being used for if you are canceling the project?

General KLOTZ. The actual amount would be $270 for the MOX Fuel Fabrication Facility itself. There is another $9 million that is associated with other aspects of our plutonium disposition mission. In any large government contract, particularly one, a large construction effort that has been underway for some years in South Carolina, there are termination costs. There are a series of steps we have to take dictated by statute and dictated by our own regulations to wind down a contract. So, if the Congress agrees with the administration's proposal to terminate MOX, then we will come back to you with a specific plan as to what we have to do to meet those regulatory requirements and at the same time how we will proceed with the facility that has been constructed thus far.

Mr. NORCROSS. So a half a billion dollars for termination fees?

General KLOTZ. I would be happy to come back to you and lay out what the costs are associated with termination.

Mr. NORCROSS. So, a year ago, they were almost 70 percent complete. I assume they got further along?

General KLOTZ. Well, we don't, quite frankly, and with respect to those who calculate a higher percentage, the standard practice for calculating percent complete, at least within the Federal Government, is costs already expensed and costs to go. So, if you accept our estimates—or you don't have to take my estimates. The U.S. Army Corps of Engineers for the total project cost is $17 billion. We have already spent, as I indicated, $5 billion. That would leave $12 billion to go. So 5 divided by 12 is less than 50 percent. So our assumption of the way in which we calculate percent complete is different than others have calculated it.

Mr. NORCROSS. Certainly, then, we have to get to the bottom of that because we are talking some considerable money as compared to what we just heard about a few minutes ago.

I yield back.

Mr. ROGERS. The Chair now recognizes the gentleman from South Carolina, Chairman Wilson, for 5 minutes.

Mr. WILSON. Thank you, Mr. Chairman.

And thank you Chairman Mike Rogers for your leadership of the subcommittee with the bipartisan input of Ranking Member Jim Cooper. Again, thank each of you for your service. It is extraordinary on behalf of our Nation.

And, of course, General Klotz, I am keenly interested in the Mixed Oxide Fuel Fabrication Facility. Last year, Congress thoughtfully, in a bipartisan manner, rejected the prior administration's shortsighted proposal to terminate the Mixed Oxide Fuel Fabrication Facility, the MOX Program, which is 70 percent completed in the area of South Carolina and Georgia. The Congress had many concerns with alternatives, including the legal, regulatory, and political issues with storing the entirety of 34 metric tons; the fact that it does not comply with the Plutonium Management Disposition Agreement, PMDA, with the Russian Federation; and the fact that Congress does still not have a complete valid cost estimate of the MOX program because the Department of Energy never completed a full rebaseline. Ultimately, the authorizers and appropriators both agreed to continue construction of MOX as the

best path forward and included legislative text requiring it in the fiscal year 2015, 2016, and 2017. And the question: Has an industrial-scale dilute and dispose method with weapons-grade plutonium ever been done before? If not, what is the—if not processed, what is the timeline for removal from South Carolina and Georgia?

General KLOTZ. Thank you very much, Congressman Wilson. In terms of what we know about dilute and dispose, we already have 5 metric tons of diluted plutonium largely from the Rocky Flats facility that used to be in Colorado in WIPP as we speak. We have also diluted plutonium that existed at South Carolina—was in South Carolina and have shipped that to WIPP. In fact, we have done three shipments already this year since. As was alluded to earlier, WIPP has reopened for operations.

I went down to WIPP about a month or so ago and personally toured the site and was briefed on what they believe the capacity of WIPP is to hold not only nonweapons-grade plutonium but all 34 metric tons, and I came away from that quite convinced that 34 metric tons can fit within the WIPP facility.

So the other, I think, very, very interesting point about this whole process is it allows us to get plutonium out of the State of South Carolina far sooner than would be the case with MOX.

Mr. WILSON. Let's get to that now, because WIPP is not industrial grade now, but you are describing something industrial grade.

And what is the timeline? And, specifically, how many years are you talking about, because my constituents are very concerned about it being a dump and a disposal area, which puts our region at risk.

General KLOTZ. Well, I don't understand the term industrial——

Mr. WILSON. Capability to truly process a large amount.

General KLOTZ. Yes. We have the ability to—what we would have to do is—like I said, we are already processing plutonium at Savannah River. What it would require would be adding——

Mr. WILSON. Back again, because time is running out. What is the timeline? My constituents and the people of South Carolina and Georgia would like to know.

General KLOTZ. Let me give you the specific timeline. It is not showing up on what I have right here sitting in front of me. But I will tell you it is far faster than anything that can be done with MOX.

Mr. WILSON. And that timeline would be? Because the reprocessing is going, but what you are describing could take years.

General KLOTZ. Okay. Here is our estimate: If we went down what we call the Surplus Plutonium Disposition Project, we expect that we would complete the work that we need to do that by 2027 and plutonium disposition would begin in 2028 and end in 2049. If we go down the MOX route, we would not complete the project until 2048. That is, my rough calculation, 20-some odd years later, and we would not begin disposing of plutonium through a MOX facility until the year 2050 to 2051, assuming that we get all the NRC [Nuclear Regulatory Council] licensing completed, and plutonium disposition would not end until 2065, which is, again, 15, 20 years after what we would be able to do with the surplus—the approach we would like.

The main difference, however, is the total project cost for MOX we estimate to be $17 billion. The total project cost for the surplus disposal that we have suggested, right now we have a range of $200 million to $500 million to do that. And if Congress gives us the authority——

Mr. WILSON. My time is up. And please look at the—we want it removed by reprocessing the weapons-grade plutonium. What you are describing is, I consider, long term. But thank you very much.

Mr. ROGERS. I thank the gentleman.

The Chair now recognizes the gentlelady from Hawaii, Ms. Hanabusa, for 5 minutes.

Ms. HANABUSA. Thank you, Mr. Chair. I am going to direct this question to Dr. Soofer because of the fact that your testimony referenced it. We are in the process of doing the Nuclear Posture Review—or you are in the process of doing that. And I think it is a review that is usually done every 5 to 10 years. I think the last one was in 2010.

My question is really one more practicality. We have heard people take positions on the triad and what we should be funding. I think even the Secretary of Defense at one time had taken a position questioning whether or not the triad is the way to go.

We have someone who we have all listened to in terms of his review of the QDR [Quadrennial Defense Review], and that, of course, is former Secretary of Defense William Perry at Stanford, who has said, basically, he doesn't like the triad system and questions the whole use of long-range missiles, for example. And I think, at one point, he even questioned whether we should have the concentration of ICBMs as well.

So, given that and given the fact that this review isn't going to be done until the end of the year—and I understand that we should continue along the way—decisions that are to be made on major expenditures, such as the new bomber, B–21s, and all the different types of what is expected to do the nuclear defense posture for this country, how do you justify that at this particular point in time where we have got people whose opinions some of us value, I think most of us at least will pay attention to—how can you come before us and take a position when we know that there is at least enough of a concern that the posture has been required to be reviewed?

Dr. SOOFER. Thank you, Congresswoman. I think there is a sense we—we feel there is a sense of urgency to get on with the program of record, because the current systems will age out within the next 10 to 15 years. And if we do not begin or continue the process of acquiring new systems, there will be a gap in deterrence capability.

The previous administration has laid in a nuclear modernization program that, again, appears to be consistent with general principles of nuclear deterrence. We will examine these principles and determine in light of the new strategic environment whether they still obtain.

But there are some basic fundamentals, such as maintaining a nuclear triad, that the Secretary of Defense has already endorsed. And so, quite frankly, it is just a sense of urgency that, if we do not continue the programs this year, there may be a gap if it is ultimately determined that the systems are needed.

Ms. HANABUSA. Well, I understand that the Secretary may have said he is endorsing it now, but there was a point in time, maybe it was before he became Defense Secretary, that he called into question the premise of the triad as well. And the fact that the NPR has basically now been mandated is problematic.

I understand—the urgency that we speak about here, theoretically, I understand all of that, however, we have never had such an emphasis, that I recall, where most of the briefings that we have had in a very short period of time has concentrated on our nuclear position. And I understand it is probably triggered by Russia, China, and North Korea. However, the concept of developing a systematic posture and to review that posture seems to be one that we need to be very certain about that threat and how we best address that threat. And that is why, for the expenditures that we are being asked to authorize, how do we know that this is the best way for us to proceed?

And I am out of time. So we may have to take——

General RAND. If I may, ma'am, I need to comment on one comment that you made about the B–21. We can have the discussion about the nuclear posture and the triad, but the B–21 will be a dual-capable airplane. There is a requirement for long-range strike conventionally, and that will be, obviously, what that airplane would be doing. Any delay to that program would be devastating. Our newest bomber is 25 years old.

Ms. HANABUSA. I understand that, General. The question is more a matter of number, whether it is 100 or 200. We have heard two numbers. That is a huge amount of numbers, but shouldn't we know whether——

General RAND. The requirement right now is for 100 B–21s.

Ms. HANABUSA. Mr. Chair, I yield back. I think that votes were called.

Mr. ROGERS. The gentlelady's time has expired.

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

Dr. DESJARLAIS. I thank the Chair. This will be a question for Ms. Cange and General Klotz.

During our Oversight and Investigations Subcommittee hearing in March on NNSA's deferred maintenance and infrastructure challenges, we briefly discussed how certain OMB directives have negatively impacted NNSA's ability to get after its decaying infrastructure. In particular, OMB Management Procedures Memorandum 2015–01 was identified as a huge problem, because it, perhaps unintentionally, slows NNSA's ability to tear down old buildings and build new ones. General Klotz can you give us your personal views on that OMB memorandum and whether it impedes NNSA from making smart decisions and moving efficiently to deal with infrastructure problems?

General KLOTZ. Thank you very much for that question. I think the intent behind the directive, which is, as you build new buildings, you ought to dispose of excess facilities, is a good one. In the—when I was in the Air Force, the rule used to be: Build a building, tear a building down. Otherwise, you see this behavior where people start to move into those buildings which you have moved out of, and you still have an infrastructure issue. However,

I think the notion that you have to do this simultaneously is more constraining than it needs to be. I hear anecdotally, I haven't had a chance to get the empirical data on that, that maybe some site directors would choose to wait to build a new building until they knew they had enough money that they could dispose of an older building.

So I would like to see—it is good intent, but I would like to see a little more flexibility in terms of how we actually balance new construction with demolition and disposition of old buildings.

Dr. DESJARLAIS. Okay.

And, General, I understand your budget request would put an additional $195 million above the fiscal year 2017 appropriated level toward deferred maintenance and repair needs at NNSA and that you, Ms. Cange, have a line in your budget for $225 million to deal with four excess facilities at Y–12 and Lawrence Livermore.

This is good news, but I need to ask you, General Klotz, could you execute additional money on deferred maintenance and repair needs if it was provided by Congress?

General KLOTZ. The backlog of deferred maintenance is so large that what we have asked is not going to buy all of it down.

So it is a question of, you know, timing in terms of which the money comes. We do have—there are some capacity limits in terms of local craft and companies to be able to do that. The other challenge we have at NNSA, and this is where Ms. Cange could—has to help us out is many of the facilities you have, particularly facilities in Y–12 and our other laboratories are contaminated with, you know, either radioactive materials or other contaminants, and we have to go through the process of decontaminating those facilities first before we can do the standard, you know, demolition of that.

So there are some significant costs associated with some of our—some of our facilities.

Dr. DESJARLAIS. So the $3.7 billion backlog isn't going to get fixed without additional funding in all likelihood?

General KLOTZ. Well, thanks to this committee's strong support, we stabilized the level of deferred maintenance we had in fiscal year 2016. With 2017, we will see it—we will see it decrease slightly, modestly. And if the Congress supports the fiscal year 2018 budget, we will continue that downward slope.

I am might add, again, through the support of Congress, one of the good news things that came out of the passage of the omnibus, fiscal year 2017 omnibus bill, is we will be able to proceed with the demolition of the Bannister Federal Complex in Kansas City, which is a 5-million-square-foot facility, World War II facility, of which we used about 3 million. That is now—with the funding provided by the Congress, we will now be able to go ahead and do that and also save the Federal Government a considerable amount of money in how we do that by allowing a private developer to do the demolition and the remediation of the property.

Dr. DESJARLAIS. Okay. Ms. Cange, do you expect to continue into fiscal year 2019 and beyond the excess facilities line with environmental management program? I think it is a great idea, and I would encourage you to continue it, but is that your intent?

Ms. CANGE. Yes, we certainly hope to be able to continue to address excess contaminated facilities across the DOE complex. I will

mention that the 2016 report to Congress that the Department submitted on excess contaminated facilities estimates approximately $32 billion to address all of the excess facilities across the Department's entire complex.

Dr. DESJARLAIS. All right. Thank you. And I yield back.

Mr. ROGERS. Okay. We have about 9 minutes left to vote. So I am going to go ahead and try to get Mr. Garamendi in before we head over to the Chamber, and then we will come back after votes for the closed session.

The gentleman is recognized.

Mr. GARAMENDI. Thank you, Mr. Chairman.

Obviously, all of this is extremely important. I want to go to follow up on Mr. O'Rourke's questions about commonality, and, specifically, Admiral Benedict, you have a couple of new bombs that are being reworked, the W–88 and W–76. Are those—my understanding is those are supposed to last some 20 years or more into the future? Is that correct?

Admiral BENEDICT. Sir, our planning factors are—the life-extension programs are 30-year extensions to the existing life of the weapon itself.

Mr. GARAMENDI. Okay. So some 30 years. Do you need the interoperable weapon?

Admiral BENEDICT. Sir, at the direction of the Nuclear Weapons Council, the Navy, the Air Force, and NNSA were directed to conduct a study. That study was scheduled to commence in 2020, and we will do both the technical analysis of the IW [interoperable warhead] as well as the cost analysis. That information will be presented approximately late 2021, 2022 to the Nuclear Weapons Council for review, concurrence, and approval, if they so deem so.

Mr. GARAMENDI. I am sorry. Late 2021, 2022, what is that?

Admiral BENEDICT. 2020, 2021.

Mr. GARAMENDI. For the next 3 years, we will continue to spend money on the interoperable——

Admiral BENEDICT. We will spend money to do the technical analysis between the services and NNSA——

Mr. GARAMENDI. If I—excuse me.

Admiral BENEDICT. Yes, sir.

Mr. GARAMENDI. Back and forth here and I hope in a way that it is not—so if you have a—two weapons that currently work on the missiles and your missiles are good for 30 years and your weapons are good for 30 years, do you ever need an interoperable for those 30 years?

Admiral BENEDICT. Sir, I would say—and then I will defer to General Klotz here for one second—the Navy does not have a requirement for a third reentry body. However, as we look at the complex in total, this issue of IW is larger than just a single Navy issue. It involves Navy, Air Force, and the NNSA.

Mr. GARAMENDI. So where would the Air Force use this new interoperable?

General KLOTZ. If I could, Congressman Garamendi, the—first of all, there is no money in the NNSA account for working on the interoperable.

Mr. GARAMENDI. There is some money somewhere.

General KLOTZ. Well, not explicitly for interoperable in ours. We—recall, a few years ago, we deferred the need date for that until 2030. So our expectation as we have laid it out is we will begin the very serious work on that in 2020 because it is about a 10-year process.

And the reason why we have been proceeding down the path of having an interoperable is there is an Air Force system that will require a life-extension program in about the 2030 timeframe. That is the W78 warhead.

So there was—the thinking when this strategy was developed was, well, if we are going to do a life-extension program to an Air Force system, wouldn't it make sense in terms of long-term cost and efficiency if, as you did that particular warhead, you designed it in such a way that it could be used by both the Air Force and the Navy and subsequent interoperable warheads so that you had some commonality beyond back and forth between the two services as you got in the 2030, 2040, 2050 timeframe.

Mr. GARAMENDI. And your 50 to 80 new pits—your requirement for 50 to 80 new pits, plutonium pits, is it based on this interoperable scheme that is somewhere out there in the future?

Mr. KLOTZ. It is based on a number of factors. One the factors is requirements for, you know, the next series of life-extension programs, which would include the interoperable warhead——

Mr. GARAMENDI. We don't have too much time to get into this, but I really want to get into this in great detail, because it seems to me that we are about to spend billions of dollars to do something that ultimately isn't going to happen. This interoperable warhead, I'm looking over here at the Navy and they're saying, not for 30 years. And I haven't had a chance to get to General Rand about this, but I would like know exactly when his 30-year period is going to begin.

And I am out of time, and we have votes, and thank you so very, very much.

Mr. ROGERS. I thank the gentleman.

Just in closing, before we recess to meet after votes in the SCIF [secure compartmented information facility] for the closed session, I want to put on the record, General Rand, in 2006, the Air Force identified the UH–1N helicopter is not effective for the ICBM security mission. Last year, Secretary James recommended an acquisition strategy that would have sole-sourced these helicopters. Secretary Carter then shelved that strategy and directed full and open competition.

General Rand, can you commit that you will make it clear to the entire Air Force that anyone who attempts to interfere with the acquisition of this capability will have absolute hell to pay?

General RAND. Yes, sir.

Mr. ROGERS. Thank you, sir. We are in recess.

[Whereupon, at 11:20 a.m., the subcommittee was adjourned.]

A P P E N D I X

MAY 25, 2017

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MAY 25, 2017

Opening Remarks – As Prepared for Delivery
The Honorable Mike Rogers
Chairman, Subcommittee on Strategic Forces

House Armed Services Committee
Hearing on the "Fiscal Year 2018 Priorities for Nuclear Forces and Atomic Energy Defense Activities"

May 25, 2017

Good morning. The subcommittee will come to order.

Welcome to our hearing on "Fiscal Year 2018 Priorities for Nuclear Forces and Atomic Energy Defense Activities."

I thank our witnesses for being here today and for your service to the Nation. In uniform or out, your service to the American people is greatly appreciated.

We have a full witness panel today because—due to the compressed schedule for the budget request and defense authorization bill—we're going to attempt to cover the waterfront on all things nuclear.

Our witnesses are:

- The Honorable Frank Klotz
  Administrator and Under Secretary for Nuclear Security
  National Nuclear Security Administration

- Dr. Robert Soofer
  Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy
  Department of Defense

- General Robin Rand
  Commander
  Air Force Global Strike Command

- Vice Admiral Terry Benedict
  Director
  Navy Strategic Systems Program

- Dr. John Zangardi
  Acting Chief Information Officer
  Department of Defense

- Ms. Susan Cange
  Acting Assistant Secretary of Energy for Environmental Management
  Department of Energy

Two and a half months ago, the Vice Chairman of the Joint Chiefs of Staff, General Selva, testified before our full committee that:

> "There is no higher priority for the Joint Force than fielding all of the components of an effective nuclear deterrent and we are emphasizing the nuclear mission over all other modernization programs when faced with that choice…we in the Joint Force put our nuclear deterrent as the number one priority for modernization and recapitalization."

This priority has now been clearly stated by three successive Secretaries of Defense—from Secretary Hagel, to Secretary Carter, to Secretary Mattis.

As my friend and ranking member has repeatedly pointed out, this subcommittee agrees with that prioritization on a bipartisan basis.

And I am pleased to say that the Fiscal Year 2018 budget request put forward by the Trump Administration two days ago reinforces that priority. This is good news—as a nation we need to put our money where our mouths are.

This committee played a key role in building the current broad, bipartisan agreement on the importance of the U.S. nuclear deterrent and the urgent need to carry out the full nuclear modernization program put forward by the Obama Administration.

Reflecting on the budget request, let's be clear about one thing: the billion dollar increase requested for NNSA's nuclear weapons activities goes a long way, but does not fully fill the gap identified by Secretary of Energy Ernie Moniz in his letter to the Office of Management and Budget in December 2015. The Secretary said there was over a billion dollar gap between the program of record in FY18 and the funding allocated—we're still several hundred million dollars short here.

As the Trump Administration embarks on its Nuclear Posture Review—in which several of our witnesses are intimately involved—we will take stock today of this and all of the priorities, policies, and programs related to nuclear deterrence and nuclear security more broadly.

Let me briefly highlight two.

Of particular concern to this subcommittee are the nuclear advances being made by foreign countries and how those impact our own deterrent. As we heard from the Defense Science Board earlier this year: "nuclear weapons are a steadily evolving threat—in both new and familiar directions." We must

understand how the threat is evolving and anticipate what must be done to compensate.

The U.S. focus in recent years has been on downplaying the utility of nuclear weapons—but most other nuclear powers have not followed this lead. The U.S. will ensure its nuclear deterrent is robust and credible against all potential threats today and for the long-term.

Another longstanding concern of this subcommittee has been the state of the infrastructure within the NNSA enterprise. The committee has held several hearings on this topic in the past year, and I'm pleased that the budget request provides additional funding here.

We will take a look at the projects that are being proposed and make sure we are truly buying down the massive backlog of deferred maintenance and repair needs. We will also look to see what authorities and processes can be provided or streamlined to ensure we're doing this smartly, effectively, and efficiently.

