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# NUCLEAR DETERRENCE IN THE 21ST CENTURY

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTEENTH CONGRESS

FIRST SESSION

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# NUCLEAR DETERRENCE IN THE 21ST CENTURY

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HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
*Washington, DC, Thursday, June 25, 2015.*

The committee met, pursuant to call, at 10:01 a.m., in room 2118, Rayburn House Office Building, Hon. William M. "Mac" Thornberry (chairman of the committee) presiding.

## OPENING STATEMENT OF HON. WILLIAM M. "MAC" THORNBERRY, A REPRESENTATIVE FROM TEXAS, CHAIRMAN, COMMITTEE ON ARMED SERVICES

The CHAIRMAN. Committee will come to order.

The committee meets today to have a hearing on nuclear deterrence in the 21st century.

I ask unanimous consent that my complete opening statement be made part of the record. I am afraid we are going to have votes here in a few minutes.

Let me just say that in my view, our nuclear deterrent is the cornerstone of all our defense efforts as well as a source of stability around the world. And in my opinion, for too long, we have taken it for granted, neglecting the systems, the infrastructure, and the people involved in making all of those complex machines safe, reliable, and effective.

Unfortunately, the investment that we have made in delivery systems and weapons in the past are all aging out about the same time, and that presents us with a substantial challenge, especially when we merge that with what other nations are doing.

The committee has had a series of events over the course of the past week or so, classified and unclassified, looking at various aspects of this problem. I understand the Oversight and Investigations Subcommittee will have a further hearing on this matter this afternoon.

So I think it is very appropriate that we have our witnesses with us today to examine some of these issues. I will look forward to introducing them in just a moment, but Mr. Smith has been detained for a brief period, and in his absence, I would yield to the distinguished gentleman from Rhode Island for any comments he would like to make.

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

## STATEMENT OF HON. JAMES R. LANGEVIN, A REPRESENTATIVE FROM RHODE ISLAND, COMMITTEE ON ARMED SERVICES

Mr. LANGEVIN. Thank you, Mr. Chairman.

I want to, on behalf of Ranking Member Smith and the committee, welcome our witnesses here today. Look forward to your testimony. Mr. Smith is at his physical therapy appointment and will be here shortly once that concludes, but he welcomes you.

And in the interest of time, Mr. Chairman, given the fact that votes are going to be called, without objection, I will submit Mr. Smith's full statement for the record, and I will yield back.

[The prepared statement of Mr. Smith can be found in the Appendix on page 36.]

The CHAIRMAN. I thank the gentleman. Without objection, it is so ordered.

Again, let me welcome our distinguished witnesses today. I think your presence is evidence of the seriousness with which the administration takes this issue.

We are pleased to welcome the Deputy Secretary of Defense, Robert Work; the Deputy Secretary of Energy, Elizabeth Sherwood-Randall; and the Vice Chairman of the Joint Chiefs of Staff, Admiral James "Sandy" Winnefeld.

And let me also say, Admiral, that the odds are this may be your last hearing in front of the House Armed Services Committee. And my memory is something like 37 years of service to our Nation, and may I say thank you for all of those years, not only in your current job, where we have been able to work with you on a number of issues, but an incredible history of service.

And so thank you and congratulations.

Secretary Work, you are recognized for any comments you would like to make. And without objection, all of your written statements will be made part of the record.

Mr. Secretary, you may have to punch the button and get the microphone right in front of you. Thank you.

## STATEMENT OF HON. ROBERT O. WORK, DEPUTY SECRETARY OF DEFENSE, U.S. DEPARTMENT OF DEFENSE

Secretary WORK. Thank you, sir.

I want to thank you and the members of the committee for the support that you continue to show for our men and women in uniform, our Department of Defense [DOD] civilians, and their families. Secretary Carter and I and everyone in the Department greatly appreciate it. We simply couldn't maintain the finest fighting force in the world without your help and without everything that you have provided us.

I am really delighted to be here this morning with Dr. Liz Sherwood-Randall from the Department of Energy and, as you said, the vice chairman, to talk about this very important subject, nuclear policy, forces, and modernization.

I would just like to touch briefly on three points: the critical role that our nuclear forces continue to play in our national security; the continuing importance of nuclear deterrent forces given recent changes in the security environment; and the actions the Department is taking to make sure that we maintain a safe, reliable, and effective nuclear force.

As the chairman and the vice chairman say constantly, the survival of our Nation is our most important national security interest. The fundamental role of the U.S. nuclear force is to deter an

attack on the United States, which is the only existential threat to our Nation. Extended deterrence provides protection to our allies and partners, enhances alliance cohesion, and serves our nonproliferation goals.

Now, while we seek a world without nuclear weapons, we face the hard reality that Russia and China are rapidly modernizing their already capable nuclear arsenals, and North Korea continues to develop nuclear weapons and the means to deliver them against the continental United States. So a strong nuclear deterrent force will remain critical to our national security for the foreseeable future.

I would like to address Russia's provocations. As members of this committee well know, senior Russian officials continue to make irresponsible statements regarding Russia's nuclear forces and we assess that they are doing it to intimidate our allies and us.

These have failed. If anything, they have really strengthened the NATO [North Atlantic Treaty Organization] alliance solidarity.

Moscow continues to violate the INF [Intermediate-Range Nuclear Forces] Treaty, in our estimation, and our goal is to return them to compliance to preserve the viability of that treaty. Under any circumstances, however, we will not allow them to gain significant military advantage through INF violations. We are developing and analyzing response options for the President and we are consulting with our allies on the best way forward here.

Now, let me just say this about Russian military doctrine that sometimes is described as "escalate to deescalate." Anyone who thinks that they can control escalation through the use of nuclear weapons is literally playing with fire. Escalation is escalation, and nuclear use would be the ultimate escalation.

As Secretary Carter recently said, "Moscow's nuclear saber rattling raises questions about Russia's commitment to strategic stability and the profound caution and respect that world leaders in the nuclear age have shown towards the brandishing of these weapons."

China is also doing nuclear upgrades. They are placing multiple warheads on their ICBMs [intercontinental ballistic missiles]. They are expanding their mobile ICBM force. They continue to pursue a sea-based element for their nuclear forces. However, we assess that this modernization program is designed to ensure they have a second-strike capability, and not to seek a quantitative nuclear parity with the United States or Russia.

North Korea, they continue to expand their nuclear weapons and missile programs. And in response, we continue to improve our national missile defenses and conventional counterforce options, and our current plans will keep us ahead of North Korean capabilities, in our estimation.

So given the importance of nuclear weapons, as well as this volatile 21st century national security environment, the President has directed that we maintain a safe, secure, and reliable triad of strategic nuclear delivery systems, while adjusting the force levels to the New START [Strategic Arms Reduction] Treaty. This is the highest priority for the Department of Defense.

We have developed a plan to transition our aging systems. As the chairman said, they all are becoming—reaching the time where

they will age out. Carrying out this plan is going to be a very expensive proposition and we recognize that. It is projected to cost DOD an average of $18 billion a year from 2021 through 2035 in fiscal year 2016 dollars.

Without additional funding dedicated to strategic force modernization, sustaining this level of spending will require very, very hard choices and will impact the other parts of the defense portfolio, particularly our conventional mission capability.

Now, this modernization we have delayed and we cannot do further any delays without putting the safety, security, and effectiveness of our forces at risk. So the choice that we are facing, quite frankly, Mr. Chairman and members, is that keeping the existing force or modernizing the force, the choice right now is modernizing or losing deterrent capability in the 2020s and 2030s. That's the stark choice that we are faced with.

We appreciate that this committee has recognized this problem, including legislation to establish a strategic deterrent fund. We now believe we have to decide how to resource the fund and the challenge we think we need to talk about on how we solve this, because it is a very pressing issue.

So I look forward to discussing this issue with you and the other defense oversight committees, and I look forward to your questions.

[The joint prepared statement of Secretary Work and Admiral Winnefeld can be found in the Appendix on page 38.]

The CHAIRMAN. Thank you, sir.

Secretary Sherwood-Randall, the floor is yours.

**STATEMENT OF HON. ELIZABETH SHERWOOD–RANDALL, DEPUTY SECRETARY OF ENERGY, U.S. DEPARTMENT OF ENERGY**

Secretary SHERWOOD-RANDALL. Thank you, Chairman Thornberry, Ranking Member Smith, and members of the committee—Mr. Rogers as well, who I had the privilege of traveling with to our Idaho National Lab. I appreciate this opportunity to discuss the Department of Energy's role in supporting U.S. nuclear deterrence in the 21st century.

Secretary of Energy Moniz and I appreciate the priority that this committee places on nuclear matters, given their significance to our national security and the emphasis that President Obama has placed on ensuring the safety, security, and effectiveness of our nuclear weapons as we seek to reduce global nuclear dangers.

Today's hearing is an important step in our ongoing effort to build a strong national consensus on the role for and management of the United States nuclear deterrent. I am honored to testify alongside my two close colleagues from the Department of Defense. The Departments of Energy and Defense share a solemn responsibility for delivering the nuclear deterrent, and we work on this in tandem, with DOE providing the weapons and DOD providing the delivery systems.

Our two agencies collaborate through the Nuclear Weapons Council to improve communication and to increase coordination throughout the budget cycle. Our cooperation is strong and deliberate, as you will hear today.

This cooperation depends upon the leadership of experienced members of our military, like Admiral Sandy Winnefeld who, as

the chairman noted, will be retiring after 4 years as Vice Chairman of the Joint Chiefs at the end of July.

It has been a privilege to work closely with Admiral Winnefeld throughout the administration, and we have joined forces frequently on issues of direct relevance to this hearing.

I would like to take this opportunity to publicly thank Sandy for his many years of extraordinary and dedicated service to our Nation.

We are all aware that the United States and our allies and partners face grave and growing nuclear dangers. As President Obama said in his April 2009 Prague speech, the threat of nuclear war has gone down, but the risk of nuclear attack has gone up.

With these dangers in mind, the Obama administration has set forth a clear two-pronged nuclear strategy. First, we must reduce the threat of nuclear proliferation, and second, we must maintain a safe, secure, and effective nuclear deterrent.

At DOE, we are charged with playing a significant role in implementing both elements of the President's nuclear strategy. This is a no-fail mission in which we must provide a safe, secure, and effective nuclear deterrent without explosive nuclear testing while also preventing, countering, and responding to proliferation and nuclear terrorism around the world.

Indeed, as the United States reduces its nuclear arsenal, DOE's responsibility for maintaining the arsenal's safety, security, and effectiveness becomes all the more important.

Infrastructure modernization and the ongoing Stockpile Stewardship and Management Program, undergirded by sound science and advanced technology, are necessary to ensure the ability of the United States to meet 21st century threats.

The Stockpile Stewardship Program is one of DOE's most remarkable achievements of the past two decades.

Every year, DOE has enabled the Secretaries of Defense and Energy, together with the directors of Livermore, Los Alamos, and Sandia National Laboratories, the Nuclear Weapons Council, and the commander of the U.S. Strategic Command, to certify to the President that our nuclear stockpile is safe, secure, and reliable.

And for the past 20 years, DOE's scientific and technological expertise has achieved this without explosive nuclear testing. In fact, our labs now know more about the physics of the inner workings of the stockpile than they ever did during the days of explosive nuclear testing.

Our life extension programs and alterations refurbish, reuse, and replace nuclear components to extend the lifespan of our existing nuclear arsenal and to ensure their continued safety and effectiveness.

To maintain confidence in our nuclear arsenal, we must continue to invest in the uniquely skilled nuclear security workforce, as well as the science and infrastructure essential to stockpile stewardship.

DOE's National Nuclear Security Administration [NNSA] is responsible for the Nuclear Security Enterprise infrastructure necessary to sustain the stockpile and execute all of our nuclear missions.

Some of the physical infrastructure dates back to the days of the Manhattan Project. As many of you have seen with your own eyes,

much of it degrading, has exceeded its useful life and is in need of substantial maintenance or replacement.

Equally important, more than 50 percent of the NNSA Federal workforce will be eligible to retire in the next 5 to 7 years. This wave of retirements requires us to recapitalize our workforce with a successor generation of outstanding talent that is able to carry forward our nuclear mission in this century.

Building a responsive infrastructure requires investing in our people as well as in our new facilities, especially for plutonium and uranium, as well as high explosives, nonnuclear component production, and requisite laboratory and office workspace.

Secretary Moniz and I have made reducing the maintenance backlog a key element of the Department's overall infrastructure strategy, and we seek your support for this as well as for the new construction that we need.

Your recognition of our critical mission and your support for the life extension programs and a modernized infrastructure are critical to American national security and to the security of our allies and partners around the world.

More broadly, the Secretary and I see the implementation of recommendations of the Congressional Advisory Panel on NNSA Governance, also known as the Mies-Augustine report, as a top priority and one that will enhance our efforts across the Nuclear Security Enterprise.

Under Secretary Moniz' leadership, DOE and NNSA have already taken several significant steps to improve the operation and management of the Nuclear Security Enterprise.

One of the report's significant findings was the need to rebuild national leadership focus on nuclear security with a particular emphasis on strengthening regular communications with relevant congressional leaders on policy elements that make up the nuclear security mission.

I, along with the NNSA administrator, will lead the implementation group, and I look forward to working with you on this important issue. Your support for our governance agenda will be absolutely critical to our success.

As I have already observed, DOE also plays a central role within the U.S. Government in implementing nuclear threat reduction activities. Our portfolio of work, aimed at preventing, countering, and responding to global nuclear threats, is rooted in our capabilities to develop and sustain the U.S. nuclear stockpile and enables us to implement this important dimension of the Prague Agenda.

These activities are defense by other means. When we take fissile material off the global playing field or work discreetly to help countries to do a better job of protecting the fissile material that they retain, we defend ourselves and those who share our values from those who would do us harm.

For example, NNSA's Office of Defense Nuclear Nonproliferation has safely and securely removed or confirmed the disposition of over 5,359 kilograms of highly enriched uranium and plutonium around the world, which is enough material for more than 200 nuclear weapons.

In conclusion, as Deputy Secretary Work has already noted, our Nation faces numerous strategic challenges, including the continuous expansion of the Russian and Chinese nuclear programs.

In the wake of several difficult years of constrained budgets and fiscal uncertainty, we cannot afford to delay the investments we need to make in our Nuclear Security Enterprise. With your support, we can sustain nuclear deterrence in the 21st century.

I thank you for the opportunity to testify today on this vitally important national security issue, and I look forward to your questions.

[The prepared statement of Secretary Sherwood-Randall can be found in the Appendix on page 48.]

The CHAIRMAN. Thank you.

Admiral.

**STATEMENT OF ADM JAMES A. WINNEFELD, JR., USN, VICE CHAIRMAN OF THE JOINT CHIEFS OF STAFF, U.S. DEPARTMENT OF DEFENSE**

Admiral WINNEFELD. Chairman Thornberry and distinguished members of the committee—I just missed Ranking Member Smith, but thank you, Mr. Langevin—thank you for the opportunity to share my perspective on nuclear deterrence. And sir, thank you for your kind words earlier; very much appreciate it.

Chairman Dempsey and I view national security decision making, whether it is the use of force, resource allocation or assignment of risk, through the lens of a set of prioritized national security interests.

It goes without saying, as Deputy Secretary Work alluded, that the survival of our Nation ranks first among those interests, followed closely by the need to prevent catastrophic attacks on our Nation.

Additionally, our extended deterrence commitments help cover our interest in assuring our nonnuclear allies that their security interests will be protected without developing their own nuclear capabilities.

It follows that tending to the health of our nuclear deterrent force is the most important thing that we do, representing, as it does, our only way to deter an existential attack from a major nation-state and one of several ways of deterring a smaller attack from a lesser state and also to assure our allies.

We principally accomplish this through our long-proven triad and a combination of forward-deployed weapons and delivery platforms in Europe and the ability to rapidly do the same in the Pacific.

However, while our deterrent is healthy today, three factors are contributing to our concern for its future health.

First, at the end of the Cold War, many felt that the international system had evolved to the point where a nuclear deterrent was obsolete. However, recent events remind us of the necessity of maintaining a reliable and capable deterrent, including a triad, for as long as nuclear weapons exist.

We still believe that any reductions in weapons must be done in concert with our potential antagonists, because unilateral gestures of good will have little standing with authoritarian regimes.

Second, all three legs of our deterrent, their supporting command-and-control structure and many of the weapons they employ are coming due for recapitalization within a natural cycle.

The fact is that systems age and need to be refreshed, modernized, or replaced. Russia is going through this exact same experience right now. But the unfortunate, coincident timing for us, also alluded to by Deputy Secretary Work, in the coming years presents a large bill over a relatively short period of time.

And third, this is all happening at a time when our resources are actually decreasing.

As it stands, any remaining margin we have for investing in our nuclear deterrent has been steadily whittled away as we have pushed investments further and further into the future.

The fact is there is no slack left in the system. We will need stable, long-term funding to recapitalize this most important element of what we do. We can no longer adjust priorities inside the nuclear portfolio to make things work, to string it along.

That implies that absent some other form of relief, because this is our highest security interest, we are going to have to reach into the other things we do to protect other national security interests. That is going to make many people, both inside and outside DOD, unhappy.

For our part, we have been and will continue to exercise the best possible stewardship we can over our resources, and we will continue working closely with our DOE partners to ensure the viability and affordability of warhead life extension programs and stockpile stewardship. I hope Congress will do its part to help us.

Before I conclude, I would like to thank the members of this committee for your strong support for our Nation's men and women in uniform during my tenure as vice chairman. And thank you again for the opportunity to appear alongside my colleagues today, and I do look forward to your questions.

Thank you, sir.

[The joint prepared statement of Admiral Winnefeld and Secretary Work can be found in the Appendix on page 38.]

The CHAIRMAN. Thank you, sir.

As feared, we have votes on the floor, and so we are going to have to recess, and then we will return as soon as those votes are concluded.

And so if the witnesses want to make their way to the anteroom, we will buy you a cup of coffee. I am not promising how good it is.

But with that, the committee will stand in recess. I would encourage members to come back right after votes.

[Recess.]

The CHAIRMAN. The committee will come to order again. Thank you all for your patience.

Let me ask a couple of things as other members are making their way back from the floor.

Secretary Work, last November, then-Secretary Hagel issued a message to the force on nuclear deterrence. And let me read a quote from that message. It said, "Our nuclear deterrent plays a critical role in assuring U.S. national security and it is DOD's high-

est priority mission. No other capability we have is more important."

Is that still the case? Do you agree with that or not?

Secretary WORK. Yes, Mr. Chairman, I absolutely do, as does Secretary Carter. You know, one of the issues that we found in the Nuclear Enterprise Review is that once the Strategic Air Command was disestablished in 1991, over a long period of time between there and about 2008, we stopped thinking of the nuclear deterrence mission as a mission, and more of a function. And that resulted in some very, very bad outcomes, which we have been working to try to overcome since 2008.

That is why Secretary Hagel said "mission." It is a mission. We are looking for people who are responsible for every aspect of the mission. And efficiencies are great for savings when you are looking for functions, but this is really about command responsibility and making sure.

So I believe that that is absolutely the case, and I believe the vice chairman and the chairman would agree with it, too.

The CHAIRMAN. Well, let me ask you and Admiral Winnefeld this question. Because part of the reaction one gets is, okay, we have been dealing with this for 70 years; it has gone along pretty well; nothing has really changed; you know, we haven't had nuclear testing since 1991 or whatever the date is.

So, there is really no need to spend all this money because we have been making it okay; and besides, we have got enough weapons to destroy the world several times over. So, really, you are just asking us to waste money to put it into the warheads or delivery systems.

Now, what would y'all's reaction be to that sort of sentiment?

Secretary WORK. As both the vice chairman and I have testified, and I think all of the senior leadership of the Department has said, the only existential threat to our Nation is a nuclear attack. And the only thing that is more important—I mean, the one step down is preventing a catastrophic attack, which we believe would be one or two nuclear weapons being fired at the continental United States or blowing up in the continental United States.

So, anybody who looks at the way that the international environment is moving, especially the way that Russia has been describing its nuclear deterrent posture, has to say: Nuclear weapons remain the most important mission we have; this is absolutely critical. We can perform deterrence with a much smaller force than we did in the Cold War. That is true. And that is reflected in the cost of the replacement.

It will—the peak of the replacement will be nowhere near the peak of the replacement costs that occurred in the 1960s and the 1980s. So it is a smaller force. It performs an extremely important mission, no more important mission. And I would just say, just look at the international environment. This is not a time for us to say that nuclear weapons are useless.

The CHAIRMAN. Admiral.

Admiral WINNEFELD. Sir, I would add to that very good description of why the deterrent is more relevant—remains relevant, to the fact that it is a capital asset. It is a whole host of capital assets. And like any capital asset, it needs to be maintained. It needs

to be refurbished, refreshed, modernized. And as we've mentioned earlier, it is all coming due at the same time.

Just as an example, I would point out that the air-launch cruise missile was designed to last 10 years. It has lasted two decades beyond that 10-year initial life. And we need to recapitalize that asset, and that is just one small slice of the need to do that.

The CHAIRMAN. Finally, you all have all mentioned the cost of all of these systems aging out at the same time. I think yesterday or the day before yesterday, the Center for Strategic and Budgetary Assessment, CSBA, released at least a preliminary study entitled, "Are U.S. Nuclear Forces Unaffordable?" And their analysis, looking at various budget requests from now until fiscal year 2039, was that at no point would the nuclear force's share of national defense be more than 5 percent of the defense budget.

Does that sound about right, based on the projections that you all have looked at?

Secretary WORK. We believe that they did a credible study. The big difference between their estimates and ours is they only included the long-range bomber—just a small portion of the entire program for the nuclear mission. We would say that it would take 7 percent of our budget. Right now, we are spending about 3 percent. So about doubling the level of effort that we are doing now to sustain the force, it would require about 7 percent.

They were also correct on the time where we would peak out, generally around 2026 and 2027. And I would just say, Mr. Chairman, that if you look at the last two times, whereas the vice chairman said we recapitalized this force, recapitalized it, the peak is going to be much lower and will be spread out over a longer period of time. So it will average about $18 billion a year.

The important thing that they said in the study, sir, is it is a matter of prioritization and in both of the previous times we have added money on top of the conventional force mission—so on a flat budget, taking that type of hit would have a major, major impact on the defense portfolio.

Admiral WINNEFELD. I would just add I think we differ on the numbers a little bit from that report. It is about 3 to 4 percent to maintain what we have and around 7 percent to maintain what we have and modernize what we have, and I think that it is important to get that number out.

The CHAIRMAN. Yes. And I appreciate the difference is how you assign the long-range bomber.

But regardless, whether it is 5 or 7 percent for the highest priority for our national security, it seems to me like it is not completely unreasonable to say that that is in the ballpark.

Admiral WINNEFELD. Sir, if I could just add, you know, we have already lost about 10 percent over the last few years with BCA [Budget Control Act]. Stack that on top of it.

