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Subcommittee on Strategic Forces

COMMITTEE ON
ARMED SERVICES

UNITED STATES SENATE

HEARING TO RECEIVE TESTIMONY ON THE DEPARTMENT OF ENERGY'S ATOMIC ENERGY DEFENSE ACTIVITIES AND PROGRAMS

Wednesday, May 24, 2017

Washington, D.C.

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U.S. Senate
Subcommittee on Strategic Forces
Committee on Armed Services
Washington, D.C.

The subcommittee met, pursuant to notice, at 2:30 p.m. in Room SD-G50, Dirksen Senate Office Building, Hon. Deb Fischer presiding.

Committee Members Present: Senators Fischer [presiding], Inhofe, Sullivan, Donnelly, Heinrich, Warren, and Peters.

OPENING STATEMENT OF HON. DEB FISCHER, U.S. SENATOR FROM NEBRASKA

Senator Fischer: Good afternoon, everyone. The hearing will come to order.

The subcommittee meets today to receive testimony on the Department of Energy's atomic energy defense activities, and I thank our distinguished panel before us for their service and for agreeing to appear before us.

Of the missions represented here today, there is no higher priority than maintaining the safety and the reliability of our nuclear stockpile.

General Klotz, we look forward to hearing an update from you on the life extension programs and major alterations that NNSA is currently performing, in particular the B61-12, which will be carried by our nuclear-certified aircraft, and the W80-4, which will be the warhead for the long-range standoff weapon, another system that we need in order to maintain our deterrence.

Modernizing the infrastructure and scientific capabilities that make up NNSA's nuclear complex is also vitally important. As General Hyten testified earlier this year, in concert with our delivery platforms, our nuclear weapons stockpile and the unique facilities that sustain the stockpile must be modernized to ensure our deterrent remains effective and credible.

I remain concerned that we are not making enough progress in this area. Warheads continue to age, the geo-political landscape continues to change, and we must ensure that progress toward a responsive nuclear enterprise is keeping pace.

Admiral Caldwell and Ms. Cange, we will also be interested in hearing updates from each of you on the programs within your purview. Additionally, we would appreciate your assessment on whether the newly-released budget adequately meets the needs of your missions and where it accepts risk.

With that, I recognize the ranking member, Senator Donnelly, for any opening remarks he'd like to make.

Senator Donnelly?

STATEMENT OF HON. JOE DONNELLY, U.S. SENATOR FROM INDIANA

Senator Donnelly: Thank you, Madam Chair.

This subcommittee has a strong history of bipartisan support for modernization of our nuclear deterrent in which the National Nuclear Security Administration plays a central role. I want to thank today's witnesses for joining us to testify on the Fiscal Year 2018 budget request for defense programs at the Department of Energy.

Administrator Klotz, I am glad you have stayed on at the Department of Energy through this transition. With so many important modernization activities underway, it's essential these operations move forward with minimal disruption.

I want to hear from you what the National Nuclear Security Administration is doing to ensure our warhead life extension programs stay on track and that your organization is heeding lessons learned and best practices gathered from the many reports on your operations over the past several years.

Admiral Caldwell, it's good to see you again. Thanks for making the time to come down to Newport News last month for the christening of the future U.S.S. Indiana, a submarine that is close to the heart of every Hoosier. It was good to have you there. I look forward to hearing from

you about progress on the Columbia-class submarine and the ongoing infrastructure modernization across the naval reactors complex.

Ms. Cange, welcome. The Environmental Management Program undertakes some of the Energy Department's most complex work. We'll want to hear about the status of operations at the Waste Isolation Pilot Plant and the storage tunnel collapse at Hanford, among other things.

And, Mr. Trimble, as always, we're grateful to you and your staff for the excellent work you do in support of this subcommittee. I look forward to your testimony.

Thank you, Madam Chair.

Senator Fischer: Thank you, Senator.

Before we begin with our statements from the panel, I would like to announce that we have two votes today at 3:00. When there's about two minutes left in the first vote, the committee will recess until after we take our second vote, and then we will be back.

And with that, I would ask for our panelists to give us their opening statements, knowing that your full statement will be included in the record.

General Klotz, welcome.

STATEMENT OF HON. FRANK G. KLOTZ, UNDER SECRETARY FOR NUCLEAR SECURITY, DEPARTMENT OF ENERGY

General Klotz: Thank you, Chairwoman Fischer, Ranking Member Donnelly, and Senator Inhofe, and other members of the subcommittee who will show up. Thank you for the opportunity to present the President's Fiscal Year 2018 budget request for the Department of Energy's National Nuclear Security Administration.

We value this committee's strong support for the nuclear security mission and for the people and the organizations that are responsible for executing it.

Our budget request, which comprises approximately half of DOE's budget, is $13.9 billion. This represents an increase of $1 billion, or 7.8 percent, over the Fiscal Year 2017 omnibus level.

This budget request demonstrates the Administration's strong support of NNSA's diverse missions. As you will recall, those are maintaining the safety, security, reliability, and effectiveness of the nuclear weapons stockpile; reducing the threat of nuclear proliferation and nuclear terrorism at home and around the world; and providing naval nuclear propulsion to the U.S. Navy's fleet of aircraft carriers and submarines.

The budget materials we have provided describe NNSA's major accomplishments in Fiscal Year 2016, as well as the

underlying rationale for our budget proposal for the coming fiscal year. Let me just briefly highlight a few of the points that are explained in greater detail in our written submission.

This budget request is vital to ensuring that U.S. nuclear forces are modern, robust, flexible, resilient, ready, and appropriately tailored to 21st-century threats and to reassure our allies. NNSA's Fiscal Year 2018 budget request for the weapons activity appropriation is $10.2 billion, an increase of nearly $1 billion, or 10.8 percent over the Fiscal Year 2017 omnibus level. This increase is needed to both meet our current life extension program commitments and to modernize our research and production infrastructure so we are positioned to address future requirements and future challenges.

The budget request will enable NNSA to meet its program objectives, including beginning construction of the main process building and the salvage and accountability building at the Y-12 uranium processing facility in Oak Ridge, Tennessee; and restoring the nation's capability to manufacture plutonium pits on the timeline required to meet future stockpile needs.

The Fiscal Year 2018 budget request also includes $1.8 billion for the Defense Nuclear Non-Proliferation Account, which is consistent with the enacted funding level for

Fiscal Year 2017. This appropriation continues NNSA's critical and far-reaching mission to prevent, counter, and respond to nuclear threats.

The request for our third appropriation, the Naval Reactors Program, is $1.48 billion; and, of course, it's a delight to be here with Admiral Caldwell, who can discuss the details of that appropriation account. It represents an increase of $60 million, or 4.2 percent above the Fiscal Year 2017 omnibus level. Not only does the requested funding support today's operational fleet, it also enables Naval Reactors to deliver tomorrow's fleet by funding three national priority projects: developing the Columbia-class reactor plant, as you indicated; refueling a research and training reactor in New York; and building a new spent fuel handling facility in Idaho.