In closing, let me revisit something that General Hyten, the Commander of U.S. Strategic Command, said at our hearing back in March:

> "At a time when others continue to modernize and expand strategic capabilities, nearly all elements of the U.S. nuclear delivery systems, weapons stockpile, NC3, and other critical infrastructure are operating well beyond their expected service life… Planned sustainment and modernization activities must be completed on schedule as any delay will impact the execution of our strategic deterrence mission and unacceptably degrade our ability – and ultimately our credibility – to deter and assure."

For our #1 priority defense mission, this is a sobering reminder of the tremendously important job facing these witnesses and this subcommittee. Let's get to work.

# # #

Opening Statement
The Honorable Jim Cooper

Strategic Forces Hearing: Fiscal Year 2018 Priorities for Nuclear Forces and Atomic Energy Defense Activities

May 25, 2017

I join Chairman Rogers in welcoming our witnesses today. Our nuclear forces are the cornerstone of nuclear deterrence and there is no higher priority for our committee and defense requirements than maintaining a safe effective and reliable nuclear arsenal.

We are embarking on a significant nuclear modernization and sustainment effort, that will likely exceed $1 trillion over the next three decades and that will not be without challenges in terms of cost and execution. We are planning the recapitalization of five platforms or missiles, the sustainment of seven platforms or missile in the meantime, and life extensions for the seven associated warheads. In addition, the nuclear command and control systems are aging; these should be high priority systems; yet they have been bogged down by delays and cost increases. I look forward to hearing your plans for effectively managing these concurrent programs.

The administration is also conducting a nuclear posture review which will make important decisions on the type and numbers of nuclear weapons, arms control issues and nuclear doctrine. Maintaining strategic stability will be critical as we face more complex geopolitical challenges.

In this context, nuclear non-proliferation should remain a high priority as we cannot lose focus on efforts that reduce the risk of nuclear weapons or materials spreading to additional countries or to potential terrorists. I am pleased that the budget request continues the decision to terminate the unaffordable MOX project in favor of a more cost-effective solution.

Nuclear clean-up is also an important mission as we remediate the nuclear weapons production sites that served national security needs of the Cold War.

Thank you for being here and I look forward to your testimony.

Statement of Lt. Gen. Frank G. Klotz, USAF (Ret)
Administrator
National Nuclear Security Administration
U.S. Department of Energy
on the
Fiscal Year 2018 President's Budget Request
Before the
Subcommittee on Strategic Forces
House Committee on Armed Services

May 25, 2017

Chairman Rogers, Ranking Member Cooper, and Members of the Subcommittee, thank you for the opportunity to present the President's Fiscal Year (FY) 2018 budget request for the Department of Energy's (DOE) National Nuclear Security Administration (NNSA). The Committee's strong support for the nuclear security mission and for the people and organizations that are responsible for executing it is deeply appreciated.

The President's FY 2018 budget request for NNSA is $13.9 billion, an increase of $1.0 billion, or 7.8% over the FY 2017 Omnibus level. The request represents approximately 50% of DOE's total budget and 68% of DOE's 050 budget.

NNSA's diverse missions are critical 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. This budget request demonstrates the Administration's strong support for NNSA and is vital to ensuring that U.S. nuclear forces are modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure America's allies.

NNSA's activities are accomplished through the expertise, innovative spirit, and hard work of both its federal and its Management and Operating (M&O) contractor employees. NNSA must continue to support these highly-talented, dedicated men and women as they carry out complex and challenging responsibilities. In particular, it is imperative that NNSA modernize its scientific, technical, and engineering capabilities, as well as its infrastructure, in order to provide a safe, modern, and more efficient workspace for its workforce. In doing so, NNSA is mindful of its obligation to continually improve its business practices and to be responsible stewards of the resources that Congress and the American people have entrusted to the agency.

The FY 2018 budget request also reflects the close working partnership between NNSA, the Department of Defense (DoD), the Department of Homeland Security (DHS), the State Department, the Intelligence Community, and other federal departments and agencies. NNSA works closely with DoD to meet military requirements, support the Nation's nuclear deterrent,

and modernize the nuclear security enterprise. NNSA also collaborates with a range of federal agencies to prevent, counter, and respond to nuclear proliferation and nuclear terrorism.

Weapons Activities Appropriation

For the Weapons Activities account, the FY 2018 budget request is $10.2 billion, an increase of nearly $1 billion, or 10.8% over the FY 2017 Omnibus level. Programs funded in this account support the Nation's current and future defense posture and its attendant nationwide infrastructure of science, technology, and engineering capabilities. Weapons Activities provide for the maintenance and refurbishment of nuclear weapons to maintain their 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. Weapons Activities also includes investments to make the NNSA nuclear complex more cost effective and more responsive to unanticipated challenges or emerging threats.

Maintaining the Stockpile

This year, the work of the science-based Stockpile Stewardship Program (SSP) allowed the Secretaries of Energy and Defense to certify to the President for the 21st 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 each year by investments in state-of-the-art diagnostic tools, high performance computing platforms, modern facilities, and most importantly by NNSA's world-class scientists, engineers, and technicians.

For Directed Stockpile Work (DSW), the FY 2018 budget request is $4.0 billion, an increase of $669 million, or 20.2% over the FY 2017 Omnibus level.

The major warhead Life Extension Programs (LEPs) are a fundamental part of this account:

- ***W76-1 LEP***: The $224 million requested for the W76-1 LEP directly supports the sea-based leg of the nuclear triad and will keep the LEP on schedule and on budget to complete production in FY 2019.

- ***B61-12 LEP***: NNSA continues to make progress on the B61-12 LEP, which will consolidate four variants of the B61 gravity bomb and improve the safety and security of the oldest weapon system in the U.S. nuclear arsenal. In June 2016, NNSA authorized the program to transition into the Production Engineering Phase (Phase 6.4). With the $788.6 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, while 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, bolstering central deterrence for the United States while also providing extended deterrence to America's allies and partners.

- ***W88 Alteration (Alt) 370 Program***: In February 2017, NNSA began the Production Engineering Phase (Phase 6.4) for the W88 Alt 370 Program, including conventional high explosives refresh activities. The budget request for this program, which also supports the sea-based leg of the nuclear triad, includes $332 million in FY 2018, an increase of $51 million, or 18.2% over the FY 2017 Omnibus level, to support the scheduled FPU in FY 2020.

- ***W80-4 LEP***: The FY 2018 budget request is $399 million, an increase of $179 million, or 81.2% over the FY 2017 Omnibus level. This funding supports a significant increase in program activity through the Design Definition and Cost Study Phase (Phase 6.2A), driving toward a FY 2025 FPU in support of the Air Force's Long Range Stand-Off (LRSO) cruise missile program.

Also within DSW, the FY 2018 budget request includes $1.5 billion for Stockpile Systems and Stockpile Services. These programs sustain 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.

NNSA continues to make progress on the Joint Technology Demonstrator (JTD) program, a strategic collaboration between the United States and the United Kingdom under the Mutual Defense Agreement. This program is intended to reduce technological risk and provide relevant data for future program activities. JTD's focus is on technologies and process improvements that can improve weapon affordability and enhance weapon safety and security.

Within DSW, the FY 2018 budget request also includes $695 million for Strategic Materials. This 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.

Funding for Uranium Sustainment will permit operations with enriched uranium in Building 9212, a Manhattan Project-era production facility at the Y-12 National Security Complex in Oak Ridge, Tennessee, to end in FY 2025, and allow the bulk of this obsolete building to shut down.

Plutonium Sustainment funds the replacement and refurbishment of equipment and critical skills needed to meet the pit production requirements. Increases are included to fabricate several W87 developmental pits. Investments to replace pit production equipment which has

reached the end of its useful life and install equipment to increase production capacity are also continued.

Tritium Sustainment ensures the Nation's capacity to provide the tritium for national security requirements 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.

The DUE program continues its efforts to ensure that NNSA has the necessary supplies of enriched uranium for a variety of national security needs. Funding increases are included in this year's request to begin down-blending available stocks of unobligated highly enriched uranium (HEU) for use in tritium production, which delays the need date for a DUE capability until at least 2038-2041.

The FY 2018 budget request also includes $52 million for Weapons Dismantlement and Disposition to allow NNSA to remain on track with the goal of dismantling all weapons retired prior to FY 2009 by the end of FY 2022.

For Research, Development, Test, and Evaluation (RDT&E), the FY 2018 budget request is $2 billion, an increase of $186 million or 10.1% over the FY 2017 Omnibus level.

Increases for the Science Program ($487.5 million, an increase of $51 million) provide additional funding for the Advanced Sources and Detectors Major Item of Equipment in support of the Enhanced Capabilities for Subcritical Experiments (ECSE) effort.

The Engineering Program ($193.1 million, an increase of $61 million) sustains NNSA's trusted microsystems capability and further develops the Stockpile Responsiveness Program (SRP). NNSA is requesting $40 million in FY 2018 for SRP to identify, sustain, enhance, integrate, and continually exercise the capabilities required to conceptualize, study, design, develop, engineer, certify, produce, and deploy nuclear weapons. These activities are necessary to ensure the U.S. nuclear deterrent remains safe, secure, reliable, credible, and responsive. The funding will support the creation of design study teams to explore responsiveness concepts as well as development of capabilities for accelerating the qualification and production cycle.

The Inertial Confinement Fusion Ignition and High Yield Program has spearheaded ongoing improvements in management and operational efficiencies at NNSA's major high energy density (HED) facilities, including the National Ignition Facility (NIF) at LLNL in California, the Z-Machine at Sandia National Laboratories in New Mexico, and the OMEGA laser facility at the University of Rochester in New York. In FY 2016, NIF exceeded the goal of 400 data-acquiring shots (417), more than double the number of shots executed in FY 2014 (191) in support of the SSP. The improved shot rates have accelerated progress towards the achievement and application of multi-megajoule fusion yields, investigating material behaviors in conditions presently inaccessible via other experimental techniques, and improving the predictive

capability of NNSA's science and engineering models in high-pressure, high-energy, high-density regimes.

The RDT&E request for FY 2018 includes $734 million for the Advanced Simulation and Computing (ASC) Program. NNSA is taking major steps in high performance computing (HPC) to deliver on its missions by deploying increasingly powerful computational capabilities to both Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL). In the summer of 2017 – Trinity – NNSA's next generation high performance computer, will become fully available for classified use at LANL. This computer will be about 30 times more powerful than the Cielo super computer it is replacing. The Sierra HPC system will be deployed at LLNL starting this year; it is projected to provide four to six times the sustained performance of LLNL's current HPC system, Sequoia.

The RDT&E request also increases NNSA's contribution to the Exascale Computing Initiative (ECI) from $95 million in FY 2017 to $161 million in the FY 2018 request. The ECI is a collaboration with DOE's Office of Science to develop the technology needed for exascale-class high performance computing. The increased funding will provide for NNSA-specific application development, and improve software and hardware technologies for exascale computing in order to meet NNSA's needs for future assessments, LEPs, and stockpile stewardship. Specifically, exascale computing will provide capabilities to improve weapon performance simulation tools and techniques; evaluate the safety, security, and effectiveness of the current stockpile; and provide support to certify potential advanced surety features for the future stockpile.

NNSA's Secure Transportation Asset (STA) program provides safe, secure movement of nuclear weapons, special nuclear material (SNM), and weapon components to meet projected DOE, DoD, and other customer requirements. The Office of Secure Transportation (OST) has an elite workforce performing sensitive and demanding work; OST agents are among the most highly trained national security personnel operating within the United States. Since FY 2012, STA has repeatedly been funded below the Administration's budget requests. This trend increases risks and possible production delays to the Mobile Guardian Transporter (MGT) and adversely affects OST's ability to recruit and retain agents. The FY 2018 budget request of $325.1 million includes an increase of $76 million or 30.6% over the FY 2017 Omnibus level to continue asset modernization and workforce capability initiatives. These initiatives include: 1) restoration of federal agent strength levels to meet the goal of 370 agents; 2) the Safeguards Transporter (SGT) Risk Reduction Initiatives to manage the SGT beyond its design life; 3) procurement of long-lead parts and materials for the two full scale MGT prototype systems; and 4) deferred facilities maintenance and minor construction projects at multiple sites.

Improving Safety, Operations, and Infrastructure

NNSA's ability to achieve its vital national security missions is dependent upon safe and reliable infrastructure. If not appropriately addressed, the age and condition of NNSA's infrastructure will put NNSA's missions, the safety of its workers, the public, and the environment at risk.

More than half of NNSA's facilities are over 40 years old, and roughly 30% date back to the Manhattan Project era. The FY 2018 budget request for Infrastructure and Operations is $2.8 billion, a decrease of $5 million, or 0.2% below the FY 2017 Omnibus level. The request actually represents an increase of $195 million (7.5%) after adjusting for the one-time $200 million Bannister Federal Complex project funded in FY 2017. This funding will help modernize and upgrade antiquated infrastructure and address safety and program risks through strategic investments in general purpose infrastructure and capabilities that directly support NNSA's nuclear weapons and nonproliferation programs.

In August 2016, NNSA broke ground on the Administrative Support Complex at the Pantex nuclear weapons assembly and dismantlement facility in Amarillo, Texas. The site's M&O contractor entered into a lease agreement for a new office building that a private developer is building using third-party financing. This project will allow roughly 1,000 employees to move out of dilapidated, 1950s-era buildings into a modern, energy efficient workspace. It will also eliminate approximately $20 million in deferred maintenance at the Pantex site and enhance recruitment and retention by improving the quality of the work environment. The project will be completed and staff will move into the new facility, by spring 2018.

The FY 2018 budget request further reduces deferred maintenance and supports the execution of new recapitalization projects to improve the condition and extend the design life of structures, capabilities, and systems to meet program demands; decrease overall operating costs; and reduce safety, security, environmental, and program risk. The request also supports general purpose infrastructure and program-specific capabilities through Line Item Construction projects. These projects include the Uranium Processing Facility (UPF) at Y-12, the Chemistry and Metallurgy Research Replacement (CMRR) project at LANL, and the Albuquerque Complex Project.

One of the most worrisome of the NNSA infrastructure challenges is the excess facilities that pose risks to NNSA's workers, the environment, and the nuclear security mission. As of the end of FY 2016, NNSA had 417 excess facilities, 79 of which were identified as high-risk excess facilities, including 58 at the Kansas City Bannister Federal Complex. Many of these facilities will ultimately be transferred to the DOE Office of Environmental Management (EM) for disposition, and the EM FY 2018 budget requests $225 million to address high-risk excess facilities at Y-12 and LLNL. In the interim, NNSA is focusing on reducing the risk where it can. The FY 2018 budget request supports a number of activities related to excess facilities. NNSA benefitted enormously from funding provided by Congress in FY 2017 for the disposition of the Bannister Federal Complex in Kansas City. The disposition project is on track, with final pre-transfer activities occurring now.

The Office of Defense Nuclear Security (DNS) develops and implements security programs to protect sensitive nuclear material (SNM), people, information, and facilities throughout the nuclear security enterprise. The FY 2018 budget request is $687.0 million, an increase of $1.5 million, or 0.2% over the FY 2017 Omnibus level that included funding to address immediate infrastructure needs at Pantex and Y-12. The request manages risk among important

competing demands as NNSA continues to face the challenges associated with physical security infrastructure that must be effectively addressed in the coming years. NNSA is finalizing a 10-Year Plan to Recapitalize Physical Security Systems Infrastructure, also known as the 10-Year Plan, which identifies and prioritizes the replacement and refresh of physical security infrastructure across the nuclear security enterprise. Of note, the request includes preliminary planning and conceptual design funds for future projects, as outlined in the 10-Year Plan, to sustain and recapitalize the Perimeter Intrusion Detection and Assessment System (PIDAS) at the Pantex Plant and Y-12.

Information Technology and Cybersecurity enable every facet of the NNSA mission. The FY 2018 budget request is $186.7 million, an increase of $10 million, or 5.7% over the FY 2017 Omnibus level. This increase will fund much needed improvement to the Information Technology and Cybersecurity program, including Continuous Diagnostic and Mitigation, Telecommunications Security, infrastructure upgrades for the Enterprise Secure Computing Network (ESN), Public Key Infrastructure (PKI), Energy Sciences Network program, and an increased information technology budget. The cybersecurity program continuously monitors enterprise wireless and security technologies to meet a wide range of security challenges. In FY 2018, NNSA plans to continue the recapitalization of the ESN, modernize the cybersecurity infrastructure, implement the Identity Control and Access Management project at NNSA Headquarters and site elements, and implement all Committee on National Security Systems and PKI capabilities. The requested funding increase will allow NNSA to continue working toward a comprehensive information technology and cybersecurity program to deliver critical information assets securely.

Defense Nuclear Nonproliferation Appropriation

The FY 2018 budget request for the Defense Nuclear Nonproliferation (DNN) account is $1.8 billion, a level consistent with the FY 2017 Omnibus level. This appropriation covers NNSA's critical and far-reaching nuclear threat reduction activities. DNN addresses the entire nuclear threat spectrum by helping to prevent the acquisition of nuclear weapons or weapon-usable materials, technologies, and expertise; countering efforts to acquire them; and responding to possible nuclear and radiological incidents. The FY 2018 budget request funds two program mission areas under the DNN account: the Defense Nuclear Nonproliferation Program and the Nuclear Counterterrorism and Incident Response (NCTIR) Program.

Nonproliferation Efforts

Working with international partners, the Office of Defense Nuclear Nonproliferation removes or eliminates vulnerable nuclear material; improves global nuclear security through multilateral and bilateral technical exchanges and training workshops; helps prevent the illicit trafficking of nuclear and radiological materials; secures domestic and international civilian buildings containing high-priority radiological material; provides technical reviews of U.S. export license applications; conducts export control training sessions for U.S. enforcement agencies and international partners; strengthens the IAEA's ability to detect and deter nuclear proliferation;

advances U.S. capabilities to monitor arms control treaties and detect foreign nuclear programs; and maintains organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide.

The Material Management and Minimization (M^3) program provides an integrated approach to addressing the risk posed by nuclear materials. The FY 2018 budget request is $332.1 million, an increase of $44 million or, 15.2% over the FY 2017 Omnibus level. The request supports the conversion or shut-down of research reactors and isotope production facilities that use HEU; acceleration of new, non-HEU-based molybdenum-99 production facilities in the United States; the removal and disposal of WUNM; and the completion of the lifecycle cost estimate and schedule for the dilute and dispose option for plutonium disposition.

The Global Material Security (GMS) program works with partner nations to increase the security of vulnerable nuclear and radiological materials and improve their ability to detect, interdict, and investigate illicit trafficking of these materials. The FY 2018 budget request for this program is $337.1 million, a decrease of $30 million, or 8.2% below the FY 2017 Omnibus level.

The Nonproliferation and Arms Control (NPAC) 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 other challenges. The FY 2018 budget request for this program is $129.7 million, an increase of $5 million, or 4.0% over the FY 2017 Omnibus level. 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 DNN Research and Development (DNN R&D) program supports innovative unilateral and multilateral technical capabilities to detect, identify, and characterize foreign nuclear weapons programs, illicit diversion of SNM, and nuclear detonations worldwide. The FY 2018 budget request for this program is $446.1 million, a decrease of $23.7 million, or 5.0% below the FY 2017 Omnibus level. The decrease in funding reflects a shift of $53 million from R&D back to M^3 for the U.S. High Performance Research Reactors Program and is offset by an increase of $29 million for planned R&D activities.

Nonproliferation Construction consolidates construction costs for DNN projects. The FY 2018 budget request is $279 million, a decrease of $56 million, or 16.7% below the FY 2017 Omnibus level. The Administration proposes to terminate the Mixed Oxide Fuel Fabrication (MFFF) project and to pursue the dilute and dispose option to fulfill the United States' commitment to dispose of 34 metric tons of plutonium. If supported by Congress, $270 million would be used to achieve an orderly and safe closure of the MFFF. The scope and costs will be refined in subsequent budget submissions when the termination plan for the MFFF project is approved. In addition, $9 million is provided for the Surplus Plutonium Disposition project to support the dilute and dispose strategy.

Nuclear Counterterrorism and Counterproliferation

In FY 2016, the NCTIR Program transitioned to the DNN account from the Weapons Activities account to align all NNSA funding to prevent, counter, and respond to nuclear proliferation and nuclear terrorism under the same appropriations account. The FY 2018 budget request includes $277.4 million to support the NCTIR Program, an increase of $5 million, or 2.0% over the FY 2017 Omnibus level. Within NCTIR, NNSA continues to work domestically and internationally to prepare for and improve the Nation's ability to respond to radiological or nuclear incidents.

NNSA's counterterrorism and counterproliferation programs are part of broader U.S. Government efforts to assess the threat of nuclear terrorism and develop technical countermeasures. The scientific knowledge generated under this program ensures NNSA's technical expertise on potential nuclear threat devices, including improvised nuclear devices (INDs), supports and informs U.S. nuclear security policy, and guides nuclear counterterrorism and counterproliferation efforts, including interagency nuclear forensics and contingency planning.