And the one thing I do agree with the CSBA study is that if we don't find some other outside relief on this, then we will have to take it out of somewhere else in the defense budget, as the deputy said, as you said, and there are going to be a lot of people who aren't happy about that, because other missions that are important to this country are going to get pushed aside.

The CHAIRMAN. Fair point.

Mr. Cooper.

Mr. COOPER. Thank you, Mr. Chairman. Thank you for holding this hearing.

And I would like to add my welcome to the witnesses. It is great to have such a distinguished panel before us, and it is great to hear this ringing affirmation for the importance of America's nuclear deterrence, because it is our most important mission but sometimes a forgotten one, and I appreciate your stressing it to this committee and to the public at large.

One of the latest estimates we got was it will take at least $355 billion just to maintain our nuclear stockpile and all the things that go along with it for the next 10 years.

And we in Congress have gotten in the bad habit of not paying for things. We really haven't fully funded our military in 15 years. We haven't had a fully funded highway bill in 8 years. So I am hopeful that my colleagues will hear this message of the importance of this deterrent and not only support it but start funding it and start funding it now on a regular schedule.

I congratulate the Obama administration because they have taken this very seriously and have funded these priorities. I just hope that as we go through the conference, which I am proud that our chairman is chairing, on the NDAA [National Defense Authorization Act], we will be able to figure out better solutions for fully funding and not pretending that we are funding things by relying on the so-called OCO, or Overseas Contingency Operation, account.

But as we deal with these important issues, there are tons of questions to ask. And it is a pleasure to work with Chairman Mike Rogers on the subcommittee, where we can focus in more detail on these issues.

But whether it is the newest, freshest missileer out in one of the missile fields or a young sailor on one of the nuclear subs or somebody who is preparing to fly a strategic bomber that—in some cases, where the B–52s are older than any of us on the panel. That is—we have got a lot of work to do.

But I think the hardest thing is to get the public to understand why we need to spend so much money and be so careful with these incredible weapons that we hope we will never use. That is kind of a paradox, or at least an anomaly that some people don't quite want to wrap their heads around.

But I am appreciative of y'all's devoting your careers to making this nuclear deterrence real, and I hope that we will figure out ways to counter Vladimir Putin's doctrine of, you know, nuclear escalatory dominance. And that is something that I see as one of the main threats, and I would welcome any of the panelists comments on that, the best way to counter a new and different sort of threat than perhaps we have seen before.

Secretary WORK. Well, sir, it is interesting. We have been trying to deemphasize the role of nuclear weapons in our national strategy, whereas Russia has been trying to emphasize it. It is primarily because they believe that they are at a conventional disadvantage against us, so they emphasize that for deterrence.

And what we have said is using that type of escalatory language is extremely troubling because of the dangerous implications that it has that you might use a nuclear weapon to deescalate a crisis.

Once you escalate, you escalate, and there is no way for us to be able to foresee what would happen after that.

So we are asking the Russians to moderate their language and to continue to talk with us on the New START, make sure that they are in compliance on New START and potentially even reduce the number of weapons below that.

The CHAIRMAN. Thank you.

Mr. Forbes.

Mr. FORBES. Mr. Chairman, thank you for this hearing, and to each of our witnesses, thank you for your commitment to our country.

Secretary Work, we are very fortunate to have you with your analytical skills and your vision for national defense, and we appreciate what you do.

And Admiral, you have brought just a wealth of experience and wisdom to this position, and we thank you for that. And before you leave, I just want to pick just a little bit of that from you.

And, you know, part of our nuclear program is not only what we do but what we keep others from taking from us, perhaps, or stealing from us. And we all know that China is committed to, more or less, stealing our lunch every day through both traditional and cyber espionage. The hack of OPM [Office of Personnel Management] is just the latest example.

Do the Chinese steal our naval technology and apply it to their navy? And as a corollary to that, are you aware of any evidence concerning China stealing U.S. civil nuclear technology and diverting it to its nuclear navy?

Admiral WINNEFELD. Sir, I am not personally aware of any incidences of another nation stealing our nuclear technology and applying it to their navy, including China.

That may be happening. I am just not briefed on any intelligence that would implicate that.

I think it is well understood that there is cyber espionage that occurs. We have concerns from time to time about our cleared defense contractors, for example, and their cybersecurity. And we—I know that Frank Kendall and AT&L [Acquisition, Technology and Logistics] is working hard to tighten that up as best we can.

I was reflecting on this earlier. You know, we talk about nuclear matters. As a sort of graduate of the Navy Nuclear Propulsion Program, one of the things that has intrigued me over the years is the element of human performance that that program inculcates into its people is very applicable to protecting ourselves in the cyber world, and we are investigating how we can go about inculcating some of those principles into our workforce so that we can stop any—or at least minimize the amount of cyber espionage that we experience.

Mr. FORBES. And for any of our witnesses, do you have any suggestions of steps we should take to ensure that China can't take our technology and upgrade their ballistic missile submarines for their navy nuclear reactor technology?

Secretary WORK. I think you are referring to the China 123 provision, sir. We are very concerned and we want to make sure that any agreement that we have in this regard is not used to allow them to have a quieter plant, for example. But as of this point, I

know of no Chinese espionage that is looking, you know, is trying to specifically on this aspect of it, but I defer to the Secretary on the China 123 if there is anything on there.

Secretary SHERWOOD-RANDALL. Thank you, Mr. Forbes.

Our judgment is that the agreement protects our interest. And it also provides opportunity for our industry to have markets that are very significant for the United States and that allow us to advance the kinds of safety and performance standards that we want to see other countries adopt in their civil nuclear programs. Thank you.

Mr. FORBES. Thank you all for your service and for being here.

With that, Mr. Chairman, I yield back.

The CHAIRMAN. Thank you.

Mr. Langevin.

Mr. LANGEVIN. Thank you, Mr. Chairman.

I want to thank our witnesses for your testimony today.

Admiral Winnefeld, as the chairman noted, this may be your last appearance before the committee. And I just want to thank you for your service to our Nation. You have made great contributions to our men and women in uniform and to our national security, and our Nation is greatly in your debt.

Madam Secretary, if I could start a question with you. In the category of good-better-best, given the fact that our adversaries are clearly modernizing their nuclear programs, how do you assess our program? Is the refurbishment program adequate enough? Is it best? Or would we be serving our Nation better by designing a new nuclear warhead with all the modern safety features and surety features that we could build in, given how far technology has advanced? Or are we—is "best" doing what we are doing and just refurbishing?

Secretary SHERWOOD-RANDALL. Thank you, Mr. Langevin.

We, together with the Department of Defense, through the Nuclear Weapons Council, set the requirements for modernization of our stockpile. And it is our judgment that what we have committed to doing in the "3+2" strategy for modernization ensures that we will retain the deterrent capability that we need to defend the United States and our allies and partners around the world.

We are confident of this work. We believe that the requirements that are presented in the 3+2 strategy will enable us to deter any adversary. It also enables us to reduce the stockpile in a way that makes it safer and more secure. And therefore, we judge that this is the right strategy going forward and are working very hard to implement it.

Mr. LANGEVIN. Thank you.

I would also like to ask about nonproliferation programs. Can you describe the importance of radiation portal monitors as a component of a larger suite of technologies designed to prevent additional states and actors from acquiring nuclear materials?

Secretary SHERWOOD-RANDALL. Thank you for giving me the opportunity to answer that question.

These radiation portal monitors are part of what we have previously called a second line of defense program. And that is a critical part of our efforts to ensure that the movement of fissile material across borders does not go undetected. Because as we know,

the most important part of a country or a group's ability to build a nuclear weapon is getting access to that fissile material.

And so what we want to do is ensure that everywhere possible we have detection capabilities in vulnerable places to allow us to know in real time when something may be moving, so that it can be interdicted, and so that it can be secured against acquisition by those who would do us harm.

Mr. LANGEVIN. Secretary Work, perhaps for you, or to Madam Secretary, whichever would be appropriate: How would you characterize the cybersecurity measures in place to protect our nuclear enterprise? And how resilient are our systems?

Secretary WORK. The threat of cyberattack on all of our systems we take very, very seriously, sir. And obviously on nuclear issues, we take that the most seriously because they are some of the most important—as we have said, it is the most important mission we have.

We are doing a wide variety of reviews on all of our systems, all of our platforms. We are concerned about our cyber vulnerabilities everywhere, and we continue to really look at it closely. Right now, I would judge it to be satisfactory.

Mr. LANGEVIN. I think we need to obviously continue to pay attention to that, and something I am very concerned about in particular. So thank you, Secretary.

Admiral Winnefeld, does the New START treaty remain in the U.S. national interest? And then I have some other follow-up questions if the time allows.

Admiral WINNEFELD. Yes, sir. We believe the New START treaty does remain inside our national interest. We monitor continuously other nations and their behavior. We believe that Russia is adhering to the New START treaty as far as we can tell.

The principal value to me of that treaty is our ability to verify what it is they are doing. And we would love to have complete transparency, but we believe the verification measures we have got on that treaty are adequate for us to have a better understanding of what they are doing. So yes, sir, we do believe that the New START treaty is still in our interest.

Mr. LANGEVIN. Thank you.

To all witnesses, on the issue of verification, how important are verification detection to detect cheating? A 2014 Defense Science Board concluded that much work remains to be done on verification and detection technologies and interagency cooperation. Do you agree? And what gaps remain?

And that one you may have to do for the record.

[The information referred to can be found in the Appendix on page 63.]

The CHAIRMAN. If you all don't mind supplying that answer for the record, we will try to keep moving with our limited time and some more votes coming up, but I appreciate the gentleman.

Mr. Turner.

Mr. TURNER. Thank you, Mr. Chairman.

As we look back over the recent events that have been happening with Russia, there is no good news. Things keep getting worse. We have dangerous and aggressive nuclear threats and exercises directed against the United States, NATO allies, and its neighbors.

We have Putin himself conducting nuclear weapons exercises. Imagine if our President conducted a nuclear weapons exercise, what international criticism there would be.

But yet they defy that criticism and go to the next step of even adopting and openly discuss doctrine that Russia intends to use nuclear weapons early in a conflict to, what they call, "deescalate" and get the United States to back down, which is just inconceivable in my mind that someone would think the use of nuclear weapons as a deescalation, because our doctrine, of course, is that it is an escalation.

Russia continues to brazenly violate the INF Treaty as well as numerous other arms control obligations, without a response from the U.S. on the INF Treaty, not to mention the invasion and occupation and annexation of Crimea and the steadily more overt actions that they are taking for hybrid warfare in eastern Ukraine.

So Admiral Winnefeld, what message would you want to send to the American public and to our allies, and in contrast directly to Putin, about the dangerous path that Russia is taking?

Admiral WINNEFELD. Thank you for the question. I think you have made a fairly good message yourself in your question.

I would say it is very important that the Russians understand that far from being deescalatory, first use of nuclear weapons in a conflict like that, it risks uncontrolled escalation.

The Russians are good mathematicians. They should consult chaos theory and things like that, that it is almost impossible to completely predict what the outcome would be of such a use of nuclear weapons, however small.

So they need to understand that we are not falling for this trap, we are determined to protect and defend our allies within the commitments we have made to the NATO alliance and we will do that. And bluster and threats of nuclear weapons, as Deputy Secretary Work said in his opening statement, are destined to fail. We will not let that deter us from defending our allies.

Mr. TURNER. Thank you, Admiral. I appreciate the strong words.

When you look Russia's actions—hybrid warfare, aggressive behavior, invading Ukraine, occupying Crimea, threatening NATO and non-NATO nations with nuclear retaliation and military action if they participate in either NATO or in missile defense deployment, and then with the buzzing of ships and aircrafts and the approaching in very aggressive manner, both our allies and our NATO allies—what do you believe the risks are of a conflict in Europe with Russia and with Russia's announced doctrine of seeing nuclear weapons as deescalatory and their practicing the use of those weapons? What do you see of the risk of such a conflict escalating to a nuclear exchange?

Admiral WINNEFELD. Sir, I would obviously want to defer to an intelligence person to really crisply assess the risk of something like that happening.

So in my non-intelligence role, the risk is certainly not smaller than it used to be based on all the rhetoric and all the actions that President Putin and Russia have taken.

But I do think they understand that we have a red line there, I do think they understand that we have got considerable capability to frustrate any moves that he might make in Europe, and

at the end of the day, I believe that they will take that very seriously.

We can't let down our guard in that regard in any way, shape, or form, and we are not.

That is why we are investing more in the European Reassurance Initiative. Our very capable commander of European Command, who also happens to be SACEUR [Supreme Allied Commander Europe], is very active in reassuring our allies and taking the right steps, we believe, to make sure that reassurance is backed with actual capability.

Mr. TURNER. Right. I appreciate the strong words, because I think that in the rhetoric from Russia, it is hybrid warfare that it has undertaken, it is aggressiveness, it is threats to its neighbors, it is deployment of new and threatening systems and in the exercises that it is undertaking, they need to hear those words from the United States that our military is strong and that we view our obligations to our allies as absolute.

Thank you, Admiral.

The CHAIRMAN. Thank you.

Mr. Courtney.

Mr. COURTNEY. Thank you, Mr. Chairman, and thank you to the witnesses for your testimony today.

Mr. Work, I wanted to just sort of focus on your comments on the *Ohio* Replacement Program, which—again, you say all the right things about the fact that there is going to be this short—relatively short period of cost that is going to capsize the normal levels of the shipbuilding account.

You know, as somebody who has been on Seapower for the last 8 years, frankly, we have heard that testimony over and over again.

And there are many times I sympathize with the administration coming up here and talking about sequestration, because, you know, that is our job to fix that.

But in this case, you know, I would like to just sort of observe that, you know, what we have done on this side in terms of *Ohio* is actually set up a mechanism to try and provide a positive solution to the problem.

And so we set up the account last year. This year, we are actually talking about activating the account and also empowering the Navy through incremental, you know, purchasing authority, multiyear purchasing authority, to really give them the tools to deal with this, you know, very challenging cost issue, which everybody, again, says the right things, that it is, you know, the highest priority for our Nation.

And again, if we don't do it, we are going to drain, you know, the other conventional forces. This morning, in fact, General Dunford spoke to the Shipbuilding Caucus and spent a large portion of his remarks about the fact that we need to deal with this.

We had a surface combatant hearing last week, where Admiral Mercado came over. Same thing. You know, the conversation just always, like, migrates to this issue.

And so there are two high-profile amendments on the floor of the House. Mr. Forbes, who is not here, and myself and others, you know, on a bipartisan basis, led the charge to protect this upgrade

of the fund—321 to 111, 74 percent in the House Republican Caucus, 74 percent in the House Democratic Caucus.

So people are actually starting to get to the point where we—as you are—your comments are we need to think about this. I mean, we are past that, very frankly. We are ready to act.

And what I am asking you is that, you know, when—if you don't like the Sea-Based Deterrence Fund, fine, you know, then—you know, but come back to us with something. You know, you just get the impression that the budget planners at the Pentagon and the administration are just spectators here in terms of us trying to come up with a fix to this that will avoid all of the negative fallout, which, again, you described very powerfully here this morning.

So I was just wondering if you could, you know, just share your thoughts in terms of our work that we are doing on this in terms of whether, you know, at some point, you guys are prepared to embrace it and help us advance what I think is a solution that has precedent in the past in terms of the [National Defense] Sealift Fund and ground-based missile defense.

Secretary WORK. Thank you, sir.

This is our number one mission. We are going to pay for it no matter what.

In the past, Congress has added money for strategic modernization during periods of these times where we are starting to recapitalize, and we hope that is going to happen again, and we would very much appreciate the theory of the case behind this fund. We believe that there is going to have to be something like that to help us through.

As I said, up until this time, it has been theoretical. In 2021, as you know, sir, the *Ohio* replacement—the first *Ohio* replacement, we pay for. If we paid for it all in that single year, it would be a $7 billion add to the Navy, and they average only about $15 billion to $16 billion a year in their entire shipbuilding account. It would be enormously destructive to the Navy to have to fit that in within their topline.

So it is—we want to work with you, and we are anxious to work with you on figuring out how to do this.

But I just wanted to foot-stomp what—something that the vice chairman said. It is one thing saying that we would eat it within a fixed topline. That would cause enormous disruption to our program not just in the Navy but across all of our services.

So we are anxious to work with you, sir, and we need to do it.

Mr. COURTNEY. Well, I would like to tease out a little more from you, because again, what we have done is create a mechanism within the budget process, again, giving, I think, the incremental authority, you know, all the tools that we know worked with *Virginia* and carriers and—you know, I hope at some point, you know, the powers that be are going to kind of spit it out here in terms of whether or not they are willing to use this fund, which obviously the huge vote in Congress shows that, you know, we are ready and, in fact, we are moving forward.

And we—you know, we hope that the, you know, administration is going to help us solve this problem.

With that, I yield back.

The CHAIRMAN. Thank you.

Mr. Rogers.

Mr. ROGERS. Thank you, Mr. Chairman.

And thank all the witnesses. And Admiral Winnefeld, thank you very much for your service. Congratulations on retirement—upcoming retirement.

Two weeks ago, this committee received the State Department's second straight noncompliance report about Russia's violation of the INF Treaty. And for many years prior to these last 2 years' official reports, we had had evidence of their noncompliance.

And it is against that backdrop that I want to ask this. The committee learned in December that the Joint Staff was conducting an assessment of possible military responses to Russia's noncompliance. And my understanding is that that assessment—and you briefed us on that assessment, by the way, in March and we appreciate that. It is my understanding that Chairman Dempsey has forwarded proposed responses to the President.

Admiral Winnefeld, do you have a timeframe that you can suggest to us that you will get some direction from the White House as to military responses to Russia's continued INF violations?

Admiral WINNEFELD. Sir, I don't have a specific timeline for you. I know it is something that the interagency policy committees and so on are looking at, consulting with allies on. I don't think that we want to necessarily rush into a definitive move because we would like to bring Russia back into this treaty.

But there is no question, as you point out, that we have got options at hand that I can't really discuss in an unclassified hearing, but those options are available for use. Some of them are expensive. None of them contribute to Russia's security and they need to understand that. They need to come back inside this treaty.

Mr. ROGERS. In all deference, we are not rushing into anything. This has been going on for years. It is just the last 2 years that the administration has officially recognized it. He is playing us along and we are just letting him. And I just don't understand why it continues to go on. I know you are not the President and you can't tell him what to do, but we need to be making some decisions and doing something proactively.

Which leads me to my next question. I am really worried about, you know, Secretary Work talked about the provocative statements, and I think you made reference to it, that the Russian military leadership's made toward our NATO allies, trying to jar their resolve. And I am worried about them fracturing NATO.

So I guess my question is: What is the U.S. doing to alert our NATO allies to the seriousness of Russia's violation and the threat that they pose? And then what are we doing to reassure them that we are going to be there and everything is going to be okay?

Admiral WINNEFELD. Sir, we have had very close consultations with our NATO partners on the nature of the Russian violation of the INF Treaty. They are well aware of the fact of and that we are—we still remain deeply committed to our Article 5 obligations with NATO.

Secretary Carter is over there today with the NATO ministerial. I am sure he is discussing this with them both in the major forums and also on his pull-asides that he has with various NATO leaders. But the NATO leadership there of the various partners and of the

NATO command structure are very well aware of this and very well aware that we are determined to not permit the violation of the INF Treaty to create a greater threat to NATO than currently exists.

Mr. ROGERS. Do you believe—because, you know, I was just there. I have been there twice in Eastern Europe in the last 6 months, most recently with the full committee chairman. They are very concerned about our resolve. Do you believe that we are being muscular enough in our military posture in the region to reassure them?

Admiral WINNEFELD. I would be—I would challenge their concerns about our resolve. We are trying to help buttress their resolve. We are one of the very few nations in NATO that has met the 2 percent investment obligation of GDP [gross domestic product]. Secretary Carter is over there right now encouraging the rest of them. And in fact, that is quite a topic of discussion right now in Brussels in terms of getting the rest of the alliance to reach its commitment of 2 percent of GDP funding for defense.

So, we are reassuring them. They should be well aware of our firm commitment based on what we have done lately with the European Reassurance Initiative [ERI], thankfully with the support of Congress, and all of the actions that we have been taking.

Mr. ROGERS. They see that very inadequate. And we met with defense ministers and presidents of four different Eastern European countries—allies—and they see that as a limp-wristed reassurance, the ERI.

But anyway, my time is expired. I look forward to my next series of questions.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Mr. Garamendi.

Mr. GARAMENDI. Thank you, Mr. Chairman.

Let me take this in a little different direction, and my questions will go to Secretary Sherwood-Randall.

The deal with the new pit facilities, and if you could explain the rationale behind the need for 50 to 80 capacity, the costs associated with that, and then a discussion of the need—well, let's go there, and then another question after that.

Secretary SHERWOOD-RANDALL. Thank you, Mr. Garamendi.

I will begin by noting that in the questions that have recently been asked, for example by Chairman Rogers, we understand the need for a fully responsive nuclear infrastructure, given the dynamic threat environment that we face. And one aspect of that, approved by the Nuclear Weapons Council, is the plutonium strategy, which requires us to meet certain targets in terms of production of plutonium pits over the coming decades.

That strategy will enable us to move out of an old facility built in 1952 by 2019 at Los Alamos, and produce up to 30 plutonium pits per year by 2026, which will be necessary to ensure that we can continue our life extension programs, and construct and operate additional capabilities to produce up to 50 to 80 pits by 2030. Again, giving us the flexibility should we need it, given the dynamic threat environment, to utilize those pits.

Mr. GARAMENDI. And the cost?

Secretary SHERWOOD-RANDALL. And the cost associated with those pits, with that strategy, I will have to come back to you with an answer for the record.

[The information referred to can be found in the Appendix on page 63.]

Mr. GARAMENDI. It would seem to me that you would want to know that at the outset. There seems to be some shortage of money for all of this. So what is the cost?

Secretary SHERWOOD-RANDALL. So, as you have heard, we face very significant budgetary challenges on this front. And the requirement for investment to enable us to have a responsive infrastructure is significant.

Mr. GARAMENDI. Have you—has the committee considered revamping, updating the existing facility?

Secretary SHERWOOD-RANDALL. We did consider that and the scrutiny that the Secretary and I and the National Nuclear Security Administration leadership have applied to the planning for major infrastructure projects has been very significant. And what we have done is set up a whole new process for examining the kinds of buildings that we need to build to recapitalize that infrastructure, to ensure that we do it in the most effective way from a taxpayer perspective.

Mr. GARAMENDI. It seems to me that the starting point of this is somebody decided you need a capacity of 50, and now it is 80 pits a year, if I just heard you correctly. And then you backed from there into a facility to accomplish that. But you have not yet told me why you need 50 to 80 new pits a year.

Secretary SHERWOOD-RANDALL. Thank you for seeking clarification on this.

The objective is to give us the flexibility to produce additional plutonium pits——

Mr. GARAMENDI. Why should we need flexibility?

