AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 2012

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

RODNEY P. FRELINGHUYSEN, New Jersey, *Chairman*

JERRY LEWIS, California
MICHAEL K. SIMPSON, Idaho
DENNY REHBERG, Montana
RODNEY ALEXANDER, Louisiana
STEVE WOMACK, Arkansas
ALAN NUNNELEE, Mississippi

PETER J. VISCLOSKY, Indiana
ED PASTOR, Arizona
CHAKA FATTAH, Pennsylvania
JOHN W. OLVER, Massachusetts

NOTE: Under Committee Rules, Mr. Rogers, as Chairman of the Full Committee, and Mr. Dicks, as Ranking Minority Member of the Full Committee, are authorized to sit as Members of all Subcommittees.

ROB BLAIR, JOSEPH LEVIN, ANGIE GIANCARLO,
LORAINE HECKENBERG, and PERRY YATES,
Staff Assistants

PART 8

NATIONAL NUCLEAR SECURITY ADMINISTRATION

	Page
Energy Weapons Activities	**1**
Defense Nuclear Nonproliferation and Naval Reactors	**127**

Printed for the use of the Committee on Appropriations

PART 8—ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 2012

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 2012

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

RODNEY P. FRELINGHUYSEN, New Jersey, *Chairman*

JERRY LEWIS, California
MICHAEL K. SIMPSON, Idaho
DENNY REHBERG, Montana
RODNEY ALEXANDER, Louisiana
STEVE WOMACK, Arkansas
ALAN NUNNELEE, Mississippi

PETER J. VISCLOSKY, Indiana
ED PASTOR, Arizona
CHAKA FATTAH, Pennsylvania
JOHN W. OLVER, Massachusetts

NOTE: Under Committee Rules, Mr. Rogers, as Chairman of the Full Committee, and Mr. Dicks, as Ranking Minority Member of the Full Committee, are authorized to sit as Members of all Subcommittees.

ROB BLAIR, JOSEPH LEVIN, ANGIE GIANCARLO,
LORAINE HECKENBERG, and PERRY YATES,
Staff Assistants

PART 8

NATIONAL NUCLEAR SECURITY ADMINISTRATION

	Page
Energy Weapons Activities	**1**
Defense Nuclear Nonproliferation and Naval Reactors	**127**

Printed for the use of the Committee on Appropriations

U.S. GOVERNMENT PRINTING OFFICE

68–245 WASHINGTON : 2011

COMMITTEE ON APPROPRIATIONS

HAROLD ROGERS, Kentucky, *Chairman*

C. W. BILL YOUNG, Florida [1]
JERRY LEWIS, California [1]
FRANK R. WOLF, Virginia
JACK KINGSTON, Georgia
RODNEY P. FRELINGHUYSEN, New Jersey
TOM LATHAM, Iowa
ROBERT B. ADERHOLT, Alabama
JO ANN EMERSON, Missouri
KAY GRANGER, Texas
MICHAEL K. SIMPSON, Idaho
JOHN ABNEY CULBERSON, Texas
ANDER CRENSHAW, Florida
DENNY REHBERG, Montana
JOHN R. CARTER, Texas
RODNEY ALEXANDER, Louisiana
KEN CALVERT, California
JO BONNER, Alabama
STEVEN C. LATOURETTE, Ohio
TOM COLE, Oklahoma
JEFF FLAKE, Arizona
MARIO DIAZ-BALART, Florida
CHARLES W. DENT, Pennsylvania
STEVE AUSTRIA, Ohio
CYNTHIA M. LUMMIS, Wyoming
TOM GRAVES, Georgia
KEVIN YODER, Kansas
STEVE WOMACK, Arkansas
ALAN NUNNELEE, Mississippi

NORMAN D. DICKS, Washington
MARCY KAPTUR, Ohio
PETER J. VISCLOSKY, Indiana
NITA M. LOWEY, New York
JOSÉ E. SERRANO, New York
ROSA L. DELAURO, Connecticut
JAMES P. MORAN, Virginia
JOHN W. OLVER, Massachusetts
ED PASTOR, Arizona
DAVID E. PRICE, North Carolina
MAURICE D. HINCHEY, New York
LUCILLE ROYBAL-ALLARD, California
SAM FARR, California
JESSE L. JACKSON, JR., Illinois
CHAKA FATTAH, Pennsylvania
STEVEN R. ROTHMAN, New Jersey
SANFORD D. BISHOP, JR., Georgia
BARBARA LEE, California
ADAM B. SCHIFF, California
MICHAEL M. HONDA, California
BETTY MCCOLLUM, Minnesota

---

[1] Chairman Emeritus

WILLIAM B. INGLEE, *Clerk and Staff Director*

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 2012

TUESDAY, MARCH 1, 2011.

DEPARTMENT OF ENERGY WEAPONS ACTIVITIES

WITNESSES

THOMAS D'AGOSTINO, UNDER SECRETARY FOR NUCLEAR SECURITY

DR. DONALD L. COOK, DEPUTY ADMINISTRATOR FOR DEFENSE PROGRAMS

BRIG. GEN. SANDRA E. FINAN, PRINCIPAL ASSISTANT DEPUTY ADMINISTRATOR FOR MILITARY APPLICATION

Mr. FRELINGHUYSEN. The hearing will come to order. Good morning, everybody. Before we get started I would like to welcome everyone to the Subcommittee's first hearing of the year. There have been many changes over the last several months but some faces are familiar and I suspect there will be more faces for you to see as the hour goes on, a lot of competing hearings this week.

Mr. Pastor, it's great to be working with you again. Thanks for being a good friend and ally and partner in the process. I look forward to a really good year with you.

I would also like to extend a special welcome to two new members who have yet to arrive but you will see them when they come in. Steve Womack of Arkansas and Allen Nunnelee of Mississippi. I think those gentlemen will find out that the issues this Subcommittee oversees are both challenging and incredibly important to the security and well being of this nation and we are glad to have them as part of our committee.

As we begin our Fiscal Year 2012 hearings, I do want to commend to the attention of my colleagues on this Subcommittee as well as each Department and Agency official that will come before us in the upcoming weeks to review their Fiscal Year 2012 budget requests, that it is highly unlikely there will be any new funding in Fiscal Year 2012 for our subcommittee. In fact, the committee was just tasked with finding $3.5 billion in savings from existing programs for the remainder of Fiscal Year 2011 and that's what we delivered in the House approved Fiscal Year 2011 Continuing Resolution. I expect our task will be as great if not greater in Fiscal Year 2012. Our committee must do its part to reduce federal spending and our huge Federal deficit.

So in short, resources will be constrained, even for the most essential of activities under our jurisdiction. The issues we will review and discuss today and in future hearings must be considered in that context.

To the task at hand, we have before us three professionals who have dedicated themselves to ensuring a safe, secure and reliable national nuclear stockpile and what we commonly refer to as the nuclear "enterprise".

The first of these is well known to us, Thomas D'Agostino, Undersecretary for Nuclear Security and NNSA Administrator. He has served Republicans and Democrats and we have full confidence in your abilities. We also know that you attended the Naval Academy of which you are rightly proud and once a submariner, always a submariner, sir.

Also Donald Cook as Deputy Administrator for Defense Programs has had wide experience running similar programs in the UK and many years of service at Sandia. We welcome you as well, Dr. Cook.

Brigadier General Sandra Finan, Principal Assistant Deputy Administrator for Military Application. Thank you for your distinguished career in the Air Force and thank you for being with us this morning.

And of course we look forward to your remarks.

Mr. Administrator, as you surely noted in our recent House action on the Fiscal Year 2011 Continuing Resolution, your program was the only program under the jurisdiction of this subcommittee that was "held harmless". And for good reason.

That said, I am aware that the Administration's request for Fiscal Year 2012 for Weapons Activities asks for a substantial increase. Compared to Fiscal Year 2010, this request is $1.2 billion, or 20 percent higher. Mr. Administrator, in the fiscal environment that we are now facing, that request is very unlikely to be met.

Mr. Administrator, I promise you a fair and thoughtful hearing, but with the proviso that new resources will not be available unless they come from other existing accounts. No account in this request will be spared and you will have to ensure that we understand the need for every dollar you request.

And so I end my remarks there and I am pleased to turn to Mr. Pastor for any remarks he may wish to make.

Mr. PASTOR. Good morning, Mr. Chairman, and good morning to the other members of the Subcommittee. I look forward to working with you and the Subcommittee members on the issues we will discuss today.

Mr. Administrator, welcome again. Good morning to the three of you. It is good to see you before the Subcommittee again. Dr. Cook and General Finan, welcome. We are all looking forward to your testimony.