As NNSA executes our three vital missions, we are mindful of our obligation to continually improve our business practices and to be responsible stewards of the resources that Congress and the American people have entrusted to us. NNSA is committed to encouraging competition and streamlining its major acquisition processes. Recent competitions for management and operations contracts have generated extraordinary interest from industry and academic institutions, validating the acquisition and program management improvements that we have

instituted over the last five years.

Finally, our budget request for Federal salaries and expenses is $418 million, an increase of $31 million, or 8.1 percent over the Fiscal Year 2017 omnibus level. This request supports recruiting, training, and retaining the highly skilled Federal workforce essential to achieving success in technically complex, 21st-century national security missions.

Since 2010, NNSA's program funding has increased 28 percent. However, at the same time, our staffing has decreased 17 percent. The Fiscal Year 2018 budget request supports a modest increase of 25 full-time equivalent employees over the current cap of 1,690 full-time equivalent employees. Phase I of a study by the Office of Personnel Management confirms that NNSA needs additional Federal staff.

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

Again, thank you for the opportunity to appear before this subcommittee today.

[The prepared statement of General Klotz follows:]

Senator Fischer: Thank you, General.

Ms. Cange, please. Welcome.

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

Ms. Cange: Thank you, and good afternoon, Chairwoman Fischer, Ranking Member Donnelly, and members of the subcommittee. I'm pleased to be here today to represent the Department of Energy's Office of Environmental Management and to discuss the important work we have recently accomplished, as well as what we plan to achieve under the President's Fiscal Year 2018 budget request.

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

Before discussing our request, I'd like to provide a brief update on the recent incident at the Hanford site. As you know, on May 9th, there was a partial collapse of one tunnel near the Purex facility. The tunnel has been used since the 1950s to store contaminated equipment. Based on extensive monitoring, there has been no release of radiological contamination and no workers were injured.

Workers have filled in the collapsed section with soil and placed a cover over the tunnel. We're continuing to ensure that our workers and the public are protected, and we are working closely with the State of Washington for a more permanent solution.

We take this event very seriously and are looking closely at lessons learned. Maintaining and improving aging infrastructure is a priority for the EM program, and this incident emphasizes the need to continue to focus on these efforts.

With regard to recent accomplishments, we continue to demonstrate our ability to make significant progress through achievements like resuming shipments of transuranic waste to the Waste Isolation Pilot Plant, or WIPP; completing the exhumation and packaging of 65,000 cubic meters of buried waste at Idaho; and completing removal of all of the waste from the 618-10 burial grounds at the Hanford site.

Our Fiscal Year 2018 budget request will enable us to build on this momentum. The request allows EM to continue to make progress in addressing radioactive tank waste, as well as continue other important work such as deactivation and decommissioning, soil and groundwater remediation; and management and disposition of special nuclear materials, spent nuclear fuel, and transuranic and solid waste.

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

In particular, the Fiscal Year 2018 request supports continued waste emplacement activities at WIPP. At the

Savannah River site, the request supports the commissioning and start-up of the Salt Waste Processing Facility. And at Hanford, the budget request supports continued site remediation along the river corridor; and it supports beginning to treat low-activity tank waste by 2023.

In closing, I'm honored to be here today representing the Office of Environmental Management. We're committed to achieving our missions safely and successfully. I'd like to thank you for this opportunity and would be pleased to answer any questions, as time permits.

[The prepared statement of Ms. Cange follows:]

Senator Fischer: Thank you very much.

Admiral Caldwell, welcome, sir.

STATEMENT OF ADMIRAL JAMES F. CALDWELL, JR., USN, DEPUTY ADMINISTRATOR FOR NAVAL REACTORS, NATIONAL NUCLEAR SECURITY ADMINISTRATION

Admiral Caldwell: Thank you, Chairwoman Fischer and Ranking Member Donnelly, and distinguished members of this subcommittee. Thank you for the opportunity to testify before you today. This is my second appearance before this subcommittee, and I am grateful for the tremendous support that the subcommittee has shown Naval Reactors. Your support is essential to our program.

Since I last testified before this subcommittee, U.S. nuclear-powered warships, which include 10 aircraft carriers, 14 ballistic missile submarines, 57 attack submarines, and 4 guided missile submarines, have steamed over 2 million miles in support of national security missions. We have 101 reactors across our program that operated safely and effectively for another year. This is a true testament to the sailors who operate these propulsion systems and the technical base that supports them.

Nuclear power is a key enabler to the success of our nation's Navy, both in the missions it supports and the capability advantage that it affords over adversaries. Nuclear-powered submarines and aircraft carriers make up over 45 percent of the Navy's major combatants, and as we move forward it is vital to our national security to

continue to build and improve upon these incredible assets.

Last year marked the start of an ongoing program that delivers two Virginia-class submarines annually. Recently, the Navy commissioned the attack submarine Illinois, completed initial C trials on PCU Washington, and christened the Colorado and the Indiana. And just this last month we completed C trials on the Ford, the nation's newest aircraft carrier.

Having witnessed Ford's propulsion plant testing firsthand, I am happy to report that in terms of propulsion capability, Ford met the high speed of our Nimitz-class carriers while delivering major increases in electrical power generation and core energy with half of the manning in the reactor department.

Nuclear power continues to play an important role in our military strategic deterrent mission. Our ballistic missile submarine force achieved over 60 years of peacekeeping through continuous at-sea strategic deterrence. This milestone occurs as the nation is preparing to recapitalize the ballistic missile submarine force through the procurement of the Columbia-class ballistic missile submarine. That will enable undersea deterrence through the year 2080.

Over the past year our technical base of scientists, engineers, and logisticians were vital to the continued

operation of the Navy's nuclear fleet. This core team directly supports the Navy's ability to maintain a forward-deployed carrier, three battle group deployments last year, 33 submarine deployments, and 32 strategic ballistic missile deterrent patrols.

Our progress in mandatory oversight of the safe operation of the fleet is only possible through the support of this subcommittee. Naval Reactors funding request for Fiscal Year 2018 allows us to continue this important work. The funding request is for $1.48 billion. That's approximately a 4 percent increase over the Fiscal Year 2017 enacted funding level. This request enables us to deliver tomorrow's fleet while recapitalizing critical program facilities and infrastructure, while performing research and development, and funding three national priority projects, which are the continued design of the new propulsion plant for the Columbia SSBN, which will feature a life-of-core reactor and electric drive; refueling a research and training reactor in New York to facilitate the Columbia-class reactor manufacturing development efforts, which will also provide 20 more years of training fleet operators; and building a new spent fuel handling facility in Idaho that will facilitate long-term, reliable processing and packaging of naval spent nuclear fuel.