Secretary SHERWOOD-RANDALL. Because we cannot predict the threat environment that we will face as a nation 10, 20, or 30 years from now. We want to make sure that we have the infrastructure necessary to respond should a President of the future need to pursue the modernization of our nuclear capabilities in light of those threats.

Mr. GARAMENDI. Oh, some day we might want it, and therefore we are going to build it now and we don't have the money to do so.

Secretary SHERWOOD-RANDALL. We can't snap our fingers and produce the infrastructure and the human talent required to support this program.

Mr. GARAMENDI. What is the capacity of the current pit production facility in Los Alamos?

Secretary SHERWOOD-RANDALL. It is much lower.

Mr. GARAMENDI. And it is what number?

Secretary SHERWOOD-RANDALL. And I will have to get back to you——

Mr. GARAMENDI. It is somewhere between 10 and 20.

Secretary SHERWOOD-RANDALL. But I want to confirm it precisely.

Mr. GARAMENDI. And that is one shift a day; multiple shifts, upgrade of the existing facility could produce far more than the 10 or so today. Check it out and get back to me, please.

Secretary SHERWOOD-RANDALL. I promise to do that.

[The information referred to can be found in the Appendix on page 64.]

Mr. GARAMENDI. Thank you.

I think I am out of time, but there is a whole series of other questions having to do with the MOX [Mixed Oxide Fuel Fabrication] Facility, and specifically on the question of the September report. Is it online? Is it moving forward? And can we expect to see it in September?

Secretary SHERWOOD-RANDALL. Would you like me to get back to you for the record on that?

Mr. GARAMENDI. No, I would like an answer now. You ought to know.

Secretary SHERWOOD-RANDALL. Okay. I am sorry. I thought you said you were out of time. May we continue?

Mr. GARAMENDI. Yes, you have 22 seconds.

Secretary SHERWOOD-RANDALL. Okay. I will try to speak quickly, then.

So as you know, both the Senate and the House have asked us to do additional review of the costs of the MOX Facility. And we are going to conduct a red team review with the director of our Oak Ridge National Lab to evaluate the Aerospace report findings and other findings about the costs associated with this facility to determine the best way forward.

Mr. GARAMENDI. Okay, so that is due in September.

Secretary SHERWOOD-RANDALL. It is, correct.

Mr. GARAMENDI. Thank you.

And finally, yes, I will take for the record the costs.

Secretary SHERWOOD-RANDALL. I will get them to you. Thank you.

[The information referred to can be found in the Appendix on page 64.]

Mr. GARAMENDI. Thank you.

The CHAIRMAN. Thank you.

Mr. Bridenstine.

Mr. BRIDENSTINE. Thank you, Mr. Chairman.

I would like to discuss the Open Skies Treaty. We had a hearing not too long ago called "Worldwide Threats." And it was on February 3rd. Lieutenant General Stewart, the director of the Defense Intelligence Agency [DIA], was asked about the Open Skies Treaty. The general said this—he said, "The Open Skies construct was designed for a different era. I am very concerned about how it is applied today and I would love to talk about it in a closed hearing."

We had the chairman of my subcommittee, Mr. Rogers, send a request for information to Admiral Haney, commander of U.S. STRATCOM [Strategic Command]. And his letter came back and it said, "I agree with Lieutenant General Stewart, director of DIA, in his assertion that the Open Skies construct was designed for a different era."

He goes on to say that Russia's application today has gone beyond the original intent of the treaty. He said the United States

in concert with our allies continues to address these concerns. He says, "I am concerned the treaty has become a critical component of Russia's intelligence collection capability directed at the United States. In addition to overflying military installations, Russia's Open Skies flights can overfly and collect on DOD and national critical infrastructure."

Deputy Secretary Work, are you aware that the most recent compliance report from the Department of State indicates Russia is not in compliance with this treaty?

Secretary WORK. I am, sir.

And this is something that we would really like to talk about in a closed hearing, but we are concerned about what Russia is doing as well as all of their other intelligence activities that are focused on our nuclear mission.

Mr. BRIDENSTINE. Do you have any reason to believe the Russians are using the treaty for reasons beyond what it was ratified for?

Secretary WORK. We are concerned on the way they are operating, as Admiral Haney said. We think that they are going beyond the original intent of the treaty and we continue to look at this very, very closely.

Mr. BRIDENSTINE. So, the Russians have requested that we continue this treaty and that they are able to use even more advanced sensors. Do you believe it is prudent to accede to Russian proposals to fly increasingly advanced sensors over the United States?

Secretary WORK. That is in discussion right now sir, inside the Department.

Mr. BRIDENSTINE. So would you say that you don't have an opinion on that at this point, or——

Secretary WORK. Not until we look at all of the different aspects.

Mr. BRIDENSTINE. Okay. This is an issue that is going to continue to be of high interest, I know, to me, and of course to the chairman of the Strategic Forces Subcommittee, Mr. Rogers, whose committee I am honored to serve on.

Also for you, Deputy Secretary Work, is Russia modernizing its nuclear forces to include developing and deploying new types of ICBMs and submarine-launched ballistic missiles [SLBMs]?

Secretary WORK. Yes, they are undergoing, as the vice chairman said, a wide-ranging modernization of their entire nuclear force.

Mr. BRIDENSTINE. Is China modernizing, including new types—again, new types of ICBMs and SLBMs?

Secretary WORK. Yes, they are modernizing both the warheads that are on their silo-based missiles, as well as deploying road-mobile missiles.

Mr. BRIDENSTINE. Are we, as the United States, modernizing to include new types of ICBMs and SLBMs?

Secretary WORK. Right now, our modernization plan is to replace the Minuteman III with a ground-based strategic deterrent to replace our Trident force with the *Ohio* replacement platforms, to replace our bombers with the long-range bomber, and to replace our air-launch cruise missile with the long-range—new long-range——

Mr. BRIDENSTINE. So we are maintaining our current strategic deterrent while they are creating new and more advanced strategic deterrent capabilities. Do you agree with that?

Secretary WORK. Well, it is just on their timeline. The Russian timeline. Their system started to age out before ours, so they are in the midst of their modernization cycle, as the vice chairman said.

Our cycle is coming up in the 2020s and early 2030s.

Mr. BRIDENSTINE. But remember, they are advancing beyond where they currently are, and we are staying stagnant. Is that correct?

I mean, I understand we are modernizing what we currently have, but we are not creating any new technologies.

Secretary WORK. They are—again, they are replacing old systems with new systems. That is correct, Congressman. But they are staying within the New START in our estimation. So they are not increasing the size of their force.

Mr. BRIDENSTINE. I have just got a few seconds left. I heard you earlier. You mentioned that there was—we will just—we will take it offline. We will ask questions later. Thank you, Mr. Chairman. I yield back.

The CHAIRMAN. Appreciate it. If the gentleman wishes to ask—submit questions in writing—of course, I am sure the witness is—will be able to respond.

Ranking Member.

Mr. SMITH. I thank you, Mr. Chairman.

And I apologize for being absent earlier. I had a physical this morning that went on, and on, and on, took forever.

So I want to be sure and be here for one thing, to thank Admiral Winnefeld for his service. And you know, we have joked with General Dempsey, we have had numerous last hearings for him. So, we dare not make a prediction. You may be back. Who knows.

But if this is your last hearing, just want to thank you very much for a great working relationship and for your service. You have done a fantastic job.

And following up on the last point there, Russia may be modernizing, but a nuclear weapon is a nuclear weapon. It is pretty powerful. We have, you know, we have I think 4,800 and some-odd of them. And you know, submarine-based, ICBM-based, bomber-based, it is not like the Russians are building something that gives them some new technical advantage, correct?

Admiral WINNEFELD. I think the only exception to that that would concern me is that the greater shift towards mobile missiles in their ICBM force; their submarine-launched ballistic missile force, even with their improvements, is not as good as ours.

Mr. SMITH. Sure.

Admiral WINNEFELD. Their bomber leg is not as good as ours. But I think the mobile missiles is probably of a greater——

Mr. SMITH. But the advantage of the mobile thing is it is—it would be hard for us to hit it in a first strike. But with 4,800 nuclear weapons, we could hit them pretty hard, even if we couldn't necessarily hit the mobile nuclear missiles, correct?

Admiral WINNEFELD. They are not invulnerable. Yes, sir.

Mr. SMITH. And so I think that the larger point, and we get bogged down in this modernization debate, and I think the more important debate is what is our deterrence strategy?

Because look, if it comes to it, A, bad, all bad no matter what. B, we got plenty of firepower under just about any scenario that you are going to see, to basically destroy the planet in combination, you know, with whatever the Russians do.

Now, we have to make sure that we maintain—that we upgrade systems that are failing, falling offline and all that. I understand all of that. But I think obsessing over you know, oh my gosh, they are a little bit more mobile, it is a nuclear weapon, which I forget the number, but it is like thousands of times more powerful than either of the bombs we dropped on Japan in World War II.

So, it is a pretty significant deterrent. I think the larger, more difficult question is, what is our deterrence policy, and how well do we understand that within the Pentagon?

And you know, we had a deterrence policy during the Cold War, which was basically, we felt that the Soviets had us, you know, outmanned in Europe conventionally. And so part of our deterrence policy was you go too far in Western Europe and we will nuke you.

And it worked. I mean, they went into Czechoslovakia, they went into Hungary, they pushed the envelope a little bit.

But what is our policy on you know, when we would do first use? What if they go into a NATO country and start messing with them?

And I would also—permission to answer that question, and I would suggest that communication between us and the Russians and us and the Chinese, the Russians being far more important, whatever our differences may be on a wide range of other subjects, a robust communication to make sure that those differences don't lead to us destroying the planet is something that I think should be a huge part of our deterrent strategy.

That is why I don't have a problem, even with the differences that we have with China, that we do a joint—would do some joint military exercises.

You know, we worked with Russia on Afghanistan. We worked with Russia—we are doing the P5+1 [China, France, Russia, the United Kingdom, and the United States, plus Germany] negotiations on Iran. Anything that can make sure that we communicate and don't, you know, inadvertently start Armageddon because of a lack of communications, I think should be a huge part of our deterrence policy.

But what is our deterrence policy in terms of use of nuclear weapons, and what is our understanding of Russia's deterrence policy?

Secretary WORK. Well, right now our policy is to achieve nuclear parity with Russia, and that is established under the New START treaty.

Mr. SMITH. Right.

Secretary WORK. We do not assess that China is trying to achieve parity with either of us. The primary role of our nuclear mission, our nuclear forces, is to deter an attack on the continental United States, our allies, and our partners.

We state very clearly that the use of nuclear weapons will cross an escalatory red line. We do not make explicit what our reactions would be, but we do say that we have the full force of our nuclear arsenal behind us to respond as needed, and as the President directs.

So our policy is to deter an attack on the United States and try to reduce the role of nuclear weapons in our normal national security strategy around the world.

Mr. SMITH. Because Russia now has the conventional disadvantage that we at least perceived ourselves to have during portions of the Cold War. So one of the concerns is that if they feel that they are conventionally outgunned, they might go the nuclear route. And we communicate clearly to them that that will receive a proportional response, regardless of how they—you know, they view the conventional situation, that is part of our deterrence strategy.

If you use a nuke against anybody, then you have got at least one coming back at you.

Secretary WORK. It is a very important point sir. Whenever your conventional and your nuclear deterrence capabilities get out of whack, you tend to rely on one or the other.

Mr. SMITH. Right.

Admiral WINNEFELD. And the Russians believe that we have a significant conventional force advantage, and therefore they rely more on their nuclear weapons as a deterrent. What we are concerned about is the way they explain their escalatory posture.

We believe that is extremely problematic, and something that I agree with you that we need to be constantly talking with the leaders of Russia to say we do not want this to lead to a miscalculation.

Mr. SMITH. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Ms. Stefanik.

Ms. STEFANIK. Thank you, Mr. Chairman.

And thank you to our witnesses for your thoughtful remarks today. My question is related to—I want to turn to North Korea and Iran.

North Korea is continuing to grow a small arsenal of nuclear and advanced missiles. Recently, North Korea claimed that it has tested a new type of missile from a submarine, and that they had built a nuclear warhead small enough to be mounted on a long-range missile.

Then you have Iran's proliferation of nuclear weapons capability. And as we are on the precipice of a potential deal with the Obama administration which would allow Iranian production of nuclear fuel to continue. These are very real threats we have today, and it is my belief that we need all possible capabilities available to deter and protect our own national security and our allies.

Just this week, Admiral Haney reaffirmed his commitment to strong deterrence against potential threats by North Korea, so I am wondering, at this point when some of our most important strategic weapon systems are aging, what do you think this says about our priorities?

Secretary WORK. Well we believe, as we have said over and over, that nuclear deterrence is our number one mission. We take it very seriously. We believe that we do have a strong nuclear deterrent. Our force today is, we believe, the best nuclear force on the planet, period.

The modernization recycle that is coming up in the 2020s is something that we need to face together to make sure that it stays at that point. We are absolutely confident that we can stay ahead

of the capabilities that the North Koreans, and as the President said, we are absolutely committed to preventing them from acquiring a nuclear weapon.

Ms. STEFANIK. Thank you. My next question, I wanted to ask about the President's decision to reject dealerting the U.S. ICBM forces. President Obama's nuclear employment guidance rejects the notion of dealerting U.S. nuclear forces, while continuing to examine options to reduce the role of "launch under attack" in U.S. planning.

Can you explain why the President made this decision?

Secretary WORK. It is very simple that when every one dealerts, the race to alert, it becomes escalatory, and provides incentives for another side to try to preempt before you can raise your alert level. Therefore, it was decided that a dealert posture would actually raise the possibility of a miscalculation, and we decided against that.

Ms. STEFANIK. Are there any other comments from the other witnesses?

Admiral WINNEFELD. I would just say there is an awful lot of folklore out there regarding the alert piece of this, that it puts our nuclear weapons on a hair trigger. And the fact of the matter is that they are not on a hair trigger, they are—the system is designed such that there is exquisite control over the employment of a nuclear weapon. The President is the only person who can actually authorize that. And it is not possible to launch one unless he does that. You can't have a rogue actor down there somewhere in a silo actually launching a weapon.

So, the benefits of dealerting in terms of preventing an accidental launch are very small, where the drawbacks that Deputy Secretary Work pointed out are substantial.

Secretary WORK. We do do open-ocean targeting of our submarine-launch ballistic missiles, and we have dealerted our bombers.

So we do believe we have taken the prudent steps to make sure that we are—you know, we are deemphasizing a hair-trigger response, as the vice chairman said, but we thought that dealerting ICBMs would actually cause us more problems than it would solve.

Ms. STEFANIK. Thank you very much.

I yield back.

The CHAIRMAN. Thank you. Mrs. Davis.

Mrs. DAVIS. Admiral Winnefeld, thank you very much for your service, all your contributions to our national security. I am going to go back to my colleague Mr. Langevin's question about verification and detection and the importance of that. He had quoted the 2014 Defense Science Board [DSB], which concluded that much work does remain to be done on verification and detection technologies, and interagency cooperation, and we are talking about our own country, not working with our allies at this time.

Do you agree with that? Do you think that there is much? And what are those specific gaps that we need to be sure that we are doing so that we are picking up the problems that exist in the technology and sensors, all that we are using in verification?

Admiral WINNEFELD. Ma'am, I am going to have to review the DSB study. We are very confident that our verification measures

for the New START treaty are quite good. And as you know, as we are dealing with Iran, being transparent and verifiable are the absolute two key pillars of what we are trying to do. So I am not certain of what the DSB said, but I will be happy to review it and get back with you.

Mrs. DAVIS. Okay. Any other comments on that? Are you familiar? Okay.

And then we have talked a lot about the modernizing recapitalization. I think people have had some, you know, different thoughts about that. But I think one of the concerns, at least on the surface, would be that the NNSA submits a 25-year plan for how we are going to deal with these issues, and yet the Department of Defense does not.

So, I think the concern, you know, how is the DOD planning beyond 2025? What is it that we are doing even to think about reducing cost? Because we know that in many situations, we have costs that go far out of the realm of what initially was planned.

How are we going to manage peak spending? And we may see some of these programs converging as well. Where are we in that? And is that a criticism that is justified in terms of the Department of Defense in not doing that planning that far out, knowing that we are looking at an awfully lot of money here?

Secretary WORK. Congresswoman, we do have a good understanding of what we need to do over the course of the next 20 years. The *Ohio* Replacement Program starts first. We will start replacing our Trident boats first. Then will come the LRSO [Long-Range Standoff weapon], along with the bomber in the mid-2020s. And then will come the ground-based strategic deterrent, which we have to—Minuteman starts to age out in 2030.

We also have a dual, I mean a nuclear capability for the F–35 which is planned for a future flight.

So we understand the general costs of all these. We understand the—how they will unfold. Twenty-year cost estimates are uncertain, but we can provide you with our estimates over this period.

We are quite confident we understand what we have to replace, the timing we have to replace, and the rough costs that will require us now.

Mrs. DAVIS. Is there—do you think that in terms of working along the same lines of NNSA that you are meeting those requirements?

Admiral WINNEFELD. Ma'am, we have a very good discussion through the avenue of the Nuclear Weapons Council with NNSA. And we, I think, do a pretty good job of trying to synchronize our programs. And the LRSO is a classic example of trying to make sure that the life extension program for the W80 warhead would be synchronized well with the introduction of that new weapon system.

So—and we submit a 5-year Future Year's Defense Plan, which is a detailed program. But we plan well beyond that. The program managers, the services, and the like have very detailed understanding of how those programs propagate out through decades to include life-cycle costs and the whole piece.

And we would be happy to come brief you on that if you would like.

Mrs. DAVIS. All right. Great. Thank you very much. Thanks again for your service.

The CHAIRMAN. I had just a handful of follow-ups.

Mr. Secretary, editorial comment. Saying something is a red line doesn't quite have the punch it once did. And I think that is part of Mr. Rogers' point about allies who are concerned about our reliability. And so that is at least what we hear as we travel, not just in Eastern Europe, but in other places.

Admiral, I want to take advantage of 37 years on a question. Obviously, at one point, this subject of nuclear deterrence received a tremendous amount of attention, intellectual energy, planning, and then it didn't.

And while understandably we have been focused so much on terrorism and other challenges, now we are having to kind of reinvent, not reinvent, but to develop those skills again, to put that emphasis, I think, on nuclear deterrence and its credibility, which is really, to me, the key characteristic in all of this.

So I would be interested in your view. Are we there, where we need to as far as especially the intellectual planning and firepower on nuclear deterrence?

Admiral WINNEFELD. I think that is an excellent question. Point well taken.

And the way I would approach the answer is that across the broad intellectual base of the military, let's say especially in the senior officers' corridor, I would say you know, O–5 and above, how steeped have we educated our broad workforce in nuclear deterrence matters?

When they attend war colleges, they get a good dose of it. And they may, you know, hear about it, see—read particular articles and the like on their own. But I would tend to agree with you that over the last 15 years or so, particularly since the—we have been in the post-9/11 era, that a substantial share of our intellectual bandwidth has been shifted over towards counterterrorism and the like.

I would also say though that in the niche that is the nuclear business, and I have a wonderful Air Force officer with me, Major General Tom Bussiere, who has grown up in that business. They are still doing pretty well. The Strategic Command folks, the Air Force, Navy, nuclear deterrence community has retained its interest and focus on this particular mission.

So, I think we are doing okay in that stovepipe, but I think your point is well taken that we need to make sure that we are emerging from this last 15 years that we have been in, and make sure that the broader force has a robust understanding of this question. It is a good point.

The CHAIRMAN. Well, especially as the Russians seem to broaden the circumstances under which at least they threaten to use nuclear weapons. I want to ask one other question here, about this idea that a nuke is a nuke is a nuke.

I am old enough to remember a debate in the 1970s about a neutron bomb, which is a nuke, but it has very different characteristics than the existing weapons that we have. And my understanding is a variety of actors around the world are developing new weapons in the sense that it is not just replacing what they had, but it is

adding weapons with some different characteristics, which gets in my mind back to this credibility issue.

And as you know, the argument has been that our very large nuclear weapons that were designed for a Cold War exchange are not as credible as other weapons might be in a different strategic landscape.

Would you care to comment on that?

Admiral WINNEFELD. Yes, sir.

Two things. One, I would say we do have a range of—for a lack of a better word, dialability in some of our weapons. So that we do have low-yield weapons that we can call upon to—for the President to use if he sees fit.

So, we don't have a lot of work going on in vastly different weapons, like a neutron weapon or something like that. But in terms of the scale—scalability of a nuclear detonation, we can cover that fairly well.

What I spend more of my time worrying about is the delivery systems; making sure that they are modern in the sense of reliable. They are not old. But also that they are also incorporating new technology.

And I would contend that the systems that we are developing new to deliver these weapons, should it be necessary, and hopefully it won't be, are very advanced. The LRSB [Long-Range Strike Bomber] is going to be a very advanced bomber.

The *Ohio* replacement submarine is going to be very quiet. It is going to be a very capable boat.

And the ground-based strategic deterrent will of course be better than what we have now.

So we are making more than just incremental but less than, you know, major changes in how we deliver these things. But I also think we have the array of scalability on our nuclear weapons where we need it to be.

The CHAIRMAN. Yes. I just think, as Mrs. Davis said, I think there gets to be a little confusion. We talk about modernizing. Well, it is one thing to replace something with something that is just like it, but as you point out, whether we are talking delivery systems or the warheads themselves, our adversaries are not—the Russians for example, are not replacing a system with this exact same system just made newer. It has different characteristics. And I think we have to keep that in mind.

Madam Secretary, I want to get back to responsive infrastructure right quick.

A lot of what we have under New START is a lot fewer weapons but part of the agreement was we would have a more responsive infrastructure and ability to respond quickly to ensure that this deterrent remains credible.

Now, we—you would not say that we have a responsive infrastructure today, right?

Secretary SHERWOOD-RANDALL. I believe we do have a responsive infrastructure today, but we must make the investments that I described in my statement that I submitted as well as my opening remarks. We need to ensure that we retain the capabilities that Admiral Winnefeld and you have just had an exchange about this on the delivery system side. Similarly, on the weapons production

side, we need to retain the workforce and we need the infrastructure to support them.

And that is the intellectual workforce that we are discussing. The people who are doing the work right now on stockpile stewardship and on modernization are the very people we need to invest in. We need to recruit the next generation of people who will do that work in the future to ensure that we have that responsive infrastructure for decades to come. And so I would say now we have what we need, but we have put forward to you an historic budget on this front in this 2016 request to ensure that we are making the investments we need going forward to retain that responsive infrastructure. Because we did suffer, unfortunately, following the New START agreement, from a cutback in the kind of investment that we anticipated in advancing that agreement.

The CHAIRMAN. Well, I certainly do not want to diminish the importance of the budget request the administration sent up this year, because I do think it has turned things around.