NNSA emergency response teams' current equipment is aging, resulting in increasing maintenance expenses and imposing increased risks to NNSA's ability to perform its emergency response mission. The Radiological Assistance Program (RAP) remains the nation's premier first-response resource to assess a radiological incident and advise decision-makers on the necessary steps to minimize hazards. To ensure that NNSA is able to execute its radiological emergency response mission, RAP's equipment must be recapitalized regularly. NNSA is acquiring state-of-the-art, secure, deployable communications systems that are interoperable with Federal Bureau of Investigation and DoD mission partners, ensuring that decision makers receive real-time technical recommendations to mitigate nuclear terrorist threats.

NNSA recently concluded an Analysis of Alternatives (AoA) on the Aerial Measuring System (AMS) aircraft. 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 current aircraft are experiencing reduced mission availability due to increasing unscheduled downtime and maintenance. The AoA determined that NNSA recapitalization of the aging aircraft fleet is necessary in order to provide rapid aerial radiological exposure and contamination information to Federal, State, and local officials following an accident or incident in order to protect the public and first responder's health and safety. NNSA anticipates proposing a two-year replacement schedule starting in FY 2019.

Naval Reactors Appropriation

Advancing Naval Nuclear Propulsion

NNSA provides nuclear propulsion for the U.S. Navy's nuclear-powered fleet, which is critical to the security of the United States and its allies as well as the security of global sea lanes. The

Naval Reactors Program remains at the forefront of technological developments in naval nuclear propulsion. This preeminence derives from advancing new technologies and improvements in naval reactor performance, ensuring a commanding edge in warfighting capabilities.

The Naval Reactors FY 2018 budget request is $1.48 billion, an increase of $60 million, or 4.2% above the FY 2017 Omnibus level. In addition to supporting today's operational fleet, the requested funding will enable Naval Reactors to deliver tomorrow's fleet by funding three national priority projects and recruiting and retaining a highly skilled workforce. The projects include: 1) continuing design and development of the reactor plant for the *COLUMBIA*-Class submarine, which will feature a life-of-ship core and electric drive; 2) refueling a Research and Training Reactor in New York to facilitate *COLUMBIA*-Class reactor development efforts and provide 20 more years of live reactor-based training for fleet operators; and 3) building 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 2018 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. Importantly, the laboratories perform the technical evaluations that enable Naval Reactors to thoroughly assess emergent issues and deliver timely responses that ensure nuclear safety and maximize operational flexibility.

NNSA Federal Salaries and Expenses Appropriation

The NNSA Federal Salaries and Expenses (FSE) FY 2018 budget request is $418.6 million, an increase of $31.5 million, or 8.1% over the FY 2017 Omnibus level. The FY 2018 budget request provides funding for 1,715 full-time equivalents (FTE), which includes a 1.9% cost of living increase, a 5.5% increase for benefit escalation, and other support expenses needed to meet mission requirements. NNSA is actively engaged in hiring to reach that number in a thoughtful and strategic manner. The FY 2018 budget request for 1,715 FTEs is an increase of 25 above the authorized 1,690. Since 2010, NNSA's program funding has increased 28%, while staffing has decreased 17%. In FY 2018, NNSA will continue efforts to meet current and future workforce needs by analyzing job requirements to meet evolving missions, including completion of a study by the Office of Personnel Management in support of the Reform of Government Initiative. Initial results from four program offices and one field office indicate the need for a 20% increase in federal staff.

Management & Performance

Since 2011, NNSA has delivered approximately $1.4 billion in projects, a significant portion of NNSAs 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. NNSA is committed to encouraging competition and increasing the universe of qualified contractors by streamlining its major acquisition processes. NNSA will continue to focus on delivering timely, best-value acquisition solutions for all of its programs and projects, using a tailored approach to contract structures and incentives that is appropriate for the special missions and risks at each site. NNSA's Office of Acquisition and Project Management (APM) is leading continued improvement in contract and project management practices and NNSA's effort to institute rigorous analyses of alternatives; 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 missions are crucial to the security of the United States, the defense of its allies and partners, and global stability writ large. The U.S. nuclear deterrent has been the cornerstone of America's national security since the beginning of the nuclear age, and NNSA has unique responsibilities to ensure its continued safety, security, reliability, and effectiveness. Likewise, NNSA's 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 around the world. Finally, NNSA's support to the U.S. Navy allows the United States to defend its 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.

Lieutenant General Frank G. Klotz, USAF (Ret.)
Under Secretary for Nuclear Security and NNSA Administrator

Lieutenant General Frank G. Klotz, United States Air Force (Ret.), was confirmed by the Senate on Tuesday, April 8, 2014, as the Department of Energy's Under Secretary for Nuclear Security and Administrator for the National Nuclear Security Administration (NNSA).

As Under Secretary for Nuclear Security, Klotz is responsible for the management and operation of the NNSA, as well as policy matters across the Department of Energy and NNSA enterprise in support of President Obama's nuclear security agenda.

Prior to his Senate confirmation, Klotz served in a variety of military and national security positions. As the former Commander of Air Force Global Strike Command, a position he held from 2009 to 2011, he established and then led a brand new 23,000-person organization that merged responsibility for all U.S. nuclear-capable bombers and land-based missiles under a single chain of command. From 2007 to 2009, Klotz was the Assistant Vice Chief of Staff and Director of the Air Staff. He served as the Vice Commander of Air Force Space Command from 2005 to 2007 and was the Commander of the Twentieth Air Force from 2003 to 2005.

Klotz served at the White House from 2001 to 2003 as the Director for Nuclear Policy and Arms Control on the National Security Council, where he represented the White House in the talks that led to the 2002 Moscow Treaty to reduce strategic nuclear weapons. Earlier in his career, he served as the defense attaché at U.S. Embassy Moscow during a particularly eventful period in U.S.-Russian relations.

A distinguished graduate of the U.S. Air Force Academy, Klotz attended Oxford University as a Rhodes Scholar, where he earned an MPhil in international relations and a DPhil in politics. He is also a graduate of the National War College in Washington, DC. Most recently, Klotz was a senior fellow for strategic studies and arms control at the Council on Foreign Relations.

HASC-SF Hearing on the President's Fiscal Year 2018 Budget Request for Nuclear Forces and Atomic Energy Defense Activities

Dr. Robert Soofer

Deputy Assistant Secretary of Defense for Nuclear and Missile Defense

May 25, 2017

Chairman Rogers, Ranking Member Cooper, and distinguished Members of the Committee, thank you for the opportunity to testify on the President's Fiscal Year (FY) 2018 Budget Request for Nuclear Forces and Atomic Energy Defense Activities.

Historical deterrence role of U.S. nuclear weapons

For decades, U.S. nuclear forces have provided the ultimate deterrent against nuclear attacks on the United States and our allies. During the Cold War, nuclear forces also played a key role in deterring the threat of massive conventional attack in Europe and elsewhere. Since the end of the Cold War, nuclear weapons have remained a foundational element of U.S. strategy for deterring strategic attacks and large-scale war, and for assuring U.S. allies, even as the United States worked to reduce the role and salience of nuclear weapons worldwide. It is apparent that, unfortunately, some nations have not followed our lead in reducing the role of nuclear weapons, and have, in some cases, deliberately elevated and expanded the prominence of nuclear weapons in their strategies.

Nuclear Posture Review

The President directed the Department of Defense (DoD) to conduct a comprehensive review of our nuclear weapons policy. Not surprisingly, an enduring deterrence role for U.S. nuclear forces is explicit in the President's direction. The Nuclear Posture Review (NPR) will look at all elements of U.S. nuclear forces and posture to ensure that our nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st century threats. The NPR is underway, and we expect to complete it by the end of this calendar year.

The NPR is led by the Office of the Under Secretary of Defense for Policy (OUSD(P)) and the Joint Staff, in direct consultation with the Department of Energy's (DOE) National Nuclear Security Administration (NNSA) and the Department of State. OUSD(P) and Joint Staff leadership are working closely with representatives from the Military Departments, Combatant Commands, and across DoD components. We are also consulting with key allies and partners, other U.S. Government departments and agencies, and appropriate congressional committees.

The 2017 NPR is following a structured and deliberate process to meet the President's direction. That process begins with reviewing and assessing changes in the strategic environment since the last NPR, which was conducted in 2009. We must then determine the roles of nuclear weapons in U.S. national security strategy, develop strategies to fulfill those roles, and assess the capabilities needed to implement U.S. nuclear strategy.

I will not prejudge the outcome of the NPR, but will outline some of the challenges and questions we must consider.

Continuity and Change in the Security Environment

Maintaining effective nuclear deterrence is an absolute imperative, and it is the highest priority mission of the DoD. Effective deterrence requires a deliberate strategy for how to deter and how to communicate messages of resolve and restraint to potential adversaries, and it requires forces that are structured and postured to support that strategy within the existing security environment. Strategy, forces, and posture must also be flexible enough to maintain stability while adjusting to both gradual and rapid technological and geopolitical changes.

The 2017 NPR must consider elements of both continuity and change in the international security environment. There is continuity in the reality that we live in a world with potential adversaries armed with nuclear weapons. Nuclear weapons in the hands of potential adversaries pose the only clear existential threat to the United States, and, likewise, threaten our allies. Russia remains our only near peer in terms of arsenal size, though China also fields a substantial nuclear force. Both Russia and China are actively engaged in extensive programs to modernize their nuclear forces, and are well positioned to retain them for the foreseeable future. Knowledge about nuclear, chemical, and biological weapons is widespread, and, therefore, we cannot rule out the possibility of further proliferation of weapons of mass destruction (WMD). Finally, there is an element of continuity in the ever-present possibility of impending change, which can appear as a gradual evolution or as rapid upsets.

Recent years have indeed brought changes to the security environment that U.S. nuclear policy must address. Russia has undertaken aggressive actions against its neighbors and threatened the United States and its NATO Allies—including nuclear threats. It has elevated strategies of nuclear first use in its strategic thinking and military exercises, and is violating the landmark Intermediate-Range Nuclear Forces (INF) Treaty.

Resolving Russia's INF Treaty violation is a top priority for this Administration. This Administration has been clear with Russia that the status quo is unacceptable and that the United States must therefore consider concrete steps that will deny Russia any significant military advantage from this violation. While our strong preference is for Russia to return to compliance with the Treaty, the United States is prepared to hold Russia accountable and take steps to

change Russia's calculus. This is not only to mitigate against the new threats presented by the missiles, but also to ensure arms control agreements remain credible in the future.

Russia presents a significant set of challenges, but is only one element of an increasingly complex global strategic environment. In the Asia-Pacific region, China's increased assertiveness suggests a desire to dominate that region. North Korea's leadership has demonstrated a willingness to accept economic countermeasures and international isolation in order to advance its nuclear weapons capability and develop ballistic missiles able to strike the U.S. homeland as well our allies in the region. The United States remains committed to ensuring that Iran never acquires a nuclear weapon. As the Administration conducts its policy review of the Joint Comprehensive Plan of Action (JCPOA), we will continue to meet our commitments under the deal. Iran continues its ballistic missile program, which is outside of the JCPOA.

Across the globe, new threats are emerging from non-nuclear strategic capabilities, most of which are not constrained by arms control agreements. These include conventional ballistic missiles, offensive capabilities within the space and cyber domains, and the potential for hypersonic weapons armed with non-nuclear as well as nuclear munitions. Technological advancements mean that future proliferators might seek and find WMD development paths that are different from those we are used to detecting and countering. Finally, existing nuclear weapon States might pursue new means for delivering nuclear weapons, and for defeating U.S. nuclear forces through active defenses or counterforce attacks.

Nuclear Forces and Posture for Implementing U.S. Deterrence Strategy

It is against this backdrop that the President directed DoD to ensure that the U.S. nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st century threats. Each of these characteristics contributes to the effectiveness of our deterrence strategy. Modern nuclear forces would incorporate 21st century technology, whereas the current U.S. arsenal relies on aging technology that, in some cases, dates back more than half a century. A robust deterrent is strong and able to convince a range of potential adversaries with varying perceptions and values that the risks in attacking the United States or its allies far outweigh any expected benefits. A resilient deterrent is stable, such that plausible changes in adversary strategy, forces, and posture would not create or expose vulnerability in our ability to deter attack. A ready deterrent is postured to enable rapid response across a wide range of conditions and scenarios, thereby further enhancing stability. A tailored deterrent is one that is calibrated to the specific actors and conditions we see today and would expect to see in the near-term, and a flexible deterrent is one that can be adapted further to meet evolving threats and sudden upsets.

Prior reviews across multiple Administrations determined that the surest way to maintain stable and effective nuclear deterrence is to sustain a full triad of land-based intercontinental ballistic missiles (ICBMs), ballistic-missile submarines (SSBNs), and strategic bombers, together with dual-capable fighter aircraft (DCA) equipped to employ nonstrategic nuclear weapons. Each leg

of the triad provides unique and complementary capabilities that, together, enable and protect the credibility, flexibility, and survivability of the U.S. deterrent. Each leg also provides a hedge against technical problems or changes in the security environment.

As we conduct the NPR, DoD must continue with the existing Program of Record for recapitalizing our aging strategic triad; dual-capable aircraft; Nuclear Command, Control, and Communications (NC3) systems; and supporting infrastructure. After decades of deferred modernization following the end of the Cold War, most of our current systems are well past their planned service lives. Replacement and modernization programs for strategic delivery and NC3 systems must proceed without further delay if we are to retain existing deterrent capabilities. Similarly, significant delays in delivering a nuclear capability for the F-35 aircraft would create gaps in the ability of the United States and its NATO Allies to support U.S. and Alliance nuclear posture. Nuclear warhead life extension programs (LEPs), together with supporting stewardship activities and infrastructure modernization, must also continue apace to ensure the continued effectiveness of U.S. deterrent forces.

DoD will continue to coordinate with DOE's National Nuclear Security Administration (NNSA) to ensure that programs for warheads and delivery systems are integrated and well aligned. Close and effective coordination between the Departments is one key measure of the overall health of the nuclear enterprise. Maintaining that health also requires stable and adequate funding for both DoD and DOE/NNSA.

Cost of Nuclear Recapitalization

The nuclear enterprise is affordable if nuclear deterrence is prioritized appropriately. During the coming period of increased recapitalization spending, nuclear forces will remain a small fraction of the DoD budget – with annual funding levels that are projected to range from approximately 3 percent to 6 percent of total defense spending. This includes spending to sustain and operate the existing force—currently about $12-14 billion per year—as well as recapitalization spending to develop and field modernized replacements.

DoD expects nuclear recapitalization costs to total approximately $230-$290 billion spread over more than two decades, from FY 2018 to FY 2040, in constant FY 2018 dollars. This projection includes the total cost of strategic delivery systems that have a nuclear-only mission, and a portion of the cost of the B-21 bomber, which will have both conventional and nuclear roles. The fraction of the B-21 cost DoD apportions to the nuclear mission is consistent with the historical cost of delivering nuclear capability to a strategic aircraft. The DoD projection for total recapitalization cost also includes modernizing NC3 systems.

Previous DoD projections of $350-$450 billion for nuclear recapitalization included the full cost of the B-21 bomber, even though the planned size of the bomber force is determined entirely by its conventional mission. The previous projections also included DoD outyear planning funds

that were reallocated in each budget request to DOE/NNSA to support nuclear warhead LEPs and other stockpile activities. Beginning in FY 2018, these funds will be accounted for in NNSA budget requests rather than in DoD's. Finally, the updated total of $230-$290 billion also reflects program progress that has been made in FY 2017 and refinements in cost projections for individual programs.

Public mischaracterizations of non-DoD reports have in some cases created confusion about nuclear recapitalization costs. This is particularly true for studies that included in their estimates nuclear force sustainment and operations in addition to recapitalization, but are often characterized as projecting costs for recapitalization alone. For example, the Congressional Budget Office (CBO) released a report in February 2017 that projected $400 billion for the full cost of U.S. nuclear forces over the next 10 years. In addition to the DoD recapitalization programs that I outlined a moment ago, the CBO estimate includes force sustainment and operations; all NNSA weapons activities, including warhead LEPs and infrastructure; and a projected cost growth of 16 percent.

In making these long-term cost projections, there are always legitimate questions about what to include, what timeframe to cover, and what level of uncertainty is reasonable to expect. DoD is committed to taking a responsible approach to budgeting for nuclear force sustainment and recapitalization. We believe that the President's budget request for the current FY and the five-year Future Years Defense Plan (FYDP) provides the most reliable assessment of these costs.

President's Budget Request for Nuclear Forces

The President's Budget Request (PBR) for FY 2018 and the FYDP provide for sustainment and operation of our existing nuclear forces, and fully fund the DoD nuclear recapitalization Program of Record. Future budget submissions will reflect any policy and program adjustments resulting from the NPR.

The portion of the PBR dedicated towards the DoD nuclear enterprise for FY 2018 is $19 billion, which includes $14 billion for nuclear force sustainment and operations and $5 billion for associated recapitalization programs. It funds the Columbia-class SSBN to replace the current Ohio-class SSBN; the Ground-Based Strategic Deterrent (GBSD) to replace the Minuteman III ICBM; the B-21 next-generation penetrating bomber; the Long-Range Standoff (LRSO) cruise missile to replace the AGM-86B Air-Launched Cruise Missile (ALCM); the DoD portion of the B61-12 nuclear gravity bomb, which will consolidate and replace several existing gravity bomb variants; and modernized NC3 systems. Over the FYDP, the FY 2018 PBR funds nuclear recapitalization programs at a total of $43 billion.

The PBR for FY 2018 incrementally funds the first Columbia-Class SSBN, which requires average ship construction funding of about $5 billion per year from FY 2021 to FY 2025. It funds the GBSD Program at $0.2 billion in FY 2018, increasing to $2.5 billion in FY 2022. It

also fully funds the B-21 bomber at about $2.7 billion per year in the FYDP, a portion of which is attributed to nuclear modernization, and the LRSO at an average of $0.5 billion per year. The President's FY 2018 budget adds more than $3 billion across the FYDP, relative to the previous year's request, to continue implementing recommendations from the 2014 Nuclear Enterprise Reviews for improving the health of the DoD nuclear enterprise. This includes $2.8 billion in increased funding for the ICBM and sea-based deterrent programs, and about $500 million for the program to replace ICBM security helicopters.

These investments demonstrate the President's commitment to nuclear deterrence and national defense. The critical mission of ensuring an effective nuclear deterrent is one that the Department of Defense shares with the DOE/NNSA and the Congress. We look forward to continuing to work together in faithfully and responsibly fulfilling this mission, and we look forward to congressional and allied input as we conduct the NPR. Thank you, again, for the opportunity to testify. I look forward to your questions.

Dr. Robert Soofer

Dr. Robert Soofer has been selected for appointment to the Senior Executive Service, and for assignment as the deputy assistant secretary of defense for nuclear and missile defense policy, Office of the Assistant Secretary of Defense for Strategy, Plans and Capabilities. Soofer was most recently a professional staff member for the Senate Armed Services Committee, where he served as staff lead for the Subcommittee on Strategic Forces, with responsibility for nuclear, arms control, and missile defense matters. He has 30 years of combined service with the U.S. Senate and the Department of Defense.

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HOUSE ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE
UNITED STATES SENATE

DEPARTMENT OF THE AIR FORCE

PRESENTATION TO THE HOUSE ARMED SERVICES COMMITTEE-
STRATEGIC FORCES SUBCOMMITTEE

SUBJECT: Fiscal Year 2018 Priorities for Nuclear Forces and Atomic Energy Defense Activities

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

MAY 25, 2017

NOT FOR PUBLICATION UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE
UNITED STATES SENATE

Introduction

Chairman Rogers, Ranking Member Cooper, and distinguished Members of the Committee, thank you for allowing me to come before the committee and represent the 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

As you know, the command focuses on the stewardship and operation of two legs of our nation's nuclear Triad and the Air Force's nuclear command, control, and communications 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, and 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 safe, secure, effective and lethal. 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.

Our bomber and Intercontinental Ballistic Missile (ICBM) forces, and our nuclear command, control, and communications systems defend our national interests, assure our allies and partners, and deter potential adversaries; should deterrence fail, we stand ready to defeat our adversaries through the persistent application of 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, and the Kirtland Underground Munitions Maintenance and Storage Complex at Kirtland Air Force Base, New Mexico. The 450 dispersed and hardened launch facilities (LFs), controlled and maintained by AFGSC Airmen every single day, preserve strategic stability by providing the nation a credible,

responsive deterrent, which presents 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 Minuteman III ICBM and its command, control, and communications systems and support equipment. We continue moving forward on the $62M FYDP Transporter Erector (TE) Replacement Program (TERP) and the $76M FYDP Payload Transporter (PT) Replacement (PTR) to modernize our existing fleet of large missile maintenance vehicles. We currently expect TERP and PTR to begin production in FY18.