As the Chairman mentioned, this is the second consecutive budget request for weapons with a large increase, intended to ensure the safety, reliability and security of our nuclear weapons stockpile. We have supported the President's commitment to complex modernization as evidenced by the inclusion of the anomaly for weapons in the existing CR at the President's request.

I look forward to hearing your justification for this budget today. As you are discussing the 2012 budget, I would also like for you to address how the recently passed House CR will impact your plans.

I join the Chairman in believing that the NNSA must provide this Subcommittee detailed information on how you plan to execute this expanded program. In these challenging budget times it is incumbent upon all of us to ensure that the taxpayers' hard earned dollar is used efficiently and effectively, and thank you, Mr. Chairman for the time.

I yield back.

Mr. FRELINGHUYSEN. Thank you, Mr. Pastor. Mr. D'Agostino, welcome. Thanks for being with us.

Mr. D'AGOSTINO. Thank you, Mr. Chairman, Ranking Member Pastor, members of the Committee.

I look forward to addressing and the opportunity of addressing the Committee today and to discuss the investments the President has proposed in the future for our nation's nuclear security enterprise.

I would like to begin by thanking the two of you for your continued support for the Department of Energy and the National Nuclear Security Administration. Our 35,000 employees, men, women working hard every day, across our enterprise to keep their country safe and secure, protect our allies, and enhance global security. We could not do the work we do without the support of the Committee and all of you, all the members, and I do greatly appreciate it.

I come before you today to discuss the President's 2012 budget request. That request seeks to make critical investments in the future of our nuclear security enterprise and to continue the recovery path that started last year.

Despite the challenging economic times facing our country, President Obama requested $11.8 billion for NNSA up from $11.2 billion in the 2011 request. This is the second consecutive year in which he has requested increased resources for our program, which reflects his commitment to our mission.

As I see it, the budget request can be broken down into three key themes: first, we are investing in our future. This budget request reflects the President's—President Obama's commitment made last November to invest more than $85 billion over the next decade to assure the safety, security, and effectiveness of our nuclear stockpile and to modernize the nuclear security infrastructure and revitalize the science and technology base that supports the full range of our nuclear security mission. It provides $7.6 billion for our Weapons Activities Account to support our efforts to leverage the best science and research in the world to maintain our deterrent and modernize the infrastructure that supports the deterrent. This will enable us to enhance surveillance activities of the stockpile, proceed with key life extension programs on the B61 and the W76 and W78 warhead systems, and to continue to design the uranium processing facility at Y–12 and the chemistry and metallurgy research replacement facility at Los Alamos Laboratory.

These two facilities are critical to maintaining the nation's expertise in uranium processing and plutonium research. Investing in a modern nuclear security enterprise is critical to our stockpile stewardship program but it also supports our full range of NNSA nuclear security missions, which brings me to the second theme in this budget request, which is implementing the President's nuclear security agenda.

President Obama has made strengthening our security—nuclear security, and the nuclear nonproliferation regime around the world one of his top priorities. As he said in his speech in Prague in April 2009, "The threat of a terrorist acquiring and using a nuclear weapon is one of the most immediate and extreme threats we face."

This budget request makes the investments needed to continue to implement the President's nuclear security agenda.

In addition to the $7.6 billion investment in modernizing our infrastructure and maintaining the deterrent, this budget request provides $2.5 billion in fiscal year 2012 and more than $14.2 billion over the next five years for nuclear nonproliferation programs.

To power the nuclear Navy, the budget request includes more than $1.1 billion for NNSA's Naval Reactors Program, an increase of 7.8 percent over fiscal year 2011 at the President's request. These—as I understand, we will be able to have the opportunity to discuss these in our hearing tomorrow, sir.

These are all critical investments of the nuclear security agenda defined by the National Security Strategy and in the Nuclear Posture Review.

Mr. Chairman, we recognize that this request for increased investments in nuclear security enterprise comes at a time of acute financial challenges for our nation and we recognize the need to be effective stewards of our taxpayer dollars.

That brings me to our third key theme outlined in this budget request and that is our commitment to improve the way we do business and manage our resources, including the budget resources, our people, our projects, and our infrastructure. Mr. Chairman, I realize that you and the Ranking Member and all members of this committee have many competing requirements, and while I believe that nothing is more important than our shared responsibility to ensure our nation's security, I also recognize that it is my responsibility to assure you that we can manage those resources wisely.

We can and we must do better and continue to improve, which is why we are working with our management and operating partners to streamline our government's model to devote more resources to critical mission work and to maximize our ability to complete our mission safely and securely and to do it cost-effectively.

We are making sure that we have the right contracting strategy in place. We are improving our project management by ensuring we have qualified project managers leading our major projects, setting costs and schedule baselines on our construction projects only when the design work is 90 percent complete, then subjecting those estimates to rigorous, independent reviews and placing renewed focus on our organization for project management. That is why we recently created a new policy and oversight office for managing major projects that report directly to me. This will help ensure that the project management gets the high level focus it deserves.

We will continue to find innovative ways to save money across the enterprise. Take, for example, our supply chain management center. It's managed largely out of the Kansas City plant but implemented across the whole enterprise. Since 2007 it has used new technologies, and pooled purchasing power, to drive efficiencies across our enterprise, to operate more as an integrated enterprise.

We have saved, as a result of this, over $213 million in the past three years alone. We think those savings will increase.

All of this is part of our effort to create one NNSA, a true partnership between our programs and all the partners we need to fulfill our mission. We must breakdown stovepipes, work collaboratively across our programs and organizations, make sure headquarters organizations, site office organizations, contract organizations are coordinated and leveraging all of our resources. Taken together, these steps will ensure that we have a modern, 21st century nuclear security enterprise that is smaller, smarter, more secure, more efficient, and organized to succeed, an enterprise that can address the broader security needs that the nation requires. While also realizing positive results, last year our Kansas City plant won the Malcolm Baldrige Award. Since October two NNSA projects have won separate Project Management Institute awards and one of them has become the first federal project ever to win the PMI Institute Distinguished Award. That has never been awarded to a federal agency until just recently in the last few months. That is the vision that we have outlined in this budget request and it supports the full range of missions. More importantly, it invests in the infrastructure, the people, the science and technology required to fulfill those missions. We look forward to working with the members of the Committee. At that, I would be happy to take any questions you may have. Thank you.

[The information follows:]

Statement of Thomas P. D'Agostino
Under Secretary for Nuclear Security and Administrator
National Nuclear Security Administration
U.S. Department of Energy
on the
Fiscal Year 2012 President's Budget Request
Before The
House Appropriations Committee
Subcommittee on Energy and Water Development

March 1, 2011

Thank you for the opportunity to present the Fiscal Year (FY) 2012 President's Budget Request for the National Nuclear Security Administration (NNSA). This budget request will allow the NNSA to meet its commitments to the American people and our international partners to provide for nuclear deterrence, to reduce nuclear dangers around the world, and to provide the capabilities to address the broader national security challenges of the 21st century.

The vision of NNSA is to make the world a safer place. **NNSA's mission is to enhance global security through nuclear deterrence, nonproliferation, counterterrorism, naval nuclear propulsion, and to support national leadership in science and technology.**

Recognizing the economic challenges facing our nation and the budget pressures being felt throughout the federal government, the President demonstrates through this FY 2012 budget request his strong commitment to the nuclear security of our country and our allies by proposing an unprecedented investment in NNSA's mission. This investment is a commitment to recapitalize the nuclear security enterprise and do it in a way that makes sense.

The FY 2012 President's Budget Request provides $11.78 billion to **invest in a modern, 21st century nuclear security enterprise, implement the President's nuclear security agenda, and improve the way the NNSA does business and manages its resources.**

The FY 2012 request represents an increase of 5.1 percent over the $11.2 billion requested for FY 2011, reflecting a commitment to investing in a modern enterprise that can support the full range of nuclear security missions. The request highlights the vital role NNSA plays in implementing the President's nuclear security agenda and the broad, bipartisan consensus that has developed over the last two years regarding the role NNSA plays in enhancing our nation's security and the resources needed to get the job done.

Investing in the Future
Secretary of Energy Chu and I work closely with Secretary of Defense Gates and other Defense Department (DoD) officials to ensure that NNSA remains focused on a strong interagency partnership that meets our national security requirements and promotes NNSA's sustainability. As a result, the President's request includes $7.6 billion for the **Weapons Activities** appropriation, an 8.9 percent increase over the President's FY 2011 request and a 19.5 percent increase over the FY 2010 appropriation to **invest in the future of the nuclear security enterprise.** These resources will

support, among other things, the operation and construction of the modern research facilities needed to do cutting edge science and attract the next generation of nuclear security experts. It continues implementation of the President's commitment to invest $85 billion over the next decade to sustain the nuclear deterrent and to modernize the infrastructure that supports it, as well as to implement the agenda outlined in the Nuclear Posture Review, the Stockpile Stewardship and Management Plan and the updated Section 1251 Report submitted to Congress.