But I am not sure that I am with you that our response—that our infrastructure is as responsive as it needs to be today, because I just see too much evidence, not only of the people retiring, other people choosing other lines of work, and a variety of problems, some of which we have kind of touched on today, but others of which we haven't.

Secretary SHERWOOD-RANDALL. Mr. Chairman, I think together we need to signal to people that this matters.

The CHAIRMAN. Yes.

Secretary SHERWOOD-RANDALL. We are doing that by virtue of holding this hearing. My colleagues and I do it by the work we do every day. And I look forward to working together with you to ensure that we continue to send that signal across our Nation.

The CHAIRMAN. Well, I think that is a very important point, and maybe that is a good point to end on, because I do think whether we are talking about the intellectual bandwidth for nuclear deterrence, whether we are talking about attracting the best scientists to work in our nuclear weapons labs and plants.

People need to know that this is the most important element of our Nation's security, and it will continue to be and it will receive the investment that is deserving of that. And so if there is one point I think we hopefully all agree on, it is that we need to continue to attract the best and the brightest. And have facilities that can meet the unexpected.

Because as these machines age, there will be more unexpected.

Thank you all for being here. I very much appreciate your testimony and look forward to working with you all, at least for a month or longer.

So, thank you.

Secretary SHERWOOD-RANDALL. Thank you, so much.

The CHAIRMAN. With that, the hearing is adjourned.

[Whereupon, at 12:13 p.m., the committee was adjourned.]

# A P P E N D I X

June 25, 2015

## PREPARED STATEMENTS SUBMITTED FOR THE RECORD

JUNE 25, 2015

**Opening Statement of Chairman Thornberry**

HEARING ON

**Nuclear Deterrence in the 21st Century**

**June 25, 2015**

Our nuclear deterrent is the cornerstone of all of our defense efforts, as well as a foundation of international stability. For too long now we have taken it for granted — neglecting the systems, the infrastructure, and the people involved in making sure those complex machines are safe, reliable and effective. The weapons and the delivery systems are all aging out about the same time and require our serious attention.

Maintaining a credible nuclear deterrent must be a major priority for Congress and the White House. It is far past time for us to have a national conversation about the state of our nuclear weapons, delivery systems, and the infrastructure that supports them.

Developments around the world help emphasize the importance of these issues.

For example, Russia has embarked upon a course of belligerent activities:

- There have been dangerous and aggressive nuclear threats and exercises conducted against U.S., NATO allies, and neighbors;
- Russia has declared and openly discussed new doctrine to use a nuclear weapon early in a conflict to "de-escalate" and get the United States to back down;
- It has brazenly violated the INF treaty, not to mention numerous other arms control obligations;
- And, of course, the invasion, occupation, and annexation of Crimea and steadily more-overt "hybrid warfare" in eastern Ukraine.

This hearing, and the other committee events associated with our nuclear deterrence oversight week, will bring these issues to the forefront and highlight why we must maintain a credible nuclear deterrent.

Last November, then-Secretary of Defense Chuck Hagel said: "Our nuclear deterrent plays a critical role in assuring U.S. national security, and it is DOD's highest priority mission. No other capability we have is more important." I agree, and the Committee looks forward to hearing how this priority is being translated into policies, programs, and budgets today and in the future.

We also need to hear how events and actions by Russia, China, Iran, North Korea, and others are being factored into our overall nuclear deterrence strategy.

A confident and secure nuclear power does not rattle its nuclear saber to remind the world of its capabilities—and that is not what this hearing is about. Instead, I view this as a refresher course of sorts for the Administration, Congress, the American people, our allies, and our adversaries to discuss the many threats we face and the importance a safe and reliable nuclear deterrent plays in helping protect our nation and stabilize an increasingly volatile world.

**"Nuclear Deterrence in the 21st Century"**
**Opening Statement**
**Ranking Member Smith**
**June 25, 2015**

I would like to join Chairman Thornberry in extending a warm welcome to Deputy Secretary Work, Vice Chairman Winnefeld and Deputy Secretary Sherwood-Randall to our committee to offer their advice on nuclear deterrence in the 21st century. I would like to recognize and thank Adm. Winnefeld for his invaluable service to our country and dedication to national security. We are lucky to have him here for one more hearing. Thank you Admiral.

We must remain prepared to deter the use of nuclear weapons against the US, our allies and our forces abroad.

The United States currently has approximately 4,800 nuclear weapons, enough to destroy the world several times over. That is a potent deterrent. How we utilize, posture and maintain that arsenal moving forward will be a key part of US foreign policy.

In this context, strategic stability remains a key pillar of US and international security. Our strategic relationship with Russia must be robust against new and diverse provocations such as the aggression against Ukraine, and we must guard against unintentionally lowering the threshold for the use of nuclear weapons. As we have seen since the invasion of Crimea, we must be prepared to respond to a wider array of security risks with tailored capabilities that do not implicate the threshold of nuclear weapons use and does cause a nuclear arms race. Engaging the Russians on this front is never more important than when relations are strained.

To maintain a strong deterrent in the 21st century, the Department of Defense and the Department of Energy have started a modernization effort that will take decades to complete and cost nearly a trillion dollars. In the next decade alone, the Congressional Budget Office estimates the costs at nearly $350 billion for the initial phase of the modernization. Costs will increase past 2025 as several modernization programs converge on a 2030 target date. This effort will require a clear understanding of requirements, careful planning, and affordable solutions. A long-term plan is necessary particularly as DOD envisions as many at least 5 concurrent programs for new missiles or delivery platforms including a new nuclear bomber, a new nuclear fighter, a new nuclear ballistic missile submarine, a new intercontinental ballistic missile and a new nuclear cruise missile and submarine-launched ballistic missile, while continuing to sustain legacy platforms. Meanwhile, the Department of Energy will sustain and modernize the associated nuclear bombs and warheads.

The Department of Energy, through the National Nuclear Security Administration, provides Congress with an annual 25-year plan. The Department of Defense currently does not. I look forward to this opportunity to understand the requirements, what a cost-effective, affordable plan entails.

Finally, nuclear non-proliferation must go hand in hand with maintaining an effective and reliable nuclear deterrent.

The spread of nuclear weapons to additional states makes the challenge of deterring the use of nuclear weapons exponentially more difficult. And the problem of hundreds of metric tons of vulnerable bomb-grade materials increases the risk of nuclear terrorism. We must continue vital efforts to stem the spread of nuclear weapons and materials. This should be a

strong bipartisan effort, but instead the FY16 House-passed defense authorization contains provisions restricting nonproliferation technology and blocking funding for detecting nuclear smuggling. Secretaries Kissinger, Perry, Schultz and Senator Nunn have widely warned that "Ensuring that nuclear materials are protected globally in order to limit any country's ability to reconstitute nuclear weapons, and to prevent terrorists from acquiring the material to build a crude nuclear bomb, is a top priority."

Getting these answers right, now, will have lasting consequences for the next several decades.

Thank you for being here today.

STATEMENT OF

ROBERT WORK

DEPUTY SECRETARY OF DEFENSE

AND

ADMIRAL JAMES WINNEFELD

VICE CHAIRMAN OF THE JOINT CHIEFS OF STAFF

BEFORE THE HOUSE

COMMITTEE ON ARMED SERVICES

JUNE 25, 2015

Chairman Thornberry, Ranking Member Smith, members of the Committee, thank you for the opportunity to testify on nuclear deterrence and what we in the Department of Defense are doing to ensure that it remains effective in the 21st century security environment.

We want to address three subjects: the critical role our nuclear forces play in our national security strategy, in accordance with the Nuclear Posture Review and the President's Employment Guidance; circumstances and recent changes in the security environment that underscore the continuing importance of nuclear deterrent forces in the future; and what we are doing to ensure that, as the President has directed, the United States will retain a safe, secure, and effective nuclear force for as long as nuclear weapons exist.

**The Role of Nuclear Weapons in U.S. National Security Strategy**

Survival of our nation is our most important national security interest. The overriding goal of our national policy is to reduce the nuclear dangers facing us and our allies. The President's policies enshrined in the Nuclear Posture Review and the Nuclear Weapon Employment Guidance lay the foundations for our efforts in these areas. We remain committed to the President's standing direction that we will seek the peace and security of a world without nuclear weapons, but that as long as nuclear weapons exist, we will maintain a safe, secure and effective nuclear arsenal.

Our nuclear deterrent force is the ultimate protection against a nuclear attack on the United States, the one known existential threat to the nation. Additionally, our extended deterrence strategy provides protection to our allies and enhances alliance cohesion.

U.S. nuclear forces play two other limited but critical roles in our strategy.

First, our nuclear forces help convince potential adversaries that they cannot escalate their way out of failed conventional aggression. This enhances our ability to project power in the face of escalatory threats, and indirectly enhances the deterrence of large scale conventional war between nuclear-armed states. Second, our nuclear forces provide the President the means to achieve his or her objectives should deterrence fail. While we continue to seek to create the conditions under which we could declare that the sole purpose of our nuclear forces is to deter nuclear attack on the United States, today's security environment does not meet those conditions.

**A Dynamic Security Environment**

The members of this Committee are well aware of the pace, scope, and magnitude of change in the 21st century security environment in which we live. We want to call the Committee's attention to continuing circumstances relevant to the subject of this hearing.

In the wake of the Russian Federation's violation of Ukrainian sovereignty and territorial integrity, senior Russian officials have made numerous statements regarding Russia's nuclear forces, their capabilities, and intentions. Those statements constitute veiled, and not so veiled, attempts to intimidate our allies and us. Threatening and cavalier language like this has no place in the responsible dialogue between nations. Neither the United States nor our NATO and Asian allies need to be reminded that Russia is a nuclear-armed state. But it appears that Russia must continually be reminded of NATO's lack of aggressive intent on the one hand, and unwavering determination to defend its members on the other. Russian actions, including its irresponsible nuclear saber rattling have, if anything, strengthened Alliance solidarity and led us to take a number of measures to deter further Russian aggression and reassure our allies.

The Russian Federation remains in violation of its obligations under the INF Treaty. Despite Russian claims to the contrary, we remain in full compliance with our obligations. Our goal is to return Russia to compliance and preserve the viability of the Treaty. However, as Secretary Carter said, the INF Treaty is a two way street. As we have told both the Russians and the members of this Committee, we will not allow the Russian Federation to gain a significant military advantage through their violation of an arms control treaty. We are developing and analyzing response options for the President, and will consult with our Allies. We will keep you posted on our progress.

Russian nuclear force modernization continues, within the limits of the New START Treaty. We assess that the Russians remain in compliance with New START, which remains in our mutual national security interest, and intends to adhere to the central limits of the treaty when they come into effect in February 2018. To date, the Russians have not shown interest in further reductions of our respective nuclear forces as proposed by the President in Berlin in 2013. That proposal remains on the table should they desire to engage.

Russian military doctrine includes what some have called an "escalate to de-escalate" strategy – a strategy that purportedly seeks to deescalate a conventional conflict through coercive threats, including limited nuclear use. We think that this label is dangerously misleading. Anyone who thinks they can control escalation through the use of nuclear weapons is literally playing with fire. Escalation is escalation, and nuclear use would be the ultimate escalation.

We also remain watchful of China's continuing modernization of its nuclear force. The Chinese are deploying multiple warheads on some of their silo-based ICBMs. They continue to expand their mobile force, while developing a new mobile ICBM that may carry multiple warheads. China also continues to develop and field a sea-based element of their nuclear forces.

Four JIN-class SSBNs are currently operational, and up to five may enter service before China begins developing and fielding its next-generation SSBN, the type 096, over the coming decade. China will likely conduct its first SSBN nuclear deterrence patrol sometime in 2015. China's modernization program seems to be designed to ensure they have a survivable second strike capability; we see no indication that they seek quantitative parity with the U.S. and Russia. They are an increasingly capable nuclear-armed state.

Meanwhile, several authoritarian powers have determined that gaining a nuclear weapon capability is essential to protecting their regimes. In this regard, the administration is working diligently to conclude an agreement that, in a verifiable manner, would prevent Iran from developing nuclear weapons. North Korea's nuclear weapons and missile programs pose a serious threat to the United States and to the security environment in East Asia. The United States continues to expand and improve our national missile defenses, and our current plans are intended to ensure that we remain ahead of North Korean capabilities. At the same time, our own nuclear capabilities have an essential role in deterring North Korean aggression.

The situations described above demonstrate the wisdom of maintaining a safe, secure, and effective nuclear force as long as nuclear weapons exist.

**Maintaining a Safe, Secure, and Effective Nuclear Force**

Given the importance of our nuclear forces to our national security interests, and the volatile nature of the 21st century security environment, the President has directed that we maintain a safe, secure, and effective triad of strategic nuclear delivery systems while also adjusting those forces to the levels required by the New START central limits. This is the highest priority in the Department of Defense.

Based on that direction, we have developed a plan to transition from our aging systems to a modernized nuclear arsenal.

Our plan will replace our aging nuclear delivery systems, modernize our nuclear command and control systems, and extend the life of the associated nuclear warheads in accordance with our "3+2" strategy. The 3+2 Strategy is designed to transition the U.S. nuclear stockpile from 12 warheads types today (five ballistic-missile warheads, six gravity bombs, and one air-launched cruise missile) to a future stockpile with three types of interoperable ballistic missile warheads and two types of air-delivered warheads (one gravity bomb and one cruise missile). Consistent with the 2010 Nuclear Posture Review, at this time the United States will not develop new nuclear warheads. Instead, it will pursue Life Extension Programs that use only nuclear components based on previously tested designs, rather than developing new nuclear weapons with new military capabilities.

This transition plan poses three central challenges for the Department of Defense. First, we must ensure we sustain our current force until it can be replaced. Second, we must find a way to pay for simultaneously modernizing all three legs of the triad, our dual capable tactical aircraft, and our nuclear command and control systems. Third, we must work closely with our partners in the Department of Energy to ensure warhead life extensions and other modifications keep pace with the needs of the platforms that carry them.

Our response to the recommendations made by the Nuclear Enterprise Review has put us on a solid track to address the first of these challenges, and we thank you for your support of our funding requests.

The second challenge is a very expensive proposition. Modernizing the triad requires concurrently replacing the Ohio class SSBN, recapitalizing the ICBM force, building the LRSB,

and moving ahead with LRSO. In addition, following the Nuclear Enterprise Review the Department launched a National Leadership Command Capability (NLCC) and Nuclear Command, Control, and Communications (NC3) Enterprise Review to assess our current capabilities and identify modernization requirements. That review concluded that the nation's NLCC/NC3 system remains effective today. However, based on the Review's findings we are revising our modernization plans and reviewing the overall NLCC/NC3 structure. We will be providing the full classified report to Congress.

After adding the cost of making required improvements to our nuclear command and control systems, modernizing and sustaining our nuclear arsenal is projected to cost the Department of Defense an average of $18 billion per year from 2021 to 2035 in FY16 dollars. This is approximately 3.4% of our current, topline defense budget. When combined with the continuing cost to sustain the current force while we build the new one this will roughly double the share of the defense budget allocated to the nuclear mission. This will require very hard choices and increased risk in some missions without additional funding above current defense budget levels.

We appreciate that you have recognized this problem, including your legislation to establish a strategic deterrent fund; we now need to decide how to resource the fund. As a nation we have always found a way to provide what we need for our defense. We need to start thinking about how to solve this particular challenge together.

As for synchronizing the modernization of our delivery systems with the Department of Energy's warhead programs, we are doing this through close cooperation on the Nuclear Weapons Council and earlier and more frequent collaboration during the development of our budgets. This approach worked well during the preparation of the President's Budget (PB) for

Fiscal Year 2016, and we hope to improve on it as we tackle PB 2017.

Finally, we would like to thank this Committee for its abiding interest in our national security and the strength and health of our armed forces. The oversight you provide and the funding you authorize is critical to our success in ensuring that the American soldier, sailor, airmen and Marine are the best trained, best equipped, and best supported military in the world.

# # #

**Deputy Secretary of Defense Robert O. Work**

Robert O. Work was confirmed as the 32nd Deputy Secretary of Defense on April 30, 2014. Mr. Work most recently served as Chief Executive Officer of the Center for a New American Security (CNAS). From 2009 to 2013, Mr. Work served as the Undersecretary of the Navy. In this capacity, he was the Deputy and Principal Assistant to the Secretary of the Navy and acted with full authority of the Secretary in the day-to-day management of the Department of the Navy.

In 2008, Mr. Work served on President-elect Barack Obama's Department of Defense Transition Team as leader of the Department of the Navy issues team. He also worked on the defense policy, acquisition, and budget teams.

In 2002, Mr. Work joined the Center for Strategic and Budgetary Assessments (CSBA), first as the Senior Fellow for Maritime Affairs, and later as the Vice President for Strategic Studies. In these positions, he focused on defense strategy and programs, revolutions in war, Department of Defense transformation, and maritime affairs.

Mr. Work was also an adjunct professor at George Washington University, where he taught defense analysis and roles and missions of the armed forces.

Mr. Work was a distinguished graduate of the Naval Reserve Officers Training Course at the University of Illinois, and was commissioned a second lieutenant in the U.S. Marine Corps in August 1974. During his 27-year military career, he held a wide range of command, leadership, and management positions. He commanded an artillery battery and a battalion, and was the base commander at Camp Fuji, Japan. His last assignment was as Military Assistant and Senior Aide to the Honorable Richard Danzig, 7lst secretary of the Navy.

Mr. Work earned a Bachelor of Science degree in Biology from the University of Illinois; a Master of Science in Systems Management from the University of Southern California; a Master of Science in Space System Operations from the Naval Postgraduate School; and a Master in International Public Policy from the Johns Hopkins School of Advanced International Studies.

He is a member of the International Institute for Strategic Studies (IISS).

His military and civilian awards include the Legion of Merit, Meritorious Service Medal, Defense Meritorious Service Medal, and the Navy Distinguished Civilian Service Award.

Mr. Work is married to Cassandra Work, and has one grown daughter, Kendyl.

**Admiral James A. "Sandy" Winnefeld, Jr.**
**Vice Chairman of the Joint Chiefs of Staff**

Adm. James Winnefeld serves as the ninth Vice Chairman of the Joint Chiefs of Staff. In this capacity, he is a member of the Joint Chiefs of Staff and the nation's second highest-ranking military officer.

Winnefeld graduated from the Georgia Institute of Technology and received his commission through the Naval Reserve Officers Training Corps program. He subsequently served with three fighter squadrons flying the F-14 Tomcat, and as an instructor at the Navy Fighter Weapons School.

Winnefeld's unit commands at sea include Fighter Squadron 211, USS Cleveland (LPD 7), and USS Enterprise (CVN 65). He led "Big E" through her 18th deployment, which included combat operations in Afghanistan in support of Operation Enduring Freedom immediately after the terrorist acts of Sept. 11, 2001. As Commander, Carrier Strike Group Two/Theodore Roosevelt Carrier Strike Group, he led Task Forces 50, 152, and 58 in support of Operation Iraqi Freedom and maritime interception operations in the Arabian Gulf. He also served as commander, United States 6th Fleet; commander NATO Allied Joint Command, Lisbon; and, commander, Striking and Support Forces NATO.

His shore tours include service in the Joint Staff Operations Directorate (J-3), as senior aide to the Chairman of the Joint Chiefs of Staff, and as executive assistant to the Vice Chief of Naval Operations. As a flag officer, he served ashore as director, Warfare Programs and Transformational Concepts, United States Fleet Forces Command; as director of Joint Innovation and Experimentation at United States Joint Forces Command; and, as the director for Strategic Plans and Policy (J-5) on the Joint Staff. He most recently served as the commander of North American Aerospace Defense Command (NORAD) and U.S. Northern Command (USNORTHCOM).

Winnefeld's awards include the Defense Distinguished Service Medal, Distinguished Service Medal, Defense Superior Service Medal, the Legion of Merit, the Bronze Star, the Defense Meritorious Service Medal, the Meritorious Service Medal, the Air Medal, and five Battle Efficiency awards.

Updated: 18 November 2014

**Testimony of the Honorable Elizabeth Sherwood-Randall**
**Deputy Secretary of Energy**
**"Nuclear Deterrence in the 21st Century"**
**Before the House Armed Services Committee**
**June 25, 2015**

**Introduction**

Chairman Thornberry, Ranking Member Smith, and Members of the Committee, thank you for providing me with this important opportunity to discuss the Department of Energy's (DOE) role in supporting U.S. nuclear deterrence in the 21st century. The Secretary and I appreciate the attention and focus of this Committee on nuclear matters given their significance to our national security and the priority that the President has placed on ensuring the safety, security, and effectiveness of our nuclear weapons as we seek to reduce global nuclear dangers and the role and number of nuclear weapons.

I am honored to testify before you today alongside two of my close colleagues from the Department of Defense (DOD). Together, the Departments of Energy and Defense have a solemn responsibility for delivering the nuclear deterrent, and we work on this in tandem – with DOE providing the weapons and DOD providing the delivery systems. Our cooperation is strong and deliberate, as you will hear today. As the post-Cold War landscape becomes more complex and challenging, we must remain vigilant and prepared to ensure the protection of the American people and our allies and partners around the world against a wide range of current and evolving threats. Today we look forward to discussing our preparations to meet those challenges in our ongoing effort to build a strong national consensus on the role for and management of the nuclear deterrent.

**Strategy**

From the outset, this Administration set forth a clear two-pronged nuclear strategy: (1) reduce the threat of nuclear proliferation; and (2) maintain a safe, secure, and effective nuclear deterrent even as we pursue the safety and security of a world without nuclear weapons. At DOE we are charged with the mission to implement both elements of the nuclear strategy by providing a safe,

secure, and effective nuclear deterrent without nuclear explosive testing, while also preventing, countering, and responding to proliferation and nuclear terrorism around the world. I have been involved in both dimensions of this strategy since joining the Administration on its first day in January 2009.

The President set forth this strategy in April 2009 in Prague, when he stated the "threat of nuclear war has gone down, but the risk of nuclear attack has gone up." This strategy, developed to address the changed realities of the post-Cold War world, was most recently outlined in the Administration's 2015 National Security Strategy:

> No threat poses as grave a danger to our security and well-being as the potential use of nuclear weapons and materials by irresponsible states or terrorists. We therefore seek the peace and security of a world without nuclear weapons. As long as nuclear weapons exist, the United States must invest the resources necessary to maintain—without testing—a safe, secure and effective nuclear deterrent that preserves strategic stability. However, reducing the threat requires us to constantly reinforce the basic bargain of the Nuclear Non-Proliferation Treaty, which commits nuclear weapons states to reduce their stockpiles while non-nuclear states remain committed to using nuclear energy only for peaceful purposes.

With American leadership, our North Atlantic Treaty Organization (NATO) allies have consistently endorsed this strategy. For example, in the 2010 Strategic Concept, NATO commits to "the goal of creating the conditions for a world without nuclear weapons—but reconfirms that, as long as there are nuclear weapons in the world, NATO will remain a nuclear Alliance."