We are also equipping ICBM launch control centers (LCC) with modernized communications systems that will improve and replace aging and obsolete systems. The LCC Block Upgrade, expected to begin full deployment in 2019, is a $70M modification effort that replaces multiple LCC components to include a modern data storage replacement for floppy disks and new Voice Control Panels to provide higher fidelity voice communications. We continue to push forward on improving Remote Visual Assessment at our remote launch facilities, a significant security upgrade, to improve situational awareness and security. We expect this $40M program to begin deployment in FY19.

We conducted four reliable MMIII flight tests in Fiscal Year 2016 that, along with two Simulated Electronic Launch tests in the operational environment, demonstrated the operational credibility of the nuclear deterrent force and the AF's commitment to sustaining that capability. Four operational flight tests are currently funded in FY17 ($39M), satisfying both United States Strategic Command (USSTRATCOM) and National Nuclear Security Administration (NNSA) requirements. We have already conducted three tests; the last is scheduled for August.

We are nearing completion of our efforts to remove 50 ICBM boosters from their LFs as part of our effort to meet New START Treaty limits. The LFs are spread across all three ICBM wings and will remain fully operational and capable of receiving boosters, if needed. The final booster is expected to be removed in early June 2017.

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 Minuteman III, suffers from age out, asset depletion,

and numerous performance shortfalls. Simply put, it will not meet critical mission performance requirements or force commitments by 2030.

To meet these requirements, we're successfully moving forward on developing the Ground Based Strategic Deterrent (GBSD). OSD/AT&L approved the GBSD Acquisition Strategy in July of last year, and Milestone A was achieved on 23 August 2016. The GBSD is fully funded, $5.6B FY18-22, and in source selection with an expected on-time contract award (up to two offerors) in 4QFY17, 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.

Additionally, we remain engaged with our Navy partners and have identified promising areas for intelligent commonality between GBSD systems and future Navy weapons, and we are collaborating with the NNSA to develop a W-78 warhead life extension program for our aging nuclear assets, starting in 2020. The replacement warhead, Interoperable Warhead 1 (IW1) is planned to deploy with GBSD; however, due to system age-out, attrition, and commitment requirements, the first priority is to modernize the necessary facilities, replace the missile, and sustain and maintain command and control (C2) systems.

UH-1N

AFGSC is the lead command for the Air Force's fleet of 62 UH-1N helicopters. The majority of these aircraft support two critical national missions. The UH-1N provides vital support in the security of our ICBM fields and critical Continuity of Operations and transport missions in the National Capitol Region. 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.

UH-1N Follow On

In order to continue supporting these critical national missions and fully comply with DoD and USSTRATCOM requirements, the Air Force has committed $2B FY18-22 to 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. We plan to release the final request for proposal in summer 2017, with contract award in FY18.

Bomber Forces

Eighth Air Force 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, or deployment.

Global Assurance and Deterrence

To assure our allies and partners, and to increase regional stability, AFGSC provides bomber forces arrayed across the globe to provide flexible, responsive options to combatant commanders. The deployments in support of the United States Central Command area of responsibility (AOR) and the Continuous Bomber Presence (CBP) in the United States Pacific Command (USPACOM) AOR send a strong signal to our allies of our commitment to their regions. Additionally, AFGSC provides bomber forces to support United States Southern Command's (USSOUTHCOM) Joint-Interagency Task Force-South (JIATF-S), United States European Command (USEUCOM), and United States Africa Command (USAFRICOM) through the Joint Staff's Global Force Management (GFM) process and Bomber Assurance and Deterrence (BAAD)-ordered deployments and missions. These opportunities enhance our support to our allies and display our resolve to our adversaries. The core of AFGSC assurance and deterrence is our unwavering commitment to United States Strategic Command (USSTRATCOM) and our nuclear deterrence operations (NDO). AFGSC must balance global force posturing with our NDO mission, while not jeopardizing readiness and fleet health. Arraying bomber forces globally, to increase strategic flexibility and respond to a changing global security environment, while doing no harm to our NDO mission, will further enhance our assurance to allies and partners and posture our forces in such a manner where our adversaries will take notice.

B-1

The B-1 is a highly versatile, multi-mission weapon system that carries the largest payload of both guided and unguided weapons in the Air Force inventory. It can rapidly deliver large quantities of precision and non-precision weapons in support of combatant commanders around the globe.

The B-1 will be in demand for at least two more decades and avionics and recent weapon upgrades are critical for it to remain a viable combatant commander tool. The Integrated Battle Station (IBS)/Software Block-16 (SB-16) upgrade, the largest ever B-1 modification ($210M

FY18-22), includes an upgraded Central Integrated Test System (CITS), Fully Integrated Data Link (FIDL), Vertical Situation Display Upgrade (VSDU), and a simulator upgrade. This marks a fantastic capability upgrade, and the associated cockpit upgrades provide the crew with a much more flexible, integrated cockpit.

B-52

The B-52 may be the most universally recognized symbol of American airpower…its contributions to our national security through the Cold War, Vietnam, Desert Storm, Allied Force, Iraqi Freedom, Enduring Freedom and now Operation Inherent Resolve are well documented. The B-52 is able to deliver the widest variety of nuclear and conventional weapons.

I anticipate the B-52 will remain a key element of our bomber force until at least 2050; it is paramount that we continue to invest resources into this aircraft now to keep it viable in both conventional and nuclear mission areas for the next 30-40 years. Our B-52s are still using 1960s radar technology with the last major radar upgrade done in the early 1980s. Currently, the mean time between failure rates on the B-52 radar is 46 flight hours. 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 $500M FYDP B-52 Radar Modernization Program is approaching the conclusion of its Capability Development Document phase and will enter the program pre-Milestone B.

Today we have 21 of the B-52s converted to the CONECT configuration. This modification moves the B-52 into the digital age for the first time. This on-board LAN will allow the crew to share a common battlespace picture. This modification is installed on every aircraft going through their regular program depot maintenance cycle.

The 1760 Internal Weapons Bay Upgrade increases B-52 smart weapons capacity by 67%. This capability reached its IOC milestone in May 2016 and will be adding Joint Air-to-Surface Standoff Missile (JASSM) and Joint Air-to-Surface Standoff Missile-Extended Range (JASSM-ER) capability in late summer 2017.

Communications remain the cornerstone of our strike capability. The ability to launch bombers and retask / retarget them while enroute to the fight is a powerful force multiplier. We will be adding 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 Link-16. Additionally, we are exploring options to re-engine the B-52 to make it more fuel efficient and cost effective.

Finally, I want to point out that we have converted 29 operational and 12 stored B-52 aircraft to conventional-only configurations. These conversions were undertaken as a part of the U.S.'s New START obligations.

B-2

For nearly 25 years, our B-2s have provided the nation with an assured penetrating bomber capability. The B-2's ability to penetrate enemy defenses, holding any target at risk with a variety of nuclear and conventional weapons, has provided deterrence against our enemies and stability for our allies.

We are starting the most aggressive modernization period in the history of the B-2. This effort is addressing a Nuclear Command and Control need, bringing Very Low Frequency (VLF) and Extremely High Frequency (EHF) Satellite communications capability to the aircraft. Additionally, with the proliferation of Anti-Access Area Denial (A2/AD) 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 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 sustaining and modernizing the B-2's small-fleet should be considered when determining the purchase size of future acquisitions such as the B-21.

B-21

Technology gaps between the US and potential adversaries are closing. The B-21 will support the nuclear Triad by providing an advanced and flexible deterrent capability, with 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, large and mixed payloads, and survivability. The B-21 program will extend American air dominance against next generation capabilities and advanced air defense environments.

The B-21 is designed to have an open architecture, which enables it to integrate new technology and respond to future threats. The B-21 is fully funded in the FY18 budget submission, and an initial capability is projected for the mid-2020s.

As the B-21 is developed and goes into production, the Air Force is also preparing for future basing and the required facilities on those bases. While the B-21 will bring new construction and facility renovation costs, we believe the current bomber bases are best suited to absorb the new mission. Simply put, the current bomber bases were custom built to support and sustain bomber operations. In many cases, they already have the environmental framework and airspace agreements in place. Additionally, the current bomber bases also have the infrastructure and missions for maintenance, munitions storage, security, simulators, base operating support network, off-base community support, and many of the other areas required for bomber operations. New bases may require more construction, infrastructure, and investment dollars. While preparing for future B-21 basing, our primary focus will be providing safe, secure, and effective 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. While the ALCM remains effective today, we must replace it due to its aging subsystems, the shrinking stockpile of operational missiles (553), and advances in enemy defenses. We plan to invest $162M in FY18-22 to continue life-extension programs including critical telemetry, encryption, and flight termination components until our Long-Range Stand-Off (LRSO) weapon 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. It's only employment platform is the B-52 and unlike the ALCM, CALCM has not received any life-extension programs to maintain reliability or viability against enemy defenses. Current NDAA language has prevented 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, B-1, or B-2. 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 which hold our adversaries at risk.

Long Range Stand-Off Missile

The AF dedicated $2.7B FY18-22 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-ranging, and survivable weapon system and an absolutely essential element of the nuclear triad. It will be flexible, and will be 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, and negatively impacts our ability to execute the mission. Additionally, we are synchronizing our efforts with NNSA to fully integrate the W80-4 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 support the airborne leg of the Triad and is the primary weapon supporting our NATO allies under extended deterrence. The B61-12 is currently undergoing a Life Extension Program (LEP) and will result in a smaller stockpile, reduced special nuclear material in the inventory, improved B61 surety, and reduced lifecycle costs by consolidating four weapon versions into one. The B61-12 life-extension includes the addition of a digital weapons interface and a guided tail kit assembly. AFGSC is the lead command for the $630M FY18-22 B61-12 Tail Kit Assembly program, which is needed to meet USSTRATCOM requirements on the B-2. The B61-12 Tail Kit Assembly program is in Engineering and Manufacturing Development Phase 1 and is synchronized with NNSA efforts.

The Tail Kit Assembly design and production processes are on schedule and within budget to meet the planned Fiscal Year 2020 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, USCENTCOM, and the Air Force Life Cycle Management Center Program Office are currently conducting two more enhancements to increase weapon effectiveness.

Security

Nuclear security is a key function of the command's mission, and a major AFGSC security initiative continues to be new Weapon Storage Facilities (WSF). 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 eliminates security, design, and safety deficiencies and improves our maintenance processes. We have put forward a $1.9 billion program to meet requirements for a safe, secure, and effective nuclear arsenal.

Nuclear Command, Control, and Communications

Air Force Nuclear Command, Control and Communications (NC3) systems connect the President to his senior advisors and to the nuclear forces. The ability to receive presidential orders and convert those orders into actionable directives is both critical to performing the nuclear mission and foundational to an effective and credible strategic deterrent. AFGSC is the Air Force's lead command for National Leadership Command Capabilities (NLCC)/NC3 which establishes one focal point for the weapon system.

AFGSC has taken its charge of sustaining and modernizing the NC3 weapon system seriously. In fact, 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. To remedy the deterioration, we have advocated for funds specifically for NC3, including $16 million to improve long-haul communications, $8 million in telephony upgrades, and $2 million in radio upgrades. Additionally, AFGSC stood up the USAF NC3 Center in April 2017. The NC3 Center oversees interoperability, standardization, and configuration control of the USAF's NC3 weapon system, and will plan and program for NC3 investment, sustainment, and operations. In standing up the Center, Air Force NC3 finally speaks with a singular voice.

AFGSC has continued to make gains in efforts to modernize our communications and cyberspace infrastructure by leveraging technology, making our forces more capable and effective. In our ICBM fields, some of the copper cabling that transports voice and data between the main base and the Missile Alert Facilities (MAFs) rely on 1960s technology and equipment. We have undertaken a major modernization initiative to replace old cabling with modern technology that will realize over a 15-fold increase in data capability and improve missile field command and control with unclassified and classified networking, wireless networking, and secure digital voice to the MAFs. These are important upgrades, but they still do not replace the buried copper nuclear command and control lines.

When AFGSC was named lead command for NC3, we added the E-4B to our list of aircraft. The E-4B Nightwatch serves as the National Airborne Operations Center and is a key component of the National Military Command System for the President, the Secretary of Defense, and the Joint Chiefs of Staff. In case of national emergency or destruction of ground command and control centers, the aircraft provides a highly survivable command, control and communications center to direct U.S. forces, execute emergency war orders and coordinate actions by civil authorities.

Nuclear Enterprise Review

In 2014, the DoD Nuclear Enterprise Review (NER), along with internal Air Force assessments, served as a catalyst for major improvements within the Air Force nuclear enterprise. Since 2014, the Air Force has applied deliberate and sustained focus towards addressing the identified shortfalls. Our ongoing efforts—spanning the full-range of personnel, management, oversight, mission performance, training, testing, and investment issues—continue to produce tangible and lasting improvements. As this committee is well aware, the Air Force

and AFGSC have undertaken monumental shifts to support our number one priority, the nuclear enterprise. Our Airmen continue to see increased emphasis on their mission requirements. They see mid-career leaders mentoring those younger than them, educating them on the importance of their missions. And they see their most senior leaders in the Administration, in the Department, and here in Congress acting on their behalf.

However, we are not done. Since the NER, we have accomplished bottom-up reviews of our bomber forces, airborne launch operations, and the headquarters itself. Most recently, we created a Human Weapon System Team. All of our major weapon systems have teams which monitor the health and sustainment of the program. We were lacking this kind of approach for the most important weapon system we have…our Airmen! We continue to cultivate a culture that embraces innovation, change, diversity, while fostering an environment of dignity and respect. In order to gauge our progress on improvement, I established an Independent Strategic Assessment Group earlier this year. This group, led by established former leaders of the DoD, is providing me with critical feedback on how we are taking care of our Airmen, how we are structured, and how we can expertly accomplish our deterrence mission. This is a resource I will continue to use in the future as the command evolves.

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 AF Core Values and reinforced by our rich heritage. We exist to serve the nation by providing strategic deterrence and global strike. However, without our great Airmen, we could never hope to be as successful as we are. When I visit our units, I am always humbled by the dedication of our Global Strike warriors and their unfailing drive to do their best. I truly believe that while we recruit Airmen, we retain families. We cannot forget the loved ones who stay behind while our Airmen deploy, whether it is overseas or to a missile field. We recognize that no matter the job an Airman is doing, we must never lose sight of the families who support them. This is why I have asked my leadership at all levels to focus on making tangible and lasting improvements in supporting our Airmen and families. We have always made family a top priority, but now we're deliberately focusing on initiatives to care for our Airmen and their families. We are improving the quality and capacity of dormitories across the command and strengthening involvement and engagement with local

School Liaison Officers through annual training and regular encounters. We have also looked at how we care for our families and have engaged the Defense Health Agency to enhance the reimbursement rates for Applied Behavioral Analysis Therapy and the Exceptional Family Member Program. We have recognized the sacrifices spouses make when they are required to change duty stations and realize the high rates of under and unemployment. To address this area, we are utilizing military spouse preference hiring authorities, and are also working with Headquarters Air Force on reciprocity agreements to transfer accreditations and licensures (e.g. medical, education) for spouses in these situations to assist in employment opportunities. These efforts ensure that we take special care of our great Airmen and their families.

Conclusion

Thank you for your continued support of Air Force Global Strike Command and our strategic deterrence and global strike missions. Fiscal constraints, while posing planning challenges, do not alter the national security landscape or the intent of competitors and potential adversaries; nor do they diminish the enduring value of long range, strategic forces to our nation. The technology and capability gaps between our nation and its adversaries are closing dangerously fast…and in some cases, have closed completely.

Although we account for less than one percent of the DoD budget, AFGSC forces represent two-thirds of the nation's nuclear Triad and oversee approximately 75% of the nation's NC3 systems. These forces play a critical role in ensuring U.S. national security, 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. Modernization, however, is mandatory. 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 and be prepared to fight with modern and reliable forces. To do otherwise, by delaying modernization once more, invites strategic instability, potential miscalculation, and the risk of devastating escalation. We stand at a pivotal point in history where the American people and our allies are counting on congressional action to fund our nuclear enterprise modernization efforts. Thank you for your ongoing support of the nuclear enterprise.

General Robin Rand

Gen. Robin Rand is the Commander, Air Force Global Strike Command, Barksdale Air Force Base, Louisiana. He is responsible for organizing, training, equipping all U.S. intercontinental ballistic missile and bomber forces. The command's mission is to provide strategic deterrence, global strike and combat support. The command comprises more than 31,000 professionals operating at nine wings that control the nation's inventory of Minuteman III intercontinental ballistic missiles, B-1, B-2 and B-52 bomber aircraft.

General Rand was commissioned in 1979 after graduating from the U.S. Air Force Academy. He's had multiple flying tours; served as an air liaison officer with the U.S. Army; and has had staff tours on the Joint Staff, Office of the Secretary of Defense, and Air Staff. General Rand's previous commands include the 36th Fighter Squadron, USAF Weapons School, 8th Fighter Wing, 56th Fighter Wing, 332nd Air Expeditionary Wing at Salad Air Base, Iraq, 12th Air Force (Air Forces Southern), and prior to this assignment, Air Education and Training Command.

General Rand is a command pilot with more than 5,080 flying hours, including more than 470 combat hours.

EDUCATION

1979 Bachelor of Science, 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, Aeronautical Science, Embry-Riddle Aeronautical University, Fla.
1990 U.S. Air Force Fighter Weapons Instructor Course, Nellis AFB, Nev.
1998 Master of Arts, 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 Pilot, 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. February 1985- December 1986, F-16 Pilot, 612th Tactical Fighter Squadron, Torrejon AB, 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, Texas
27. July 2015 - present, Commander, Air Force Global Strike 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

FLIGHT INFORMATION
Rating: Command pilot
Flight hours: More than 5,100
Aircraft flown: Primarily F-16

MAJOR AWARDS AND DECORATIONS
Distinguished Service Medal with oak leaf cluster
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 Feb. 1, 1995
Colonel Feb. 1, 2001
Brigadier General Jan. 1, 2006
Major General June 1, 2009
Lieutenant General Dec. 1, 2011
General Oct. 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

25 MAY 2017

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THE HOUSE ARMED SERVICES COMMITTEE
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 is essential to our ability to deter warfare with major adversaries and assure our allies. The Navy provides the most survivable leg of the triad with our ballistic missile submarines (SSBNs) and the Trident II (D5) strategic weapon system (SWS). Submarine launched ballistic missiles (SLBMs) are responsible for a significant majority of the nation's operationally deployed nuclear warheads. The Chief of Naval Operations (CNO) states that sea-based strategic deterrence is the Navy's number one priority. In order to execute this mission, we must sustain all elements of the undersea leg of the triad including the submarine, the propulsion system, and the SWS.

SSP's mission is to design, develop, produce, support, and ensure the safety of our Navy's sea-based strategic deterrent, 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.

Sustaining the sea-based strategic deterrent capability is a vital national requirement today and into the foreseeable future. Our fiscal year 2018 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; the COLUMBIA Class Program; the Solid Rocket Motor Industrial Base; the Navy Nuclear Deterrence Mission Oversight responsibility; and collaboration with the Air Force.

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 Masters at Arms provide an effective and integrated elite security force at our two Strategic Weapons Facilities and 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 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.

The Navy maintains a culture of self-assessment in order to ensure safety and security. This is accomplished through biennial assessments, periodic technical evaluations, formal inspections, and continuous on-site monitoring and reporting at the Strategic Weapons Facilities. The Department of the Navy completed its most recent biennial self-assessment in 2016. The department's self-assessment efforts have shown a continued focus on compliance and improvement in the oversight of our execution of the Navy Nuclear Deterrence Mission (NNDM). 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 next priority is SSP's life extension effort to ensure the Trident II (D5) SWS remains an effective and reliable sea-based deterrent.

The Trident II (D5) SWS has been deployed on our OHIO Class ballistic missile submarines for 27 years and is planned for a service life of 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 payload 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 flight hardware — missile and guidance — life extension efforts are designed to meet the same form, fit, and function of the original system to keep 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 February, the first two D5 life-extended missiles were outloaded onto the USS MARYLAND (SSBN 738). This was a significant programmatic achievement and represents the first step to convert the entire Fleet to life extended missiles over the coming years.

We also reached another milestone in our program earlier this year. In February, we conducted the last Follow-On Commander Evaluation Test (FCET) of the legacy Trident II (D5) missile, involving the flight test of four missiles. The FCET program was established to obtain and monitor, under representative tactical conditions, valid operational reliability, accuracy, and other performance planning factors. We started the D5 FCET program nearly 25 years ago and now have young engineers supporting the program who were born after the FCET program began. We will begin the Commander Evaluation Test (CET) program next year to measure the performance and ability of the life-extended missile to meet demonstrated requirements.

Another major step to ensure the continued sustainment of our SWS is the SSP Shipboard 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 includes refreshes of shipboard electronics hardware and software upgrades, 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 STRATCOM requirements. Thirty installations were completed in 2016; six have been completed so far this year with an additional fifteen planned.