NNSA's budget request also includes associated out-year projections in the Future-Years Nuclear Security Program (FYNSP) that identifies resources needed to meet the continuing requirements for significant long-term investments in the deliverables, capabilities and infrastructure of the enterprise.

These resources will help us invest in a modern, 21st century Nuclear Security Enterprise that can sustain the stockpile and support our full range of nuclear security missions. With these investments, NNSA will be able to continue to move toward an enterprise that is safer, smaller, more secure, more efficient, more sustainable, and more adaptable.

The request includes an increase of 3.1 percent over the FY 2011 level to protect and advance the scientific capabilities at the U.S. national security laboratories and a 21 percent increase for infrastructure improvements, including continuing work on the Uranium Processing Facility (UPF) at the Y-12 National Security Complex and the Chemistry and Metallurgy Research Replacement facility (CMRR) at Los Alamos National Laboratory. These capital projects are key for ensuring safe, secure, and reliable uranium and plutonium capabilities for nuclear security and other important missions.

To power the nuclear navy, the budget request includes $1.2 billion for the NNSA's **Naval Reactors** program, an increase of 7.8 percent over the FY 2011 President's Request. The programs in this appropriation support the U.S. Navy's nuclear fleet. Specifically, the request supports the Administration's decision to recapitalize the sea-based strategic deterrent. The OHIO Class ballistic submarines, the most survivable leg of the nation's strategic deterrent, are reaching the end of their operational life. The request will enable Naval Reactors to continue reactor plant design and development efforts begun in 2010 for procurement of long-lead reactor plant components in 2017, in support of Navy procurement of the first OHIO Class submarine replacement in 2019. Providing the OHIO Class replacement a life-of-the-ship reactor core will require substantial advances in manufacturing technology to provide a new cladding and a new fuel system. The request also supports the refueling of a land based prototype reactor, providing a cost effective test platform for these new technologies.

Increased funding is also requested for the Spent Fuel Handling Recapitalization Project (SFHP), which will replace the over 50-year old Expended Core Facility (ECF) as the location for naval spent nuclear fuel receipt, inspection, dissection, packaging, and secure dry storage. FY 2012 funding continues the conceptual design for the facility, equipment, and related systems, as well as continues meeting the National Environmental Policy Act's requirements and project oversight (e.g., engineering procurement and construction management). Detailed project engineering and design work will commence in FY 2013 and construction will commence in FY 2015.

These vital projects will replace facilities that date back to the dawn of the Cold War with modern facilities that can support the full range of nuclear security missions – including maintaining the nuclear deterrent, preventing proliferation, securing vulnerable nuclear material, powering the nuclear Navy and providing the nation with the best emergency response and counterterrorism capabilities possible. They will also ensure that NNSA can continue to work with the Department of Defense and other interagency partners to keep the nation safe.

Implementing the President's Nuclear Security Agenda
The FY 2012 budget request also provides the resources required to continue **to work toward the President's commitment to secure vulnerable nuclear material around the world within four years, a key national security goal**. The budget request includes $2.5 billion for **Defense Nuclear Nonproliferation** in FY 2012 and $14.2 billion over the next five years to reduce the global nuclear threat by detecting, securing, safeguarding, disposing and controlling nuclear and radiological material worldwide, as well as promoting the responsible application of nuclear technology and science.

This request reflects the significant accomplishments of NNSA's nuclear nonproliferation programs in the past year, and seeks the resources needed to complete the President's goals. This budget request provides the resources required to meet commitments secured from international partners during the 2010 Nuclear Security Summit to remove all remaining highly enriched uranium (HEU) from Belarus, Ukraine, Mexico, and other countries by April 2012 and to work with the Defense Department to improve international nuclear security cooperation.

The request of $2.5 billion is a decrease of 5.1 percent from the FY 2011 President's Request, but an increase of 19.6 percent over the FY 2010 appropriation. This 5.1 percent or $138 million decline flows logically from the FY 2011 request which was 'front loaded' to accelerate the effort to secure vulnerable nuclear materials within the President's stated timeframe. Even with this decrease, the NNSA's budget request remains consistent with our overall strategy to ensure that programs supporting the President's commitment to lead an international effort to secure all vulnerable nuclear materials around the world in four years are fully funded in the Request. The Global Threat Reduction Initiative efforts related to radiological material, as well as the International Nuclear Material Protection and Cooperation program's activities to enhance the ability of our foreign partners to detect nuclear smuggling at border crossings and in megaports have been prioritized to accommodate accelerated nuclear material lockdown efforts. The decrease in the request for Fissile Materials Disposition reflects the completion of long-lead procurements for the MOX and Waste Solidification projects, as well as the decision to wait to request additional funds associated with the $400 million U.S. pledge for the Russian program until agreement is reached on milestones for the program. Prior Year unobligated balances of $30 million associated with contingency funds for construction under the Elimination of Weapons Grade Plutonium Production Program are proposed for cancellation, due to the program's anticipated completion of CD-4 activities in the June 2011 timeframe.

Improving the Way NNSA Does Business
Consistent with the President's commitment to deliver on critical national nuclear security missions at the best value to the American taxpayer, the FY 2012 budget request will enable NNSA to continue to **improve the way it does business and manages resources.** The President's Budget

Request for Federal oversight and staff included in the **Office of the Administrator** appropriation is $450.1 million, an increase of 0.4 percent over the FY 2011 request and an increase of 7 percent over the FY 2010 appropriation.

NNSA recognizes that the FY 2012 budgetary investments come at time of severe economic challenge for our country and a renewed commitment to reduce the deficit. To maintain bipartisan support for the NNSA programs, the enterprise has a responsibility to work together as "One NNSA," a fully integrated enterprise that operates efficiently, is organized to succeed, that performs its work seamlessly, and speaks with one voice. This "One NNSA" needs to be a true partnership among Headquarters, the Site Offices and our Management & Operations (M&O) partners.

Changing the way NNSA does business is an important part of the effort to transform a Cold War nuclear weapons complex into a 21st Century Nuclear Security Enterprise. NNSA simply cannot expect Congress to support major investments in its programs and its facilities unless the enterprise can demonstrate that the Department of Energy is a responsible steward of the taxpayer's money.

NNSA needs to do better, which is why the federal sector leadership is working with its M&O partners to streamline the enterprise governance model in order to devote more resources to critical mission work and maximize NNSA's ability to complete its mission safely and securely.

NNSA is making sure that it has the right contracting strategy in place. The agency is improving its project management by, for example, ensuring that NNSA no longer sets cost and schedule performance baselines on construction projects until design work is 90 percent complete, ensuring it has the right leadership teams in place, and performing independent cost reviews. NNSA has also created a new policy and oversight office for managing major projects. The new office reports directly to the Administrator. This will help ensure that project management gets the high level focus it requires.

We are already beginning to see results. NNSA is increasingly recognized for its efforts to be an effective steward of tax dollars. For example, since 2007, NNSA's Supply Chain Management Center has saved $213 million by using pooled purchasing power to drive efficiencies across the enterprise. In the last year NNSA's Kansas City Plant won the prestigious Malcolm Baldrige Award, America's highest honor for innovation and performance excellence. Two other NNSA programs were recognized with Project Management Institute (PMI) awards. In 2010, the Global Threat Reduction Initiative became the first federal project to receive PMI's Distinguished Project Award, while the National Ignition Facility at Lawrence Livermore National Laboratory received PMI's project of the year.

Conclusion

The Nation has carefully evaluated its security needs in an international landscape that remains challenging and uncertain. NNSA has charted a path forward that shows our unwavering commitment to the Nation's security and enhances our formidable capabilities to address broader security challenges.

The NNSA is a technically based organization with a strong nuclear heritage that serves as the base for our contribution to a wide range of national security solutions. NNSA is rooted in the

management of our Nation's nuclear weapons stockpile and the application of nuclear energy for naval propulsion. Additionally, NNSA capabilities support a broad range of U.S. and international activities that address existing dangers, identify and prepare for future challenges, and advise the U.S. Government and our international partners on nuclear security matters.

This budget request takes the NNSA into the next decade and strengthens the capabilities that are themselves integral elements of our nuclear deterrent. The challenge is to retain the capabilities that continue to be essential, and to identify and develop those needed for the future.