The budget request supported by sustained and

predictable funding levels also permits Naval Reactors to support today's operational fleet by recruiting and retaining talented engineers, technicians, and scientists that make up the technical base. This technical base includes world-class laboratory and reactor facilities and allows me to support maintenance and modernization investments that are critical to the fleet.

Madam Chairwoman, our Fiscal Year 2018 budget request is part of a closely coordinated Department of Navy and Department of Energy budget that supports both my responsibility to regulate the safe and effective operation of the nuclear fleet, and Naval Reactors roles in both departments to support the security of our nation and our future security. We will accomplish this with industry partners while maintaining high standards for safety and environmental stewardship.

Again, thank you for your longstanding support, and I look forward to discussing my program with you.

[The prepared statement of Admiral Caldwell follows:]

Senator Fischer: Thank you, Admiral.

Director Trimble, welcome.

STATEMENT OF DAVID C. TRIMBLE, DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT GOVERNMENT ACCOUNTABILITY OFFICE

Mr. Trimble: Thank you, Chairman Fischer, Ranking Member Donnelly, and members of the subcommittee. My testimony today will address the affordability of NNSA's nuclear modernization programs, the growing cost of DOE's environmental liabilities, DOE's efforts to improve its management of contracts and projects, and assessing performance in the non-proliferation program.

NNSA faces challenges with the affordability of its nuclear modernization programs. In our review of the Fiscal Year 2017 SSMP, we found misalignment between NNSA's modernization plans and projected budgetary resources, which could make it difficult for NNSA to afford its planned portfolio of modernization programs.

We identified two areas of misalignment. First, NNSA's estimates of program costs exceeded the projected budgetary resources included in the President's planned near- and long-term modernization budgets. For example, we found that to stay within five-year budget limits, NNSA continues to push work out beyond the FYNSP, something it has repeatedly done in the past. Such "bow waves" of increased future budget needs often occur when agencies are undertaking more program than their resources can support.

Long-term modernization budgets also show a shortfall,

with program costs of about $3 billion more than the projected budgets.

Second, the cost of three LAPs -- the B61, W80, and W88 -- could be about $4 billion higher than estimated. Moreover, projected budgets for some programs are not always sufficient to cover even the low end of projected costs.

Addressing the affordability challenges facing the modernization effort is complicated by DOE's growing environmental liabilities, which defense up-budgets will also need to fund. This year we added the Federal Government's environmental liabilities to our high-risk list. Notably, DOE is responsible for $372 of the $450 billion Federal total. Further, over the past six years, EM has spent about $35 billion on cleanup, while its liabilities have grown by $90 billion in the same time period. Also of concern is that these liability estimates do not include all future cleanup responsibilities.

We and others have found that DOE has not consistently taken a risk-informed approach to decision-making for environmental cleanup. Our recent work has identified opportunities where DOE may be able to save tens of billions of dollars such as by taking a risk-informed approach to treating a portion of the low-activity waste at the Hanford site.

Regarding DOE contract and project management, which

has been on GAO's high-risk list for several decades, DOE has taken several important steps, including requiring the development of cost estimates in accordance with best practices, creating new oversight structures, and ensuring that major projects, designs, and technologies are sufficiently mature before construction.

But significant work remains. First, DOE still lacks reliable enterprise-wide cost information. Without this information, meaningful cost analyses across programs, contractors, and sites are not possible. NNSA needs to develop a comprehensive plan to address this issue.

Second, DOE has not established a policy on program management or a training program for program managers. Program management can help ensure that a group of related projects and activities are managed in a coordinated way to obtain benefits not available for managing them individually.

Third, DOE's acquisition planning for major contracts could be improved. While DOE has since revised its guidance, in our last report we found that it had not considered an acquisition alternative beyond continuing its longstanding M&O approach in 16 of the 22 cases we examined. By not considering alternative structures, DOE could not be sure that it had selected the most effective form of contracts for billions in annual spending.

Fourth, DOE has not consistently applied its recent reforms to its largest legacy cleanup project at the Hanford site. In light of longstanding challenges with the WTP and the billions of dollars yet to be spent, DOE should ensure that its improved controls are applied to its largest and most troubled project.

Finally, DOE's efforts to ensure contractors maintain an environment for workers to raise concerns without fear of reprisals has not been sufficient. As we reported, management must foster a culture in which workers are encouraged to identify risks and use their expertise to proactively mitigate them.

And lastly, regarding non-proliferation, DNN faces challenges with assessing the performance of some of its programs. We found that DNN's R&D results were not being tracked consistently to help evaluate the success of that program. In addition, we found that DOE did not have measureable goals supporting its plans and efforts to deploy and support detection equipment overseas.

Also related to non-proliferation, let me note that we have ongoing work for this committee related to MOX and WIPP.

Thank you, and I'd be happy to answer any questions you may have.

[The prepared statement of Mr. Trimble follows:]

Senator Fischer: Thank you, Director.

We will begin the first round of questioning, 7-minute rounds, please.

General Klotz, I appreciate the work that NNSA has done in tandem with Los Alamos to repurpose existing lab space and take initial steps to rebuild our pit production capacity. However, last year you testified before this subcommittee that additional capacity would be required and that the NNSA was conducting an analysis of alternatives to determine the Department's future plutonium strategy.

Can you tell me what the status is of that AOA, please?

General Klotz: Yes, ma'am. The AOA is still underway. We expect that it will be completed in the summer timeframe.

Senator Fischer: Are there any additional studies that are going to be required, or do you expect the AOA to select a way forward and to allow us to move out on this?

General Klotz: I expect the AOA will inform us as the way to go forward. Now, the AOAs themselves are not necessarily dispositive in terms of what the final outcome will be. They're designed to inform the decision-makers within NNSA and within the Department and the Congress as to what the various options are and what the various advantages and disadvantages of a particular option are.

Senator Fischer: At this point, do you believe that that will be enough, that the AOA is going to be able to

present options and that we're going to be able to move forward, or do you think there will be other studies required?

General Klotz: Well, we will do other -- as part of the process which Director Trimble, in fact, outlined, in several parts of it, we do analysis of alternatives, we do independent cost estimates, we examine the particular risks of the various ways forward. But the first step in that process is to do an analysis of alternatives to know the places that we can go.

But I'm glad you raised this because as a nation we no longer have the capability to manufacture plutonium pits for our nation's nuclear weapons stockpile, and the Congress has given us clear direction to rebuild that capability, and we are on track to be able to. In fact, this year we have already fabricated, Los Alamos has fabricated some development pits at Los Alamos. With this budget, if it's approved by the Congress, we'll fabricate four additional developmental pits, working our way towards the ability to do 10 pits in 2024, and then growing up to eventually get to the point where we'll be able to demonstrate the capacity to do 80 pits a year.