**Policy Guidance**

Guidance consistent with this strategy was initially laid out in the 2010 Nuclear Posture Review (NPR). The NPR identified five objectives and set forth a plan to achieve them. These objectives are:

1. Preventing nuclear proliferation and nuclear terrorism;
2. Reducing the role of U.S. nuclear weapons in U.S. national security strategy;
3. Maintaining strategic deterrence and stability at reduced nuclear force levels;
4. Strengthening regional deterrence and reassuring U.S. allies and partners; and
5. Sustaining a safe, secure, and effective nuclear arsenal.

While the NPR focused principally on steps to be taken in the next 5 to 10 years, it also considered the path ahead for U.S. nuclear strategy and posture over the longer term. Achieving these objectives and making sustained progress to reduce nuclear dangers, while ensuring security for ourselves and our allies and partners will, as the NPR noted, "require a concerted effort by a long succession of U.S. Administrations and Congresses. Forging a sustainable consensus on the way ahead is critical." This Committee's role in convening this hearing and others like it is critical to achieving that goal, for without public support the investments that are required will not be sustained.

In 2013, the President followed up on the NPF by issuing revised Nuclear Employment Guidance in the form of a Presidential Decision Document. This document provided guidance to DOE and DOD regarding the actions needed to ensure our nuclear posture is aligned to address 21st century threats. It also reinforced the need to maintain strategic stability, strengthen regional deterrence, and assure our allies and partners, all while reducing the overall size of the U.S. nuclear weapons stockpile, reducing the reliance on nuclear weapons in our national strategy, and continuously improving the safety, security, and effectiveness of our nuclear arsenal. In essence, the President directed that we work to become more effective as we move toward a smaller arsenal that maintains the full range of military capabilities required to meet any threat to the United States and our allies. In the work that led up to this new guidance, the Administration carefully evaluated the changing nature of the threat to ensure that the country is appropriately postured for the future.

In addition to maintaining a safe, secure, and effective nuclear arsenal, the NPR highlighted the necessity of preventing nuclear proliferation and terrorism. In particular, DOE is focused on three critical policy goals:

1. Preventing non-state actors and additional countries from developing nuclear weapons or acquiring weapons-usable nuclear materials, equipment, technology, and expertise; and preventing non-state actors from acquiring radiological materials for a radiological threat device.
2. Countering the efforts of both proliferant states and non-state actors to acquire, develop, disseminate, transport, or deliver the materials, expertise, or components necessary for a nuclear or radiological threat device or the devices themselves.
3. Responding to nuclear or radiological terrorist acts, or accidental/unintentional incidents, by searching for and rendering safe threat devices, components, and/or radiological and nuclear materials.

**Implementation**

Within the Department of Energy, NNSA is responsible for implementing central elements of the nuclear strategy, including the Stockpile Stewardship and Management Program (SSMP), the Naval Reactors program, and the Nuclear Nonproliferation, Emergency Response and Counterproliferation programs.

Although we have an aging stockpile and an even more aged nuclear complex, we have started to lay the foundations to ensure that we can maintain the safe, secure, and effective arsenal for the future through Life Extension Programs (LEP) and a modernized nuclear complex. The Department has made substantial progress, but we must continue working to maintain the cutting-edge scientific expertise and facilities to ensure our continued success into the future – for as long as nuclear weapons exist. Your support for LEPs and modernized infrastructure is critical to our national security.

We are also responsible with the Navy, through the joint Naval Reactors program, for developing new reactor plants for the Navy's nuclear-powered aircraft carriers and submarines, which provide delivery and propulsion systems important to our conventional and nuclear deterrent.

Finally, DOE is a key agency charged with implementing the mission to reduce nuclear threats that emanate from the unfortunate spread of fissile materials around the world. We fulfill this mission through our work to prevent, counter, and respond to a wide range of nuclear threats and terrorism.

In all that DOE does to implement the nuclear strategy, we depend on our unparalleled science and technology base. This base includes all of the Department's 17 national laboratories, including the three National Nuclear Security Administration (NNSA) laboratories, the Naval Reactors laboratories, the NNSA production facilities, and the Nevada National Security Site. Across this country, we have a workforce that invests every day in delivering on this vital mission. The synergy between all aspects of the nuclear mission is essential for the United States to ensure the preeminence of its nuclear weapons and nuclear threat reduction capabilities. DOE also leverages these capabilities to meet other complex and high-risk national security challenges facing our interagency partners including the Departments of Defense, State, and Homeland Security.

Given the centrality of our partnership for fulfilling the nuclear mission, DOE and DOD have worked hard through the Nuclear Weapons Council (NWC) to strengthen communication, foster collaboration, and increase transparency. This concerted effort has significantly improved the relationship between the Departments to the betterment of both and to the benefit of American national security. In the past few years, DOE and DOD have made substantial progress via the NWC in integrating cost, scope, and schedules for the entire nuclear system, including delivery platforms, warheads, and production infrastructure. The process ensures that DOE's warhead and infrastructure plans are linked up with DOD delivery platform schedules and operational requirements.

**Stockpile Stewardship**

One of our most remarkable achievements of the past two decades is the success of the SSMP. With the scientific and engineering capabilities developed under this program, and the dedication of a world-class workforce, we have maintained the nuclear stockpile without nuclear explosive testing for over 20 years.

Working through the NWC, DOE's NNSA and DOD maintain a safe, secure, and effective nuclear stockpile, and ensure that the delivery platforms are aligned with the stockpile. NNSA's share of this task is performed through a rigorous and formal annual surveillance process, by which we assess, maintain, and certify the existing stockpile systems. Even as the United States has foresworn the building of new nuclear weapons, the 2010 NPR provided the latitude and direction to consider the full range of LEPs including refurbishment, reuse, and replacement of the nuclear components. Through the LEPs and alterations ("ALTs"), NNSA extends the capability of weapons that have reached the end of what was anticipated to be their normal lifespan, or that have degraded parts to ensure their continued safety and effectiveness. NNSA accomplishes this objective by conducting extensive surveillance and modernizing, through LEPS, including replacing or repairing nuclear and non-nuclear components, while maintaining operational capability. These tasks require intensive human effort, backed up by DOE's substantial computational capabilities. Consistent with the 2010 NPR, the United States does not develop new nuclear warheads.

Each year DOE's NNSA sets forth its plans to maintain the stockpile in the annual Stockpile Stewardship and Management Plan. This plan is a comprehensive, interagency-coordinated plan for NNSA weapons activities that articulates the scope of work and required resources for the next 25 years. It covers in substantial depth the five-year period of the President's budget request.

A concrete example of how the current interdepartmental planning process is working effectively on behalf of the Nation is the decision to accelerate the schedule for the Long Range Stand Off (LRSO) cruise missile warhead. The decision to accelerate LRSO resulted from a detailed and deliberate interagency process that considered the future threat environment. Ultimately, DOE's NNSA and DOD recommended this acceleration via the NWC and it was approved in the context of the President's Budget Request for Fiscal Year (FY) 2016. While the Air Force is accelerating the design and development of the new cruise missile, DOE's NNSA is accelerating the LEP for the W80-4 warhead for the LRSO from a First Production Unit (FPU) date in FY 2027 to FY 2025.

We are also making significant progress in the full set of LEPs with which we are charged. DOE's NNSA has now passed the halfway mark in the production phase of the W76-1 LEP, which will support the U.S. submarine-launched ballistic missile (SLBM) capability. When completed, the W76-1 will have an extended life of approximately 30 years, and will enable the reduction of the total number of W-76 warheads currently in the inventory by approximately half.

NNSA is also making good progress in the engineering development phase of the B61-12 LEP, which remains on budget and on schedule. This program is critical to modernizing the nuclear gravity weapon stockpile while ensuring the sustainment of the Nation's strategic and non-strategic air-delivered nuclear deterrent capability. The development activities of the B61-12 LEP will also be highly leveraged in subsequent life extension activities. Once complete, the B61-12 LEP will enable the United States to retire the B83 bomb, the last megaton class nuclear weapon in the U.S. arsenal.

Working with the Air Force, we successfully completed environmental flight tests on the F-15, F-16, and B-2 aircraft on or ahead of schedule. These tests ensure that the B61-12 is compatible with analog fighters like F-15s and F-16s and digital fighters like the F-35, as well as the B-52. The B61-12 LEP program will enter Phase 6.4 Production Engineering in 2016 and remains on track to deliver the FPU in FY 2020. The B61-12 LEP will refurbish both nuclear and non-nuclear components and extend the life of the system by approximately 30 years. When complete, the B61-12 will allow consolidation of all of the variants of the B-61 currently in the inventory, with the exception of the B61-11, into a single variant and reduce the amount of nuclear material in the current B61 variants by 80 percent in the total mass of nuclear material. The B61-12 LEP will also allow a reduction by a factor of two in the number of air-delivered gravity bombs in the total inventory by consolidating the strategic and non-strategic capabilities, all while improving surety. All of these changes will be accomplished while meeting military requirements set out by the NWC.

As noted above, at the November 2010 Lisbon Summit, and again in NATO's 2012 Deterrence and Defense Posture Review, the allies reaffirmed the role of nuclear deterrence in NATO's security strategy. The B61 bomb, deployed with NATO dual-capable aircraft, provides the cornerstone of our extended deterrence commitment to NATO and other regional allies. Particularly since retirement of the nuclear-armed tomahawk cruise missile (TLAM-N), the B61 has similar importance to our Asia/Pacific allies. To sustain our nonproliferation goals, we must demonstrate to our non-nuclear allies that extended deterrence is real and that they do not need to pursue their own nuclear weapons programs. The B61 LEP reaffirms our commitment to maintain 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.

In the past year, based on results from the ongoing surveillance of the nuclear weapons stockpile performed by our laboratories and plants, the NWC decided that it was prudent to expand the planned W88 ALT 370 to include replacement of the conventional high explosive (CHE) in the warhead. NNSA's goal is to add the new CHE and still keep the FPU date of 2020. This is an aggressive plan, but it is important to both the U.S. Strategic Command and the Navy to keep this expanded ALT on schedule. NNSA recently submitted a notification of intent to reprogram funds in support of this new scope of work and to keep the LEP on schedule. The Secretary and I respectfully ask the Committee to help us finalize this reprogramming action as soon as possible.

**Science and Engineering**

Science underpins everything we do, including our core responsibility to certify the safety, security, and effectiveness of the nuclear stockpile in the absence of nuclear explosive testing. NNSA is successfully performing its mission to certify the stockpile and ensure our military forces have the nuclear deterrent capabilities they need. DOE's world-class research, development, testing, and engineering are the key to this success. Through the science-based SSMP we have fielded a suite of innovative experimental platforms, diagnostic equipment, supercomputers, and modern codes that build on past nuclear explosive test data to simulate the dynamics of nuclear weapons. The combination of supercomputing and highly resolved experiments is powerful.

The Department uses its technical and scientific expertise, experimental facilities, and subcritical experiments, together with advanced simulation and modeling capabilities, to predict problems before they occur, diagnose them when they do, design the fix, and ensure it works. The experimental fidelity and greater predictive capability being achieved today is higher than it has ever been, with important results generated by the Z machine at Sandia, the National Ignition Facility at Livermore, the Omega laser at the University of Rochester, the Dual-Axis Radiographic Hydrotest facility at Los Alamos, and the JASPER gas gun and U1a subcritical capability at Nevada. Based on these data, today we have improved capabilities to model the effects of aging on our stockpile, as well as the effects of replacing individual components, as we extend the service life of the existing weapons in the nuclear stockpile.

**Infrastructure**

DOE's NNSA is also responsible for the nuclear security enterprise infrastructure necessary to sustain the stockpile. Although many aspects of the infrastructure are modern, such as the experimental capabilities and the support to the computational, simulation, and modeling tools discussed above, some of the infrastructure dates back to the days of the Manhattan Project. Much of it is degrading, has exceeded its useful life, and is in need of substantial maintenance or replacement.

Building a responsive infrastructure means investing wisely in new facilities, especially for plutonium and uranium, as well as high explosives, non-nuclear component production, and requisite office and laboratory workspace for our personnel. We must also work to maintain our aging facilities by stabilizing deferred maintenance. Infrastructure shortcomings can increase operating costs, decrease productivity, increase risks to safety, and shutdown program work. Having a modern, responsive infrastructure would allow the United States to reduce the nuclear stockpile even further, while also ensuring the safety of our people and our allies, as we could eliminate hedge weapons that we currently keep in case of geopolitical risk or technical failure of a weapon system. The Secretary and I have made reducing deferred maintenance a key part of the Department's overall infrastructure strategy, and we seek your support for this approach.

We recognize that these goals will not be met quickly, and that arresting the declining state of NNSA infrastructure will require steady commitment at all levels of the organization over many years, far beyond the duration of this Administration.

**Prevent, Counter, Respond—Addressing Nuclear Proliferation and Terrorism**

As noted at the outset of my testimony, DOE plays a central role within the U.S. Government in implementing nuclear threat reduction activities. Our portfolio of work aimed at preventing, countering, and responding to global nuclear threats is rooted in our capabilities to develop and sustain the U.S. nuclear stockpile, and enables us to implement this important dimension of the President's Prague Agenda. These efforts contribute significantly to U.S. national security and the security of our allies and partners; they can best be described as "defense by other means."

As with the nuclear deterrent, science underpins everything we do to counter nuclear proliferation and nuclear terrorism. The scientific, technical and engineering expertise resident in our laboratories, production plants, and sites allows us to apply scientific solutions to some of the world's most pressing national security problems, including understanding and responding to global nuclear proliferation and terrorism threats.

DOE's work to prevent nuclear proliferation and terrorism falls under four broad categories, which are reflected in the FY 2016 reorganization of NNSA's Defense Nuclear Nonproliferation program. These categories are: Material Management and Minimization; Global Material Security; Nonproliferation and Arms Control; and Research & Development.

The Material Management and Minimization (M3) program works globally to achieve permanent threat reduction by minimizing and, when possible, eliminating excess weapons-usable nuclear materials and by ensuring sound material management principles are applied in the peaceful use of remaining nuclear materials. To date, M3 has converted or confirmed the shutdown of 92 research reactors and isotope production facilities worldwide; has safely and securely removed or confirmed the disposition of over 5,359 kilograms of highly enriched uranium (HEU) and plutonium – enough material for more than 200 nuclear weapons – and removed all HEU from 26 countries plus Taiwan. Additionally, over 146 megatons of HEU

declared excess to the U.S. weapons program has been down-blended to low-enriched uranium (LEU), which represents enough for more than 5,800 nuclear weapons.

The Global Material Security program (GMS) works with partners worldwide to seek to ensure that all nuclear and radiological materials are secured, protected, under control, and accounted for, and that illicit movement of nuclear weapons, proliferation-sensitive materials, and radiological sources are deterred, detected, and investigated. While more work remains to be done, GMS has made significant progress. GMS has secured over 1,800 buildings that house radiological materials, and installed over 3,100 radiation portal monitors at over 500 sites since the beginning of the program.

The Nonproliferation and Arms Control (NPAC) program engages international partners to prevent the proliferation of weapons of mass destruction-related materials, equipment, technology, and expertise, by improving nuclear safeguards and export controls and enabling verifiable nuclear reductions. Since 2010, NPAC has supported over 100 safeguards training courses and workshops with international partners. It has transferred over 40 safeguards tools to international organizations and partner countries since 2008, partnered with 35 countries to implement national export control systems, and overseen implementation of the United States-Russia HEU Purchase Agreement, which converted about 20,000 nuclear warheads equivalent of Russian, weapons-origin HEU to LEU.

And the Research and Development (R&D) program pursues novel technologies to discover foreign nuclear weapons development activities, to detect nuclear detonations, and to strengthen the monitoring and verification of foreign commitments to nonproliferation and arms control treaties and agreements.

Together, these activities enable NNSA to prepare for the future by anticipating the technical aspects of possible nuclear terrorism scenarios. Furthermore, NNSA uses its deep knowledge of nuclear weapon design to characterize, detect, and defeat the range of nuclear or radiological devices potentially available to a rogue state or non-state actor. Based on this analysis, the teams that would ultimately respond to an incident can confidently assess and render safe any possible

threat. DOE participates in planning and exercises to ensure readiness, and also ensures the availability of scientists to provide real-time technical back-up to the responders in the field.

We also contribute to other countries' efforts to develop plans and capabilities to respond effectively and mitigate the consequences if a nuclear or radiological device results in a radioactive release.

**Conclusion**

As DOE works to prepare for the evolving and dynamic global security environment of the future, we will need to adapt and innovate in response to evolving and emerging threats. We must maintain a responsive nuclear infrastructure that is able to adjust our capabilities to respond to these trends. DOE will continue to work collaboratively with DOD to modernize a safe, secure, and effective deterrent through approved LEPs. We will continue to engage international partners to prevent, counter, and respond to nuclear dangers. Our capabilities will be based on our unique science and technology capabilities, our people, and our infrastructure across an integrated NNSA nuclear security enterprise within DOE.

The changing strategic context, including foreign strategic capabilities as well as technological developments, will continue to be key factors in our planning and drive innovation across the nuclear security enterprise. We are proud of the many contributions that our skilled workforce makes every day to the security of the American people and our friends and partners around the world. In conclusion, thank you again for giving me the opportunity to testify today on these important priorities before your Committee.

**Dr. Elizabeth Sherwood-Randall**
**Deputy Secretary of Energy**

Dr. Elizabeth Sherwood-Randall was nominated by President Obama to be Deputy Secretary of Energy on July 8, 2014; was confirmed by the United States Senate on September 18, 2014; and was sworn into office on October 10, 2014. Working with Energy Secretary Ernest Moniz, she is responsible for management of the Department and execution of the Administration's highest priority energy initiatives.

Most recently, Dr. Sherwood-Randall served as Special Assistant to the President and White House Coordinator for Defense Policy, Countering Weapons of Mass Destruction, and Arms Control, a position to which she was appointed in April 2013. During her tenure, she was the senior White House official responsible for U.S. defense policy and budget planning, oversaw the successful effort to remove all declared chemical weapons from Syria, and guided interagency implementation of the President's new nuclear employment guidance. She also directed landmark efforts to combat sexual assault in the military.

From 2009 to 2013, Dr. Sherwood-Randall served as Special Assistant to the President and Senior Director for European Affairs at the National Security Council. She was instrumental in revitalizing America's unique network of alliance relationships and strengthening cooperation with Europe to advance the President's global agenda.

From 2000 to 2008, prior to joining the Obama Administration, Dr. Sherwood-Randall was a Stanford University Senior Research Scholar. From 2004 to 2008 she was also the Adjunct Senior Fellow for Alliance Relations at the Council on Foreign Relations. Additionally, she was a Founding Principal in the Harvard-Stanford Preventive Defense Project from 1997-2008.

From 1994 to 1996, Dr. Sherwood-Randall served in the Pentagon as Deputy Assistant Secretary of Defense for Russia, Ukraine, and Eurasia. Secretary of Defense William J. Perry awarded her the Medal for Distinguished Public Service for her service at the Department of Defense.

From 1989 to 1993, Dr. Sherwood-Randall was co-Founder and Associate Director of the Harvard Strengthening Democratic Institutions Project at the John F. Kennedy School of Government. At the outset of her career, she served as Chief Foreign Affairs and Defense Policy Adviser to then-Senator Joseph R. Biden, Jr.

Dr. Sherwood-Randall received a B.A. from Harvard University and a doctorate from Oxford University, where she was a Rhodes Scholar at Balliol College. She is married to Dr. Jeffrey B. Randall, and they have two sons.

## WITNESS RESPONSES TO QUESTIONS ASKED DURING THE HEARING

JUNE 25, 2015

## RESPONSES TO QUESTIONS SUBMITTED BY MR. LANGEVIN

Secretary WORK. The dependence on, and use of, verification measures in arms control agreements has been the hallmark of the United States' ability to monitor the compliance of other Parties and to detect violations of the terms of the agreements.

More comprehensive verification measures lead to greater confidence in the United States' ability to verify that other Parties are abiding by the terms of treaties and agreements, which provides a strong deterrent against violations, and the warning required for us to counter violations if they occur.

The Department of Defense reviewed the recommendations of the Defense Science Board's (DSB) 2014 Assessment of Nuclear Monitoring and Verification Technologies and subsequently participated in several months of study and policy review in concert with other departments and agencies to address findings from the report. Work on this issue went beyond verifying treaty compliance; it explored interagency structure and processes to enable departments and agencies to more effectively detect and provide early warning of nuclear proliferation by State and non-state actors. We believe the work conducted in this regard will have an enduring positive effect on the ability to monitor treaty compliance and detect nuclear proliferation outside formal treaties and agreements.

The Administration will be submitting a report to Congress later this year regarding efforts to address findings in the DSB Report. [See page 14.]

Secretary SHERWOOD-RANDALL. Detecting material production and movement are essential to monitoring activities of interest and verifying compliance. In line with the recommendations of the January 2014 Defense Science Board (DSB) Report, Assessment of Nuclear Monitoring and Verification Technologies, the Department of Energy's National Nuclear Security Administration (DOE/NNSA) continues the development of U.S. capabilities that address current and projected threats to national security posed by the proliferation of nuclear weapons and diversion of special nuclear material by investing in near- and long-term efforts in the DOE National Laboratories, academia, and industry. In its August 2014 Report to Congress on the Progress on the National Research Agenda for Nuclear Nonproliferation & Arms Control Verification Technologies, DOE/NNSA describes the national research agenda to create technologies to detect state and non-state efforts to develop or acquire nuclear devices or weapons-usable nuclear materials. This Report addresses DOE/NNSA's progress and plans for such research and development and describes DOE/NNSA's general concurrence with the DSB report's key findings. [See page 14.]

Admiral WINNEFELD. Verification is an important concern for any treaty or agreement and is a key factor when deciding whether to sign and ratify a treaty. Yes, I agree with the 2014 Defense Science Board conclusion that additional work remains to be done. The United States continually seeks to improve verification methods and technologies and the Department of Defense actively participates in interagency efforts to improve coordination of research and development (R&D) that are focused on both current and emerging nuclear proliferation threats. [See page 14.]

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## RESPONSES TO QUESTIONS SUBMITTED BY MR. GARAMENDI

Secretary SHERWOOD-RANDALL. The near-term goal of the Plutonium Strategy is to provide the infrastructure and resources that will sustain critical plutonium capabilities necessary to meet pit production requirements. This involves maintaining and maximizing the use of existing facilities at the Los Alamos National Laboratory (LANL): the Radiological Laboratory/Utility/Office Building (RLUOB), and Plutonium Facility (PF)-4. The preliminary cost range of efforts to further equip the RLUOB and re-purpose space in PF–4 to support a production capacity of 30 pits per year by 2026 is $1.5 billion to $2.15 billion. Additionally, annual funding for programmatic equipment and critical skills that support pit production are funded through the Plutonium Sustainment Program, which requested $174.7 million in Fiscal Year (FY) 2016. We anticipate that additional infrastructure is needed to support production beyond 30 pits per year and are refining the costs associated with that scope. [See page 20.]