Appropriations Detail
Following are more detailed descriptions of each of the four specific NNSA appropriations.

*****

National Nuclear Security Administration

Appropriation and Program Summary Tables
Outyear Appropriation Summary Tables

FY 2012 BUDGET TABLES
National Nuclear Security Administration

Overview
Appropriation Summary

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2011 CR	FY 2012 Request	FY 2012 vs FY 2010 $	FY 2012 vs FY 2010 %	FY 2012 vs. FY 2011 $	FY 2012 vs. FY 2011 %
National Nuclear Security Administration								
Office of the Administrator	420,754	448,267	420,754	450,060	29,306	7.0%	1,793	0.4%
Weapons Activities	6,386,371	7,008,835	7,008,835	7,629,716	1,243,345	19.5%	620,881	8.9%
Defense Nuclear Nonproliferation	2,131,382	2,687,167	2,136,709	2,549,492	418,110	19.6%	-137,675	-5.1%
Naval Reactors	945,133	1,070,486	945,133	1,153,662	208,529	22.1%	83,176	7.8%
Subtotal, NNSA	**9,883,640**	**11,214,755**	**10,511,431**	**11,782,930**	**1,899,290**	**19.2%**	**568,175**	**5.1%**
Transfer of prior year balances	-10,000	0	0	0	0	0%	0	0%
Total, NNSA	**9,873,640**	**11,214,755**	**10,511,431**	**11,782,930**	**1,899,290**	**19.2%**	**568,175**	**5.1%**

Outyear Appropriation Summary
NNSA Future-Years Nuclear Security Program (FYNSP)

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
NNSA					
Office of the Administrator	450,060	442,992	441,242	441,522	440,591
Weapons Activities	7,629,716	7,948,673	8,418,480	8,683,538	8,905,597
Defense Nuclear Nonproliferation	2,549,492	2,771,068	2,907,934	2,983,984	3,038,395
Naval Reactors	1,153,662	1,232,278	1,289,917	1,474,200	1,569,800
Total, NNSA	**11,782,930**	**12,395,011**	**13,057,573**	**13,583,244**	**13,954,383**

Office of the Administrator

Overview
Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2011 Continuing Resolution	FY 2012 Request
Office of the Administrator				
Office of the Administrator	418,074	448,267	410,754	450,060
Congressionally Directed Projects	13,000	0	0	0
Use of Prior Year Balances	-10,320	0	0	0
Subtotal, Office of the Administrator	**420,754**	**448,267**	**410,754**	**450,060**
Transfer of Prior Year Balances	-10,000	0	0	0
Total, Office of the Administrator	**410,754**	**448,267**	**410,754**	**450,060**

Public Law Authorization:
Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)

Outyear Appropriation Summary by Program

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Office of the Administrator	**442,992**	**441,242**	**441,522**	**440,591**

Office of the Administrator

Congressionally Directed Projects
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects	13,000	0	0

Weapons Activities

Overview
Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2011 CR	FY 2012 Request
Weapons Activities				
Directed Stockpile Work	1,564,290	1,898,379		1,963,583
Science Campaign	294,548	365,222		405,939
Engineering Campaign	149,679	141,920		143,078
Inertial Confinement Fusion Ignition and High Yield Campaign	457,486	481,548		476,274
Advanced Simulation and Computing Campaign	566,069	615,748		628,945
Readiness Campaign	106,744	112,092		142,491
Readiness in Technical Base and Facilities	1,810,279	1,848,970		2,326,134
Secure Transportation Asset	240,683	248,045		251,272
Nuclear Counterrorism Incident Response	223,379	233,134		222,147
Program	95,575	94,000		96,380
Site Stewardship	63,308	105,478		104,002
Defense Nuclear Security	769,823	719,954		722,857
Cyber Security	123,338	124,345		126,614
National Security Applications	0	20,000		20,000
Congressionally Directed Projects	3,000	0		0
Use/Recission of Prior Year Balances	-81,830	0		0
Total, Weapons Activities	**6,386,371**	**7,008,835**	**7,008,835**	**7,629,716**

Public Law Authorization:
National Defense Authorization Act for Fiscal Year 2010 (P.L. 111-84)
Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)
National Nuclear Security Administration Act, (P.L. 106-65), as amended

Outyear Appropriation Summary by Program*

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Weapons Activities				
Directed Stockpile Work	2,111,439	2,327,859	2,529,992	2,630,707
Science Campaign	418,216	416,284	394,315	404,097
Engineering Campaign	168,418	165,898	159,449	158,693
Inertial Confinement Fusion Ignition and High Yield Campaign	476,381	471,668	485,237	495,026
Advanced Simulation and Computing Campaign	616,104	628,100	643,120	659,210
Readiness Campaign	130,753	130,754	133,706	135,320
Readiness in Technical Base and Facilities	2,484,259	2,742,504	2,729,657	2,734,890
Secure Transportation Asset	249,456	252,869	261,521	267,773
Nuclear Counterrorism Incident Response	219,737	232,680	236,045	242,205
Facilities and Infrastructure Recapitalization Program	94,000	0	0	0
Site Stewardship	104,699	175,370	207,488	212,706
Defense Nuclear Security	729,795	729,173	756,110	814,967
Cyber Security	125,416	125,321	126,898	130,003
National Security Applications	20,000	20,000	20,000	20,000
Total, Weapons Activities	**7,948,673**	**8,418,480**	**8,683,538**	**8,905,597**

* The annual totals include an allocation to NNSA from the Department of Defense's (DoD) Research, Development, Testing and Evaluation (RDT&E) account entitled: "NNSA Program Support." The amounts for Weapons Activities included from this DoD account are FY 2013, $433.172 million; FY 2014, $550.902 million; FY 2015, $854.900 million; and FY 2016, $637.933 million.

Directed Stockpile Work

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Directed Stockpile Work			
Life Extension Programs			
B61 Life Extension Program	0	0	223,562
W76 Life Extension Program	231,888	249,463	257,035
Subtotal, Life Extension Programs	**231,888**	**249,463**	**480,597**
Stockpile Systems			
B61 Stockpile Systems	114,195	317,136	72,396
W62 Stockpile Systems	2	0	0
W76 Stockpile Systems	65,451	64,521	63,383
W78 Stockpile Systems	52,167	85,898	109,518
W80 Stockpile Systems	20,107	34,193	44,444
B83 Stockpile Systems	36,689	39,349	48,215
W87 Stockpile Systems	53,848	62,603	83,943
W88 Stockpile Systems	42,743	45,666	75,728
Subtotal, Stockpile Systems	**385,202**	**649,366**	**497,627**
Weapons Dismantlement and Disposition	**95,786**	**58,025**	**56,770**
Stockpile Services			
Production Support	300,037	309,761	354,502
Research & Development Support	37,071	38,582	30,264
Research & Development Certification and Safety	189,174	209,053	190,892
Management, Technology, and Production	183,223	193,811	198,700
Plutonium Sustainment	141,909	190,318	154,231
Subtotal, Stockpile Services	**851,414**	**941,525**	**928,589**
Total, Directed Stockpile Work	**1,564,290**	**1,898,379**	**1,963,583**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Directed Stockpile Work				
Life Extension Programs				
B61 Life Extension Program	279,206	320,894	396,869	426,415
W76 Life Extension Program	255,000	255,000	255,000	260,099
Subtotal, Life Extension Programs	**534,206**	**575,894**	**651,869**	**686,514**
Stockpile Systems				
B61 Stockpile Systems	72,364	72,483	70,488	71,534
W62 Stockpile Systems	0	0	0	0
W76 Stockpile Systems	65,445	63,580	63,537	65,727
W78 Stockpile Systems	151,207	329,354	333,978	316,507
W80 Stockpile Systems	46,540	50,457	58,898	59,775
B83 Stockpile Systems	57,947	72,516	65,941	54,663
W87 Stockpile Systems	85,689	68,774	63,638	65,492
W88 Stockpile Systems	105,582	78,602	163,626	226,060
Subtotal, Stockpile Systems	**584,774**	**735,766**	**820,106**	**859,758**
Weapons Dismantlement and Disposition	**43,404**	**52,090**	**54,205**	**55,495**
Stockpile Services				
Production Support	319,805	320,614	332,371	341,203
Research & Development Support	31,059	31,824	33,116	33,904
Research & Development Certification and Safety	241,658	242,424	250,963	255,747
Management, Technology, and Production	199,080	207,290	215,468	222,137
Plutonium Sustainment	157,453	161,957	171,894	175,949
Subtotal, Stockpile Services	**949,055**	**964,109**	**1,003,812**	**1,028,940**
Total, Directed Stockpile Work	**2,111,439**	**2,327,859**	**2,529,992**	**2,630,707**