The Navy also works in partnership with the Department of Energy's National Nuclear Security Administration 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. The W76 life extension program is approximately 80 percent complete, and the W88 major alteration program remains on track to support a first production unit in calendar year 2019.

The Trident II (D5) SWS continues to demonstrate itself as a credible deterrent and exceeds operational system requirements established more than 30 years ago. Our life extension efforts will sustain a credible strategic weapon system until the 2040s. The Navy is also beginning to evaluate options to maintain a credible and effective strategic weapon system to the end of the COLUMBIA Class SSBN service life in the 2080s. SSP has a history of more than 60 years of developing, producing, and supporting strategic weapon systems to support the undersea leg of the triad. We have optimized our SWS and applied 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. These D5 LE missiles will be shared with the OHIO Class submarines until their retirement. Maintaining one 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). 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 April 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. We developed a CMC that will support production in both U.S. and UK build yards. The CMC will allow the life extended Trident II (D5) missile to be deployed on the COLUMBIA and the UK Dreadnought Class SSBNs.

In 2015, we began construction of missile tubes to support building the U.S. prototype Quad-pack module, the Strategic Weapons System – Ashore (SWS Ashore) test site, and the UK's first SSBN. The joint CMC effort is shifting from design to construction. Any delay to the CMC effort has the potential to impact the UK's ability to maintain a continuous at sea deterrent posture.

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 in April when test bay one reached initial operating capability.

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. To do so, we will launch the refurbished Trident II (D5) test shapes originally used in the 1980s starting later in June.

The OHIO Class will start to decommission in the late 2020s and the COLUMBIA Class must be ready to start patrol in fiscal year 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 ballistic missile submarines 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 our operational requirements but also the UK's ability to maintain a continuous at sea deterrent posture.

Solid Rocket Motor Industrial Base

The defense and aerospace industrial base – in particular the solid rocket motor industry and its sub-tier supplier base – is another important priority. I remain concerned with the state of the solid rocket motor manufacturers as well as their suppliers of critical constituents. While the Navy is maintaining a continuous production capability of rocket motors, the demand from both 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 of extinction. To allow this puts our national security at risk. Though future Air Force modernization will provide some relief beginning in the mid-2020s, the Navy cannot shoulder these costs in the interim, nor can our nation 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. At SSP, we will continue to work with our industry partners, DoD, 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

As a result of the Nuclear Enterprise Review, the Navy implemented a centralized oversight authority for nuclear force readiness. As the Director of Strategic Systems Programs, I have 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 Navy Nuclear Deterrence Mission 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 2016, I submitted the first 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.

Collaboration with the Air Force

The final priority is strategic collaboration between the Services. The Navy and the Air Force are both addressing the challenges of sustaining aging strategic weapon systems and are collaboratively working to ensure these capabilities are retained in the long-term to meet mission requirements. Many of the industries and required engineering skills sets are unique to strategic systems.

In March 2016, a joint Air Force/Navy team assessed opportunities for commonality between the Ground Based Strategic Deterrent (GBSD) and the Trident II (D5) program. The team identified commonality candidate areas for GBSD. The use of these candidates offers significant potential benefits in terms of reducing costs and technical and schedule risks to the GBSD and SLBM programs. Commonality will provide the Navy and Air Force opportunities to eliminate redundant efforts, leverage economies of scale, and sustain shared critical skills and capabilities needed by securing the industrial base. We anticipate industry will incorporate commonality into their GBSD proposals. Navy also will collaborate to leverage GBSD investments for future SLBM recapitalization.

Each leg of the triad provides unique attributes. Furthermore, a sustained and ready triad provides an effective hedge, allowing the nation to shift to another leg, if necessary, due to unforeseen technical problems or vulnerabilities. For this reason, the

Department is focused on cooperative efforts that maintain affordability and reduce risk to both services, while retaining essential diversity where needed to ensure a credible and reliable deterrent.

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. 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.

Updated: 11 May 2015

STATEMENT BY

DR. JOHN A. ZANGARDI
ACTING DEPARTMENT OF DEFENSE (DOD)
CHIEF INFORMATION OFFICER (CIO)

BEFORE THE

HOUSE ARMED SERVICES COMMITTEE

STRATEGIC FORCES SUBCOMMITTEE

ON

FISCAL YEAR 2018 PRIORITIES FOR NUCLEAR FORCES AND ATOMIC ENERGY DEFENSE ACTIVITIES

May 25, 2017

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

Introduction
Good morning Mr. Chairman, Ranking Member, and distinguished Members of the Subcommittee. Thank you for this opportunity to testify before the Subcommittee today on the Department's nuclear command, control, and communications (NC3) system, and the risks, challenges, and opportunities within the system and related programs; priorities and plans for modernization and recapitalization of the NC3 system. I am John Zangardi, the Acting Department of Defense (DoD) Chief Information Officer (CIO). I am the senior civilian advisor to the Secretary of Defense for information technology (IT) and the DoD information enterprise, including communications; spectrum management; network policy and standards; cybersecurity; positioning, navigation, and timing (PNT) policy; and the DoD information enterprise that supports DoD command and control (C2). I am also responsible for policy, oversight, guidance, and coordination for the Department's NC3 systems.

Fiscal Year 2018 Guidance
My office's Fiscal Year 2018 Capabilities Planning Guidance states that we need to strengthen our National Leadership Command Capabilities (NLCC) to meet changing threats and help the President and National Leadership command U.S. forces. I believe this budget will help both areas as we identify threats and ways to mitigate them, which in turn helps our Nation's leaders maintain positive control of the U.S. nuclear forces.

This preeminent issue area is a continuous focus for the Department and more specifically my office. This effort is led by the Congressionally-mandated Council on Oversight of the National Leadership Command, Control, and Communications System.

Council on Oversight of the National Leadership Command, Control, and Communications System
The Council on Oversight of the National Leadership Command, Control, and Communications System, (the Council), had a productive year. Highlights include:

- Continuous focus on identified issues. For example, the Council is acting on recommendations from the NC3 Enterprise Review, tri-chaired by the Joint Staff, USSTRATCOM and my office. We closed out a couple of the easy, short-term findings like E-6B availability in support of operational missions. However, there are some findings, such as manpower, training, and expertise, which we will actively track for years to ensure we fully address these requirements. This is not a "launch and leave" effort - we will continue to provide Senior Leadership guidance until the problems are resolved.

- Adopting a mission focus theme. Since the Council's inception, we have been heavily focused on NC3 modernization and sustainment programs. We will continue that focus but bring it into perspective based upon what our main customers, USSTRATCOM, Joint Staff, USNORTHCOM and the White House require to accomplish their mission over the short- and

long-term. So, working with USSTRATCOM, the enterprise is developing a NC3 mission area risk analysis across the five NC3 functions: planning, situation monitoring, decision making, force management and force development. Additionally, the enterprise is working on a methodology to provide the Council members a clear understanding of NC3 system readiness.

- Maintaining responsiveness with Congress. I believe our team's communication with your team has increased the capability and readiness of our NLCC enterprise. This communication has helped increase clarity of the NC3 mission area and its acquisition process, provided stability for NC3 program offices, and ensured warfighter capabilities. A good example of this teamwork in action is during the last couple of years during the unfunded requirements phase. We have helped EUCOM and NORTHCOM with their high-altitude electromagnetic pulse (HEMP) requirements.

Risks

The types of risks and challenges are much the same as they've been for the past decade. We have an antiquated NC3 system that we are progressively modernizing, while at the same time ensuring we have a robust sustainment program in place for our older systems. My team is constantly working with the enterprise team to identify problems and resolve them in a timely manner. For example, over the next year the Strategic Automated Command and Control System (SACCS) digital modernization program will enable the Air Force to jettison those large 8-inch floppy disks after 30 plus years. Next, we are working with the Air Force to ensure we have Military Strategic and Tactical Relay (MILSTAR) terminal parts for the next two decades as we field Advanced Extremely High Frequency satellites' family of beyond line-of-sight terminals (FAB-T) over the next 15-20 years. These are only two examples within the greater NC3 enterprise that we are addressing at this time.

Additionally, we are utilizing the Council's dedicated Defense Threat Reduction Agency team to help identify NC3 vulnerabilities across a broad area of potential threat vectors. I would be happy to discuss that team's activities and the Council's work in our classified session.

Conclusion

DoD recognizes the importance of modernization and the security implications of our NC3 systems. We have more work to do and are not where we want to be. We are, however, making investments in our existing NC3 systems and balancing modernization against the sustainment and improvement of these critical systems. The Department is actively pursuing modernization while operating within the confines of a constrained budget environment. The Department appreciates the support of the Subcommittee on these important matters. Thank you for the opportunity to testify today and I look forward to your questions.

Dr. John A. Zangardi
Acting Department of Defense Chief Information Officer

Dr. John Zangardi became the Principal Deputy Department of Defense Chief Information Officer on October 2, 2016, and is currently serving as the Acting DoD CIO. As the Acting DoD CIO, Dr. Zangardi assists as the primary advisor to the Secretary of Defense for Information Management / Information Technology and Information Assurance as well as non-intelligence space systems; critical satellite communications, navigation, and timing programs; spectrum; and telecommunications.

Dr. Zangardi's background includes acquisition, policy, legislative affairs, resourcing, and operations. In his most recent assignment as the Deputy Assistant Secretary of the Navy for Command, Control, Communications, Computers, Intelligence, Information Operations, and Space (DASN C4I, IO, and Space), he was responsible for providing acquisition oversight for C4I, cyber, space, business enterprise, and information technology programs. In 2014 and 2015, he additionally served as the acting Department of the Navy Chief Information Office (DON CIO).

Dr. Zangardi is a retired Naval Flight Officer and served in a variety of command and staff assignments. After retiring from the Navy, Dr. Zangardi was selected for appointment to the Senior Executive Service (SES) and assigned as the Deputy Director Warfare Integration Programs (N6FB) within the Deputy Chief of Naval Operations Communications Networks (N6) Directorate. With the stand-up of the Deputy Chief of Naval Operations Information Dominance (N2/N6), he was assigned as the Director for Program Integration and as Deputy to the Director for Concepts, Strategy, and Integration.

He is a native of Scranton, Pennsylvania and a graduate of the University of Scranton. Dr. Zangardi was awarded a Master of Science degree from the Naval Postgraduate School and a Doctor of Philosophy degree from George Mason University.

Written Statement of Susan M. Cange

Acting Assistant Secretary for Environmental Management

United States Department of Energy

Before the Subcommittee on Strategic Forces

Committee on Armed Services

United States House of Representatives

May 25, 2017

Good morning Chairman Rogers, Ranking Member Cooper, and Members of the Subcommittee. I am pleased to be here today to represent the Department of Energy's (DOE) Office of Environmental Management (EM). At DOE, the safety of our workforce, the communities and tribal nations that surround our sites, and the environment is the Secretary's highest priority. I would like to provide you with an overview of the EM program, key accomplishments during the past year and planned accomplishments under the President's $6,508,335,000 Fiscal Year (FY) 2018 budget request.

Overview of the EM Mission

EM supports the Department of Energy's priorities to meet the challenges leading the cleanup of legacy waste resulting from the Nation's Manhattan Project and Cold War efforts. The EM program was established in 1989 and is responsible for the cleanup of millions of gallons of liquid radioactive waste, thousands of tons of spent nuclear fuel and special nuclear material, disposition of about two million cubic meters of transuranic and mixed/low-level waste, vast quantities of contaminated soil and water, and deactivation and decommissioning of thousands of excess facilities. This environmental cleanup responsibility results from five decades of nuclear weapons development and production and Government-sponsored nuclear energy research and development. It involves some of the most dangerous materials known to man.

Since 1989, the EM footprint has been reduced significantly, as cleanup activities have been completed at 91 sites in 30 states. For example, the Fernald site in Ohio and the Rocky Flats site in Colorado, both of which once housed large industrial complexes, are now wildlife refuges that are also available for recreational use. At the Hanford Site in Washington State, the bulk of the cleanup along the Columbia River corridor has been completed including: six reactors cocooned, 502 facilities demolished, 1,201 waste sites remediated, and 16 million tons of waste removed. At the Oak Ridge site in Tennessee, we have completed the decommissioning of five gaseous diffusion uranium enrichment processing facilities---the first time such an

accomplishment has been achieved in the world. At the Idaho National Laboratory, we have decommissioned and demolished more than two million square feet of excess facilities, and removed all EM special nuclear material (e.g., highly enriched uranium) from the state. At the Savannah River Site, we have vitrified about half of the tank waste, by producing more than 4,100 canisters of glass, we have also permanently closed 8 of 51 high level waste tanks, and successfully decontaminated and decommissioned approximately 290 facilities, including in-situ decommissioning of two former production reactors.

Today, EM is responsible for the remaining cleanup at 16 sites in 11 states. There is less than 300 square miles remaining to be cleaned up across the EM complex and progress continues. However, as many of us know, the remaining cleanup work presents some of our greatest challenges.

EM Cleanup Objectives and Priorities

EM's first priority is worker safety and we continue to pursue cleanup objectives with that in mind. EM will continue to discharge its responsibilities by conducting cleanup within a "Safe Performance of Work" culture that integrates environmental, safety, and health requirements and controls into all work activities. Taking many variables into account, such as risk reduction and compliance agreements, EM has the following priorities:

- Radioactive tank waste stabilization, treatment, and disposal
- Spent nuclear fuel storage, receipt, and disposition
- Special nuclear material consolidation, stabilization, and disposition
- Transuranic and mixed/low-level waste disposition
- Soil and groundwater remediation
- Excess facilities deactivation and decommissioning

In particular, the FY 2018 budget request will allow EM to:

- Continue important cleanup activities at all of our sites in a safe and deliberate manner that ensures protection of our workers, the public and the environment
- Continue waste emplacement at the Waste Isolation Pilot Plant, including increasing the number of shipments
- Continue construction of the Low Activity Waste Facility, Analytical Laboratory, Effluent Management Facility, and supporting facilities at the Hanford site
- Complete commissioning and startup of the Salt Waste Processing Facility at the Savannah River Site
- Continue with commissioning and start-up activities for the Integrated Waste Treatment Unit at Idaho
- Complete design and begin construction of the Mercury Treatment Facility at Oak Ridge

Before discussing recent and near-term accomplishments, I want to provide a brief update on the recent incident at the Hanford Site that pertains to a partial collapse of one tunnel near the Plutonium Uranium Extraction Plant, also known as the PUREX facility. The tunnel, which has not been in operation for decades, has been used since the 1950s to store contaminated equipment from the PUREX operations. On May 9, as a part of our surveillance program, workers discovered that a 20 by 20-foot section of the tunnels had collapsed. Based on extensive radiological monitoring, including monitoring performed by the State of Washington's Department of Health, there has been no release of radiological contamination from the incident, and no workers were injured or exposed to radiological material as a result.

Workers have since filled in the collapsed section with soil and have placed a cover over the length of the tunnel. We are working closely with the state of Washington on longer-term actions which are under development. We take this event seriously, we will look closely at lessons learned from this event that may apply to other EM facilities. We are continuing to minimize the potential of a radiological release and ensure that our workers and the public are protected. We are committed to working with the State of Washington for a more permanent solution that focuses on maintaining the structural integrity of the tunnel and that permanently addresses the waste.

Key Recent and Near-Term Accomplishments

I would now like to take this opportunity to highlight a number of EM's most recent accomplishments. Recently, the Waste Isolation Pilot Plant (WIPP) received its first shipments of transuranic (TRU) waste since it re-opened in January 2017. The shipments from the Idaho National Laboratory, Savannah River Site, and Waste Control Specialists in Texas were an important milestone for WIPP and for sites that stored TRU waste since WIPP ceased operations in February 2014. Shipments from Oak Ridge and Los Alamos National Laboratory are expected later this year. WIPP is currently receiving three shipments a week, and is expected to ramp up to four shipments a week by the end of 2017. This year, WIPP anticipates receipt of approximately 130 shipments of waste for emplacement in the underground.

EM is continuing to make steady and substantial cleanup progress across the complex. At the Savannah River Site, construction of the Salt Waste Processing Facility is complete. Once in operation, it will significantly accelerate EM's ability to treat tank waste at SRS. At Hanford, demolition of the Plutonium Finishing Plant, once one of the most dangerous buildings in the DOE complex, is now underway and is scheduled for completion later this year. This winter, workers at Idaho's Advanced Mixed Waste Treatment Facility completed a15-year effort to

retrieve, characterize, treat and package more than 65,000 cubic meters of TRU waste (plutonium-contaminated waste boxes, drums, and dirt) to ready it for shipment to WIPP.

Highlights of the FY 2018 Budget Request

The FY 2018 budget request for EM is the largest request in ten years and includes $5,537,186,000 for defense environmental cleanup activities, of which $225,000,000 would be used to address excess facilities to support modernization of the nuclear security enterprise. The Department's Excess Contaminated Facilities Working Group analyzed and developed options for how DOE may prioritize and address the numerous contaminated excess facilities owned by the various DOE program offices. The FY2018 budget request implements a targeted effort to accelerate deactivation and decommissioning (D&D) of specific high-risk facilities at the Y-12 National Security Complex and the Lawrence Livermore National Laboratory not currently in the Environmental Management programs' inventory to achieve substantial risk reduction within four years.

The request will allow EM to maintain a safe and secure posture across the complex, while continuing compliance activities. In FY 2018, we expect to continue to make significant progress in addressing radioactive tank waste at EM sites, as well as to continue our D&D activities and our soil and groundwater remediation activities. In addition, we will continue to manage and disposition special nuclear materials, spent nuclear fuel and transuranic and solid waste.

At WIPP, the FY 2018 request supports continued waste emplacement and ramps up receipt of TRU waste shipments. It also supports the completion of design work and begins construction of the new ventilation system and exhaust shaft.

At the Savannah River Site, the FY 2018 request supports the commissioning and startup of the Salt Waste Processing Facility, and the operation of the Defense Waste Processing Facility to produce 60 to 70 canisters of vitrified high-level waste. In addition, the request initiates the design of the Emergency Operations Center replacement project and supports the safe and secure operation of the H Canyon/ HB-Line for the purpose of processing aluminum-clad spent nuclear fuel and down-blending EM-owned plutonium. These processing activities will, ensure the availability of space in K- and L-Areas for the future receipt of excess research nuclear material that has been removed from civilian sites in foreign countries. These removals provide for safe, secure storage of this material.

At Hanford, EM is working aggressively to complete and commission treatment facilities to safely immobilize tank waste for disposition. The Office of River Protection's FY 2018 budget request represents planned efforts for continued progress required by the Tri-Party Agreement and 2016 Amended Consent Order. The request is designed to maintain safe operations for the

tank farms; achieve progress in meeting regulatory commitments; support the development and maintenance of infrastructure necessary to enable waste treatment operations; continue construction at the Waste Treatment and Immobilization Plant's (WTP) Low-Activity Waste Facility, Effluent Management Facility, Balance of Facilities, and Analytical Laboratory to support treatment of tank waste by 2023; and resolve significant technical issues with the WTP Pretreatment facility.

Ongoing Hanford cleanup efforts will continue at the Richland Operations Office. The FY 2018 budget request supports waste site remediation activities along the River Corridor and operations necessary to provide monitoring of the 324 Building; continues groundwater remediation and continues progress on the K West Basin sludge removal project.

At the Idaho National Laboratory, the FY 2018 request supports buried waste retrieval activities and work necessary to commission and startup the Integrated Waste Treatment Unit. Once this facility is in operation, it will treat the approximately 900,000 gallons of radioactive sodium bearing waste. The request also supports repackaging and the characterization of contact-handled transuranic waste at the Advanced Mixed Waste Treatment Project.

At Oak Ridge, the request supports continued demolition of the remaining facilities and site restoration at the East Tennessee Technology Park, as well as completion of the design and initiation of early site preparations for the Mercury Treatment Facility at the Y-12 National Security Complex. Additionally, the budget supports preparation of Building 2026 at the Oak Ridge National Laboratory to support processing of uranium-233 materials.

With some of the most challenging cleanup work still remaining in the EM program, we understand the importance of technology development in reducing lifecycle costs and enhancing our effectiveness. To help address many of the technical challenges involved with high-risk cleanup activities, the FY 2018 request of $25,000,000 for Innovation and Technology Development projects to tackle our greatest challenges with remediation of Technetium-99, Mercury, Cesium-137 and Strontium-80, and the integration of advanced tooling and robotics for enhanced worker safety and productivity.

Budget Authority and Planned Accomplishments by Site

Office of River Protection, Washington (Dollars in Thousands)

FY 2017 Enacted	FY 2018 Request
$1,499,965	$1,504,311

Key Accomplishments Planned for FY 2018

- Continues construction and commissioning activities for the Direct Feed Low Activity Waste approach at the Waste Treatment and Immobilization Plant, and Low Activity Waste Pretreatment System
- Maintains tank farms in a safe and compliant manner
- Conducts Single-Shell/Double-Shell Tank Integrity assessments
- Supports single-shell tank retrieval activities and continues work to address tank vapor safety concerns.