Secretary SHERWOOD-RANDALL. Current planning efforts call for the production of four to five developmental pits per year in the FY 2016–2018 timeframe, as part of the lead-up to war-reserve pit production and as we continue to execute infrastructure investments in existing facilities. Once these infrastructure investment activities are completed, the current plutonium facilities at Los Alamos National Laboratory will support up to a 30 war-reserve pits per year production capacity by 2026. [See page 21.]

Secretary SHERWOOD-RANDALL. The Department has an ongoing independent study being conducted by Aerospace, a Federally Funded Research and Development Center (FFRDC) to assess the options for disposing of 34 metric tons of weapon-grade plutonium. This report was delivered to Congress in August 2015. In addition, a Red Team led by Thomas Mason (Director of Oak Ridge National Laboratory) completed its assessment of plutonium disposition options. The red team report has been sent to the House Armed Services Committee and Dr. Mason briefed members and staff on the team's findings. Both the Aerospace study and the Red Team review include assessments of the costs of each plutonium disposition option. [See page 21.]

## QUESTIONS SUBMITTED BY MEMBERS POST HEARING

JUNE 25, 2015

## QUESTIONS SUBMITTED BY MR. SMITH

Mr. SMITH. What confidence do you have that the United States could reliably control a nuclear war? How could we improve communications and clear signaling to avoid miscalculation?

Admiral WINNEFELD. The fundamental role of U.S. nuclear weapons is to deter nuclear attack on the U.S., our allies, and partners. Our nuclear posture has successfully achieved this goal for over half a century. However, should deterrence fail at some point in the future, we are confident U.S. nuclear forces could be deployed or employed, if authorized by the President, in such a manner that would enhance the probability of ending the conflict on terms favorable to the United States, our allies, and partners. We believe one of the most challenging aspects of such control is potential nuclear escalation in Europe should conventional deterrence fail and crisis erupt into conflict. In particular, the need to coordinate with allies amidst the gravity of nuclear escalation will inject some amount of entropy into the decision-making process.

The clearest form of communication we can make regarding our determination to control this type of warfare is to be well prepared for it. This requires a healthy Triad, a robust and survivable nuclear command and control system, and a well-structured, resourced, and coordinated extended deterrence capability. Meanwhile, we should continue to explore opportunities to enhance our strategic communications through exercises and political and military engagements with our partners. Through these engagements, we are improving our understanding of other countries' views and perspectives on matters related to maintaining stability and avoiding miscalculation in crisis.

Mr. SMITH. Would you support reducing alert levels of ICBMs, if verifiably negotiated with Russia? Understanding the risks in a crisis, are there benefits of potentially giving the President more decision time before launching ICBM warheads? How would elevating the alert levels of ICBMs be different than elevating alert levels for nuclear bombers?

Admiral WINNEFELD. We support future negotiated nuclear weapons alert reductions if such a regime were verifiable with both Russia and China, and if the problem of re-alerting instability can be solved. However, creating a verifiable regime for alert ICBMs is extremely problematic, and is unlikely in the near-term. This, combined with the exceptional mitigations we have in place against an accidental launch, makes me very hesitant at this time to pursue such a course of action.

There are always benefits to maximizing Presidential decision time in a crisis. This can be accomplished either by quickening the nuclear decision process or by increasing the President's survivability and relying more on non-ICBM legs of the deterrent. Both of these methods are very challenging given day-to-day realities and safeguard requirements for control of nuclear weapons launches.

The ability to elevate alert levels between ICBMs and nuclear-capable bombers is mostly about timing and visibility. The longer timeline associated with elevating the bomber alert level is acceptable because our ballistic missile force ensures a prompt response capability. In a crisis, there would be much greater pressure to rapidly re-alert a non-alert ICBM force, because of the possibility the adversary would otherwise perceive a window of opportunity and U.S. vulnerability.

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## QUESTIONS SUBMITTED BY MRS. DAVIS

Mrs. DAVIS. As a follow-up to my question during the hearing, how important are verification and detection to detect cheating? A 2014 Defense Science Board concluded that much work remains to be done on verification and detection technologies and interagency cooperation. Do you agree? What gaps remain?

Secretary WORK. The dependence on, and use of, verification measures in arms control agreements has been the hallmark of the United States' ability to monitor the compliance of other Parties and to detect violations of the terms of the agreements.

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ties and agreements, which provides a strong deterrent against violations, and the warning required for us to counter violations if they occur.

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Admiral WINNEFELD. Verification measures are a vital component of arms control agreements. More comprehensive verification measures lead to greater confidence in our ability to verify whether other Parties to the agreement are abiding with the agreed-upon terms, which in turn provides a strong deterrent against violations.

The Department of Defense reviewed the recommendations of the Defense Science Board's 2014 Assessment of Nuclear Monitoring and Verification Technologies and subsequently participated in several months of study and policy review in concert with other departments and agencies to address findings from the report. Work on this issue went beyond verifying treaty compliance; it explored interagency structure and processes to better enable departments and agencies to detect and provide early warning of nuclear proliferation by state and non-state actors. We believe the work conducted in this regard will have an enduring positive effect on the ability to monitor treaty compliance and detect nuclear proliferation outside formal treaties.

The administration will be submitting a report to Congress later this year regarding efforts to address findings in the DSB Report.

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## QUESTIONS SUBMITTED BY MR. WILSON

Mr. WILSON. Nuclear deterrence is an effort that relies on many of the DOE National labs including non-NNSA labs and sites. How does DOE plan to maintain long term infrastructure in non-NNSA labs and sites (such as H-Canyon and K Area at the Savannah River Site) that also support deterrence and non-proliferation efforts such as securing of vulnerable nuclear materials, a key part of this administration's strategy?

Secretary SHERWOOD-RANDALL. The Department of Energy's (DOE) National Labs and sites are safely and securely maintained and operated to support the Department's nuclear deterrence and nonproliferation missions. DOE has repeatedly acknowledged the need for and has initiated efforts to assess critical infrastructure requirements and reduce the deferred maintenance. Currently these efforts focus on ensuring the effective and efficient conduct of long-term infrastructure maintenance

at DOE National Labs and sites. The results of these efforts will provide greater insights into infrastructure conditions. DOE's goal is to ensure that each of our facilities is maintained to ensure the safe accomplishment of our multiple missions.

Mr. WILSON. Please comment on the Department's strategy to ensure we maintain an adequate supply of tritium in the future to meet our nuclear deterrence needs.

Secretary SHERWOOD-RANDALL. The National Nuclear Security Administration (NNSA) teams with the Tennessee Valley Authority (TVA) to produce the required amounts of new tritium. Tritium is produced when tritium-producing burnable absorber rods (TPBARs) are irradiated in the TVA's Watts Bar Unit 1 reactor. The tritium is extracted from the TPBARs at the Savannah River site. To meet future requirements, the number of irradiated TPBARs must increase from the 704 currently in place in the Watts Bar reactor to approximately 3,000 in the FY 2025 timeframe. The ramp-up to higher TPBAR numbers has begun. To support this ramp-up, NNSA updated the environmental impact statement, and TVA submitted a license amendment request to the Nuclear Regulatory Commission covering the increased number of TPBARs and the insertion of TPBARs in a second reactor. The two reactor plan is considered the most reliable scenario to ensure that tritium production meets the demand because it mitigates both operational and production risks and increases the likelihood that tritium requirements will be met. Under the two reactor plan, potential variations in demand can be handled with relatively small changes in fresh fuel requirements. Tritium production will remain at the maximum level in both reactors until an adequate tritium inventory is attained, at which time the loading may be reduced slightly in each reactor. The updated Tritium Supplemental Environmental Impact Statement (SEIS) addressed the higher environmental releases from higher observed TPBAR permeation in nominally two reactors. The complete and approved results showed the environmental releases are safe and still well below drinking water standards. We expect the SEIS Federal Register notification to be as early as February, with publication to occur towards the end of February 2016.

Mr. WILSON. Nuclear deterrence is important to our country. However, we have an obligation to deal with legacy Cold War radioactive waste that sits in waste tanks before we can start adding more waste into the mix. Without a well-reasoned waste disposal strategy, DOE can end up shutting down material making facilities because we will be exacerbating the waste problem. In my district at the Savannah River Site, radioactive liquid waste removal is a key gear that allows the Site to operate effectively. We need to accelerate removing this waste and not slow it down with budget cuts or reprogrammed money from the liquid waste program. What will you commit to do to increase removing harmful radioactive legacy waste from the Savannah River aging waste tanks?

Secretary SHERWOOD-RANDALL. The Department has made considerable progress in completing the tank waste cleanup program at the Savannah River Site (SRS). To date, over 3,850 vitrified high level waste (HLW) canisters have been poured, over five million gallons of salt waste have been processed in its interim salt processing facilities, and six HLW tanks have been closed. In addition, two more tanks are in the process of being closed with completion planned for May 2016.

However, the delay in the construction and startup of the Salt Waste Processing Facility has slowed the treatment of liquid tank waste, which has extended the schedule for completing the tank waste cleanup program, including tank closure. In spite of these challenges, the Department remains fully committed to making progress in the cleanup of the SRS tank waste.

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## QUESTIONS SUBMITTED BY MR. LANGEVIN

Mr. LANGEVIN. How important are verification and detection to detect cheating? A 2014 Defense Science Board report concluded that much work remains to be done on verification and detection technologies and interagency cooperation. Do you agree? What gaps remain?

Secretary WORK. The dependence on, and use of, verification measures in arms control agreements has been the hallmark of the United States' ability to monitor the compliance of other Parties and to detect violations of the terms of the agreements.

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nologies, and subsequently participated in several months of study and policy review in concert with other departments and agencies to address findings from the report. Work on this issue went beyond verifying treaty compliance; it explored interagency structure and processes to enable departments and agencies to more effectively detect and provide early warning of nuclear proliferation by State and non-state actors. We believe the work conducted in this regard will have an enduring positive effect on the ability to monitor treaty compliance and detect nuclear proliferation outside formal treaties and agreements.

The Administration will be submitting a report to Congress later this year regarding efforts to address findings in the DSB Report.

Mr. LANGEVIN. How important are verification and detection to detect cheating? A 2014 Defense Science Board report concluded that much work remains to be done on verification and detection technologies and interagency cooperation. Do you agree? What gaps remain?

Secretary SHERWOOD-RANDALL. Detecting material production and movement are essential to monitoring activities of interest and verifying compliance. In line with the recommendations of the January 2014 Defense Science Board (DSB) Report, Assessment of Nuclear Monitoring and Verification Technologies, the Department of Energy's National Nuclear Security Administration (DOE/NNSA) continues the development of U.S. capabilities that address current and projected threats to national security posed by the proliferation of nuclear weapons and diversion of special nuclear material by investing in near- and long-term efforts in the labs, academia, and industry.

In its August 2014 Report to Congress on the Progress on the National Research Agenda for Nuclear Nonproliferation & Arms Control Verification Technologies, DOE/NNSA describes the national research agenda to create technologies to detect state and non-state efforts to develop or acquire nuclear devices or weapons-usable nuclear materials. This Report addresses DOE/NNSA's progress and plans for such research and development and describes DOE/NNSA's general concurrence with the DSB report's key findings.

Mr. LANGEVIN. The 2016 Nuclear Security Summit will be the fourth Summit since the process began in 2010, and the second time that the United States has hosted. What is the point of the Nuclear Security Summit process and what has it accomplished?

Secretary SHERWOOD-RANDALL. The Nuclear Security Summit process has successfully elevated the discussion of global nuclear security issues to the highest international leadership levels. At the three previous Summits, Heads of State and governments and senior leaders from more than 50 countries and organizations reinforced their shared commitment to strengthening international nuclear security norms and to taking tangible actions to reduce the threat of nuclear terrorism. The Summits have also encouraged nuclear experts, non-governmental organizations, and nuclear industry representatives to engage with each other on the important roles they each can play in improving and sustaining nuclear security. The Summits have recorded many tangible results that have enhanced global nuclear security. Since the first Nuclear Security Summit in April 2010, more than 2.5 metric tons of vulnerable highly enriched uranium (HEU) and plutonium material have been removed or disposed of; nine countries—Austria, Czech Republic, Hungary, Mexico, Serbia, Switzerland, Ukraine, Uzbekistan, and Vietnam—have become HEU-free; physical security upgrades have been completed at 32 buildings storing weapons-usable fissile materials; and radiation detection equipment has been installed at more than 250 international border crossings, airports, and seaports to combat illicit trafficking in nuclear materials. Several countries have pledged to establish Centers of Excellence to provide international, regional, and domestic training on nuclear security, safeguards, and export control fundamentals and best practices. A number of countries have ratified the Amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM/A) and the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT), and the International Atomic Energy Agency (IAEA) hosted a Ministerial-level International Conference on Nuclear Security in July 2013.

Through individual state actions and collective action, the 2016 Summit will reaffirm and build upon the commitments of the previous Summits and will take steps to maintain the forward momentum for securing vulnerable nuclear materials worldwide. The 2016 Summit aims to produce a concise consensus Communiqué and five "action plans" that commit Summit participants to actions that will strengthen the nuclear security activities of key institutions and initiatives that support the international nuclear security architecture. These action plans will focus on the United Nations, IAEA, Global Initiative to Combat Nuclear Terrorism, G7 Global Partnership, and INTERPOL.

Mr. LANGEVIN. How important are verification and detection to detect cheating? A 2014 Defense Science Board report concluded that much work remains to be done on verification and detection technologies and interagency cooperation. Do you agree? What gaps remain?

Admiral WINNEFELD. Verification measures are a vital component of arms control agreements. More comprehensive verification measures lead to greater confidence in our ability to verify whether other Parties to the agreement are abiding with the agreed-upon terms, which in turn provides a strong deterrent against violations.

The Department of Defense reviewed the recommendations of the Defense Science Board's 2014 Assessment of Nuclear Monitoring and Verification Technologies and subsequently participated in several months of study and policy review in concert with other departments and agencies to address findings from the report. Work on this issue went beyond verifying treaty compliance; it explored interagency structure and processes to better enable departments and agencies to detect and provide early warning of nuclear proliferation by state and non-state actors. We believe the work conducted in this regard will have an enduring positive effect on the ability to monitor treaty compliance and detect nuclear proliferation outside formal treaties.

The administration will be submitting a report to Congress later this year regarding efforts to address findings in the DSB Report.

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## QUESTIONS SUBMITTED BY MR. COOPER

Mr. COOPER. Please describe Russia's doctrine on using nuclear weapons to "de-escalate" a conflict. How does it impact the risks of a conflict in Europe escalating to a nuclear war? What is our policy to limit and deter the use of nuclear weapons in this context? Has this changed the risks and scenarios since the days of the Cold War?

Secretary WORK. Russia's 2014 military doctrine describes the potential use of limited nuclear strikes intended to de-escalate a conventional conflict on its periphery. In its new doctrine, Russia clearly describes The North Atlantic Treaty Organization (NATO) as the main military danger and reserves the right for "first use" of nuclear weapons in certain circumstances. This doctrine must be viewed in light of recent aggressive Russian actions, military exercises, investments in nuclear modernization, and irresponsible nuclear rhetoric by Russian officials.

It would be a serious miscalculation for any potential nuclear-armed adversary of the United States or its Allies and partners to see nuclear escalation as a viable option for achieving its objectives and, in particular, to believe that it could escalate its way out of failed conventional conflict. In addition to the U.S. commitment to the security of our Allies and partners, we have a core interest in deterring nuclear use and ensuring that no aggressor succeeds by crossing the nuclear threshold. The Department works to maintain a deterrent capability that is robust and stable. With your help, the Department will be able to provide the President with a range of effective options for imposing profound costs on any nuclear aggressor and denying the objectives that it may hope to achieve through the threat or use of nuclear weapons.

Mr. COOPER. What are the current and projected challenges to strategic stability with Russia and what are your recommendations to best preserve strategic stability?

Secretary WORK. There are presently a number of challenges to strategic stability with Russia.

Russia's nuclear saber-rattling is underwritten by its ongoing nuclear modernization program that covers most Russian strategic systems; evolving nuclear doctrine that appears to have lowered the Russian threshold for nuclear use by contemplating "first use" in conventional conflicts in certain circumstances; and a robust military exercise program that involves simulated limited nuclear strikes. This rhetoric and activity are unhelpful and potentially destabilizing and have no place in today's security environment. The United States and its North Atlantic Treaty Organization (NATO) Allies have no interest in a conflict with Russia, but the Alliance maintains a credible, effective nuclear deterrent. It would be a serious miscalculation for any nuclear-armed adversary of the United States or its Allies to see nuclear escalation as a viable option for achieving its objectives.

Russian objections to U.S. and NATO missile defense is another challenge to strategic stability with Russia. U.S. and NATO missile defense efforts are in no way focused on Russia and pose no threat to Russia's strategic forces. U.S. and NATO missile defense efforts will continue to move forward under the European Phased Adaptive Approach as long as there is a ballistic missile threat emanating from the Middle East.

Finally, Russia's continued violation of the Intermediate-range Nuclear Forces (INF) Treaty represents another acute challenge to strategic stability with Russia. The INF Treaty has helped to maintain security and stability in Europe for more than 20 years. The Department believes the Treaty provides as much security to Russia as it does to the United States and our NATO Allies. Although the Department will continue to make the case to Russia that it is in its own interest to return to compliance with the Treaty, the Department will ensure that Russia gains no significant military advantage through its violation of the Treaty.

Mr. COOPER. On June 5th, the State Department released its arms control compliance report covering calendar year 2014. It found that Russia remains in violation of the Intermediate-range Nuclear Forces (INF) Treaty. What actions is the U.S. taking as a result of Russia's violation of this treaty? Does this violation have any impact on the U.S. nuclear deterrent capacity? Should we continue to press Russia to return to the treaty or would you suggest the U.S. withdrawing from the treaty?

Secretary WORK. The Administration is pursuing a three-pronged approach, including continued diplomatic efforts, economic countermeasures, and military countermeasures. The Department is considering a wide range of potential military response options.

All the military options under consideration are designed to ensure that Russia gains no significant military advantage from its violation of the Intermediate-range Nuclear Forces (INF) Treaty. In terms of military responses, the Department is currently considering those options that are compliant with U.S. obligations under the INF Treaty. The United States will not take any action that is inconsistent with its obligations under the INF Treaty and international law, as long as such obligations remain in force. Even so, the INF Treaty is a two-way street. As Secretary Carter has said repeatedly, the Department will not allow the Russian Federation to gain a significant military advantage through its violation of an arms control treaty.

Although Russia's violation of the INF Treaty is a serious challenge to the security of the United States, along with our Allies and partners, the U.S. nuclear deterrent capacity remains credible and effective. I continue to believe that the INF Treaty serves our interests, as well as those of our Allies, partners, and Russia. For that reason, I continue to urge Russia to return to compliance with its obligations under the INF Treaty.

Mr. COOPER. What are the current and projected challenges to strategic stability with Russia and what are your recommendations to best preserve strategic stability?

Admiral WINNEFELD. There are presently a number of challenges to strategic stability with Russia.

Evolving Russian nuclear doctrine appears to have lowered the Russian threshold for nuclear use by contemplating "first use" in conventional conflicts in certain circumstances. Moreover, a robust Russian military exercise program has emerged that involves simulated limited nuclear strikes. This rhetoric and activity is unhelpful and potentially destabilizing and has no place in today's security environment. The United States and its NATO Allies have no interest in a conflict with Russia, but the Alliance maintains a credible, effective nuclear deterrent. It would be a serious miscalculation for any nuclear-armed potential adversary of the United States or its Allies to see nuclear escalation as a viable option for achieving its objectives.

Russian objections to U.S. and NATO missile defense, which is in no way focused on Russia and poses no threat to Russia's strategic forces, is another problematic area. We will continue to go forward with NATO missile defense under the European Phased Adaptive Approach (EPAA) as long as there is a ballistic missile threat emanating from the Middle East.

Finally, Russia's continued violation of the intermediate-range Nuclear Forces (INF) Treaty represents another acute challenge to strategic stability with Russia. The INF Treaty has maintained security and stability in Europe for over 20 years. We believe the Treaty provides as much security to Russia as it does to the United States and our NATO Allies. While we will continue to make the case to Russia that it is in its own interest to return to compliance with the Treaty, we will ensure that Russia gains no significant military advantage through its violation of the Treaty.

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Admiral WINNEFELD. The U.S. believes returning to compliance with the INF Treaty is in the best interest of the United States, Russia, and our allies. At the same time, we are conducting an assessment of a variety of options to ensure Russia does not gain significant military advantage from their violation of the Treaty. When this process is complete we look forward to working with Congress and our allies to discuss and implement these decisions. And while we view these new Russian intermediate-range systems with concern, we are also fully confident in the continued viability of U.S. and NATO deterrent capabilities

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## QUESTIONS SUBMITTED BY MR. ROGERS

Mr. ROGERS. Deputy Secretary Work, please describe your views of Russia's recent and repeated nuclear threats towards its neighbors, NATO, and the United States. Given Russia's threats, its openly discussed doctrine to use nuclear weapons early in a conflict to "de-escalate" and get the United States to back down, its use of "hybrid warfare" against neighbors and potentially against NATO member states-what are the risks of a conflict in Europe and of such a conflict escalating to nuclear weapons?

Secretary WORK. Russia's use of hybrid warfare and Russia's evolving nuclear doctrine and attendant modernization program are both, in part, a response to much stronger U.S. and North Atlantic Treaty Organization (NATO) military capabilities. Russian rhetoric and destabilizing activities that are meant to showcase Russian resolve do not actually make Russia more secure. The United States and NATO have shown their own resolve to secure and defend the Alliance from potential threats.

Aggressive Russian actions have already led to active conflict in Europe and increased the threat of further conflict. It would be a serious miscalculation for any potential adversary to assume the U.S. or our allies are vulnerable, or to think that it is possible to use nuclear weapons as a means to escalate out of a failed conventional conflict. Although we cannot reduce risk to zero, the United States and NATO can and do mitigate this risk through our own credible deterrent.

Mr. ROGERS. Deputy Secretary Work and Deputy Secretary Sherwood-Randall, please describe the changes made to the U.S. nuclear deterrent and its supporting enterprise in both DOD and NNSA since the Cold War. How have our nuclear forces and capabilities changed, how has the NNSA enterprise changed, and how has our approach for sustaining the U.S. nuclear weapon stockpile changed since the Cold War?