Science Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Science Campaign			
Advanced Certification	19,269	76,972	94,929
Primary Assessment Technologies	82,838	85,723	86,055
Dynamic Materials Properties	86,371	96,984	111,836
Advanced Radiography	28,489	23,594	27,058
Secondary Assessment Technologies	77,581	81,949	86,061
Total, Science Campaign	**294,5483**	**65,222**	**405,939**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Science Campaign				
Advanced Certification	97,229	103,271	82,000	84,174
Primary Assessment Technologies	88,893	85,894	88,368	88,831
Dynamic Materials Properties	114,980	114,170	106,398	114,620
Advanced Radiography	26,816	26,528	27,421	26,473
Secondary Assessment Technologies	90,298	86,421	90,128	89,999
Total, Science Campaign	**418,216**	**416,284**	**394,315**	**404,097**

Engineering Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Engineering Campaign			
Enhanced Surety	41,928	42,429	41,696
Weapons Systems Engineering Assessment Technology	17,977	13,530	15,663
Nuclear Survivability	20,980	19,786	19,545
Enhanced Surveillance	68,794	66,175	66,174
Total, Engineering Campaign	**149,679**	**141,920**	**143,078**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Engineering Campaign				
Enhanced Surety	51,922	50,810	47,649	48,773
Weapons Systems Engineering Assessment Technology	21,233	21,502	21,244	21,699
Nuclear Survivability	24,371	25,691	26,079	26,318
Enhanced Surveillance	70,892	67,895	64,477	61,903
Total, Engineering Campaign	**168,418**	**165,898**	**159,449**	**158,693**

Inertial Confinement Fusion Ignition and High Yield Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Inertial Confinement Fusion Ignition and High Yield Campaign			
Ignition	106,575	109,506	109,888
Support of Other Stockpile Programs	0	0	0
Diagnostics, Cryogenics, and Experimental Support	72,144	102,649	86,259
Pulsed Power Inertial Confinement Fusion	4,992	5,000	4,997
Joint Program in High Energy Density Laboratory Plasmas	4,000	4,000	9,100
Facility Operations and Target Production	269,775	260,393	266,030
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**457,486**	**481,548**	**476,274**

Outyear Funding Profile by Subprogram*

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Inertial Confinement Fusion Ignition and High Yield Campaign				
Ignition	74,410	65,000	60,000	55,000
Support of Other Stockpile Programs	35,590	45,000	50,000	55,000
Diagnostics, Cryogenics, and Experimental Support	76,267	70,159	70,517	69,617
Pulsed Power Inertial Confinement Fusion	5,000	5,000	5,000	5,000
Joint Program in High Energy Density Laboratory Plasmas	9,500	9,500	9,500	9,500
Facility Operations and Target Production	275,614	277,009	290,220	300,909
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**476,381**	**471,668**	**485,237**	**495,026**

* Outyear funding profile does not include adjustments in response to the FY 2013 change in Self-Constructed Asset Pool (overhead rate at Lawrence Livermore National Laboratory). These adjustments will be reflected in the FY 2013 President's Budget.

Advanced Simulation and Computing Campaign

Funding Schedule by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Advanced Simulation and Computing Campaign			
Integrated Codes	140,882	165,947	160,945
Physics and Engineering Models	61,189	62,798	69,890
Verification and Validation	50,882	54,781	57,073
Computational Systems and Software Environment	157,466	175,833	181,178
Facility Operations and User Support	155,650	156,389	159,859
Total, Advanced Simulation and Computing Campaign	**566,069**	**615,748**	**628,945**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Advanced Simulation and Computing Campaign				
Integrated Codes	160,170	163,287	167,194	171,377
Physics and Engineering Models	69,567	70,922	72,617	74,434
Verification and Validation	56,794	57,899	59,284	60,767
Computational Systems and Software Environment	170,462	173,782	177,937	182,389
Facility Operations and User Support	159,111	162,210	166,088	170,243
Total, Advanced Simulation and Computing Campaign	**616,104**	**628,100**	**643,120**	**659,210**

Readiness Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Readiness Campaign			
Stockpile Readiness	5,670	18,941	0
High Explosives and Weapon Operations	4,583	3,000	0
Nonnuclear Readiness	19,625	21,864	65,000
Tritium Readiness	68,245	50,187	77,491
Advanced Design and Production Technologies	8,621	18,100	0
Total, Readiness Campaign	**106,744**	**112,092**	**142,491**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Readiness Campaign				
Stockpile Readiness	0	0	0	0
High Explosives and Weapon Operations	0	0	0	0
Nonnuclear Readiness	65,000	65,000	65,000	65,000
Tritium Readiness	65,753	65,754	68,706	70,320
Advanced Design and Production Technologies	0	0	0	0
Total, Readiness Campaign	**130,753**	**130,754**	**133,706**	**135,320**

Readiness in Technical Base and Facilities

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Readiness in Technical Base and Facilities			
Operations of Facilities			
Kansas City Plant	117,895	186,102	156,217
Lawrence Livermore National Laboratory	86,083	80,106	83,990
Los Alamos National Laboratory	338,479	318,464	318,526
Nevada National Security Site	79,326	80,077	97,559
Pantex	131,227	121,254	164,848
Sandia National Laboratory	103,618	117,369	120,708
Savannah River Site	131,129	92,722	97,767
Y-12 National Security Complex	228,601	220,927	246,001
Institutional Site Support	120,041	40,970	199,638
Subtotal, Operations of Facilities	1,336,399	1,257,991	1,485,254
Program Readiness	72,873	69,309	74,180
Material Recycle and Recovery	69,224	70,429	85,939
Containers	23,321	27,992	28,979
Storage	24,558	24,233	31,272
Subtotal, Operations and Maintenance	**1,526,375**	**1,449,954**	**1,705,624**
Construction	283,904	399,016	620,510
Total, Readiness in Technical Base and Facilities	**1,810,279**	**1,848,970**	**2,326,134**

Outyear Funding Schedule by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Readiness in Technical Base and Facilities				
Operations of Facilities	1,655,922	1,673,863	1,681,568	1,699,396
Program Readiness	88,900	89,511	90,780	91,504
Material Recycle and Recovery	104,940	102,782	105,021	106,642
Containers	25,016	23,997	24,809	25,396
Storage	32,347	31,872	33,647	34,208
Subtotal, Operations and Maintenance	**1,907,125**	**1,922,025**	**1,935,825**	**1,957,146**
Construction	577,134	820,479	793,832	777,744
Readiness in Technical Base and Facilities	**2,484,259**	**2,742,504**	**2,729,657**	**2,734,890**

Secure Transportation Asset

Overview
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriaton	FY 2011 Request	FY 2012 Request
Secure Transportation Asset (STA)			
Operations and Equipment	144,542	149,018	149,274
Program Direction	96,141	99,027	101,998
Total, Secure Transportation Asset	**240,683**	**248,045**	**251,272**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Operations and Equipment				
Operations and Equipment	141,560	142,270	146,865	150,561
Program Direction	107,896	110,599	114,656	117,212
Total, Operations and Equipment	**249,456**	**252,869**	**261,521**	**267,773**

Secure Transportation Asset

Operations and Equipment
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Operations and Equipment			
Mission Capacity	79,787	84,010	79,641
Security/Safety Capability	27,160	27,001	32,261
Infrastructure and C5 Systems	24,399	23,681	25,997
Program Management	13,196	14,326	11,375
Total, Operations and Equipment	**144,542**	**149,018**	**149,274**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Operations and Equipment				
Mission Capacity	69,715	69,033	73,476	72,771
Security/Safety Capability	32,715	32,817	32,923	33,030
Infrastructure and C5 Systems	26,583	27,621	27,411	31,444
Program Management	12,547	12,799	13,055	13,316
Total, Operations and Equipment	**141,560**	**142,270**	**146,865**	**150,561**

Secure Transportation Asset

Program Direction
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Program Direction			
Salaries and Benefits	78,301	83,311	87,307
Travel	7,337	7,746	8,024
Other Related Expenses	10,503	7,970	6,667
Total, Program Direction	**96,141**	**99,027**	**101,998**
Total, Full Time Equivalents	**584**	**637**	**622**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Program Direction				
Salaries and Benefits	91,067	93,307	96,888	99,038
Travel	8,301	8,550	8,806	8,984
Other Related Expenses	8,528	8,742	8,962	9,190
Total, Program Direction	**107,896**	**110,599**	**114,656**	**117,212**
Total, Full Time Equivalents	**649**	**649**	**649**	**649**