But we can only do 30, we think, at the current facilities, which, as you rightly pointed out, we're repurposing Plutonium Facility 4, PF4, and in the radiation

laboratory. We're going to need additional capacity, additional floor space to get from about the 30 level up to the 80 level. So that's why we're pursuing this analysis of alternatives to educate and inform us, inform decision-makers on the best option for achieving that capability.

Senator Fischer: So as we look at the budget request that this subcommittee and the full committee is going to be receiving, will that give us that capacity to be able to reach that goal of 80, or are we going to have to address that in the future? Is it included in the budget request here, or are we going to be having this conversation again in the future?

General Klotz: Well, we'll be having this conversation again in the future because our budget request for Fiscal Year 2018 is to pay for the program in Fiscal Year 2018. We do not have --

Senator Fischer: Not the facilities.

General Klotz: Well, the facilities, but also all the other things we need to do with our plutonium sustainment operations at Los Alamos and elsewhere. But you will not see in this budget the FYNSP numbers in great fidelity beyond this particular fiscal year request, and the reason for that, quite simply, is that with the new administration we are in the process of conducting a nuclear posture review, and the results of that nuclear posture review I

think will be very important for what we have to fund and where the priorities will be in the years ahead.

Senator Fischer: Are we looking at any funding wedges that have been built into this budget request to execute the path forward that's going to be determined by the AOA?

General Klotz: I don't know that there are any wedges in there. I think the number that we have given you for Fiscal Year 2018 is what we need to cover the cost of that. I think last year we did have some wedges in there to indicate to the Congress that there would have to be some spending in that particular area. But remember, we don't baseline a program until we have gone through this very methodical process that Director Trimble laid out. So we're not at that point where we have the fidelity of numbers to say what it's going to be two years from now, four years from now, five years from now.

Senator Fischer: So this wasn't a decision made by the OMB or by the NNSA. It's just that you haven't reached that point yet where you can put it in?

General Klotz: That's right. We have not reached that point on this particular aspect of the plutonium strategy.

Senator Fischer: Okay. What does that mean about your request for the additional funding as we move through this process beyond the years, the out-years of this budget? Will that come to us later?

General Klotz: It will. I think it will come in the Fiscal Year 2019 budget's mission, which we are already in the process of working.

Senator Fischer: Have you factored that in? Are you looking to factor that in already for the 2019 budget?

General Klotz: Yes, absolutely. And again --

Senator Fischer: Is that why you're not asking for it now?

General Klotz: Well, again, we're asking --

Senator Fischer: I just want to know if you're asking for what you need, or if you are being overly conservative.

General Klotz: We're asking for what we need in Fiscal Year 2018, and what we need beyond will be factored in as we build the Fiscal Year 2019 budget, informed by the deliberations and the results that take place in the nuclear posture review.

Senator Fischer: Okay. Thank you, sir.

Senator Donnelly?

Senator Donnelly: Thank you, Madam Chair.

Administrator Klotz, Naval Service Warfare Center in Indiana works with Sandia and others on ensuring the quality and reliability of radiation-hardened microelectronics in our strategic systems. With the progressive off-shoring of U.S. manufacturing capabilities, it's an issue of growing importance for both strategic and conventional military

systems.

The microelectronics facility at Sandia is due for replacement over the next 10 years. What actions are being taken to start this process, and what options are you looking at to make sure we take care of everything?

General Klotz: Thank you. I think you've laid the problem statement out very well, Senator. We have a specialized need within the nuclear security enterprise for a particular type of microelectronics. These have to be what we call radiation hardened, and there are different types of radiation hardened. The radiation hardening you might need for a space system is different than the radiation hardening you need for a nuclear weapons system given the types of threats that it might encounter from what we call the stockpile-to-target sequence.

You're right, there has been a lot of off-shoring, not only off-shoring of microelectronic production but also foreign ownership of that. So when we're dealing with microelectronics for nuclear weapons systems, they have to be absolutely trusted.

We have relied upon the silicon fabrication facility at Sandia for a number of years to provide a lot of our capability in this area. As you indicated, there are two things that are going on. One is what the rest of industry is doing in terms of the size of the equipment that they

use, in terms of production. We've gone from 6-inch wafers -- that's what we make now. The rest of industry is already at 12-inch silicon wafers. So we're in the process now of doing a revitalization of the Sandia silicon fabrication facility to allow us to work with 8-inch wafers, which will hold us over until we go to the next level. And then we believe that in 2025 we're going to need to be in the process of recapitalizing the capability to do radiation-hardened microelectronics for ourselves.

There is currently an analysis of alternatives which is getting very, very close to being finished. I believe the initial results are already in the building. Now, let me just say there's a lot of talk about whole-of-government approaches and partnering. Frank Klotz' own personal opinion is we are a niche market or a niche customer as far as this particular market is concerned, and our needs are relatively small and may not necessarily be the needs for the commercial or other government agencies. So we're going to have to approach this with making sure that our priority of having the types of microelectronics that we need for our purposes are met with whatever alternative we come up with.

Senator Donnelly: Well, as a niche market, who do you get to service that market? And do you ensure that it's secure in the United States? How do you ensure the security of it, and are we best off serving the niche market

ourselves?

General Klotz: Well, I'm not going to pre-judge the outcome of the analysis alternatives. I will tell you personally I agree with the statement that you just made. This will have to be, in our view, one that is manufactured in the United States where we can be very, very clear where these materials have come from.

Now, without getting into too many details, there are ways in which you can buy things from the front end and make sure on the back end that you have done the type of engineering that's necessary to enhance your confidence in the material itself. There are other approaches that we're working on in our laboratories and our production facilities to be able to assess, for want of a better word, the trustworthiness of a particular part. I think we would have to discuss that in a different setting to get into the details of that.

But this is a great, great concern of ours, and I suspect as well for the entire Department of Defense and the rest of the national security agencies in this country, where the sources of not only microelectronics but other key components that we use in the course of conducting our business are made and manufactured, given the amount of material that in the commercial world comes from overseas or from companies that overseas entities have a major equity

share in.

Senator Donnelly: Thank you.

Ms. Cange, I want to hear from you on the collapse of the tunnel at Hanford that stored contaminated equipment. The tunnel was first constructed in 1956. Referencing wooden beams used on two sides of the tunnel, the most recent structural integrity study conducted in 1991 recommended that, and I quote, "If a decision for final disposition is not made by the year 2001, the structural integrity again should be reviewed in light of any available information, including further tests on wood preservation that may have been completed at that time."

First, did the Department conduct any further structural integrity reviews after 2001? And will you be conducting an analysis of the structural integrity of the tunnel at any point in the near future?