Secretary WORK. The Administration is modernizing U.S. nuclear forces consistent with the President's commitment to retain a safe, secure, and effective deterrent for as long as nuclear weapons exist. The sustainment and modernization plans focus on modernizing the platforms, delivery systems, and weapons of our current nuclear forces to preserve military capabilities while adjusting our nuclear forces to the levels required by the New START central limits. The current nuclear triad continues to provide the flexibility and range of capabilities needed for effective deterrence at a reasonable cost, while hedging against potential technical problems or vulnerabilities. Additionally, it provides a range of options for this President and future Presidents in the event that deterrence fails. The plans also outline efforts to modernize nuclear command and control systems and extend the life of nuclear warheads through Life Extension Programs (LEPs) to ensure reliability and enhance surety. The National Nuclear Security Administration (NNSA) Stockpile Stewardship and Management Plan will prudently sustain the nuclear stockpile, including LEPs, while revitalizing the physical nuclear infrastructure and expert workforce required to sustain the nuclear stockpile, without returning to Cold War levels, capacities, and footprint. The long-term stockpile plan will leverage existing designs to maintain the weapons required for an effective nuclear force without underground testing. The plan addresses stockpile obsolescence and meets the policy objectives of sustaining deterrence through a smaller stockpile with fewer weapon types and a modernized, responsive nuclear infrastructure capable of addressing the potential for technological failure and geopolitical surprise.

Mr. ROGERS. Deputy Secretary Work, over the course of its six years in office, has the Administration examined in detail various options for the structure of U.S. nuclear forces, including a dyad or a monad? Subsequent to these reviews, why did President Obama ultimately decide to retain the triad, rather than eliminate one or more legs? What did these analyses show about the risks of moving away from the triad?

Secretary WORK. The Administration analyzed a variety of nuclear force structures prior to publication of the 2010 Nuclear Posture Review (NPR); as part of the NPR implementation study that informed Presidential strategic guidance; and prior

to a determination on the central limits under the Strategic Arms Reduction Treaty (New START). The Administration concluded that a nuclear Triad composed of heavy bombers, intercontinental ballistic missiles, and submarine-launched ballistic missiles should be retained in order to maintain strategic stability while hedging against potential technical problems, vulnerabilities, or geopolitical uncertainties. The nuclear triad, and nuclear-capable fighter/bombers based in Europe, provides a responsive, flexible, and secure force. These attributes are reinforced across the triad, and eliminating one leg of the triad would necessarily degrade these qualities, reducing the flexibility and the credibility of our deterrent and our ability to hedge against technical or geopolitical risks.

Mr. ROGERS. Deputy Secretary Work, what developments in foreign nuclear weapon programs or actions of foreign nations concern you, and how does that factor into your planning and programs for the U.S. nuclear deterrent?

Secretary WORK. Russia is in the midst of a comprehensive nuclear modernization program that includes replacing Cold-War era land- and sea-based ballistic and cruise missiles of various ranges with new systems. Nuclear weapons remain the highest priority in Russia's military modernization plan through 2020 and constitute one of the largest portion of Russia's defense budget. Russia's nuclear modernization program is a cause of concern in the context of Russian behavior in Ukraine, the aggressive nature of recent Russian military exercises, and irresponsible rhetoric suggesting nuclear threats against the United States and its Allies and partners.

China is enhancing its silo-based intercontinental ballistic missiles and continues to invest in building a more survivable nuclear force with the addition of mobile delivery systems, including a nascent sea-based nuclear deterrent capability. We have engaged China to urge that it exhibit greater transparency with respect to its nuclear arsenal and doctrine; however, this dialogue has not yet matured.

North Korea's nuclear program is a serious concern given North Korea's belligerence and its efforts to develop long-range missiles and ballistic missile submarines. We are working closely with allies in the region to mitigate or counter this threat, including with missile defense capabilities.

In light of these foreign nuclear weapon programs and developments, it is imperative that the United States visibly sustain an effective nuclear deterrent capability as the supreme guarantee of our own security, and that of our Allies and partners, for as long as nuclear weapons exist. The Department is working to maintain an effective nuclear deterrent that is robust and stable. The Department must ensure capabilities that provide the President with a range of effective options for imposing unacceptable costs on any aggressor that may hope to achieve its objectives through the threat or use of nuclear weapons. This will require strong and consistent congressional support for the nuclear modernization program.

Mr. ROGERS. Deputy Secretary Work, we have a lot of very old systems in our nuclear deterrent. How old is the B–52? How old it will the B–52 be when we plan to retire it? How old are B–2s and how old will they be when we retire them? As you manage risk from aging weapon systems, how important is it to remain on track with their replacements, like the long-range strike bomber? a. How old will OHIO-class submarines be when they are retired? Is it unusual for submarines to be operational this long? What risks does this bring? b. How old is Minuteman III? How old will it be when it is retired around 2030? c. What is the average age of our nuclear warheads?

Secretary WORK. The average age of the B–52 fleet is approximately 54 years. The newest B–52 bomber is 53 years old (delivered in 1961–62). The average age of the B–2 fleet is approximately 21 years. Both bombers have undergone and continue to undergo sustainment and modernization efforts to keep them viable into the future. There is currently no set retirement date for either system, and we expect several more decades of operational use. The Minuteman III weapon system was first deployed in April 1970. The system has been and continues to be modified and its service life extended to ensure safe, secure, and reliable operations until replaced by the Ground Based Strategic Deterrent (GBSD). The system (rather than its component elements, some of which have been replaced or modernized) will be 66 years-old when the GBSD completes its currently planned fielding in 2036.

The OHIO-class submarines were designed in 1970 and commissioned between 1984 and 1997. Their operational life has been extended from 30 years to 42 years. Current OHIO-class submarines are reaching the end of their operational life and will begin to retire in 2027. This service life is unprecedented; the oldest submarine we have had in service to date retired after 36 years. There are risks and uncertainties associated with the operational sustainment of these platforms as they age beyond their planned lifetimes.

The warheads in the present stockpile were designed and manufactured during the Cold War. The average age of the entire U.S. nuclear stockpile is approximately

28 years. Today's nuclear weapons have remained in service beyond their originally planned lifetimes.

Managing risk is challenging; sustainment costs rise and the margin of uncertainty increases as our nuclear weapon systems and platforms age past their planned lifetimes. Delays in programs such as the long-range strike bomber, the long-range stand-off cruise missile, the GBSD, and the OHIO-replacement submarine will further increase our risk in providing a credible and responsive nuclear deterrent to meet new and emerging adversary threats. It is very important that we remain on schedule with our plans to modernize these delivery platforms.

Mr. ROGERS. Deputy Secretary Work, you have led efforts to implement actions resulting from the Nuclear Enterprise Review. What are you doing to ensure these efforts continue after you depart the Pentagon? How is DOD institutionalizing the focus, attention, and improvements you have begun?

Secretary WORK. The Nuclear Enterprise Reviews (NERs) concluded that although our nuclear forces are currently meeting operational requirements, owing in part to the dedication of our service men and women, significant changes are required to ensure the safety, security, and effectiveness of the force in the future. I am holding senior leaders accountable for addressing issues identified in the NERs. The Department is working to implement an enduring system of continuous self-evaluation, honest reporting of problems up the chain-of-command, and detailed tracking of corrective actions designed to address root causes.

The Nuclear Deterrent Enterprise Review Group (NDERG), which consists of the leaders responsible for training, funding, and implementing the nuclear mission, will continue reviewing the NER recommendations and the progress being made to improve the health of our nuclear enterprise. The Office of the Director of Cost Assessment and Program Evaluation (CAPE) will continue tracking and assessing implementation of the NER recommendations and will conduct analysis to determine if corrective actions are having the desired effect. The Military Departments and U.S. Strategic Command will continue performing the nuclear force readiness reviews focused on critical resources—including infrastructure, sustainment programs, and nuclear command, control, and communications—required to perform the mission.

I am giving the enterprise care and attention commensurate with its high priority. I believe the system put in place to enable these efforts will continue after I leave the Department of Defense.

Mr. ROGERS. Deputy Secretary Work, you are currently developing a "third offset" strategy for DOD. Can you tell me how you think land- or sea-based hypersonic weapons could complicate China's anti-access area-denial (so-called A2AD) strategy against the U.S.? In your opinion, is this technology being properly resourced by the Department?

Secretary WORK. Hypersonic weapons, along with other capabilities, can generate speed and range effects that can complicate China's anti-access area-denial strategy against the United States. This technology is being properly resourced. Such technologies are being examined as part of the Third Offset Strategy, a Department-wide initiative to pursue innovative ways to sustain and advance our military superiority for the 21st century and to improve business operations throughout the Department.

Mr. ROGERS. Deputy Secretary Work and Admiral Winnefeld, our national security demands that our military be responsive and agile to new or emerging threats as they appear. This includes our ability to respond to technical surprise or unforeseen international developments. Creating a responsive nuclear weapons enterprise has been a centerpiece of the Administration's nuclear policy since its 2010 Nuclear Posture Review. a. How would you define this term, "responsive infrastructure" with respect to our nuclear enterprise? b. Do you believe we currently have a "responsive infrastructure" in NNSA's nuclear security enterprise? When will it be achieved? c. If given an urgent requirement to create a new nuclear weapon and delivery system, how quickly could our DOE and DOD nuclear enterprise respond and deliver an operational capability?

Secretary WORK. The 2010 Nuclear Posture Review states that, as long as nuclear weapons exist, the United States will maintain safe, secure, and effective nuclear forces, including deployed and stockpiled nuclear weapons, highly capable nuclear delivery systems and command and control capabilities, and the physical infrastructure with the expert personnel needed to sustain them. Today, the stockpile relies on a hedge of non-deployed warheads to ensure that we have a responsive deterrent.

A responsive infrastructure can be defined as having the technical expertise and the underlying experimental and production infrastructure to: maintain the existing stockpile (e.g., surveillance of the stockpile and execution of life-extension programs and alterations); address problems uncovered in the stockpile (e.g., identify and di-

agnose the issue, then design, develop, implement, and certify the fix); and respond to geopolitical changes (e.g., design, develop, and produce a new nuclear warhead or more warheads of an existing type). In practice, a responsive infrastructure must sustain and extend the life of the current and anticipated stockpile and provide a "surge" production capacity for technical stockpile issues or geopolitical changes. The specific numerical production capacities that would constitute a responsive infrastructure are the result of the interplay over time between policy, military requirements, the effects of aging on the existing stockpile, and the cost of infrastructure.

The United States does not yet have a fully responsive infrastructure and relies on a stockpile of hedge weapons to be responsive to world events or technology failures. The National Nuclear Security Administration (NNSA) is working hard to manage the technical expertise required for a responsive infrastructure. NNSA has also made significant progress in building and exercising experimental facilities, and it is on a multi-year path to achieving the needed production capabilities (e.g., for plutonium, uranium, and tritium production). An urgent requirement to create a new nuclear weapon and delivery system would be a significant challenge for both the Department of Energy and the Department of Defense nuclear enterprise. However, given sufficient fiscal resources and national priority, I am confident that our dedicated personnel would meet that challenge within the required timelines, if called upon to do so.

Mr. ROGERS. Deputy Secretary Work, when NATO published its Deterrence and Defense Posture Review (DDPR) in 2012, NATO explicitly saw Russia as a cooperative partner for peace in Europe and the wider world. Since 2012, Russia has illegally annexed Crimea, is actively sending troops and supporting rebels in other parts of Ukraine, has totally withdrawn from the Treaty on Conventional Forces in Europe, and is now openly declared in violation of the INF Treaty that undergirds security in Europe. Is NATO going to revisit the basic assumption of the DDPR that Russia is partner? When? Because Russia is actively calling NATO a threat. Is it time to rewrite the DDPR, which also called for NATO-Russia cooperation on missile defenses?

Secretary WORK. Russia's aggressive actions have fundamentally challenged the North Atlantic Treaty Organization's (NATO) vision of a Europe whole, free, and at peace. Although the NATO Alliance does not seek confrontation and poses no threat to Russia, the DDPR recognizes that NATO will continue to adjust its strategy in line with trends in the security environment. To this end, NATO has suspended all practical civilian and military cooperation with Russia, and has taken steps to deter Russia's malign and destabilizing influence, coercion, and aggression by, for example, doubling the number of its military exercises in just one year; setting up new command centers; reorganizing the NATO Response Force; and establishing the Very High Readiness Joint Task Force.

Mr. ROGERS. Deputy Secretary Work, last year Secretary Hagel provided a report assessing the requirements for plutonium pit manufacturing. This report reaffirmed the requirement for a pit production capacity of 50–80 pits per year, correct? This report is about a year old—has its conclusion that we need a capacity of 50–80 pits per year changed? a. Should pit production capacity be tied solely to the needs of the life extension programs, or should the requirement for a responsive infrastructure also influence when we achieve a pit production capacity of 50–80 per year?

Secretary WORK. Then-Secretary Hagel's "Assessment of Nuclear Weapon Pit Production Requirements" report concluded that the United States requires a pit production capacity of 50–80 pits per year. That conclusion has not changed. The report explains that pit production capacity is tied to four factors: 1) policy objectives for the nuclear deterrent; 2) stockpile aging (including pit age and plutonium aging); 3) military requirements; and 4) infrastructure and capacity costs. The requirement for a pit production capacity of 50–80 pits per year is not solely tied to the needs of life-extension programs, and having such capacity is part of a responsive infrastructure. The National Nuclear Security Administration plan is to achieve 30 plutonium pits per year by FY 2026 and 50–80 pits per year by 2030, as detailed in the FY 2016 Stockpile Stewardship and Management Plan.

Mr. ROGERS. Deputy Secretary Work and Deputy Secretary Sherwood-Randall, for the past several years, DOD has transferred between $1 to 2 billion a year in topline budget authority to NNSA to fund military priorities within NNSA. What is the long-term plan for this transfer—will it continue indefinitely? Has this mechanism given DOD enhanced visibility into NNSA's programs? Is this the optimal structure to strengthen transparency and accountability?

Secretary WORK. Starting with Fiscal Year 2011, the Department has transferred to the Department of Energy/National Nuclear Security Administration (NNSA) $8.7 billion to facilitate the financing of critical nuclear enterprise costs, which the Nu-

clear Weapons Council (NWC) believed was critical to national security requirements. These activities include various projects and tasks, for which the Department of Defense is driving the overall requirement. These activities include:

- the modernization of infrastructure in support of scientific and weapon manufacturing activities;
- changes to the U.S. nuclear weapons stockpile as a result of implementing the Nuclear Posture Review (NPR);
- support of the Naval Reactors program, which includes the design of the Ohio Replacement Program (ORP) power plant, and;
- ongoing Life Extension Program (LEP) for the U.S. nuclear weapons stockpile.

The Department has allocated in the Future Year Defense Program sufficient funding to continue these activities. The amount to be transferred to the NNSA is reviewed annually by the NWC, to ensure that these supplemental funds are targeted towards specific programs and projects, which require additional funding to accommodate weapon requirement changes, technical issues, and other programmatic matters.

Through the NWC, both Departments have collaborated in prioritizing tasks to ensure that resources are applied in an effective and efficient manner, focusing on the overall nuclear weapons enterprise requirements and deficiencies. The collaboration between the two Departments, though the NWC, has improved transparency, and has greatly assisted in synchronizing the NNSA capabilities with military strategic requirements.

These transfers will continue to be reviewed by the NWC as part of the Department's program budget review, prior to submission of the President's budget, and will persist until it is determined that they are no longer necessary.

Mr. ROGERS. Deputy Secretary Work and Deputy Secretary Sherwood-Randall, how does DOE and DOD manage risk to the nuclear deterrent-particularly as warheads, delivery systems, and command and control systems age and are replaced? In particular, how do you consider and manage the balance between sustaining nuclear weapons through life extension programs, and enhancing the scientific base through stockpile stewardship.

Secretary WORK. Risk to the nuclear deterrent is managed through the deployment of multiple delivery systems in the nuclear triad, deployment of more than one type of warhead on submarine launched and intercontinental missile platforms, an upload capability in the intercontinental and air legs of the Triad, and a reserve of hedge weapons. This allows the United States to manage risk to the nuclear deterrent by hedging both within and across legs of the triad. The Department of Defense (DOD) is responsible for managing the risk associated with aging and replacement of nuclear weapons delivery systems and command and control systems. The Department regularly exercises these systems to identify potential issues and executes repair, refurbishment, and replacement programs as needed. With the support of Congress, acquisition of replacement systems is timed to allow DOD to manage the risk associated with the transition between older and replacement systems.

Similarly, DOD and the Department of Energy (DOE) jointly manage the risk associated with aging and replacement of nuclear warheads. Through the National Nuclear Security Administration (NNSA), DOE executes an ongoing surveillance program that includes both destructive and non-destructive testing. This surveillance program is designed to collect data that enables us to understand how nuclear weapons systems are aging, to recognize what the likely failure modes are, and to prioritize investments in modifications, alterations, and life-extension programs.

The balance between investing in sustainment of nuclear weapons and nurturing and enhancing the underlying scientific and engineering base is managed by DOE and the NNSA in coordination with DOD through the Nuclear Weapons Council (NWC). The NWC establishes a stockpile plan that includes schedules for specific life-extension programs and key infrastructure recapitalization projects. The NNSA plans and executes scientific campaigns and initiatives to support this plan and to maintain the strong scientific and engineering base necessary to achieve a responsive infrastructure.

Mr. ROGERS. How many LRSO missiles does DOD plan to procure? How many will be for tests/spares as opposed to for the active stockpile?

Secretary WORK. [No answer was available at the time of printing.]

Mr. ROGERS. Deputy Secretary Work and Deputy Secretary Sherwood-Randall, please describe the changes made to the U.S. nuclear deterrent and its supporting enterprise in both DOD and NNSA since the Cold War. How have our nuclear forces and capabilities changed, how has the NNSA enterprise changed, and how has our approach for sustaining the U.S. nuclear weapon stockpile changed since the Cold War?

Secretary SHERWOOD-RANDALL. The size and composition of the nuclear stockpile and infrastructure have evolved as a consequence of the global security environment and U.S. national security needs. As we have reduced the size of the nuclear stockpile we have also ensured that our nuclear deterrent remains safe, secure, and effective. As of September 2014, the active nuclear stockpile (which includes strategic, non-strategic, deployed and non-deployed weapons) consisted of 4,717 weapons. When the New Strategic Arms Reduction Treaty (New START) is fully implemented, the number of operationally deployed, strategic nuclear weapons will be reduced to 1,550. In addition, no new nuclear weapons have been developed since the end of the Cold War, and the U.S. has not conducted underground nuclear explosive testing since 1992. Our confidence in the existing stockpile and the effectiveness of the deterrent has been sustained by the successes of the DOE-led Science-Based Stockpile Stewardship Program. This program has provided new tools and in-depth understanding of the warheads, and it has supported and enabled the warhead life extension programs. However, continued success in stockpile stewardship cannot be assured without the requisite investment. As the 2010 Nuclear Posture Review noted, a modernized infrastructure will allow the U.S. to begin to shift away from retaining large numbers of non-deployed weapons as a technical hedge, allowing additional reductions in the stockpile of non-deployed weapons over time. It also noted the need for strengthening the science, technology, and engineering base. For these reasons, there is a clear requirement to modernize the stockpile through life extension programs and major alterations; to recapitalize the aging infrastructure that supports the nuclear enterprise; to assess the stockpile through a surveillance program focused on detecting aging issues; and to invest in the science and engineering programs that underpin the capability to certify that the U.S. nuclear deterrent remains safe, secure, and effective as long as nuclear weapons exist. For these vital actions, sustained funding will be required.

Mr. ROGERS. Deputy Secretary Sherwood-Randall, I understand that the National Nuclear Security Administration, which runs the nation's nuclear security complex, has a backlog of over $3.6 billion in deferred infrastructure maintenance and another $1.4 billion in deferred recapitalization of physical security equipment. This is a huge bill and deeply concerning. There are some alarming statistics and anecdotes associated with this including that 30% of our buildings in the nuclear weapons complex are more than 60 years old. Last year, a huge chunk of concrete fell from a ceiling into operational work areas at our key uranium production plant. a. What are the risks to safety and to NNSA's mission of continuing to operate in these facilities? b. What is DOE's plan for actually buying-down this very large backlog of deferred maintenance?

Secretary SHERWOOD-RANDALL. Mr. Chairman, as you observe, much of the National Nuclear Security enterprise is well beyond its intended lifespan and is in less than adequate condition. In addition, more than 10 percent of the facilities in the Nuclear Security Enterprise are now considered to be excess to National Nuclear Security Administration (NNSA) needs and are awaiting disposition. As a result, infrastructure failures are increasing in frequency, severity and unpredictability. These conditions have the potential to pose risks to our workers, the public, the environment, and to the execution of our vital mission. While we work proactively to identify and mitigate these risks through repair, replacement, and compensatory measures, we know that more needs to be done.

Our plan to reduce deferred maintenance and arrest the declining state of infrastructure builds on the Energy Secretary's recent initiatives to improve the quality of data to support risk-informed investment decisions and stronger accountability for cost effective execution of infrastructure work. Regarding improved data, NNSA is replacing traditional analytical methods with new, innovative infrastructure management tools.

One example is deployment of the BUILDER system to provide systematic assessments of the conditions at the building component level. Regarding cost effectiveness, NNSA is expanding its award-winning Roof Asset Management Program to include other building systems that are common across the enterprise (e.g., heating, ventilation, and air conditioning). This strategic purchasing allows NNSA to acquire more equipment and to make repairs faster than if each site contracted separately.

We will continue to identify opportunities to increase efficiencies and minimize costs. However, additional investments are also needed. Therefore, NNSA's Fiscal Year (FY) 2016 budget request for general purpose infrastructure Recapitalization and Line-Item Construction was 76 percent higher than FY 2015 ($300.6M versus $170.8M).

Mr. ROGERS. Deputy Secretary Work and Deputy Secretary Sherwood-Randall, for the past several years, DOD has transferred between $1 to 2 billion a year in topline budget authority to NNSA to fund military priorities within NNSA. What is the

long-term plan for this transfer—will it continue indefinitely? Has this mechanism given DOD enhanced visibility into NNSA's programs? Is this the optimal structure to strengthen transparency and accountability?

Secretary SHERWOOD-RANDALL. NNSA receives all of its funding from direct appropriations from Congress. These appropriations are scored against the national security (budget function 050) cap that also applies to the Department of Defense (DOD) and several other national security agencies and programs. NNSA does not receive Congressional appropriations indirectly from monies appropriated to DOD. The practice of the so-called "topline transfers" is an administrative budget planning activity that began as part of the Administration's planning for implementation of the New START Agreement. The amount referred to as the "topline transfer" has been included within the DOD out-year budget projections and is not transferred to DOE by DOD. Instead, the Office of Management and Budget (OMB) allocates the funds in the budget year from DOD to DOE. Thus, the funds are requested from Congress by DOE in its budget request and appropriated directly to DOE/NNSA.

Mr. ROGERS. Deputy Secretary Work and Deputy Secretary Sherwood-Randall, how does DOE and DOD manage risk to the nuclear deterrent-particularly as warheads, delivery systems, and command and control systems age and are replaced? In particular, how do you consider and manage the balance between sustaining nuclear weapons through life extension programs, and enhancing the scientific base through stockpile stewardship.