Savannah River Site, South Carolina (Dollars in Thousands)

FY 2017 Enacted	FY 2018 Request
$1,369,429	$1,447,591

Key Accomplishments Planned for FY 2018

- Completes Salt Waste Processing Facility commissioning and startup in late 2018
- Brings the Defense Waste Processing Facility back online to continue vitrifying high-level waste
- Initiates Saltstone Disposal Unit #7 design and initiate long-lead procurement for cell construction
- Down-blends EM-owned (non-MOXable) surplus non-pit plutonium for disposal at Waste Isolation Pilot Plant
- Processes aluminum clad spent nuclear fuel

Carlsbad Field Office, New Mexico (Dollars in Thousands)

FY 2017 Enacted	FY 2018 Request
$324,720	$323,041

Key Accomplishments Planned for FY 2018

- Continues waste emplacement and ramps up receipt of TRU waste shipments
- Completes design and begins construction on the new ventilation system and exhaust shaft

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

FY 2017 Enacted	FY 2018 Request
$194,000	$191,629

Key Accomplishments Planned for FY 2018

- Continues chromium plume investigation
- Completes town site cleanup of solid waste management units from the 1940s and 1950s production sites

Idaho National Laboratory, Idaho (Dollars in Thousands)

FY 2017 Enacted	FY 2018 Request
$382,088	$350,226[1]

Key Accomplishments Planned for FY 2018

- Continues with the deliberate commissioning and start-up of the Integrated Waste Treatment Unit to treat liquid radioactive sodium bearing waste
- Continues buried waste retrieval activities
- Supports repackaging and the characterization of contact-handled transuranic waste at the Advanced Mixed Waste Treatment Project
- Treats and disposes mixed low-level and low-level waste offsite
- Maintains all dry spent nuclear fuel storage facilities

Oak Ridge Site, Tennessee (Dollars in Thousands)

FY 2017 Enacted	FY 2018 Request
$278,719	$225,205[2]

Key Accomplishments Planned for FY 2018

- Completes design and begins construction of the Mercury Treatment Facility
- Continues capital asset project to support processing U-233 materials
- Supports transuranic waste characterization and shipments to WIPP

Richland Operations Office, Washington (Dollars in Thousands)

FY 2017 Enacted	FY 2018 Request
$913,936	$798,192[3]

[1] The amount reflects Defense Environmental Cleanup portion, the total Idaho National Laboratory FY18 Request is $359,226,000.
[2] The amount reflects Defense Environmental Cleanup portion, the total Oak Ridge FY18 Request is $390,205,000.
[3] The amount reflects Defense Environmental Cleanup portion, the total Richland FY18 Request is $800,422,000.

Key Accomplishments Planned for FY 2018

- Continues K Basin sludge removal and supports operations and maintenance of K West Basin
- Supports safe storage of nearly 2,000 cesium and strontium capsules in the Waste Encapsulation and Storage Facility, and continues project planning for dry storage options for the capsules
- Continues integration of site-wide groundwater and vadose zone cleanup activities, groundwater monitoring, operations, maintenance, and necessary modifications of existing remediation systems
- Continues soil and waste site remediation along River Corridor

Nevada National Security Site, Nevada (Dollars in Thousands)

FY 2017 Enacted	FY 2018 Request
$62,176	$60,136

Key Accomplishments Planned for FY 2018

- Completes characterization activities for six contaminated soil sites
- Completes closure activities for one soil corrective action site
- Supports cleanup activities across the DOE complex by providing disposal capacity and services for up to 1.2 million cubic feet of low-level and mixed low-level radioactive waste

Conclusion

Mr. Chairman, Ranking Member Cooper, and Members of the Subcommittee, I am honored to be here today representing the over 20,000 men and women that carry out the Office of Environmental Management mission. Our request will enable us to continue to make progress with our mission and to realize a significant set of accomplishments across the EM program. We are committed to achieving our mission and will continue to apply innovative environmental cleanup strategies to complete work safely and efficiently, thereby demonstrating value to the American taxpayers. All of this work will, first and foremost, be done safely, within a framework of best business practices. I am pleased to answer any questions you may have.

Susan M. Cange
Acting Assistant Secretary
Office of Environmental Management

Ms. Sue Cange is currently the Acting Assistant Secretary for Environmental Management. In this role she enables the overall EM mission and assists the Assistant Secretary with carrying out program and policy direction under EM's jurisdiction. She ensures coordination of corporate initiatives across the EM complex, provides oversight of programs, and ensures overall program integration and operations to maintain line management accountability.

Over the past 29 years, Sue has held various leadership positions within the federal government including at Department of Energy in the offices of Environmental Management, Nuclear Energy and Assets Utilization. In addition, Sue was one of the founding members of the Reindustrialization Program in Oak Ridge which transfers underutilized assets to the private sector to accelerate cleanup and promote economic development.

Prior to coming to headquarters, Sue was the manager for the Department of Energy's Oak Ridge Office of Environmental Management and is responsible for safely executing the environmental cleanup of the Oak Ridge Reservation. This entails successfully managing the cleanup of the East Tennessee Technology Park, the Oak Ridge National Laboratory, and the Y-12 National Security Complex.

Throughout Sue's career, she has been able to integrate the necessary technical knowledge with personal communication skills to be highly successful in an environment that includes a broad spectrum of stakeholders such as federal and state regulators, state and local government officials, the corporate community, concerned citizen groups, and the media.

Sue holds a bachelor's and a master's degree in environmental engineering from Vanderbilt University.

DOCUMENTS SUBMITTED FOR THE RECORD

MAY 25, 2017

The Secretary of Energy
Washington, DC 20585

December 23, 2015

Mr. Shaun Donovan
Director
Office of Management and Budget
725 17th Street, NW
Washington, DC 20503

Dear Director Donovan:

I greatly appreciate the hard work and cooperative approach of your office to craft a fiscally responsible FY 2017 budget for the National Nuclear Security Administration (NNSA) that supports the President's agenda to maintain a safe, secure, and effective nuclear weapons stockpile; modernize our nuclear security enterprise; reduce the threat of nuclear proliferation; and support the U.S. Navy's nuclear propulsion program. As requested, we will provide your staff a FY 2017-2021 funding table based on the OMB proposed settlement.

While the OMB proposed settlement provides a workable framework for the FY 2017 budget, the OMB proposed settlement for FY 2018-2021 does not reflect the funding that we estimate is necessary to meet Administration requirements over the period of the Future Years National Security Program (FYNSP). We estimate that an additional $5.2 billion over FY 2018 – 2021 is needed to establish a viable and sustainable program portfolio.

This Administration has pursued a disciplined process in defining the requirements to meet the President's nuclear security and non-proliferation policy goals and to support the Navy. This in turn has driven the NNSA program planning and budgeting process to identify the funds needed to satisfy those requirements. The OMB proposed settlement for the FYNSP ignores or underfunds many of those requirements with no supporting programmatic rationale. If left uncorrected, the proposed FYNSP will lack credibility with Congress and stakeholders; within NNSA it will fuel uncertainty in program execution, creating the potential for cost and schedule growth across the nuclear security enterprise. Specifically, the lack of a credible FYNSP will undermine the Administration efforts to achieve new plutonium capabilities, replace aging infrastructure, and fulfill the President's Prague agenda to secure and dispose of U.S. surplus plutonium through such efforts as dilution and disposal instead of by irradiation as MOX fuel. For this Administration's national security legacy and for the next Administration's planning requirements, it would not be responsible to submit a budget with such obvious programmatic gaps.

Events elsewhere in the world reaffirm the seriousness of the threat environment in which we live and underscore the need for a credible nuclear security program portfolio. Since the FYNSP sets the framework and direction that guide the specific budget proposals in FY 2017, we believe that it is imperative that the out-year FYNSP issues be resolved prior to the release of the President's budget to Congress on February 1, 2016. I believe that this matter should be

addressed by the principals immediately after the start of the New Year and prior to the completion of the President's FY 2017 budget process.

While the out-years of OMB's proposed FYNSP do support several specific requirements, such as the life extension programs and construction of the Uranium Processing Facility, it provides either no funding or inadequate funding for key program and project areas previously established as Administration priorities. Specific examples of known shortfalls include:

- **Plutonium Disposition:** In 2000, the United States and Russia agreed to eliminate excess weapons-grade plutonium to prevent its theft or diversion for illegal nuclear programs. From a nonproliferation standpoint, plutonium is of the greatest concern because of how little is required to make a nuclear bomb. The principals have approved our proposal to terminate the MOX construction project and instead pursue an alternative disposition path based on dilution and disposal. The cost of this alternative is $1.5 – $1.7 billion from FY 2018-2021, of which $844 million is for dilute and dispose; and $610 million is for placing MOX in a safe and secure configuration. The OMB proposed settlement provides only $1.3 billion, of which $415 million is for disposition and $884 million for MOX reconfiguration. The Department believes we should plan for at least $1.5 billion in the Budget. Failure to demonstrate our commitment to fund the dilution and disposal pathway will undermine the credibility of the Administration's effort to gain Congressional action to terminate MOX. It also will dampen prospects for gaining the necessary agreement from Russia. This could leave in place the more expensive MOX option with Congressional mandates to fund construction with little prospect of ultimate success.

- **NNSA Facility Infrastructure:** A majority of NNSA's facilities and systems are well beyond end-of-life. More than 50 percent of facilities by square footage are 40 years old or older, nearly 30 percent are Manhattan project era, and 12 percent are excess to program needs. Infrastructure problems such as falling ceilings are increasing in frequency and severity, unacceptably risking the safety and security of both personnel and materials at NNSA facilities, as well as in some instances, potential offsite risks. The entire complex could be placed at risk if there is a failure where a single point would disrupt a critical link in infrastructure. We appreciate the increased support for infrastructure in the FY 2017 Budget Allowance that will arrest the growth of deferred maintenance in the nuclear security enterprise in FY 2017. NNSA will allocate $153 million of added topline in the December 5th OMB Passback to increase FY 2018-2021 infrastructure funding from NNSA's target of $1.27 billion to $1.43 billion. To fully address infrastructure needs, however, additional resources are required in the out-years. The FY 2018-2021 funding level in the OMB settlement proposal is still only one-half of the $2.8 billion needed to address infrastructure issues in the future.

- **Exascale High Performance Computing:** The OMB proposed settlement provides $120 million of NNSA's $670 million request for the exascale computing initiative. While the Department appreciates OMB's additional funding for this important program, the OMB proposed settlement level is not consistent with estimated requirements to meet the President's July 2015 Executive Order on the National Strategic Computing Initiative

(NSCI). There has been a steady decline in the performance of the nuclear weapons computer codes needed to ensure the safety, security, and reliability of the nuclear stockpile. The NSCI was designed, in part, because U.S. vendors will not develop our mission centric needs without this full investment. The NSCI also entails substantial collaboration between DOE and DOD.

- Domestic Uranium Enrichment (DUE): The Department appreciates the OMB proposed settlement providing $327.5 million in FY 2018-2021 to support downblending of highly enriched uranium. The OMB proposed settlement, however, does not provide any funding for the required centrifuge technologies that would be necessary by FY 2041 to support enrichment uranium requirements. The interagency process found that the domestic uranium enrichment program should initiate the program for build out in FY 2016 based on the recognized uranium need date. NNSA estimates it needs $466.5 million in resources in FY 2018 through FY 2021 on top of the $327.5 million provided in the OMB proposed settlement for FY 2018-2021. The Department agrees that cost estimates may change as further studies are taken.

- CHIP2 and Satellite: NNSA's Center for Heterogeneous Integration Packaging and Processes (CHIP2) and non-proliferation satellite program will need to make adjustments because of a recent Committee on Foreign Investment in the United States (CFIUS) decision that did not block a business transaction resulting in the control of a specific U.S. business by a foreign entity. This will result in NNSA needing to identify alternative material sources for CHIP2 to endure stockpile and interoperable warheads and mitigate potential loss of trusted foundries. The OMB proposed settlement acknowledges these requirements but does not provide any funding FY 2018-2021. NNSA estimates that the cost of alternatives will be at least $250 million over FY 2018-2021.

- W80-4: NNSA has proposed to reduce its planned FY 2017 funding for the W80-4 Life Extension Program (LEP) by $90 million due to delays in starting the program in FY 2016 as a result of the 3 month continuing resolution. This should result in significant carryover funding to FY 2017. The proposed OMB settlement asked NNSA to reaffirm that it will meet the commitment to DOD and the Air Force to have a first production unit (FPU) by FY 2025 at the reduced FY 2017 funding request. NNSA still anticipates meeting the planned FPU target date, with modest increased risk, contingent on there not being future substantial resource constraints. NNSA will continue to work with the Air Force through the Nuclear Weapons Council to align and fully integrate the LRSO program and to resource it adequately in the FY 2018-2021 funding period.

- Other: There are a number of other important programmatic requirements either not funded or with insufficient funding in the out-years as a result of topline constraints. These include funding for the Albuquerque Facility to house nearly 1,000 Federal employees currently working in mostly 1940s and 1950s facilities in New Mexico; technology development and maturation to support the life extension programs; surveillance programs; Perimeter Intrusion Detection and Assessment Systems (PIDAS); and other defense program infrastructure projects. In some cases, NNSA still needs to

better define cost estimates for these programs. Not identifying any funding towards key projects in the budget provides an impression that full scope is funded.

We are requesting an upwards adjustment of $5.2 billion over FY 2018-2021 to fund the Administration's goals and priorities. Failure to address these requirements in the near term will put the NNSA budget in an untenable position beginning in FY 2018, will not provide an appropriate statement of the Obama Administration legacy, and will provide a misleading marker to the next Administration as to the resource needs of the nuclear security enterprise.

Sincerely,

Ernest J. Moniz

cc: The Honorable Ashton Carter
Secretary of Defense

The Honorable Susan Rice
National Security Advisor

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

MAY 25, 2017

QUESTIONS SUBMITTED BY MR. ROGERS

Mr. ROGERS. General Klotz, would you please describe to us why Secretary Moniz tasked the three NNSA laboratory directors to carry out the study titled "U.S. Nuclear Deterrence in the Coming Decades"? What did it examine and why? What were some of its high-level conclusions?

General KLOTZ. Secretary Moniz tasked this study as part of the Department's mission to ensure an effective U.S. nuclear deterrent through the application of science, technology and engineering. The Department of Energy (DOE) strives to ensure U.S. nuclear capabilities meet the challenges of known and future geopolitical and technology trends.

The 2014 tri-laboratory study 1) examined known and projected future characteristics of global nuclear stability; 2) provided perspective on the evolution of U.S. strategic deterrence; 3) assessed current policy and programs; 4) examined potential future geopolitical and technological trends and scenarios that test the robustness of U.S. capabilities; and 5) outlined preliminary recommendations and areas meriting further study. The study examined these topics to challenge U.S. thinking about DOE programs of record and inform future decisions to reduce the risk of technological or geopolitical surprise.

The three national laboratories agreed that the United States needed to take action to ensure that U.S. nuclear capabilities can meet the challenges of emerging geopolitical and technological trends. A key recommendation was to conduct and periodically update a comprehensive assessment of the current and emerging threats to the effectiveness of the U.S. nuclear deterrent, including the review of options to address identified gaps.

Mr. ROGERS. Please tell us about the Joint Strategic Deterrence Review (JSDR) process that was created in December 2016? Why was it created and what does it do? How does the Trump administration view the JSDR process? How is it incorporating this type of process into the Nuclear Posture Review?

General KLOTZ. The Joint Strategic Deterrence Review (JSDR) was a recommendation that came out of the deterrence study that was tasked to the national laboratory directors. The Deputy Secretaries of Energy and Defense signed a memorandum of agreement on JSDR to strengthen Department of Defense, Department of Energy and the Intelligence Community cooperation in analyzing potential threats to the United States' ability to maintain strategic deterrence as well as potential options for mitigating those threats.

Each new Administration since the mid-1990s has conducted a Nuclear Posture Review. This Administration has followed suit and has directed an NPR to be conducted to ensure the U.S. nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure our allies. NNSA will contribute to DOD's review, which will account for a broad range of views.

All NPR deliberations are under executive privilege and not releasable. The NPR will be in full accord with the President's direction given in the National Security Presidential Memorandum on Rebuilding the U.S. Armed Forces from January 27, 2017.

Mr. ROGERS. The bad idea fairy seems to visiting some folks in this town and proposing that we should defer spending on the LRSO and GBSD programs until the Nuclear Posture Review is complete. Does the administration support this idea?

General KLOTZ. The Fiscal Year 2018 President's Budget Request for NNSA supports the program of record for W80–4 Life Extension Program, which is intended for integration into the Air Force's Long Range Stand-off (LRSO) cruise missile, as determined by the Nuclear Weapons Council. Both the LRSO and the Ground-Based Strategic Deterrent (GBSD) are Air Force programs of record.

Mr. ROGERS. Looking at the Trump administration's FY18 budget request for DOD nuclear forces and NNSA's nuclear weapons activities, is there more consistency between the Obama administration's plans, or more difference? Does the FY18 budget request in these areas deviate from the Obama administration's plans in any very substantial way?

General KLOTZ. The Fiscal Year (FY) 2018 President's Budget Request continues the program of record detailed in the FY 2017 Stockpile Stewardship and Management Plan. NNSA's Weapons Activities budget includes planned increases to the program of record as well as increases to adapt to emerging changes, such as updates to the baseline costs for the B61–12 Life Extension Program and the W88 Alteration 370.

Mr. ROGERS. Please tell us about the Joint Strategic Deterrence Review (JSDR) process that was created in December 2016? Why was it created and what does it do? How does the Trump administration view the JSDR process? How is it incorporating this type of process into the Nuclear Posture Review?

Dr. SOOFER. The JSDR is a joint project between the Department of Defense and the Department of Energy to ensure our nuclear programs remain informed by the future threat environment. Because we will be fielding recapitalized forces decades from now, it is important we anticipate the future operational environment so these forces can perform their intended functions. The Nuclear Posture Review is similarly focused on both the current and future threat environments, and is informed by the work of the JSDR.

Mr. ROGERS. The bad idea fairy seems to visiting some folks in this town and proposing that we should defer spending on the LRSO and GBSD programs until the Nuclear Posture Review is complete. Does the administration support this idea?

Dr. SOOFER. No, the Administration does not support any delay to these programs and requested full funding for these and all other nuclear recapitalization programs. Further delays in recapitalizing our nuclear forces could create critical capability gaps and undermine our ability to meet deterrence requirements as our current forces age out of service. At this critical juncture in the LRSO and GBSD programs, deferring or reducing funding would lead to significant delays and effectively prejudge the outcome of the Nuclear Posture Review. Therefore, we urge Congress to continue its ongoing support for the current recapitalization programs as we conduct the Nuclear Posture Review. Should the Administration conclude that changes to these programs are required, we will work with Congress to adjust accordingly.

Mr. ROGERS. What are the consequences if we were to defer spending on LRSO and GBSD until we have a completed Nuclear Posture Review in hand? How would that impact the programs and the Air Force's ability to meet STRATCOM's requirements and schedules?

Dr. SOOFER. There is virtually no schedule margin between legacy system age out and the deployment of modernized replacement systems. As a result, delays in recapitalizing our nuclear forces could create critical capability gaps and undermine our ability to meet deterrence requirements as our current forces age out of service. At this critical juncture in the LRSO and GBSD programs, deferring or reducing funding would lead to significant delays and effectively prejudge the outcome of the Nuclear Posture Review. Therefore, it is essential that we continue to support the current program of record in order to ensure the U.S. maintains a credible, effective nuclear deterrent into the future.

Mr. ROGERS. Looking at the Trump administration's FY18 budget request for DOD nuclear forces and NNSA's nuclear weapons activities, is there more consistency between the Obama administration's plans, or more difference? Does the FY18 budget request in these areas deviate from the Obama administration's plans in any very substantial way?

Dr. SOOFER. The fiscal year (FY) 2018 budget for DOD nuclear forces and NNSA's nuclear weapons activities reflects more continuity than change. The FY 2018 budget supports, as did the FY 2017 budget, continued recapitalization of each element of our nuclear forces and infrastructure.

Mr. ROGERS. What would be the consequences, risks, or benefits of delaying or cancelling key nuclear modernization programs—such as the GBSD land-based missile, the B–21 bomber, the long-range stand off (LRSO) cruise missile, or the new *Columbia*-class submarine? How firm is the need for the current schedules for these programs—is there room for slipping their schedules? Do you believe these programs are executable on-schedule and on-budget, if they are funded on-time by Congress?

Dr. SOOFER. There is virtually no schedule margin between legacy system age out and the deployment of modernized replacement systems. As a result, further delays in recapitalizing our nuclear forces would create critical capability gaps and undermine our ability to meet deterrence requirements as our current forces age out of service. Therefore, it is essential that we continue to support the current program of record in order to ensure the U.S. maintains a credible, effective nuclear deterrent into the future. We appreciate Congress' continued support for these vital development efforts, and we are making every effort to ensure these programs deliver on-time and within budget. However, we need everyone to understand that our

choice is not whether or not to modernize our forces now or later. Rather, the choice is between modernizing those forces or watching an unacceptable degradation in our ability to field a safe, secure, and effective nuclear force—an outcome that incurs significant risk in our ability to deter strategic threats to the nation.