Ms. Cange: To answer the first part of your question, the Department has not done any structural integrity tests since 2001 of the Purex tunnel. However, we have recently received an administrative order from the State of Washington in response to the collapse, and one of the requirements is that we do perform a structural integrity study and submit it to the state. That study is due by July 1st of this year, and so we are undergoing that study, as well as really focusing on what measures we're going to take

to ensure protection looking into the future and coming up with a longer-term and permanent solution to the tunnel and the materials in the tunnel.

Senator Donnelly: Thank you.

Thank you, Madam Chair.

Senator Fischer: Thank you, Senator.

Senator Sullivan?

Senator Sullivan: Thank you, Madam Chair.

Senator Fischer: I would remind the Senator that we have a vote. So when you're finished, we're going to adjourn until after the second vote is completed. Thank you.

Senator Sullivan: I wanted to ask about the Iran nuclear deal and to what degree you were involved in not only the negotiation but the compliance report. So, under the parameters of that agreement, Iran is restricted to 130 metric tons of heavy water. However, in 2016 the IAEA reported that Iran had, in fact, surpassed that threshold twice.

Madam Chair, I ask unanimous consent for the record that this is an article entitled, "U.N. Agency IAEA Reports Iran Has Again Violated Terms of the Nuclear Deal."

Senator Fischer: Without objection.

[The information referred to follows:]

[SUBCOMMITTEE INSERT]

Senator Sullivan: So, were you familiar with that violation that the IAEA had cited in 2016, Mr. Klotz?

General Klotz: Yes, sir.

Senator Sullivan: And do you agree with that assessment, that that was a violation, from the IAEA?

General Klotz: I agree with the IAEA's assessment.

Senator Sullivan: So were you asked, when Secretary Tillerson recently sent a letter to Congress certifying that Iran was in compliance with the agreement, with the Iran nuclear agreement -- how do you square those two issues? Obviously, they were in violation last year. Were you asked to comment on the Tillerson letter to the Congress?

General Klotz: Let me answer it this way, Senator. The State Department clearly has the lead on all actions associated with the Joint Comprehensive Plan of Action or the Iran deal. The role of the Department of Energy and the National Nuclear Security Administration is to be able to draw upon the scientific and technical know-how and knowledge that's resident within our national laboratories, all 17 DOE national laboratories.

Senator Sullivan: Like heavy water issues.

General Klotz: Yes, sir.

Senator Sullivan: I'm sure the members of your organization are much more expert on that than State Department diplomats.

General Klotz: Yes. There's another area where we are involved, and I think it's worth pointing out, and that is the support which NNSA in particular in our laboratories, again, and our production facilities provide to the International Atomic Energy Agency, whose headquarters is in Vienna. We help them develop a lot of the technology which they use to assess not only what's going on in Iran but with all other partners to the Nuclear Non-Proliferation Treaty who are subject to safeguards, inspections, and compliance by the IAEA. We help them write their technical manuals on safety, on security, on peaceful use of nuclear weapons. And we also, quite frankly, provide a lot of the talent either by sending people over there for short periods of time or actually detailing people to the International Atomic Energy Agency.

Senator Sullivan: Let me ask -- I hate to interrupt, but let me ask just a basic question. Given your expertise, given that you agreed with the IAEA just a few months ago that Iran was actually in violation of the agreement, how do we get to the point that just a few months later we're now saying that Iran is in compliance with the agreement? Do you have a sense of that? Did they ship the heavy water out? Did they try to cure this violation? I mean, it's very confusing to those of us who try to follow this agreement and think it has a lot of flaws.

General Klotz: Well, in the specific case of the heavy water, again, treading on the State Department's area of responsibility --

Senator Sullivan: But again, you're much more of an expert on heavy water than they are.

General Klotz: In the area of heavy water, what they did is they shipped out -- to get to the actual day on which the agreement was formally recognized as being implemented, they shipped out heavy water, and as they approached the limit that you mentioned --

Senator Sullivan: One-hundred and thirty metric tons.

General Klotz: -- they also shipped that out. And I would have to get back to what we know --

Senator Sullivan: How about you get back to us on that?

General Klotz: Yes.

Senator Sullivan: Because it sounds like, you know, a couple of months ago you and the IAEA were in agreement that there was a violation, and somehow we get to the point last -- I don't know, Secretary Tillerson sent this letter three weeks ago -- that they're no longer in it. It's confusing to a lot of us. Would you, for the record, like to --

General Klotz: Sure.

Senator Sullivan: Maybe in conjunction with the State Department?

General Klotz: I'd be happy to undertake that. Yes, Senator.

Senator Sullivan: Let me ask another question, a very different question, and I think again, Mr. Under Secretary, I think you're the point person on this. You know, the counter-WMD mission, which is a really important one, doesn't get a lot of discussion. The lead for that recently moved from STRATCOM to SOCOM, and we had the SOCOM commander testify here recently. You talk about the whole-of-government approach. Again, I think having your expertise and your officials who know a lot about the technical aspects of this is very important.

Are you plugged into that mission at all? And if so, how?

General Klotz: Absolutely. We worked very, very closely before, when it was under U.S. Strategic Command, and now that it's under SOCOM, we have a full-time liaison officer -- civilian serving in Tampa. I had a chance to meet with the deputy commander of SOCOM not long ago. We participate in a number of training exercises. We participate in a number of tabletop command-post exercises, and we train -- without going into too many details, we train a lot of their people, if they ever got themselves into a situation where they were confronting a radiological or a nuclear incident, how to carry out their duties.

Senator Sullivan: Great. That's very reassuring to hear that you're involved.

The final question. Admiral Caldwell, your responsibilities are over something that's incredibly important, a very strong record, by the way, over decades, in terms of the nuclear Navy. How do you maintain that excellence? How do you maintain the discipline to continue to have that strong record, and what keeps you up at night when you're thinking about your mission?

Admiral Caldwell: Thanks for the question, sir. We do have a tremendous record. I think that the support of this subcommittee and the funding, the stable funding that we've received is essential to our ability to do that. We hire tremendous folks to work in my organization, and the technical base that is supported by our funding -- that's our scientists, technologists, and engineers -- is essential to my ability to oversee and ensure the safe, effective operation of nuclear propulsion plants.

Part of our success, a strong part of our success is the culture that Admiral Rickover instilled in the program that we still talk about today, this culture of excellence, the self-critical nature, the stinging into the details, the ownership. These are just some of the tenets that make us successful.

What keeps me up at night is continuing that record of

excellence. Right now I'm laser-focused on executing the three major programs that are funded by this subcommittee. That's a lot of work to keep that going. And I also am laser-focused on ensuring that the operating fleet is still operated to the high standards to meet what the Navy needs and also preserve this great record of performance.