Nuclear Counterterrorism Incident Response

Funding by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Nuclear Counterterrorism Incident Response (Homeland Security)*			
Emergency Response (Homeland Security)*	140,481	134,092	137,159
National Technical Nuclear Forensics (Homeland Security)*	10,227	11,698	11,589
Emergency Management (Homeland Security)*	7,726	7,494	7,153
Operations Support (Homeland Security)*	8,536	8,675	8,691
International Emergency Management and Cooperation	7,181	7,139	7,129
Nuclear Counterterrorism (Homeland Security)*	49,228	64,036	50,426
Total, Nuclear Counterterrorism Incident Response	**223,379**	**233,134**	**222,147**

Outyear Target Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Nuclear Counterterrorism Incident Response				
Emergency Response (Homeland Security)*	136,918	138,440	140,098	142,816
National Technical Nuclear Forensics (Homeland Security)*	11,694	11,577	11,828	12,274
Emergency Management (Homeland Security)*	6,629	6,506	6,694	6,776
Operations Support (Homeland Security)*	8,799	8,749	9,000	9,110
International Emergency Management and Cooperation	7,139	7,032	7,276	7,664
Nuclear Counterterrorism (Homeland Security)*	48,558	60,376	61,149	63,565
Total, Nuclear Counterterrorism Incident Response	**219,737**	**232,680**	**236,045**	**242,205**

* Office of Management and Budget (OMB) Homeland Security designation.

Facilities and Infrastructure Recapitalization Program

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Facilities and Infrastructure Recapitalization Program			
Operations and Maintenance (O&M)			
Recapitalization	70,483	79,600	81,980
Infrastructure Planning	6,153	9,400	9,400
Facility Disposition	8,976	5,000	5,000
Subtotal, Operations and Maintenance (O&M)	**85,612**	**94,000**	**96,380**
Construction	9,963	0	0
Total, Facilities and Infrastructure Recapitalization Program	**95,575**	**94,000**	**96,380**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Facilities and Infrastructure Recapitalization Program				
Operations and Maintenance (O&M)				
Recapitalization	86,600	0	0	0
Infrastructure Planning	2,400	0	0	0
Facility Disposition	5,000	0	0	0
Subtotal, Operations and Maintenance (O&M)	**94,000**	**0**	**0**	**0**
Construction	0	0	0	0
Total, Facilities and Infrastructure Recapitalization Program	**94,000**	**0**	**0**	**0**

Site Stewardship

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Site Stewardship			
Operations and Maintenance	63,308	90,478	104,002
Construction	0	15,000	0
Total, Site Stewardship	**63,308**	**105,478**	**104,002**

Outyear and Over Target Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Site Stewardship				
Operations and Maintenance	102,458	175,370	192,488	197,706
Construction	2,241	0	15,000	15,000
Total, Site Stewardship	**104,699**	**175,370**	**207,488**	**212,706**

Safeguards and Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriations	FY 2011 Request	FY 2012 Request
Safeguards and Security (S&S)			
Defense Nuclear Security (Homeland Security)			
Operations and Maintenance	720,823	667,954	711,105
Construction	49,000	52,000	11,752
Total, Defense Nuclear Security	**769,823**	**719,954**	**722,857**
Cyber Security (Homeland Security)	**123,338**	**124,345**	**126,614**
Total, Safeguards and Security	**893,161**	**844,299**	**849,471**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Safeguards and Security (S&S)				
Defense Nuclear Security (Homeland Security)				
Operations and Maintenance	729,795	729,173	756,110	814,967
Construction	0	0	0	0
Total, Defense Nuclear Security	**729,795**	**729,173**	**756,110**	**814,967**
Cyber Security (Homeland Security)	**125,416**	**125,321**	**126,898**	**130,003**
Total, Safeguards and Security	**855,211**	**854,494**	**883,008**	**944,970**

Defense Nuclear Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropration	FY 2011 Request	FY 2012 Request
Defense Nuclear Security			
Operations and Maintenance (Homeland Security)			
Protective Forces	453,779	414,166	418,758
Physical Security Systems	74,000	73,794	107,636
Information Security	25,300	25,943	30,117
Personnel Security	30,600	30,913	37,285
Materials Control and Accountability	35,200	35,602	34,592
Program Management	83,944	80,311	77,920
Technology Deployment, Physical Security	8,000	7,225	4,797
Graded Security Protection Policy (formerly DBT)	10,000	0	0
Total, Operations and Maintenance (Homeland Security)	**720,823**	**667,954**	**711,105**
Construction (Homeland Security)	49,000	52,000	11,752
Total, Defense Nuclear Security	**769,823**	**719,954**	**722,857**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Defense Nuclear Security				
Operations and Maintenance (Homeland Security)				
Protective Forces	405,145	402,755	417,474	451,148
Physical Security Systems	129,491	130,266	132,872	140,537
Information Security	29,540	30,148	31,406	33,806
Personnel Security	39,063	39,375	39,862	41,205
Materials Control and Accountability	33,206	33,502	34,831	37,412
Program Management	86,706	86,363	92,631	103,527
Technology Deployment, Physical Security	6,644	6,764	7,034	7,332
Total, Operations and Maintenance (Homeland Security)	**729,795**	**729,173**	**756,110**	**814,967**
Construction (Homeland Security)	0	0	0	0
Total, Defense Nuclear Security	**729,795**	**729,173**	**756,110**	**814,967**

Cyber Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Cyber Security (Homeland Security)			
Infrastructure Program	99,838	97,849	107,618
Enterprise Secure Computing	21,500	21,500	14,000
Technology Application Development	2,000	4,996	4,996
Total, Cyber Security (Homeland Security)	**123,338**	**124,345**	**126,614**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Cyber Security (Homeland Security)				
Infrastructure Program	106,826	106,711	108,193	111,233
Enterprise Secure Computing	14,000	14,000	14,000	14,000
Technology Application Development	4,590	4,610	4,705	4,770
Total, Cyber Security (Homeland Security)	**125,416**	**125,321**	**126,898**	**130,003**

National Security Applications

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Operations and Maintenance	**0**	**20,000**	**20,000**
Total, National Security Applications	**0**	**20,000**	**20,000**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Total, National Security Applications	**20,000**	**20,000**	**20,000**	**20,000**

Weapons Activities

Congressionally Directed Projects
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects	**3,000**	**0**	**0**

Defense Nuclear Nonproliferation

Overview
Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2011 CR	FY 2012 Request
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research and Development	311,274	351,568		417,598
Nonproliferation and International Security	187,202	155,930		161,833
International Nuclear Materials Protection and Cooperation [a]	572,749	590,118		571,639
Elimination of Weapons-Grade Plutonium Production	24,507	0		0
Fissile Materials Disposition	701,900	1,030,713		890,153
Global Threat Reduction Initiative	333,500	558,838		508,269
Congressional Directed Projects	250	0		0
Total, Defense Nuclear Nonproliferation	**2,131,382**	**2,687,167**	**2,136,709**	**2,549,492**

Public Law Authorization:
Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)
National Nuclear Security Administration Act, (P.L. 106-65), as amended National Defense Authorization Act for Fiscal Year 2010 (P.L. 111-84)

Outyear Appropriation Summary by Program

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research and Development	479,191	506,243	503,328	519,455
Nonproliferation and International Security	163,000	168,000	171,999	174,999
International Nuclear Materials Protection and Cooperation	519,000	633,000	656,000	531,723
Fissile Materials Disposition	1,112,877	963,691	991,657	1,071,940
Global Threat Reduction Initiative	497,000	637,000	661,000	740,278
Total, Defense Nuclear Nonproliferation	**2,771,068**	**2,907,934**	**2,983,984**	**3,038,395**

Nonproliferation and Verification Research and Development

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Nonproliferation and Verification R&D			
Proliferation Detection (PD)	175,813	225,004	218,350
Homeland Security-Related Proliferation Detection [Non-Add]	[50,000]	[50,000]	[50,000]
Nuclear Detonation Detection (NDD)	135,461	126,564	127,800
University of California Pension Payments and Contractor Pension Cost	0	0	71,448
Total, Nonproliferation and Verification R&D	**311,274**	**351,568**	**417,598**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Nonproliferation and Verification R&D				
Proliferation Detection (PD)	222,623	227,838	228,517	242,357
Homeland Security-Related Proliferation Detection [Non-Add]	[50,000]	[50,000]	[50,000]	[50,000]
Nuclear Detonation Detection (NDD)	139,568	145,405	145,811	154,098
University of California Pension Payments and Contractor Pension Cost	117,000	133,000	129,000	123,000
Total, Nonproliferation and Verification R&D	**479,191**	**506,243**	**503,328**	**519,455**

Nonproliferation and International Security

Funding Profile by Subprogram*

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Nonproliferation and International Security			
Dismantlement and Transparency	72,763	49,207	0
Global Security Engagement and Cooperation	50,708	47,289	0
International Regimes and Agreements	42,703	39,824	0
Treaties and Agreements	21,028	19,610	0
Nuclear Safeguards and Security	0	0	53,925
Nuclear Controls	0	0	48,496
Nuclear Verification	0	0	46,995
Nonproliferation Policy	0	0	12,417
Total, Nonproliferation and International Security	**187,202**	**155,930**	**161,833**

* The Nonproliferation and International Security Program is proposing a budget structure change staring in FY 2012. The structure change creates a more efficient and clearer program organization with activities aligned along functional lines that reflect United States nonproliferation priorities and initiatives. The new structure depicts more clearly the alignment of people, technology, and resources to meet and implement nuclear nonproliferation objectives.