Secretary SHERWOOD-RANDALL. Modernization planning for the nuclear enterprise is a joint DOE/NNSA and DOD process that balances multiple goals, objectives, and constraints. Through this process we seek to prevent operational gaps in the Nation's nuclear deterrent while enhancing the safety, security, use control, and reliability of the stockpile. In the current constrained fiscal environment, balancing the many near-term needs of managing the stockpile drives difficult choices. These needs include: investment in the maturation of evolving technologies and manufacturing capabilities that support both the current stockpile and future life extension programs (e.g., additive manufacturing); sustainment and recapitalization of aging infrastructure; investment in research, development, test, and evaluation to address future stockpile challenges (e.g., certification readiness exercises); and maintaining a highly skilled workforce responsive to national security needs. The choices are informed by an enterprise risk management approach that is detailed in the FY 2016 Stockpile Stewardship and Management Plan, which is our 25-year strategic program of record to maintain and extend the life of the nuclear stockpile and modernize the supporting infrastructure.

Mr. ROGERS. Deputy Secretary Sherwood-Randall, the B61–12 and W76–1 life extension programs are both well underway, and the W88 alteration and the W80–4 cruise missile warhead are ramping up. Please give us a status update on these programs. Are you confident they will finish on time and on budget? What are the major risks to these programs executing successfully?

Secretary SHERWOOD-RANDALL. The B61–12 life extension program (LEP) is in the fourth year of Development Engineering (Phase 6.3) and is on track to enter Production Engineering (Phase 6.4) in June 2016. The B61 LEP is on schedule and recently completed two development flight tests that demonstrate the successful integration of the NNSA bomb assembly with the U.S. Air Force tail kit assembly. The W76–1 LEP is in the fourth year of full-scale production and is on track to complete production by FY 2019.

The W88 ALT 370 is completing its third year of development engineering and has completed baseline design reviews on over half (eight of thirteen) of the components making up the program scope. In November 2014, the Nuclear Weapons Council approved the refresh of the conventional high explosive (CHE–R) within the W88 warhead. In February 2015, NNSA formally included that scope in the W88 ALT 370 program. NNSA is accelerating the CHE–R to align and integrate development and qualification activities with the original ALT 370 scope. NNSA will generate a Baseline Cost Report to baseline the entire ALT 370 program, including CHE–R, in FY 2016 to support an NWC Phase 6.4 milestone in FY 2017. The program is currently on schedule for a December 2019 first production unit (FPU). Funding challenges with the addition of the CHE–R, require the program to coordinate with its DOD partners to examine the additional scope and cost increases to identify solutions to mitigate against any impacts to the current FPU. The W80–4 LEP entered Feasibility Study and Down Select (Phase 6.2) in July 2015, and is on schedule to meet a FPU date of 2025, which supports U.S. Air Force and Strategic Command requirements.

The major risks to successful execution of any of these LEPs or major alterations are a combination of technical and funding risks. These include continuing resolutions, sequestration, and government shutdowns, all of which adversely affect the

execution of weapons design and engineering, warhead production, and delivery schedules. In addition, other risks of primary concern to the W76–1 and B61–12 LEPs are single-point failures associated with aging infrastructure (facilities and production equipment) within the nuclear weapons complex. NNSA continues to reduce these risks by replacing aging infrastructure and by maintaining margin-to-delivery requirements. Funding requested for these two programs in the FY 2016 Future Years Nuclear Security Program continues their current progress.

Mr. ROGERS. Deputy Secretary Sherwood-Randall, DOE and NNSA face an array of longstanding problems with governance and management, as documented by many studies (including the recent advisory panel led by Norm Augustine and Rich Mies). What is DOE doing to address these problems? If many of the challenges are cultural, how is DOE leadership going to change the culture over the long-term?

Secretary SHERWOOD-RANDALL. The Deputy Secretary and the NNSA Administrator are jointly responsible to the Secretary for managing governance and management reform activities in the Department to address recommendations from the Augustine-Mies advisory panel and other external reports. A description of these corrective actions and their status will be presented in the congressionally mandated NNSA Governance and Management Reform Implementation Plan by March 31, 2016.

Mr. ROGERS. Admiral Winnefeld, you recently spoke at a CSIS event about the cruise missile threat to the United States. Would you please share your thoughts on this? What is DOD doing to defend us, particularly the continental United States, against that threat—what should we actions should we expect to see taken or proposed in the near-term? a. Should we be focused on Russia's new air-launched and sea-launched cruise missiles that can target the United States homeland? b. Are you concerned with Russia's new Club-K cruise missile—which they are selling and hides inside a normal shipping container? Is this anything other than a Russian first strike weapon? What's our military strategy to counter this system? i. What are we to make of all of these Russian programs that seem to be aimed at creating first-strike capabilities against the United States?

Admiral WINNEFELD. The DOD is enhancing U.S. homeland defense capabilities by developing more effective cruise-missile defenses, while operating within the current fiscal environment of limited defense resources and competing priorities. As Russia continues its military modernization efforts, including working on longer-range, conventionally-armed cruise missiles such as the Kh-101, the DOD will continue to monitor and to address, as appropriate, these and other potential threats. The DOD is cognizant of Russia's potential to use these systems and capabilities to augment Russia's flexible-deterrence options, short of the nuclear threshold. Some U.S. means to counter these potential threats involve F–15 and F–16 fighter aircraft, while other means, such as the National Advanced Surface-to-Air Missile System (NASAMS), will utilize sensor-laden aerostat balloons as well as surface-based sensors. Still other counter-means could include new radar sensors for F–16s, and the Joint Land-Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) aerostat to detect and to defeat Russian and other cruise-missile threats.

Mr. ROGERS. Admiral Winnefeld, General Dunford and General Selva both recently said they believe Russia should be at the top of the list for threats to the United States. Do you agree?

Admiral WINNEFELD. [No answer was available at the time of printing.]

Mr. ROGERS. Admiral Winnefeld, please describe your views of Russia's recent and repeated nuclear threats towards its neighbors, NATO, and the United States. Given Russia's threats, its openly discussed doctrine to use nuclear weapons early in a conflict to "de-escalate" and get the United States to back down, its use of "hybrid warfare" against neighbors and potentially against NATO member states-what are the risks of a conflict in Europe and of such a conflict escalating to nuclear weapons?

Admiral WINNEFELD. The Kremlin has consistently mischaracterized the U.S. and NATO as having belligerent designs against Russia. Regardless of Russian nuclear forces and doctrinal developments, the U.S. commitment to the defense of its allies remains a constant and enduring principle, as codified within NATO Treaty Article 5. Russia has no reason to doubt the seriousness of this commitment, and we have pointed out publicly that we will not be intimidated by an "escalate to de-escalate" doctrine. We are also, in conjunction with our NATO allies and U.S. European Command, updating our planning and posture to account for Russian use of hybrid warfare. It should be clear neither the U.S. nor our NATO allies maintain any aggressive intent against Russia, so there is no cause for alarm over defensive threats by Russia. However, Russia is also well aware NATO's capacity to defend itself against any source of military aggression remains indisputable. The strength of the NATO Alliance will continue to underpin European security and stability.

Mr. ROGERS. Admiral Winnefeld, should we retain the nuclear triad? Why?

Admiral WINNEFELD. Yes—indeed, maintaining a nuclear triad is consistent with current Presidential policy. The Triad offers enhanced flexible deterrence options for the President in time of crisis, while also providing assurance to our allies and partners. It also provides redundancy should, for some reason, the viability of one of the legs come into question.

Mr. ROGERS. Admiral Winnefeld, President Obama has announced he believes we can make a 1/3 reduction to the number of nuclear weapons the United States deploys. In your professional military judgment, should the United States carry out such a reduction unilaterally? Or should it be done bilaterally, through a treaty, with Russia?

Admiral WINNEFELD. In June 2013 in Berlin, President Obama stated U.S. willingness to negotiate a reduction of up to one-third of our deployed strategic warheads from the level established in the New Start Treaty. The United States has made clear we are prepared to engage Russia on a full range of issues affecting strategic stability, including prudent, mutual reductions in deployed nuclear weapons. However, stability is not necessarily enhanced by unilateral reductions, and we believe we should maintain the position that we will only reduce in concert with Russia and, if and when appropriate, China.

Mr. ROGERS. Admiral Winnefeld, would you please compare and contrast the U.S. stockpile of non-strategic nuclear weapons vs. that of Russia? In general, unclassified terms would you describe our respective stockpiles of non-strategic nuclear weapons as equal in size and capabilities? a. During a Strategic Forces subcommittee hearing in October of 2013, General Bob Kehler, then the commander of U.S. Strategic Command, responded to a question on whether he thinks B61 nuclear bombs serve a military purpose in Europe. General Kehler said: "I do. Nuclear deterrence is a military mission, and we would offer . . . military options in extreme circumstances that would be available for the President. I believe all of that is a military mission." Do you agree with General Kehler's assessment?

Admiral WINNEFELD. Numerous assessments have concluded the Russian non-strategic nuclear weapons inventory is considerably larger than the U.S. non-strategic nuclear stockpile. We do believe, however, our non-strategic force, while smaller than that of Russia, contributes to effective deterrence of Russian aggression. We agree with General Kehler that our non-strategic force provides valuable options to the President, both in Europe and the Pacific.

Mr. ROGERS. Admiral Winnefeld, what developments in foreign nuclear weapon programs or actions of foreign nations concern you, and how does that factor into your planning and programs for the U.S. nuclear deterrent?

Admiral WINNEFELD. The intelligence community has been actively following developments in foreign nuclear weapons programs. Most of the details are highly classified. Our concerns would regard development of deliverable weapons that could threaten the United States. Our second concern is regional competition (for example, between India and Pakistan) that could lead to strategic instability or proliferation. While on active duty, the information and analysis provided certainly factored into our perspective as we develop plans to modernize the U.S. nuclear deterrent over the next several decades. With the support of Congress, we are confident our plans today ensure our nuclear deterrent will remain viable and effective against the range of foreign threats we face today and anticipate in the future.

Mr. ROGERS. Admiral Winnefeld, in your professional military opinion, why does the United States need the long-range standoff (LRSO) weapon (the follow-on to the current air-launched cruise missile)? What is the short, elevator speech we can bring to our fellow Members on the floor and constituents back home—why is this capability important? a. Why do we need a nuclear-armed cruise missile if we'll have a penetrating bomber and the B61 nuclear gravity bomb? Are these capabilities duplicative or complementary?

Admiral WINNEFELD. The Long-Range Standoff (LRSO) nuclear-armed cruise missile will preserve the President's flexibility to sustain effective deterrence, as well as the credibility of strike options available to the President should deterrence fail. In short, when paired with a penetrating bomber, the LRSO will dramatically enhance the survivability of the bomber leg of the Triad, while the B61 should be retained for additional flexibility and for use in conjunction with our NATO allies on dual capable aircraft based in Europe. LRSO will replace the air-launched cruise missile (ALCM) as the Nation's only air-launched, long-range nuclear standoff capability. The ALCM's service lifetime has already been extended more than two decades beyond its planned 10-year service life, and the ALCM's reliability in the next decade is not assured, particularly as our potential adversaries improve their anti-access and area denial capabilities. Without LRSO, our only air-delivered response

option after ALCM is retired would be B61 nuclear gravity bombs, which could put manned air crews at risk by forcing them to fly over their targets.

That is not to say LRSO can fully substitute for the B61. Gravity bombs maximize the President's flexibility by providing a strike option that can be redirected or recalled up to the moment of weapon release above a target—an attribute LRSO will not have. More importantly, the B61 will sustain our ability to forward-deploy nuclear weapons with tactical aircraft. In this capacity, the B61 is an essential component of our commitment to extended deterrence and assurance, particularly in NATO. Similarly, LRSO and penetrating bombers are complementary rather than duplicative capabilities. Together, they significantly complicate our potential adversaries' defenses by multiplying the number of penetrating targets each bomber presents and by expanding the accessible space of targets that can be held at risk. In doing so, LRSO carried on a penetrating bomber ensures our credibility in challenging adversary defenses, not just as they exist today but as they evolve into the future.

Mr. ROGERS. Admiral Winnefeld, are you aware that China has recently claimed to have successfully completed its fourth successful test of a hypersonic weapon? a. How many successful tests has the U.S. conducted? b. How many different hypersonic programs does China have underway at present? How about Russia? How does the level of resources they are investing in this technology compare to us?

Admiral WINNEFELD. The Joint Staff can provide a response to this question in a classified forum.

Mr. ROGERS. Deputy Secretary Work and Admiral Winnefeld, our national security demands that our military be responsive and agile to new or emerging threats as they appear. This includes our ability to respond to technical surprise or unforeseen international developments. Creating a responsive nuclear weapons enterprise has been a centerpiece of the Administration's nuclear policy since its 2010 Nuclear Posture Review. a. How would you define this term, "responsive infrastructure" with respect to our nuclear enterprise? b. Do you believe we currently have a "responsive infrastructure" in NNSA's nuclear security enterprise? When will it be achieved? c. If given an urgent requirement to create a new nuclear weapon and delivery system, how quickly could our DOE and DOD nuclear enterprise respond and deliver an operational capability?

Admiral WINNEFELD. We believe a responsive infrastructure consists of the suite of nuclear warhead design and production capabilities required to execute current stockpile plans, and to respond, in a timely manner, to stockpile technical issues or geopolitical developments without interruption to sustainment and modernization activities. We do not believe the Nation has a fully responsive infrastructure at this time. However, NNSA is working hard to manage its current physical infrastructure, some of which dates back to the Manhattan Project, while it implements a long-term plan to sustain critical design and production capabilities, including the construction of new facilities to process plutonium and uranium. With sustained support from Congress and continued collaboration with DOD, we are optimistic NNSA can make significant progress towards a fully responsive infrastructure over the next 15 years.

While this transition to a responsive infrastructure takes place, an urgent requirement to create a new nuclear weapon and delivery system would be a significant challenge for both the DOE and DOD nuclear enterprise. However, given sufficient fiscal resources and national priority, we are confident our dedicated personnel would meet that challenge within the required timelines if called upon.

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## QUESTIONS SUBMITTED BY MR. SHUSTER

Mr. SHUSTER. The June 5th State Department made public in its arms control compliance report that it had evidence demonstrating that Russia has committed violations of the Intermediate-range Nuclear Forces (INF) Treaty. This coupled with military action against Ukraine and posturing against our European allies signals a larger surge in Russian aggression, which is deeply troubling. How is the United States responding to these treaty violations, and how does this impact our own obligations to a treaty, which is no longer being followed by one of the signatories? Does this adversely impact our ability to protect against Russian nuclear action?

Secretary WORK. The Administration is pursuing a three-pronged approach, including continuing diplomatic efforts, economic countermeasures, and military countermeasures. The Department is considering a wide range of potential military response options.

All the military options under consideration are designed to ensure that Russia gains no significant military advantage from its violation of the Intermediate-Range

Nuclear Forces (INF) Treaty. In terms of military responses, we are currently considering those options that are compliant with U.S. obligations under the INF Treaty and international law, and the United States will not take any action inconsistent with such obligations under the INF Treaty, as long as such obligations remain in force.

Even so, the INF Treaty is a two-way street. As Secretary Carter has said repeatedly, we will not allow the Russian Federation to gain a significant military advantage through its violation of an arms control treaty. Although Russia's violation of the INF Treaty is a serious challenge to the security of the United States, along with our Allies and partners, the U.S. nuclear deterrent capacity remains credible and effective.

Mr. SHUSTER. Given the increasingly bold action of the Russian military and the increasing tempo of threats being made, do you believe Russia is more likely now to utilize nuclear weapons than they have been in the past decade?

Secretary WORK. Recent Russian rhetoric and evolving Russian doctrine, as we understand it, are certainly cause for concern regarding Russian willingness to use nuclear weapons, even during the early stages of a conflict. In part owing to weakness in its conventional forces, Russia appears to have lowered its nuclear threshold. Current Russian doctrine, which must be viewed in light of recent rhetoric, conduct, and Russia's ongoing nuclear modernization, reserves the right for "first use" of nuclear weapons in certain circumstances, including the defeat of its conventional forces.

Although Russian doctrine and rhetoric are certainly unhelpful and potentially destabilizing, neither the United States nor its NATO allies are without means to respond; our conventional and nuclear forces constitute a credible and powerful deterrent. It would be a serious miscalculation for any potential nuclear-armed adversary of the United States or its allies to see nuclear escalation as a viable option for achieving its objectives and, in particular, to believe it could escalate its way out of failed conventional conflict.

Mr. SHUSTER. The June 5th State Department made public in its arms control compliance report that it had evidence demonstrating that Russia has committed violations of the Intermediate-range Nuclear Forces (INF) Treaty. This coupled with military action against Ukraine and posturing against our European allies signals a larger surge in Russian aggression, which is deeply troubling. How is the United States responding to these treaty violations, and how does this impact our own obligations to a treaty, which is no longer being followed by one of the signatories? Does this adversely impact our ability to protect against Russian nuclear action?

Secretary SHERWOOD-RANDALL. Since 2013, the United States has on many occasions raised its serious concerns with Russia regarding its actions that the United States concluded were in violation of the INF Treaty. The United States has held senior-level and expert-level bilateral discussions with the goal of securing Russia's return to verifiable compliance with its Treaty obligations, and has engaged with allies on this matter throughout this process. Engaging primarily elements of the Departments of State, Defense, and Energy, the United States continues to consult with allies on potential diplomatic, economic, and military measures to protect U.S. and allied interests and ensure that Russia does not gain a significant military advantage as a result of its violation, while at the same time working to bring Russia back into compliance with the Treaty. The Department of Energy (DOE) refers you to the Department of State and the Department of Defense for further information on this topic.

Mr. SHUSTER. Given the increasingly bold action of the Russian military and the increasing tempo of threats being made, do you believe Russia is more likely now to utilize nuclear weapons than they have been in the past decade?

Secretary SHERWOOD-RANDALL. The role of the DOE remains consistent regardless of Russian behavior. We are responsible for ensuring that the United States' nuclear weapons stockpile is safe, secure, and effective to deter any adversary and assure U.S. allies and security partners that they can count on America's security commitments. After twenty years of the Stockpile Stewardship Program, the Department has ever-increasing confidence that we can sustain a safe, secure, and effective deterrent for the United States without testing.

Mr. SHUSTER. The June 5th State Department made public in its arms control compliance report that it had evidence demonstrating that Russia has committed violations of the Intermediate-range Nuclear Forces (INF) Treaty. This coupled with military action against Ukraine and posturing against our European allies signals a larger surge in Russian aggression, which is deeply troubling. How is the United States responding to these treaty violations, and how does this impact our own obligations to a treaty, which is no longer being followed by one of the signatories? Does this adversely impact our ability to protect against Russian nuclear action?

Admiral WINNEFELD. We are very concerned about Russian violations of their arms control commitments, including the INF Treaty. We are pursuing an approach designed first to seek to bring Russia back into compliance with the Treaty, but at the same time are developing a range of military responses. All the options under consideration are designed to ensure that Russia gains no significant military advantage from their violation. Some of those options are compliant with the INF Treaty. Options that are not treaty compliant would not be implemented as long as the United States remains subject to the Treaty's provisions.

No decisions have been made at this time, and military options will involve close coordination and discussion with allies moving forward. We will abide by our INF Treaty obligations so long as they are in force.

Mr. SHUSTER. Given the increasingly bold action of the Russian military and the increasing tempo of threats being made, do you believe Russia is more likely now to utilize nuclear weapons than they have been in the past decade?

Admiral WINNEFELD. Recent Russian rhetoric and evolving Russian doctrine, as we understand it, are certainly cause for concern regarding Russian willingness to use nuclear weapons, even during the early stages of a conflict. In part owing to weakness in its conventional forces, Russia appears to have lowered its nuclear threshold. Current Russian doctrine, which must be viewed in light of recent rhetoric, supported by Russia's ongoing nuclear modernization, reserves the right for "first use" of nuclear weapons in certain circumstances, including to prevent impending defeat of its conventional forces.

While Russian doctrine and rhetoric are certainly unhelpful and potentially destabilizing, neither the United States nor its NATO allies are defenseless; our conventional and nuclear forces constitute a credible and powerful deterrent. It would be a serious miscalculation for any potential nuclear-armed adversary of the United States or its Allies to see nuclear escalation as a viable option for achieving its objectives or to escalate its way out of failed conventional conflict.

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## QUESTIONS SUBMITTED BY MR. WALZ

Mr. WALZ. Secretary Work, how important is verification in nuclear arms control treaties? Do we have sufficient verification capabilities given the increasing threat of proliferation and recent treaty violations?

Secretary WORK. The dependence on, and use of, verification measures in arms control agreements has been the hallmark of the United States' ability to monitor the compliance of other Parties and to detect violations of the terms of the agreements.

More comprehensive verification measures lead to greater confidence in the United States' ability to verify other Parties are abiding to the terms of treaties and agreements, which in turn provides a strong deterrent against violations, and the warning required for us to counter violations if they occur.

For those nuclear arms control treaties currently being implemented, we believe we have sufficient monitoring capability to verify compliance. For example, the New START Treaty's verification measures provide the ability to discover violations and ensure that the other Party does not gain a significant military advantage from violations. This aids in deterring any violations as it minimizes any advantages that could be achieved. Russia seems to have underestimated our ability to monitor its compliance with the INF Treaty. Russia attempted to covertly build and test a nuclear-capable cruise missile system in violation of the INF Treaty, and the U.S. verification capability allowed us to detect that activity before Russia could gain any significant military advantage from it actions.

Looking toward the future, the Department of Defense reviewed the recommendations of the Defense Science Board's 2014 Assessment of Nuclear Monitoring and Verification Technologies, and subsequently participated in several months of study and policy review in concert with other departments and agencies to address findings from the report. The work conducted in this regard will have an enduring positive effect on the ability to monitor treaty compliance and detect nuclear proliferation outside formal treaties and agreements.

Mr. WALZ. Admiral Winnefeld, the current administration indicated it would be willing to further reduce U.S deployed strategic nuclear weapons by up to one third, to near 1,000 warheads. The Joint Chiefs of Staff have indicated that it would support these reductions if they are bilateral and verifiable. Do such reductions therefore have to take place via a treaty? Do you believe we could pursue such reductions while Russia is in violation of the INF treaty and other arms-control obligations? At what point should the U.S require that further reductions in our nuclear arsenal

address non-strategic nuclear weapons that Russia is in possession of thousands, while the U.S. has very few?

Admiral WINNEFELD. The current situation has significantly undermined trust in our relationship with the Russian Federation. Russia has rejected our proposals for negotiations regarding further reductions, which we believe should only be conducted bilaterally. We are very concerned about Russian violations of the INF Treaty and are pursuing an approach that seeks to bring Russia back into compliance with its obligations while maintaining or strengthening strategic stability and enhancing U.S. security. Reductions of Russian non-strategic nuclear weapons will be problematic due to Russian dependence on those weapons and a lack of U.S. negotiating leverage.

The Department of Defense continues to believe mutual compliance with nuclear arms control agreements can provide benefit and stability to the United States, its allies and partners, and the Russian Federation.

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