Senator Sullivan: Great. Thank you.

Thank you, Madam Chair.

Senator Fischer: Thank you, Senator Sullivan.

The committee will stand in recess until we are able to reconvene after the next vote. Thank you.

[Recess.]

Senator Fischer: Thank you all for your patience. The committee hearing will reconvene at this point. Thank you.

And I would ask, next in line is Senator Heinrich.

Senator Heinrich: Thank you, Chairwoman Fischer. I want to actually thank the Chair and the Ranking Member for bringing up with General Klotz the incredible importance of investing in the plutonium capability and the trusted microelectronics at the Mesa facility, and I would just add to that the importance, not only from a physical investment point of view but the incredible importance of the intellectual capacity that we have at those two facilities.

General Klotz, you mentioned the potential for talk of the whole-of-government approach, and I would just, with my

two cents, proceed cautiously, because first and foremost we need to make sure we get this right for NNSA's requirements and needs, and those can be very different from other U.S. agencies.

Ms. Cange, I wanted to ask you, I was really pleased to be at the WIPP facility in January when waste disposal operations were re-started. Going forward, what are some of the key milestones and the timeline for restoration for full operation at the WIPP facility?

Ms. Cange: Thank you. We, too, were very excited with the resumption of activities and operations at WIPP. As you may know, we started shipping waste from the generator sites to WIPP for disposal beginning in April of this year, and when we first started we were limited to two shipments per week. We have shipped waste from Idaho, from Savannah River, and also from Waste Control Specialist facility in Texas, and we are now up to three shipments per week.

We will be adding shipments from the Oak Ridge site, and also the Los Alamos site, later this year. So there are plans underway to increase the number of generator sites sending the waste, and we do plan to get up to four shipments per week by the end of 2017.

Of course, one of our challenges with being able to resume full operations or the level of operations prior to the shutdown is the ventilation system. As I'm sure you

know, we have an important capital asset project underway for the installation of a new ventilation system and an exhaust shaft. We are at the 90 percent design review stage for those new facilities, and our current plan is to complete construction and have the facilities operational in the 2021 timeframe. It's at that point that we will be able to resume full operations and go back to what we were, which was approximately 17 shipments per week.

Senator Heinrich: Great. So, Ms. Cange, in addition to the operating funds for WIPP and, as you mentioned, the investments and the construction of the new exhaust shaft and the ventilation system, one of my concerns is that WIPP is reporting a backlog of about $25 million in Fiscal Year 2018 for really critical upgrades for key fire safety systems, for instrumentation, for infrastructure.

Your budget request of $323 for Fiscal Year 2018 is certainly below what I think WIPP needs at this point, and I just want you to know that I'll be working to increase the funding for WIPP when we mark up the Fiscal Year 2018 NDAA.

General Klotz, I have a question for you that relates to recruiting, and we've talked a fair amount about some of the impediments that we have in recruiting at our NNSA labs. Both Sandia and Los Alamos labs are actively recruiting new employees to replace a growing rate of staff retirements, and one of the barriers to hiring these employees that I

hear about is the long timeframe that it takes to obtain security clearances for new hires. Some of these backlogs, the backlogs for clearances at each lab, is up to 1,000 new hires and time delays of sometimes over a year.

Do you have any suggestions on what we can do to reduce that backlog at this point?

General Klotz: Thank you, Senator. I, too, share your frustration on that, and it is an enormous impediment in terms of hiring people, or once you hire them actually putting them to work for the tasks that you've hired them to do. I'm sad to report that it's not getting any faster in terms of the normal processing of security clearances. At least that's been our experience.

Now, there are a number of things we are doing. We are trying to lean very far forward in the granting of interim clearances for those people who have in their background check, the background check doesn't indicate anything that would ultimately be untoward as far as the award, the granting of a security clearance.

The other thing I've seen going on at both our national laboratories and our production plants, which I commend them on, is going ahead and bringing people on and then starting the process of doing work that is unclassified. For instance, I was at Kansas City plant not long ago where they had sort of a basic course on how you do soldering and

putting together the various types of components which they produce there at Kansas City, but doing it in an unclassified setting, so that when their clearances come through they're able to move over. And as you well know, Senator, at our laboratories, including Sandia and Los Alamos, one of the things that we do is we bring in a lot of postdocs and interns, other people that we want to work there, put them to work on unclassified projects, a lot of them funded by research and development funds, and then as they get their clearances they can move over to jobs that require those clearances.

Senator Heinrich: Would you agree that LDRD is an absolutely critical component to be able to recruit the quality of applicants that we need, especially given some of the older infrastructure, the competition with Silicon Valley and other issues, and the remoteness of some of these sites, to the ability to get the best-of-the-best into these national labs?

General Klotz: Absolutely, and I appreciate your personal support in stressing the importance of LDRD over these past few years. It's an extraordinarily important way in which to recruit the best and brightest out of our graduate school programs to the laboratories and to give them some challenging science work to do, work that they can publish because it's unclassified for the most part, and

then allow them to build up their credibility among their peers.

It also, by the way, has resulted in some fairly important scientific and engineering outcomes which do have some direct correlation to the work that we do either in the nuclear weapons enterprise or for the other customers that the labs have, whether it's other government agencies or whether it's technology which can be transferred to the commercial sector.

Senator Heinrich: Madam Chair, I apologize for going over my time.

Senator Fischer: Thank you, Senator.

Senator Peters?

Senator Peters: Thank you, Madam Chair.

And to our witnesses here today, I appreciate your testimony a great deal. Thank you for taking the time to be here.

It's my belief that the continued improvement of nuclear detection technology is an often overlooked component of the international non-proliferation regime. The United States and our allies, particularly at the International Atomic Energy Agency, of course used radiation detectors, seismographs and many other technologies to ensure that countries are abiding by their commitments under treaties, such as the Non-Proliferation Treaty, and are not

secretly building a nuclear weapon.

The Iran nuclear deal depends in part on the application of this technology, such as devices that can measure and transmit in real time the enrichment level of uranium and centrifuges or detectors that can identify nuclear isotopes in particles about one-tenth of the width of a hair, which is amazing. And I believe that it's critical to develop next-generation non-proliferation technology to sustain international norms.

This is especially critical during the years afforded by the Iran nuclear deal so that when some of its components expire, the world standard for non-proliferation can be raised, hopefully during these next few years.

The NNSA's defense nuclear non-proliferation research and development program supports research programs to develop this next generation of nuclear non-proliferation technology, and a prime example that I'm very proud of is research conducted by the Consortium for Verification Technology which is based at the University of Michigan, which includes universities and national laboratories from across the nation.

So, General, in your view, how important is new nuclear detection technology for future non-proliferation efforts?