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Nonproliferation and International Security				
Nuclear Safeguards and Security	56,038	57,757	59,132	60,163
Nuclear Controls	50,396	51,942	53,178	54,106
Nuclear Verification	43,662	45,001	46,073	46,876
Nonproliferation Policy	12,904	13,300	13,616	13,854
Total, Nonproliferation and International Security	**163,000**	**168,000**	**171,999**	**174,999**

International Nuclear Materials Protection and Cooperation

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
International Nuclear Materials Protection and Cooperation			
Navy Complex	33,880	34,322	33,664
Strategic Rocket Forces/12th Main Directorate	48,646	51,359	59,105
Rosatom Weapons Complex	71,517	105,318	80,735
Civilian Nuclear Sites	63,481	59,027	59,117
Material Consolidation and Conversion	13,611	13,867	14,306
National Programs and Sustainability	68,469	60,928	60,928
Second Line of Defense	272,446	265,297	263,784
International Contributions [a]	699	0	0
Total, International Nuclear Materials Protection and Cooperation	**572,749**	**590,118**	**571,639**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
International Nuclear Materials Protection and Cooperation				
Navy Complex	8,146	3,900	3,750	3,600
Strategic Rocket Forces/12th Main Directorate	42,014	6,150	5,900	5,650
Rosatom Weapons Complex	51,560	46,061	39,442	38,876
Civilian Nuclear Sites	48,292	44,249	46,996	46,996
Material Consolidation and Conversion	64,627	64,627	66,433	50,000
National Programs and Sustainability	39,006	39,006	41,734	39,006
Second Line of Defense	265,355	429,007	451,745	347,595
Total, International Nuclear Materials Protection and Cooperation	**519,000**	**633,000**	**656,000**	**531,723**

Elimination of Weapons-Grade Plutonium Production

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Elimination of Weapons-Grade Plutonium Production (EWGPP)			
Zheleznogorsk Plutonium Production Elimination (ZPPEP)	22,507	0	0
Crosscutting and Technical Support Activities	2,000	0	0
Total, Elimination of Weapons-Grade Plutonium Production (EWGPP)	**24,507**	**0**	**0**
Cancellation of unobligated balalnces			**-30,000**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Elimination of Weapons-Grade Plutonium Production	0	0	0	0

Fissile Materials Disposition

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Current Appropriation	FY 2011 Request	FY 2012 Request
Fissile Materials Disposition (FMD)			
U.S. Surplus Fissile Materials Disposition			
Operations and Maintenance (O&M)			
U S Plutonium Disposition	91,659	278,940	274,790
U S Uranium Disposition	34,691	25,985	26,435
Supporting Activities	312	0	0
Subtotal, O&M	**126,662**	**304,925**	**301,225**
Construction	574,238	612,788	578,754
Total, U.S. Surplus FMD	**700,900**	**917,713**	**879,979**
Russian Surplus FMD			
Russian Materials Disposition	1,000	113,000	10,174
Total, Fissile Materials Disposition	**701,900**	**1,030,713**	**890,153**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Fissile Materials Disposition				
U S Surplus Fissile Materials Disposition (O&M)	422,575	480,280	531,134	686,135
Construction	637,802	430,661	402,773	354,805
Russian Surplus Fissile Materials Disposition	52,500	52,750	57,750	31,000
Total, Fissile Materials Disposition	**1,112,877**	**963,691**	**991,657**	**1,071,940**

Global Threat Reduction Initiative (GTRI)

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Global Threat Reduction Initiative			
Highly Enriched Uranium (HEU) Reactor Conversion	**102,772**	**119,000**	**148,269**
Nuclear and Radiological Material Removal			
Russian-Origin Nuclear Material Removal	94,167	145,191	147,000
U.S.-Origin Nuclear Material Removal	9,889	16,500	9,000
Gap Nuclear Material Removal	9,111	108,000	56,000
Emerging Threats Nuclear Material Removal	5,556	16,000	5,000
International Radiological Material Removal	8,333	45,000	20,000
Domestic Radiological Material Removal (Homeland Security)*	17,778	25,000	20,000
Subtotal, Nuclear and Radiological Material Removal	**144,834**	**355,691**	**257,000**
Nuclear and Radiological Material Protection			
BN-350 Nuclear Material Protection	9,109	2,000	2,000
International Material Protection	41,463	57,000	50,000
Domestic Material Protection (Homeland Security)*	35,322	25,147	51,000
Subtotal, Nuclear and Radiological Material Protection	**85,894**	**84,147**	**103,000**
Total, Global Threat Reduction Initiative	**333,500**	**558,838**	**508,269**

* Office of Management and Budget (OMB) Homeland Security designation.

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Global Threat Reduction Initiative				
HEU Reactor Conversion	**175,000**	**230,000**	**254,000**	**269,000**
Nuclear and Radiological Material Removal				
Russian-Origin Nuclear Material Removal	112,000	110,000	105,000	100,000
U S -Origin Nuclear Material Removal	8,000	3,000	3,000	3,000
Gap Nuclear Material Removal	56,000	20,000	10,000	5,000
Emerging Threats Nuclear Material Removal	5,000	5,000	5,000	5,000
International Radiological Material Removal	20,000	20,000	25,000	25,000
Domestic Radiological Material Removal (Homeland Security)*	20,000	20,000	28,000	29,000
Subtotal, Nuclear and Radiological Material Removal	**221,000**	**178,000**	**176,000**	**167,000**
Nuclear and Radiological Material Protection				
International Material Protection	50,000	86,000	87,000	91,000
Domestic Material Protection (Homeland Security)*	51,000	143,000	144,000	213,278
Subtotal, Nuclear and Radiological Material Protection	**101,000**	**229,000**	**231,000**	**304,278**
Total, Global Threat Reduction Initiative	**497,000**	**637,000**	**661,000**	**740,278**

* Office of Management and Budget (OMB) Homeland Security designation.

Defense Nuclear Nonproliferation

Congressionally Directed Projects
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects	**250**	**0**	**0**

Naval Reactors

Overview
Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriations	FY 2011 Request	FY 2012 Request*
Naval Reactors Development			
Operations and Maintenance (O&M)	877,533	997,886	1,069,262
Program Direction	36,800	40,000	44,500
Construction	30,800	32,600	39,900
Total, Naval Reactors Development	**945,133**	**1,070,486**	**1,153,662**

* FY 2012 includes $27,800 DoD support for the Expended Core Facility M-290 Receiving Discharge Station line-item construction project

Public Law Authorizations:

P.L. 83-703, "Atomic Energy Act of 1954"
"Executive Order 12344 (42 U.S.C. 7158), "Naval Nuclear Propulsion Program"
P.L. 107-107, "National Defense Authorizations Act of 2002", Title 32, "National Nuclear Security Administration"
John Warner National Defense Authorization Act for FY 2007, (P.L. 109-364)
FY 2008 Consolidated Appropriations Act (P.L. 110-161)
National Nuclear Security Administration Act, P.L. 106-65), as amended
FY 2009 Consolidated Appropriations Act (P.L. 111-8)
FY 2010 Energy and Water Related Agencies Appropriation Act (P.L. 111-85)

Outyear Appropriation Summary by Program*

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Naval Reactors Development				
Operations and Maintenance	1,093,038	1,181,847	1,234,610	1,245,900
Program Direction	47,040	49,670	52,390	54,200
Construction	92,200	58,400	187,200	269,700
Total, Naval Reactors Development	**1,232,278**	**1,289,917**	**1,474,200**	**1,569,800**

* The annual totals include an allocation to NNSA from the Department of Defense's (DoD) Research, Development, Testing and Evaluation (RDT&E) account entitled: "NNSA Program Support." The amounts included for Naval Reactors from this DoD account are FY 2013, $5.7 million; FY 2014 $1.7 million; and FY 2015 $0.4 million.