Mr. ROGERS. CBO has recently estimated the cost of sustaining, operating, and modernizing our nuclear deterrent to be $400 billion over the next 10 years, including both DOD and NNSA costs. Do you agree with this estimate? CBO estimates this $400 billion represents roughly 6 percent of the total defense budget during this time period. Do you believe this is an appropriate amount to be spending on nuclear deterrence?

Dr. SOOFER. The DOD expects nuclear recapitalization costs to total approximately $230–$290 billion from FY 2018 to FY 2040, in constant FY 2018 dollars. This projection includes the total cost of nuclear-only systems, and a portion of the cost of the B–21 bomber, which will have both conventional and nuclear roles. The DOD projection for total recapitalization cost also includes modernizing nuclear command, control, and communications systems. I would defer to my Department of Energy colleagues for specifics relating to estimated NNSA costs. U.S. nuclear weapons deter the only existential threat to the Nation. The nuclear enterprise is affordable if nuclear deterrence is prioritized appropriately. During the coming period of increased recapitalization spending, nuclear forces will remain a small fraction of the DOD budget—with annual funding levels that are projected to range from approximately 3 percent to 6 percent of total defense spending. This includes spending to sustain and operate the existing force—currently about $12–14 billion per year—as well as recapitalization spending to develop and field modernized replacements.

Mr. ROGERS. Do you think that NATO allies should be asked to share part of the costs of the B61 Life Extension Program (LEP)? Would having the NATO allies pay for part of the LEP be contrary to the Nuclear Nonproliferation Treaty?

Dr. SOOFER. Forward-deployment of B61s is a key aspect of our commitment to extend deterrence to our NATO Allies in Europe. NATO has repeatedly affirmed the role of nuclear deterrence as a core element of its defense strategy and posture, including in the July 2016 Warsaw Summit Communique. It is not in the best interest of the United States to ask NATO Allies to provide direct funding of the B61 LEP. The B61 LEP is a key element of our strategic Triad as well as our extended deterrence posture around the world, and is not solely focused on the deterrence and defense of NATO. Further, allied funding would almost certainly create a perception problem regarding U.S. and allied compliance with the Nuclear Non-proliferation Treaty (NPT).

Mr. ROGERS. We know there are military requirements on the books that the U.S. cannot meet because of our adherence to the INF Treaty—the treaty that Russia continues to violate. General Selva and others have said that they see no indication the Russians will ever return to compliance with this treaty. How does the Trump administration view this violation and Russia's other arms control violations? What response options are being pursued? When will decisions be made on this and plans announced?

Dr. SOOFER. Currently we are able to satisfy both our military requirements as well as remain in compliance with the Intermediate-range Nuclear Forces (INF) Treaty. Although there is a military requirement to prosecute targets at ranges covered by the INF Treaty, those systems do not have to be ground-based. However, ground-based systems would increase both the operational flexibility and the scale of our intermediate-range strike capabilities. The Administration is conducting an extensive review of Russia's ongoing INF Treaty violation in order to assess the security implications to the United States and its allies and partners. The status quo is untenable and the Administration is considering potential response options that could address the threat and also remind Russia why it agreed to the INF Treaty in the first place. The United States must consider all possibilities in developing our response including a world without the INF Treaty.

Mr. ROGERS. A United Nations disarmament panel recently released its first draft of a proposed global treaty to ban nuclear weapons. The U.S. and other nuclear powers have all boycotted these negotiations. What is the Trump administration's position on this treaty? Are these negotiations damaging the Nuclear Nonproliferation Treaty? How would this treaty affect our ability to uphold our extended deterrence and assurance commitments? How might it affect our ability to forward-deploy nuclear weapons and nuclear-capable aircraft? What would be the U.S. view towards any of our allies that might support or sign onto this treaty?

Dr. SOOFER. The Administration strongly opposes a nuclear weapons ban treaty, which completely disregards the realities of the international security environment that make nuclear deterrence necessary. The proposed ban treaty would not result

in the elimination of a single nuclear weapon and would not enhance any country's security. Instead, such a treaty risks creating an unbridgeable divide among the Nuclear Non-proliferation Treaty (NPT) Parties, further polarizing the political environment. Although the draft treaty clearly attempts to undermine the legitimacy of extended deterrence—our extended deterrence partners have been clear that they will not support a treaty that is in conflict with NATO policy, with our alliance commitments, or with the NPT.

Mr. ROGERS. The last Nuclear Posture Review (NPR) was published 7 years ago. The world was very different in 2010, particularly when talking about Russia. Today, it's hard to see Russia as the partner and friend like the 2010 NPR envisioned. Would you please provide us your on what has changed in the world since the 2010 NPR? How will this affect the NPR and its deliberations?

Dr. SOOFER. The Nuclear Posture Review's analytical process will include a full assessment of the strategic environment, including what has changed since the 2010 NPR. Recent years have indeed brought changes to the security environment that U.S. nuclear policy must address. Russia has undertaken aggressive actions against its neighbors and threatened the United States and its NATO Allies—including nuclear threats. It has elevated strategies of nuclear first use in its strategic thinking and military exercises, is modernizing a large and diverse non-strategic nuclear weapons force, and is violating the landmark Intermediate-Range Nuclear Forces (INF) Treaty. While Russia presents significant set of challenges, it is only one element of an increasingly complex global strategic environment. The President directed the Department of Defense to review U.S. nuclear posture and ensure that our nuclear forces are modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure our allies and partners.

Mr. ROGERS. How important are dual-capable aircraft to the U.S. nuclear posture? Do they constitute a critical and necessary component of our nuclear deterrence and assurance?

Dr. SOOFER. Yes. U.S. dual-capable aircraft are a critical and necessary component of U.S. nuclear posture. The United States must continue to maintain the capability to forward-deploy dual-capable aircraft as part of its extended nuclear deterrence posture.

Mr. ROGERS. What role do dual-capable aircraft serve in the deterrence posture of the NATO alliance? What are the consequences that would result from a delay in the initial operating capability of dual-capable F–35 to our NATO allies?

Dr. SOOFER. The Department of Defense projects no significant delay in the delivery of dual-capable F–35A fighters to our NATO Allies. The F–35 program maintains schedule margins to account for various risks of short-term delay, and those margins remain adequate today. A longer-term delay could impact the ability of Allies to support the dual-capable aircraft (DCA) mission. Therefore, it is essential that the program remain fully-funded and mitigate schedule risk.

Mr. ROGERS. What role do dual-capable aircraft serve in our deterrence and assurance posture on the Korean Peninsula?

Dr. SOOFER. The United States maintains the capability to forward-deploy nuclear weapons with heavy bombers and dual-capable aircraft in support of extended deterrence and assurance of U.S. Allies and partners. Deployment of DCA signals U.S. resolve and commitment, and provides a forceful reminder to an adversary that might be contemplating aggression. The United States remains firmly committed to the defense of the Republic of Korea and to strengthening extended deterrence using all elements of national power, including the U.S. nuclear umbrella, as well as conventional strike and missile defense capabilities.

Mr. ROGERS. What are the consequences if we were to defer spending on LRSO and GBSD until we have a completed Nuclear Posture Review in hand? How would that impact the programs and the Air Force's ability to meet STRATCOM's requirements and schedules?

General RAND. Ground-Based Strategic Deterrent (GBSD) is the nation's replacement program for the aging Minuteman III (MMIII) weapon system. The GBSD program is currently funded through the Technology Maturation Risk Reduction (TMRR) (concept design) phase of the program (2020). We expect the TMRR contract to be awarded in the 4th Quarter Fiscal Year 2017. Public sources identify the Nuclear Posture Review as being completed by the end of the year 2017. If spending was delayed beyond the end of TMRR in 2020, there will be a significant sustainment cost to support continued MMIII operations through 2035 and beyond. MMIII reliability and effectiveness will continue to degrade and it will be difficult to maintain a plausible deterrent force that meets warfighter needs with assets falling below New START levels in 2030. For example, MMIII flight system (or missile itself) begins to age out in 2026 followed by obsolescence and attrition of assets af-

fecting other crticial weapons systems and facilities issues that have only received minimum sustainment pending a major upgrade such as GBSD.

Long-Range Standoff Weapon (LRSO) is the replacement for the aging Air Launched Cruise Missile (ALCM), which was designed in the 1970s, fielded in the 1980s is twenty years past its 10-year life expectancy. ALCM is no longer cost effective to maintain past 2030 an in future years, enemy air defense modernization will challenge ALCM's penetration capability. Additionally, testing attrition is depleting the inventory. LRSO is currently on schedule to meet its threshold Initial Operational Capability (IOC) date of 2030: just in time replacement for the ALCM. Deferred spending on LRSO will delay IOC and the United States would lose significant deterrence/assurance capability. Down-select will occur in August, and if spending were delayed to wait on a signed Nuclear Posture Review, numerous waterfall effects would occur. Of note, numerous bomber and facility modernization and upgrade tests would be impacted, as these test are waiting on LRSO to "set the stage" or lay the infrastructure for them. Additionally, the LRSO schedule is aligned with its associated warhead, the W80–4, and a delay in the cruise missile will have significant negative effects on the warhead development and production schedule.

Mr. ROGERS. Please describe the military requirements that are driving U.S. nuclear modernization plans in your respective services. What do we see other countries doing and how does that impact our requirements? How does aging or vulnerabilities in our own U.S. nuclear forces impact requirements and modernization plans?

General RAND. [The information provided is classified and retained in the committee files.]

Mr. ROGERS. What would be the consequences, risks, or benefits of delaying or cancelling key nuclear modernization programs—such as the GBSD land-based missile, the B–21 bomber, the long-range stand off (LRSO) cruise missile, or the new *Columbia*-class submarine? How firm is the need for the current schedules for these programs—is there room for slipping their schedules? Do you believe these programs are executable on-schedule and on-budget, if they are funded on-time by Congress?

General RAND. If the Air Force does not develop and produce the B–21, the U.S. will lose bomber penetration capabilities in highly contested threat areas. The B–21 will support the nuclear Triad, providing a visible and flexible nuclear deterrent capability that will reassure allies and partners. A fleet size of 100 B–21s is appropriate and ensures sustained high-end conventional operations while supporting the nuclear Triad as a visible and flexible deterrent to assure allies and partners. Analysis has shown that the B–21 is needed to address decreasing survivability and combat capabilities in our current bomber force, ensuring penetration capabilities in highly contested combat airspace. Delaying B–21 production or procuring any less than 100 B–21s will have a detrimental impact on the B–21 contract, causing increases in the average procurement unit cost and total program cost similar to what was seen with the B–2 program. Global Strike Command has developed its Bomber Vector based on the current B–21 development and production schedule. The Bomber Vector lays out planned modernization, sustainment, and aircraft retirement plans. Any delays or decreases to the B–21 program will result in capability gaps and/or Bomber Vector adjustments requiring additional modernization programs, manpower solutions, and costly force mix decisions.

Ground-Based Strategic Deterrent (GBSD) is the nation's replacement program for the aging Minuteman III (MMIII) weapon system. The GBSD program is currently funded through the Technology Maturation Risk Reduction (TMRR) (concept design) phase of the program (2020). We expect the TMRR contract to be awarded in the 4th Quarter Fiscal Year 2017. Public sources identify the Nuclear Posture Review as being completed by the end of the year 2017. If the program was delayed beyond the end of TMRR in 2020, there will be a significant sustainment cost to support continued MMIII operations through 2035 and beyond. MMIII reliability and effectiveness will continue to degrade and it will be difficult to maintain a plausible deterrent force that meets warfighter needs with assets falling below New START levels in 2030. For example, MMIII flight system (or missile itself) begins to age out in 2026 followed by obsolescence and attrition of assets affecting other critical weapons systems and facilities issues that have only received minimum sustainment pending a major upgrade such as GBSD. GBSD is just in time, no room to slip, to meet critical MMIII age out, obsolescence and asset depletion/attrition issues. The program is ready to execute and award the TMRR contract on time and on schedule.

If we do not develop and produce the Long Range Stand Off missile (LRSO), the U.S. could lose the following capacities. Deterring potential adversaties from nuclear weapon usage—central to today's national security strategy. Deterrence requires a

range of US military capabilities and LRSO is a key piece of this strategy. An option the president currently has and a capability that our peers/near-peers already have or are developing. Flexible stand-off capability supports hedge requirements in the event another leg of the Triad encounters issues. LRSO allows the U.S. to continue to impose costs on potential adversaries long into the future, as it provides continued flexibl response options. LRSO is a force multiplier compatible with the B–52, and the B–21; extends range, enables simultaneous targeting of multiple targets, lowers risk to aircrew/aircraft by reducing target overflight requirements, reduces tanker and support requirements. LRSO assures U.S. allies by signaling resolve to defend itself and its allies. This resolve is significantly enhanced by the credibility of the bomber force to hold almost any target at risk by extending its effective range with standoff capability. LRSO provides presidential options and overt strategic messaging to peer nations as a visible indication of operational status and national intent, e.g. bombers on nuclear ground alert.

Mr. ROGERS. What are the military effectiveness and cost implications of choosing to life extend the current Minuteman III missile fleet and related ground infrastructure, rather than pursue GBSD?

General RAND. The Ground Based Strategic Deterrent Analysis of Alternatives that received Office of the Secretary of Defense Cost Analysis and Program Evaluation (OSD/CAPE) sufficiency review concluded that investment is required to extend intercontinental ballistic missile life beyond 2030. The analysis revealed a replacement system, mitigating capability shortfalls, as the most cost-effective strategy. "Life Extending" Minuteman III will cost more than full system recapitalization, and would not address warfighting capability gaps validated by the Joint Requirements Oversight Council. The following are the analysis of alternatives costs identified:

Ground Based Strategic Deterrent 50 year life cycle cost—$159.2B

Minuteman III Service Life Extension Program (Baseline) life cycle costs—$160.3B

Over the next twenty years, nearly the entire Minuteman III system requires investment to address declining reliability, aging and supportability issues.

Mr. ROGERS. Why is LRSO required if we also have a B61–12 nuclear gravity bomb carried by a penetrating B–21 bomber—is this duplicative? Do we need both?

General RAND. [The information provided is classified and retained in the committee files.]

Mr. ROGERS. We understand that the Air Force and its potential contractors are considering a more mobile concept for the command and control of the GBSD missile system, rather than relying on the redundancy and survivability of a distributed system of many fixed launch control centers as in the current ICBM fields. As STRATCOM has pointed out, this is a technologically challenging approach with considerable risk. Why is the Air Force going down this path? What is the Air Force doing to address these risks and ensure this concept does not decrease the size of the missileer career field such that it is no longer sustainable?

General RAND. The Ground Based Strategic Deterrent (GBSD) Force Development Concept does pursue capabilities such as a hybrid/mix of mobile command and control (C2), similar launch control centers as utilized in Minuteman III, on-base integrated launch control center, and an alternate/airborne launch control system (ALCS). The concept does not provide exact numbers of nodes. A from-the-ground-up GBSD system design allows for Air Force Global Strike Command (AFGSC) to take advantage of technologies to pursue a more cost effective and efficient approach on to how intercontinental ballistic missiles (ICBMs) are operated, maintained, and secured. The final number of launch control centers will be assessed for survivability and apply robust risk management even if it is the same number of centers used in Minuteman III. AFGSC is adding additional oversight in cyber, wireless (if this is included in the final solution), and nuclear safety areas to manage risk.

The Airborne Launch Control System—Replacement program executing in parallel may advance launch control center suite development and provide the hooks in design to become common with the GBSD application. This would allow commonality in missileer training and operations, versus the differences which currently exist between Minuteman III ICBM console and ALCS console. Mobile and integrated operations using a common console would enhance career opportunity and offer different operating environments for the missileer career field.

Mr. ROGERS. How important are dual-capable aircraft to the U.S. nuclear posture? Do they constitute a critical and necessary component of our nuclear deterrence and assurance?

General RAND. Global Strike Command's B–2 and B–52 are both dual-capable bombers. The B–21 is being developed as a dual-capable bomber and will be nuclear capable within two years of declaring conventional initial operational capability (as

directed by the Fiscal Year 2013 National Defense Authorization Act). These bombers, along with the weapons they carry, constitute the entirety of the air-breathing leg of the Triad. Additionally, they are the most visible leg of the nuclear Triad, and inherently stabilizing. The process of arming bombers and delivering weapons is a time consuming effort requiring hours to days, not minutes. Bombers are the leg of the Triad seen as the least threatening to stability, which is why arms control experts afforded a discount for bomber weapons in New START. Second, bombers are intrinsically stabilizing in the nuclear arena due to the ability to be launched and then recalled prior execution. Third, nuclear bombers offer the ability to signal National intentions in a very visible manner. Fully loaded nuclear bombers on alert are a very powerful message. This visibility is critical to providing nuclear deterrence for our adversaries and even more critical to providing assurance to our allies. The bomber, since its inception, has been a sysmbol of America's commitment to its allies and serves as a deterrent to the proliferation of nuclear capabilities.

Mr. ROGERS. Please describe the military requirements that are driving U.S. nuclear modernization plans in your respective services. What do we see other countries doing and how does that impact our requirements? How does aging or vulnerabilities in our own U.S. nuclear forces impact requirements and modernization plans?

Admiral BENEDICT. In order to support the Commander, STRATCOM mission requirement for sea-based strategic deterrence, the Navy must provide a minimum force of 10 operational SSBNs. Today, we meet that requirement with 14 OHIO Class SSBNs. In the future, we will meet the requirement with a force structure of 12 COLUMBIA Class SSBNs, as the class will not require a lengthy engineered refueling overhaul due to a life of ship core. The Navy has already extended the existing OHIO Class service life from 30 years to 42 years, and there is no engineering margin left for further extension. This extension provides an additional 40 percent service life and will result in the OHIO Class being in service longer than any SSBN or SSN in U.S. history. Any delay to the COLUMBIA Class program could reduce the total SSBN force structure below that required to provide 10 operational SSBNs during the transition period from the OHIO Class to the COLUMBIA Class, which would prevent the Navy from meeting the STRATCOM at-sea requirements.

The assumptions of adversaries' nuclear force structures, capability developments, and doctrines play a major role in our assessments of the current and future threat environment and contribute to strategy and force structure decisions. Maintaining our ability to deter and, if deterrence fails, respond to future threats underpins our national strategy. The results of the ongoing Nuclear Posture Review will inform any recommendations to the existing nuclear triad program of record.

Mr. ROGERS. What would be the consequences, risks, or benefits of delaying or cancelling key nuclear modernization programs—such as the GBSD land-based missile, the B–21 bomber, the long-range stand off (LRSO) cruise missile, or the new *Columbia*-class submarine? How firm is the need for the current schedules for these programs—is there room for slipping their schedules? Do you believe these programs are executable on-schedule and on-budget, if they are funded on-time by Congress?

Admiral BENEDICT. There is no margin in the COLUMBIA Class SSBN program—it is imperative that we remain on schedule. The OHIO Class SSBN was originally designed for a 30-year service life. In 1998, Naval Reactors and NAVSEA completed a detailed engineering analysis including evaluation of the current material condition of the class, remaining fuel levels, and expected future operational demands of the platform. At that time, the OHIO Class service life was extended to 42 years (a 40 percent increase). Any further extension would erode the engineering safety margin to an unacceptable level. The longest serving nuclear submarine to date was the USS KAMEHAMEHA at 37 years of service. Any delay to the COLUMBIA Class program could reduce the total SSBN force structure below that required to provide 10 operational SSBNs during the transition period from the OHIO Class to the COLUMBIA Class, which would prevent the Navy from meeting STRATCOM at-sea requirements. While there is no schedule margin left, the COLUMBIA Class program of record is executable, assuming adequate and stable funding. This is true for the entire nuclear enterprise in general. The nation chose to defer modernization efforts on our nuclear weapons enterprise after the Cold War and it cannot be deferred any longer without loss of capabilities.

QUESTIONS SUBMITTED BY MR. COOPER

Mr. COOPER. What is your (military) opinion of the value of the new START Treaty? What would the risk be of preventing negotiations to extend the New START Treaty as long as Russia is not in compliance with the INF Treaty?