General Klotz: Thank you, Senator, for that strong endorsement of a very, very important line of work that we

do within the National Nuclear Security Administration. Dave Huizenga is here, who is the Acting Deputy Administrator for Defense Nuclear Non-Proliferation. I'm sure he was glad to hear that as well.

We work on a number of different fronts to improve the detection capability for both the U.S. customers, as well as our international partners, and it's not just in the NNSA labs. It's also in the academic institutions, as you so rightly point out, as well as the other Department of Energy labs.

So some of the things we're doing is we're looking at developing fast-growing large crystals that are an important part of detectors, pushing the limits of chemistry in the process of doing that. We're also looking to make detection equipment less expensive and less bulky and cumbersome so that inspectors, whether they're U.S. inspectors or IAEA inspectors, will be able to carry more with them to detect various radiation sources.

Senator Peters: Well, the Iran nuclear deal is providing -- well, it's now less than 15 years when many of the requirements disappear. Where do you see this technology going in the next 15 years? What can we expect as far as advancements that can help us in hopefully continuing to contain any kind of nuclear program there, and how will you contribute to this effort, or how will the

organization contribute to the effort?

General Klotz: Well, we'll continue to push the edge of the envelope as far as detection capability is concerned. You already mentioned one of the major contributions that the National Nuclear Security enterprise and our lab enterprise was able to produce. We actually refer to it as the online enrichment monitor, the OLEM, which can fit around a pipe without cutting into the pipe and measure the enrichment of the uranium gas that's actually flowing through it. That was a huge development and one that we passed on to the International Atomic Energy Agency for their use.

But as more nations express interest in and pursue commercial nuclear power as a means of meeting their energy goals for the future, the demands placed upon the IAEA to be able to carry out its safeguard and safety mission is only going to increase. I think we'll have a lot of work ahead of us to make sure they have not only the diagnostic tools they need to do this but also the protocols that they follow in forcing compliance with the safeguard agreements under the Nuclear Non-Proliferation Treaty.

Senator Peters: In addition to my service here on the Armed Services Committee, I'm also a member of the Homeland Security Committee, and the Department of Homeland Security also is engaged in this research effort, and it also has a

number of programs related to it.

General Klotz, as well as Mr. Trimble, could you perhaps talk a little bit about whether or not there is overlap between what you're doing, what the Department of Homeland Security is doing, and what sort of coordination is going on between these entities?

General Klotz: We are working very, very closely together, both at sort of the working group level, the action officer level, particularly on areas related to nuclear detection and also responding to a nuclear or radiological event that might take place here in the United States.

In terms of duplication, I personally don't think there is much. We made some decisions in the past where we decided, for instance, various capabilities would reside within the Department of Homeland Security and various things would continue to reside in the Department of Energy. And again, we also work together through a thing known as the Mission Executive Council, which meets at my level as well as my counterparts in the Department of Homeland Security and other government agencies to work out those kinds of lines of business that we have.

Senator Peters: Director Trimble?

Mr. Trimble: In regards to the research and development programs, that's not an area that we've dived

into in terms of the overall duplication.

Senator Peters: Great. Thank you for your testimony. I appreciate it.

Senator Fischer: Thank you.

Senator Warren?

Senator Warren: Thank you, Madam Chair.

And thank you all for being here today.

Despite our differences, which are many, Russia and the United States both want to prevent the spread of nuclear weapons, and we've had some real success on that front in the last 30 years. After the fall of the Soviet Union we worked together to remove nuclear material from Central and Eastern Europe, and over time we have down-blended over 500 tons of highly enriched uranium from Soviet-era nuclear weapons.

But that's changed. In 2014, the Russians terminated much of our bilateral nuclear security cooperation. In 2016, they refused to attend the 2016 Nuclear Security Summit, and later in 2016 they pulled out of a 16-year-old agreement to destroy 34 tons of plutonium, which is enough to make about 17,000 nuclear weapons.

So, General Klotz, in light of shrinking U.S.-Russia cooperation, what is NNSA's strategy to ensure that Russia's large nuclear complex and stockpiles of nuclear material remains secure? What's the plan now?

General Klotz: I think, Senator, you've laid it out very well, the history of this, with the Nunn-Lugar and the other work that DOE did separate from Nunn-Lugar. I happen to have been serving in Moscow from 1999 to 2001 in our embassy there and saw firsthand the work that was being done by both Department of Defense and Department of Energy in helping secure Russian nuclear facilities, doing work to get control of all the materials there, and that was very, very productive work. We established a lot of good working relationships at the technical level, scientist to scientist, engineer to engineer. But it did come to a halt, and it came to a halt I think for two reasons.

One, the Russians felt that, given the turnaround in their economic situation, that they no longer needed to be in a donor-recipient relationship as far as aid to help secure their nuclear facilities. And then, of course, there were all the differences in our relationship that have developed as a result of the invasion of Crimea, the annexation of Crimea, and so on.

So, the way in which we continue to cooperate is we are not doing work inside Russia other than cleaning up a couple of contracts that had already been in place. We are prohibited by statute from entering into any new contracts with Russia, assuming they even want to at this stage, which they don't. So we're left with working with the Russians,

and we continue to work with the Russians on what we would refer to as third-party efforts; for instance, repatriating Russian-origin fuel from other countries back to Russia. We have just recently done that with Russian-origin highly enriched uranium in Kazakhstan.

So we're looking for opportunities to do that. I would suggest if there ever is a change in our relationship at the higher political level, it strikes us that this is a natural place for cooperation to develop, resume and develop, because what we are talking about, again, as I said earlier, scientist to scientist, technician to technician.

Senator Warren: Right.

General Klotz: Largely divorced from the larger, higher policy issues.

Senator Warren: That's very worrisome, where we stand right now.

Let me ask you another part of this. Since the 1990s, the U.S. has spent billions of dollars to build nuclear infrastructure on Russian territory for things like training centers and sensors and nuclear safeguards and other technology. And now that Russia is not cooperating in these areas that we talked about, how is NNSA verifying that Russia is maintaining this infrastructure, and how do we make sure that this investment is not wasted?

General Klotz: That's a very good question, and I

probably will need to get back to you on the details. When we were actively engaged in cooperation with Russia on nuclear security within Russian borders, our people traveled there quite extensively to do the same sort of oversight we do here in the United States with our laboratories and production facilities to make sure that the contracts and the assistance we were providing was being used for the purpose for which it was intended.

Senator Warren: You know, the way I keep looking at this, we have a lot of problems, obviously, with Russia, and we need a very strong response to their interference in Ukraine, what they're doing in Syria, the attack on democratic electoral systems here in the United States and around the globe, but we don't have to agree on everything to agree that nuclear proliferation is bad and that we want to work together to stop it. So I appreciate your efforts on this.

If I can, in my remaining time, I have one other question I want to ask you about. Among your other responsibilities, General Klotz, you also oversee some of the world's most powerful supercomputers, including the three national ones here -- Los Alamos, Sandia, and Lawrence Livermore. We use these powerful supercomputers for models and simulations, obviously for our nuclear weapons stockpile, but we also use them for physics research and

climate change and biological systems and weather forecasting. They're important for lots of things, and this has always been an area of national excellence for the United States.

In recent years, however, China seems to be out-pacing us. Currently, China has the number-one and number-two most powerful supercomputers in the world.

So, General Klotz, in the little time I have left, can I just ask you to say something about is the United States losing ground in supercomputing; and if so, should we be concerned about that?

General Klotz: Senator, I think we should be concerned about it, but not just to have the fastest, best computer, although I'm a very competitive person, so that appeals to me.

Senator Warren: Good.

General Klotz: But we need to develop the computing capabilities in order to meet the requirements we have to do the modeling simulation that you talked about to maintain a stockpile that is safe, secure, and effective.

If you'll indulge me for just a minute -- I realize time is running out. Indulge me just for a minute. The advances in high-performance computing in the United States were pioneered by the Atomic Energy Commission and the Manhattan Project, working with academic institutions and

industry across the United States, because we've always had this demand for the ability to process large amounts of data, and we continue to advance the frontiers. We just put in a new computer at Los Alamos, Trinity. Next year we'll put in a new computing platform at Lawrence Livermore National Laboratory called Sierra, and we are jointly embarked upon what we refer to as an exo-scale computing initiative with DOE's Office of Science to get us to the level of exo-scale, which is 10-to-the-18th, a quintillion flops of capability to do the 3D high-fidelity simulations we need to do in the future.

So in NNSA alone we have, basically, last year in the omnibus we had $95 million going to develop the process, and we're asking for $158 million in the next. So that shows you, I think, the commitment in the Department of Energy, the commitment of NNSA to advance our capabilities in this particular area. This money is not going to buy the platform. Industry will buy the platform. We have to make sure that whatever industry develops, we will be able to run the kind of codes that we need to on the architecture they have, whether it's for the weapons program or the other lines of research, weather and biological, that you rightly pointed to.

Senator Warren: Thank you very much. I'm glad to hear that this is very much a priority for you. I'm a strong

supporter of investments in this area. They will pay dividends for the future, not only for our nuclear enterprise but for all of our scientific research. So please count on me as an ally on this.

General Klotz: Thank you, Senator.

Senator Warren: Thank you.

Thank you, Madam Chair.

Senator Fischer: Thank you, Senator.

If I could follow up a little bit with Senator Warren's questioning about Russia, you made the comment, General, that we are not actively engaged within Russia's borders right now. Can you tell me if Russia is cooperating with your efforts to secure Russian material in foreign countries?

General Klotz: Yes.

Senator Fischer: And Russia's argument at the time, in 2014, was that it didn't need the U.S. assistance to secure the material. You referenced that their economy had turned around and they felt that way. What's your assessment of that claim?

General Klotz: I do think -- my personal assessment of that claim is they have, in fact, improved significantly in terms of security of both military and domestic radiation and sources of nuclear material. But we continue to worry, and I would add that there are still things that could be

done. We would probably have to discuss the specifics of that elsewhere and the basis of our worry. But all countries, including the United States, need to continue to focus on safety and security of these special materials. It's a journey, it's not a destination, and there is a lot of work that needs to be done everywhere, including inside Russia.

Senator Fischer: So in a classified setting we need to discuss --

General Klotz: Yes, yes.

Senator Fischer: -- since cooperation ceased, where they are on that.

General Klotz: Yes, ma'am.

Senator Fischer: Thank you.

Also, back to my first line of questioning. When we look across the list on NNSA's construction projects, it looks like the plutonium project at Los Alamos is the only one that Congress appropriates at the sub-project level. You referenced that. Do you believe that that's helpful or hurtful?

General Klotz: Our druthers, our preference would be that we be appropriated not at the sub-project level, and let me tell you why. For instance, with the uranium processing facility, you appropriated at the level of the uranium processing facility. We have a number of sub-

projects under that. What that does is it gives us the flexibility that if we achieve some savings, which we have in the uranium processing facility sub-projects, we can move that money to other areas of the overall project that need that funding at that particular time. And now, within the CMMR program, we would essentially, if we found that we had saved some money in some area or we had a higher priority in another area, we would have to come to the four committees to ask for reprogramming. And with all the work that those committee staff have to do, it just takes time to get that through, and we may be late or we may be pushing some work to the right that will drive up cost.

I think there's ample opportunity on the part of committee staff and for members to exercise oversight. We send up the project data sheets. We come up and routinely brief staff and members on the work that we're doing there. We put out a strategic stockpile management plan every year, and we have these budgets, including the congressional justifications that go in there that tell you exactly what we're doing, almost in real time.

Senator Fischer: Thank you, General.

Senator Donnelly?

Senator Donnelly: Thank you, Madam Chair.

Admiral Caldwell, I understand the electric drive for the Ohio replacement is behind schedule, as we had talked

about. Can you explain what happened and what's being done to get us squared away, and the impact it will have on your integration to the Ohio replacement submarine?

Admiral Caldwell: Yes, sir. In February of this year, we discovered that we had a manufacturing error on a pre-production motor. It's a prototypical motor. That prototypical motor is designed to go into a test facility with other pre-production components to prove out the integration of those components, and then what we learn there will go into the final production motor that will go onto the first ship.

What we discovered was that the prime contractor's vendor did not properly flow down some requirements for the motor, and as a result some portions of the motor were not properly insulated. The impact is that we will have to extend our test program. The subcontractor is going to make this right. They're going to tear down the motor and rebuild it with the proper insulation. They're also procuring a second pre-production motor that will give us two paths to get to our integrated testing.

That all said, we built plenty of margin into the schedule because there's so much riding on getting electric drive correct. And even with this nine-month extension of our integrated testing, we will still meet the required in-yard date for the final production motor.

Additionally, we've taken action to ensure that the design specifications are flowing to the prime and subcontractor and sub-tier vendor appropriately, and there's been an increase in oversight at all levels.

I'd also like to make sure that I point out that the money to support this effort is on the DON side of my budget and not the DOE side of the budget.

But to reiterate, we are still able to meet our required in-yard date for the final production motor.

Senator Donnelly: Thank you.

Thank you, Madam Chair.

Senator Fischer: Thank you, Senator Donnelly.

I would like to thank all the members of the panel for being here today. We always appreciate the information that you provide to us.

If any members have any written questions for you, I would ask that you respond in a timely manner.

And with that, I will adjourn the subcommittee. We are adjourned.

[Whereupon, at 4:13 p.m., the hearing was adjourned.]