General RAND. This question was covered quite extensively during the ratification process for New START by a wide variety of witnesses. As noted at the time by the CDRUSSTRATCOM (Gen Chilton), New START "does not constrain America's ability to continue to deter potential adversaries, assure our allies and sustain strategic stability". I believe those observations remain true today. I would also note that New START limits the number of Russian warheads that can target the United States. New START's flexible limits on deployed and non-deployed delivery platforms retain sufficient flexibility to manage our Triad of deterrent forces to hedge against tactical or geopolitical surprise. Lastly, New START continues a strategic nuclear arms control verification regime of notifications and on the ground observations/inspections of Russian strategic forces by U.S. personnel. There are obvious risks in preventing negotiations on extending New START due to Russian non-compliance with the INF Treaty. First, having the U.S. tie discussions on one treaty to disputes in another would likely cause Russia to adopt the same approach. In my opinion, this would unnecessarily complicate resolving issues in either treaty. Secondly, while I vigorously support holding Russia to account for complying with all treaties, we have to keep in mind that without treaty constraints, Russia is free to do as it wants. It is important to weigh the impact of treaty disputes against the possibility of a treaty not being extended, or of Russian withdrawal from one or more treaties. The issues that we have with Russian non-compliance with INF are serious and should be dealt with, however my recommendation is that the U.S. not bring INF issues in other treaty areas.

Mr. COOPER. Is there a military requirement for a conventional Long-Range Stand-Off weapon? What would the costs be to make it conventional?

General RAND. [The information provided is classified and retained in the committee files.]

Mr. COOPER. What is your (military) opinion of the value of the new START Treaty? What would the risk be of preventing negotiations to extend the New START Treaty as long as Russia is not in compliance with the INF Treaty?

Admiral BENEDICT. I believe that bilateral and verifiable arms control agreements are a key component of our national security and provide insight into potential adversary capabilities to maintain the strategic status quo. However, further reductions of nuclear forces should only be undertaken after a complete assessment of the current security environment, particularly in regards to our nuclear armed adversaries. Any future arms control agreements should take into account prior actions, verifiability, and the arms control agreement's contribution to maintaining strategic stability. These things, along with a full intelligence assessment of the present and future threat environment will be central to the Nuclear Posture Review (NPR). The results of the NPR will inform any decisions on adjustments to strategy, force structure, and recommendations on how to best address the future threat environment.

QUESTIONS SUBMITTED BY MR. FRANKS

Mr. FRANKS. Looking at the Trump administration's FY18 budget request for DOD nuclear forces and NNSA's nuclear weapons activities, is there more consistency between the Obama administration's plans, or more difference?

General KLOTZ. The Fiscal Year (FY) 2018 President's Budget Request continues the program of record detailed in the FY 2017 Stockpile Stewardship and Management Plan. NNSA's Weapons Activities budget includes planned increases to the program of record as well as increases to adapt to emerging changes, such as updates to the baseline costs for the B61–12 Life Extension Program and the W88 Alteration 370.

Mr. FRANKS. CBO has recently estimated the cost of sustaining, operating, and modernizing our nuclear deterrent to be $400 billion over the next 10 years-including both DOD and NNSA costs. Do you agree with this estimate?

CBO estimates this $400 billion represents roughly 6 percent of the total defense budget during this time. Do you believe this is an appropriate amount to be spending on the nuclear deterrence?

General KLOTZ. NNSA publishes future year cost estimates in our annual Stockpile Stewardship Management Plan (SSMP), but NNSA has not estimated costs for the Department of Defense portion of the $400 billion estimate and therefore has no basis by which to judge its accuracy. The DOE portion of Congressional Budget

Office's (CBO) $400 billion estimate was $134 billion. Our own current estimate for that period (2017–2026), as detailed in the SSMP, is ~$112–120 billion.

Since the end of the Cold War, investments in the strategic deterrent have fallen to under 4 percent of the defense budget, but historically has been much higher than 6 percent during periods of recapitalization, particularly prior to the end of the Cold War. Over the past 40 years, Weapons Activities funding has ranged from 1.0 to 1.7 percent of total Defense discretionary spending. At currently planned levels, Weapons Activities spending over the next 10 years would constitute about 1.6 percent of defense spending.

The National Nuclear Security Administration's missions include 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. NNSA's budget is vital to ensuring that U.S. nuclear forces are modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure America's allies. NNSA's budget represents a prudent investment in a key component of our overall defense strategy. Significant and sustained investment is needed to replace aging infrastructure, provide for warhead life extension programs, revitalize our production capabilities, continue to advance the science which guarantees the safety, reliability and effectiveness of the stockpile, and sustain our highly talented workforce. Failure to make the right investments could significantly impact the deterrent.

Mr. FRANKS. Looking at the Trump administration's FY18 budget request for DOD nuclear forces and NNSA's nuclear weapons activities, is there more consistency between the Obama administration's plans, or more difference?

Dr. SOOFER. As NNSA Administrator Lieutenant Colonel Klotz noted in testimony, the President's FY 2018 budget request reflects an increase for NNSA nuclear weapons activities. For the Department of Defense portion, the fiscal year (FY) 2018 budget reflects more continuity than change. The FY 2018 budget supports, as did the FY 2017 budget, continued recapitalization of each element of our nuclear forces and infrastructure.

Mr. FRANKS. CBO has recently estimated the cost of sustaining, operating, and modernizing our nuclear deterrent to be $400 billion over the next 10 years, including both DOD and NNSA costs. Do you agree with this estimate?

CBO estimates this $400 billion represents roughly 6 percent of the total defense budget during this time. Do you believe this is an appropriate amount to be spending on the nuclear deterrence?

Dr. SOOFER. The DOD expects nuclear recapitalization costs to total approximately $230–$290 billion from FY 2018 to FY 2040, in constant FY 2018 dollars. This projection includes the total cost of nuclear-only systems, and a portion of the cost of the B–21 bomber, which will have both conventional and nuclear roles. The DOD projection for total recapitalization cost also includes modernizing nuclear command, control, and communications systems. I would defer to my Department of Energy colleagues for specifics relating to estimated NNSA costs. U.S. nuclear weapons deter the only existential threat to the Nation. The nuclear enterprise is affordable if nuclear deterrence is prioritized appropriately. During the coming period of increased recapitalization spending, nuclear forces will remain a small fraction of the DOD budget—with annual funding levels that are projected to range from approximately 3 percent to 6 percent of total defense spending. This includes spending to sustain and operate the existing force—currently about $12–14 billion per year—as well as recapitalization spending to develop and field modernized replacements.

Mr. FRANKS. The last Nuclear Posture Review (NPR) was published 7 years ago. The world was very different in 2010, particularly when talking about Russia. Today, it's hard to see Russia as the partner and friend like the 20101 NPR envisioned.

Would you please provide us your assessment on what has changed in the world since the 2010 NPR?

How will this affect the NPR and its deliberations?

Dr. SOOFER. The Nuclear Posture Review's analytical process will include a full assessment of the strategic environment, including a review of how that environment has changed since the 2010 NPR. Recent years have indeed brought changes to the security environment that U.S. nuclear policy must address. Russia has undertaken aggressive actions against its neighbors and threatened the United States and its NATO Allies—including nuclear threats. It has elevated strategies of nuclear first use in its strategic thinking and military exercises, is modernizing a large and diverse non-strategic nuclear weapons force, and is violating the landmark Intermediate-Range Nuclear Forces (INF) Treaty. However, while Russia presents a sig-

nificant set of challenges, it is only one element of an increasingly complex global strategic environment. The President directed the Department of Defense to review U.S. nuclear posture and ensure that our nuclear forces are modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure our allies and partners.

Mr. FRANKS. CBO has recently estimated the cost of sustaining, operating, and modernizing our nuclear deterrent to be $400 billion over the next 10 years, including both DOD and NNSA costs. Do you agree with this estimate?

CBO estimates this $400 billion represents roughly 6 percent of the total defense budget during this time. Do you believe this is an appropriate amount to be spending on the nuclear deterrence?

General RAND. The $400 billion estimate is based on a snapshot in time. Global Strike Command's portion for the nuclear enterprise funding was included in the CBO estimate, therefore I can't speak for our sister services and the Department of Energy. The estimated amount could fluctuate based on future budgets, adversary advancements, and new/competing requirements. Increases from 2015 are rightly attributed to modernization and replacement programs becoming more mature.

While the CBO report covers 2017–2026, the current cost estimates for Air Force Global Strike Command peak in 2030 when a number of modernization and replacement programs are going on all at once. Considering the deterrence and assurance provided by our nation's nuclear weapon programs, the CBO's number of 5–7% of the total national defense budget is quite a bargain. While I can't speak to Navy and Department of Energy costs, the CBO numbers on Air Force Global Strike's portion of sustaining, operating, and modernizing our nuclear deterrent are in line with our projections.

It is encouraging that the CBO included estimates for the command and control, communications (NC3) and early warning systems in the report. When discussing nuclear modernization, these critical systems are omitted from discussions. This country relies on positive command control of nuclear forces. Only the President may authorize the use of nuclear weapons by utilizing NC3 systems.

Mr. FRANKS. CBO has recently estimated the cost of sustaining, operating, and modernizing our nuclear deterrent to be $400 billion over the next 10 years, including both DOD and NNSA costs. Do you agree with this estimate?

CBO estimates this $400 billion represents roughly 6 percent of the total defense budget during this time. Do you believe this is an appropriate amount to be spending on the nuclear deterrence?

Admiral BENEDICT. The CBO estimate of $400 billion represents many elements across multiple agencies and services within the overall nuclear deterrence mission. The 1–2 percent of the national defense budget for the sea-based strategic deterrent is appropriate and consistent with what our nation previously invested to build both the "41 for Freedom" in the 1960s and the first nuclear modernization with the OHIO Class in the 1980s. The Navy is continually reviewing and validating the requirements needed to sustain the sea-based leg of the triad. A safe, secure, and reliable nuclear deterrent underpins our ability to conduct conventional operations around the world. Beyond deterring the threat of nuclear attack on the United States, having credible nuclear forces is essential to assuring our allies of our extended deterrence commitments, thereby convincing them that they do not need to pursue their own nuclear weapons. Recapitalization is a significant investment that happens every other generation, making it critically important that we do it right. We remain focused on cost-efficiency to ensure an affordable sea-based strategic deterrent.

Mr. FRANKS. CBO has recently estimated the cost of sustaining, operating, and modernizing our nuclear deterrent to be $400 billion over the next 10 years, including both DOD and NNSA costs. Do you agree with this estimate?

CBO estimates this $400 billion represents roughly 6 percent of the total defense budget during this time. Do you believe this is an appropriate amount to be spending on the nuclear deterrence?

Dr. ZANGARDI. The Congressional Budget Office's cost estimate for sustaining, operating, and modernizing our nuclear deterrent is not the same dollar amount that DOD will provide Congress in its classified Fiscal Year 2018 annual report on the Nuclear Weapons Stockpile, Nuclear Weapons Complex, Nuclear Weapons Delivery Systems, and Nuclear Weapons Command and Control System (the "Section 1043 Report"). I believe that the proposed funding stated in the Department of Defense's Section 1043 Report reflects the funding needed to support our Nation's nuclear deterrence.

QUESTIONS SUBMITTED BY MR. GARAMENDI

Mr. GARAMENDI. Why do we need the IW–1 rather than a life-extended W78? What steps is NNSA taking to ensure that any changes to the warhead, including any modifications to the nuclear components, do not affect the reliability of the warhead?

General KLOTZ. The Nuclear Weapons Council's (NWC's) August 2016 Strategic Plan reaffirmed the need for the interoperable warhead 1 (IW1) as the first ballistic missile in the 3+2 Nuclear Stockpile Strategy. The 3+2 Strategy is a long-term strategy with emphasis on reduced warhead types, interoperability to enable smaller inactive stockpile, and reduced burden on production infrastructure. The IW1 objective is to deploy an interoperable nuclear explosive package for use in the Mk21 intercontinental ballistic missile aeroshell and the Mk5 submarine-launched ballistic missile aeroshell with adaptable non-nuclear components.

IW1 will accomplish the following: 1) replaces capability currently provided by the aging W78; 2) rebalances sea-leg deployment to reduce risk against technical failure; and 3) along with IW2, enables replacement of capability provided by the W88. A W78 life extension program may not provide the capability envisioned for IW1 or meet the long-term requirements of the 3+2 Strategy. The pending NPR may shed greater light on this issue.

Warhead reliability is one of many requirements established by the Department of Defense in what are called Military Characteristics (MCs). The IW1 MCs will be generated by the DOD and approved by the Nuclear Weapons Council (NWC), but they are not officially established yet. As with all ongoing nuclear warhead life extensions programs and major modifications, NNSA performs extensive testing and analytical assessments to meet reliability requirements prior to deployment of the warhead. With over 70 years of experience, the NNSA (through its Design and Production Agencies) has established proven processes to meet reliability and other objectives for both newly manufactured and reused components and expects to do so for IW1.

Mr. GARAMENDI. The Trump administration has decided to terminate the MOX project, noting that "major cost overruns and schedule slippages have led to a reexamination of how best to achieve [our nonproliferation commitments]" and "It would be irresponsible to pursue this approach when a more cost-effective alternative exists."

Why did this administration decide to terminate the MOX Project? Have any new reviews taken place under the new administration?

Is DOE considering other missions for Savannah River Site? Which ones?

General KLOTZ. Independent cost reviews and estimates directed by Congress have all concluded that the MOX program of record is significantly more expensive and would take more time than originally planned. The new Administration reviewed all independent reports and met with all parties including MOX Services, the current contractor, and their parent companies to fully understand the costs, challenges, and risks associated with constructing the MOX project or pursuing the dilute and dispose approach. After careful review, the Administration came to the same conclusion as the last Administration—that the current MOX program of record is unaffordable and the dilute and dispose approach meets the nonproliferation requirements much faster with significantly lower cost and risk.

Most of the information reviewed by the new Administration and key decision makers were from prior studies, including the recent U.S. Army Corps of Engineers report on the Mixed Oxide Fuel Fabrication Facility contract structure and the Government Accountability Office's Plutonium Disposition report to the Senate Armed Services Subcommittee on Strategic Forces.

Mr. GARAMENDI. To what extent are Weapons Activities infrastructure investments driven by the 50–80 pits per year production requirement and to what extent is the 50–80 pits per year production requirement driven by the IW–1?

General KLOTZ. NNSA's Plutonium Strategy includes a number of investments intended to sustain the capabilities necessary to support stockpile requirements. These include a combination of line-item projects and resource investments that help reduce mission dependency on aging facilities, modernize our infrastructure, and help NNSA meet statutory pit production requirements, including achieving a 50–80 war reserve (WR) pits per year (ppy) production capacity in the 2030s. Much of this investment would be required, regardless of the pit production requirement.

The January 16, 2014, Assessment of Nuclear Weapon Pit Production Requirements Report to Congress confirmed the need for achieving 50–80 ppy production capacity by 2030, citing multiple drivers. Key among these drivers are both the need to support future stockpile planning requirements and address stockpile needs due to pit aging. The requirement to achieve a 50–80 ppy production capacity was codi-

fied by Congress most recently in the 2016 National Defense Authorization Act (Sec. 3140). Although the current build plan of Interoperable Warhead 1 (IW1) is the main driver for the current pit production requirements, any replacement life extension program for the W78 warhead could require similar, if not higher, production requirements.

Mr. GARAMENDI. Previous Nuclear Posture Reviews, which are comprehensive, interagency reviews of our nuclear weapons policy, have often taken more than a year to complete. This administration plans to complete its Nuclear Posture Review in about 8 months. Should we take this to mean that the review is a forgone conclusion and that it will reaffirm the status quo? Why such a constrained timeline? Further, how will the lack of confirmed appointees at relevant offices and bureaus at the State Department (such as the Under Secretary for Arms Control and International Security, Bureau of Arms Control Verification and Compliance, Bureau of International Security and Nonproliferation) affect non-DOD input on the process?

Dr. SOOFER. The Nuclear Posture Review includes subject matter experts from across the government, including the Department of State. The effort is being overseen by the Secretary of Defense and will include a full and thorough assessment of our nuclear weapons policy to ensure that our nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st century threats. If more study time is necessary we will extend the review to ensure we adequately meet the President's objectives.

Mr. GARAMENDI. President Obama stated in 2013 that "After a comprehensive review, I've determined that we can ensure the security of America and our allies—and maintain a strong and credible strategic deterrent—while reducing our deployed strategic nuclear weapons by up to one-third." Do you agree with that statement? Should the United States seek further reductions in coordination with Russia?

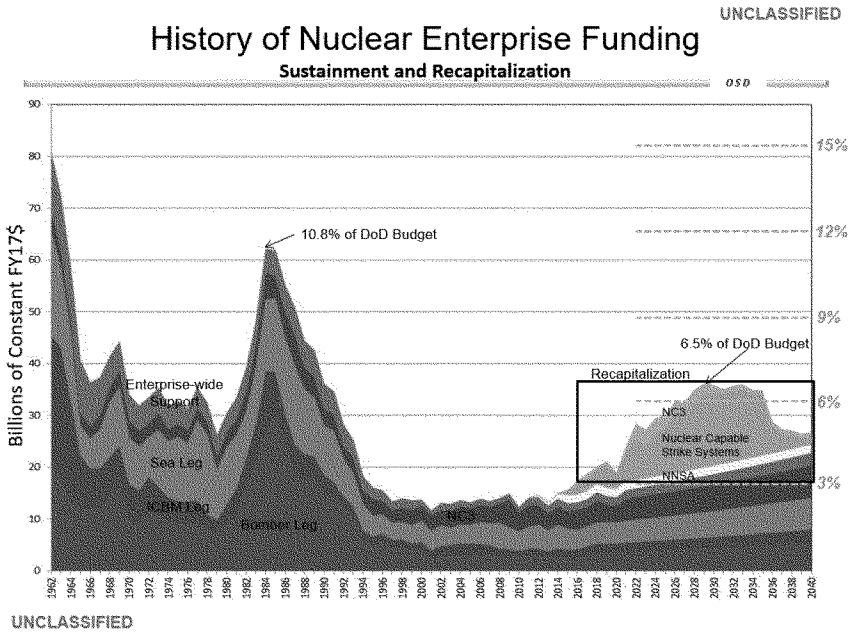
Dr. SOOFER. The President tasked the Department of Defense to review U.S. nuclear posture and ensure that our nuclear forces are modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats. The security environment has changed since President Obama's statement; I will not prejudge the outcome of the NPR and endorse this statement. If any future reductions are possible for the U.S., they should not be done unilaterally.

Mr. GARAMENDI. Do you believe that it would be in the national security interests of the United States to pursue an extension of the treaty in 2021? Would you advocate for any modifications? What would the risk be of preventing negotiations to extend the New START Treaty as long as Russia is not in compliance with the INF Treaty?

Dr. SOOFER. It is too early to consider extending or modifying the New START Treaty. This year, we are focused on completing our force reductions under the Treaty and ensuring that Russia meets its obligations by February 2018 when the Treaty's central limits go into effect. Russia remains in compliance with the New START Treaty and the Treaty continues to provide predictability of and transparency into Russia's strategic forces. The President directed the Department of Defense to review U.S. nuclear posture and ensure that our nuclear forces are modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats.

Mr. GARAMENDI. Dr. Soofer, do you believe it is within the ability of the Department of Defense to provide to Congress a 25-year cost estimate of DOD's portion of our nuclear deterrent, including operation, sustainment, and modernization?

Dr. SOOFER. In making these long-term cost projections, there are always legitimate questions about what to include, what timeframe to cover, and what level of uncertainty is reasonable to expect. At this time a reliable 25-year cost estimate for of the Departments of Defenses portion of our nuclear deterrent does not exist. However, the attached chart provides a cost estimate of operation, sustainment and modernization of our nuclear deterrent through 2040.



Mr. GARAMENDI. Dr. Soofer, thank you for providing your 20-year cost estimate for DOD's nuclear modernization costs and for providing a clear and full explanation of which costs and programs are included. However, your cost estimate is provided in constant FY18 dollars, making comparisons with most other congressionally mandated nuclear cost estimates which use then-year dollars difficult. Please provide to the committee an updated version of this cost estimate using then-year dollars.

Dr. SOOFER. DOD expects nuclear recapitalization costs to total approximately $230–$290 billion spread over more than two decades, from fiscal year (FY) 2018 to FY 2040, in constant FY 2018 dollars. In then-year dollars the range is adjusted to $280–$350 billion.

Mr. GARAMENDI. There have been some changes to this year's funding requests for the LRSO and GBSD in comparison to the FY18 plans in last year's budget. GBSD was reduced by $78 million and LRSO was increased by $31 million. General Rand, can you briefly explain those changes?

General RAND. The Ground Based Strategic Deterrent (GBSD) focus since the Milestone A decision has been on source selection related to the Technical Maturation Risk Reduction Contract Award we expect to be awarded in the 4th Quarter Fiscal Year 2017. Some planned activities were deferred due to the source selection activity. The program is currently funded to the Independent Cost Estimate.

The $31 million adjustment to the Fiscal Year 2018 budget for Long Range Standoff Missile (LRSO) is in response to the updated cost estimate developed and approved during the Milestone A approval process. This updated estimate was approved after the Fiscal Year 2017 President's Budget submission. The $451.3 million Fiscal Year 2018 funds support technology maturation and risk reduction weapon development, test planning, and aircraft integration efforts.

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