Mr. FRELINGHUYSEN. Okay, thank you. I am going to take five minutes and then I am going to turn to Mr. Pastor and then after Mr. Pastor, Mr. Rehberg, so I am not going to take too much time. Mr. Alexander? Okay, well, in order of arrival, I guess that is the way we will do it.

Okay, first question, Mr. Administrator, there is more than a little bit of confusion regarding what the Administration has actually pledged to modernize in the nuclear security enterprise over the next several years. For instance, the Administration announced last year that it would be requesting approximately $9.2 billion through 2017, more than a baseline. But in your written testimony, some of which you have gone through, you only refer to a commitment to invest $85 billion over the next decade.

In any case, they are huge numbers, but this is the most critical responsibility of the Department of Energy. I would like to take a moment to drill down into what you are really asking for and why.

Now, in your planning, what will the infrastructure and stockpile look like 10 years from now?

Mr. D'AGOSTINO. In our broad based planning—and some of the details are classified, so I will keep it focused at, obviously, the unclassified level—our desire is to meet the commitments of the New START Treaty which is 1,550 operationally deployed warheads and, obviously, in order to do that it requires us to finish the production work that we are currently underway on with the W76 warhead, which comprises a significant share of our nation's deterrent. That will take us to the 2017 timeframe.

The next piece of that will be work on the B61 warhead, to do the detailed engineering and design—production engineering and design work that is required over the next few years in order to start that production cycle on the B61 in 2017 and refurbish a small set of those warheads.

And then the third major piece is to focus on starting the study on the W78 warhead, which is a warhead we know will need some attention in about a 10-year timeframe, will need to be having some replacements put forth on it.

But our overall approach, essentially, for our infrastructure is to get—frankly get smaller, to get more focused, and to have fewer places around the country where the same thing is being done. Maybe an example might be the best way to move forward.

And I would ask Don, when I am done, maybe to add to that if it—an example would be, in the past, plutonium, for example, right now there are two places in the country that work on plutonium, one at Los Alamos and one at Lawrence Livermore Laboratory. The nation really only needs one capability, we do not need two capabilities. Having two capabilities drives up costs because I have got to maintain two sets of expertise across two different geographic locations, I have got to provide security over two geographic locations, and because we are migrating to a smaller stockpile and a more focused stockpile, as the President said, we are going to take care of that stockpile. Instead of having two, what I would say, older plutonium capabilities, we would rather have one smaller capability and we are going to put that up at Los Alamos.

We estimate, for example, on security costs alone we would save $30 million a year at Lawrence Livermore and not only that, get

plutonium further away from the community that happens to be growing around that laboratory.

So, we envision a smaller enterprise. When we first embarked on this vision a few years back we had this idea of taking the 36 million square feet of infrastructure that we have at the NNSA and taking about 9 or 10 million square feet off of that. So, we think we are going to go down to about 25 or 26 million square feet of infrastructure as a result of eliminating these types of redundant capabilities, and I have given just one example in plutonium.

There are other examples in the areas for sled—for, example, in sled tracks, that we used to—all of our laboratories used to have sled tracks. We are going to focus that look at Sandia, and operate more as an integrated, interdependent nuclear security enterprise instead of eight separate geographically independent entities, and that is kind of our vision, that is where we need to go to this one NNSA theme, is operating and working together. The supply chain management example that I used in my oral statement is a very specific example of how we have said, instead of having eight separate unique procurement organizations going out there buying stuff on their own, we are going to work together as one organization to try to drive our costs down.

It is a model that can be applied across procurements, human resources, financial management and the like. It can actually cut across——

Mr. FRELINGHUYSEN. And contracting, right?

Mr. D'AGOSTINO. And contracting, sir, as well. This is one of our elements of our contracting. We are examining very closely the idea of combining contracts between Pantex and Y12. They are currently managed both by the same contractor. There are some significant efficiencies we can look for in pushing that together. As Don knows, we have just received our final set of public input on that and we are fixing up a proposal for me to present to the Secretary and we will be making a decision before——

Mr. FRELINGHUYSEN. You said in your remarks, "The Agency is improving its project management by, for example, ensuring that NNSA no longer sets costs and schedule performance baselines on construction projects until design work is 90 percent complete ensuring it has the right leadership teams in place and by performing independent cost reviews."

Mr. D'AGOSTINO. Yes, sir, and this request specifically goes forward in implementing that. For example, in the FY12 budget request that we have before us, we are looking to do two things simultaneously, one is reduce the size of our overall federal workforce by a bit from 1940 full time Feds to like a number in the 1928 range, and then adding 56 project management professionals to work on the uranium processing facility, the chemistry and metallurgy replacement facility, and the fissile material disposition work we have down in the state of South Carolina in MOX and PDCF, but these would be limited term, in other words, these would be experts that would come in from the outside, they are highly trained project management experts. When the project is done, then the work is done.

Mr. FRELINGHUYSEN. You have got huge costs associated with all of this.

Mr. D'AGOSTINO. Yes, sir.

Mr. FRELINGHUYSEN. So, we are confident that hopefully you can get some of those costs under control.

Mr. D'AGOSTINO. Yes, sir.

Mr. FRELINGHUYSEN. Dr. Cook.

Mr. COOK. Yes, if I could add some specifics to what the Administrator said. One of the issues that we had at Los Alamos some years ago there was, for security purposes, a need to relocate reactors that were at tech area 18. Those have now been relocated to Nevada in the Device Assembly Facility there, but we have a criticality experiments facility that is coming up has passed most of the requirements to be fully on line and so that security past issue has been resolved and at the same time we've made investments in Nevada to maintain the work that is required for a wide range of national security purposes there.

At Y12 we are focused on footprint reduction. Each retrieval facility is fully in place. It has been loaded, we have already done some consolidation and a second key part of that is the uranium processing facility that would replace many of the capabilities that we have in Y12.

To address your question specifically, you said 10 years. It is '11 now, so by 2021 we intend to have the nuclear facility structures in place both for UPF and CMRR and we have engaged the M&Os and their parent companies in doing interactive planning to put the equipment in place at the rate that it's needed to meet the B61, W78, and follow on W88 requirements to the services.

Mr. FRELINGHUYSEN. Getting back to my original—is $9.2 billion the right number to get us there?

Mr. D'AGOSTINO. The 9.2——

Mr. FRELINGHUYSEN. And will that amount be enough to fully implement the NPR?

Mr. D'AGOSTINO. Well, yeah, if the $9.2 billion is a subset of the $85 billion, yes, it is an increment above what we—if we went back two years and looked at our FY10 or FY09 budgets, we were on that wrong trajectory, you know, over 10 years that number added up to over $64 billion.

Mr. FRELINGHUYSEN. You have mentioned certain major investments in there——

Mr. D'AGOSTINO. Yes, that is in there, sir.

Mr. FRELINGHUYSEN. Are there any others that are not included in that figure, or that you know about. Then I'm going to turn to Mr. Pastor, but—if you can give us some more clarity?

Mr. D'AGOSTINO. Sure, they are all included in the planning, in fact, we have an integrated priority list. We have driven some further integrated planning and formality into the process, so in the long-term planning that we articulated in both the 3113 and 1251 reports with a 20-year and a 10-year horizon, specifically you can see project by project and the time in which they would be done.

A sizable one is the High Explosives Pressing Facility at Pantex that we need not only for the later stages of the W76 full build, but to prepare for the B61 and follow on to W78. I think those are the big ones. We can comment more as you wish.

Mr. FRELINGHUYSEN. I am looking forward to visiting Pantex. I tried to get there. I apologize.

Mr. D'AGOSTINO. Looking forward to that visit.

Mr. FRELINGHUYSEN. Mr. Pastor.

Mr. PASTOR. Thank you Mr. Chairman, in 2009 GAO issued a report and they had four recommendations which dealt with the life extension program. And basically I think in that report it said NNSA and DoD were not effectively managing costs or schedules or technical risks for the B61 or W76, and so they recommended to you four specific actions for both schedules.

I guess the first question is, were those recommendations realistic? And if they are, have you followed them? And where are we today?

Mr. D'AGOSTINO. Not recalling the specifics from a few years ago on the exact recommendations—if I recall——

Mr. PASTOR. One of them—address technical challenges while meeting all military requirements, that was one.

Mr. D'AGOSTINO. Right.

Mr. PASTOR. Build in time for unexpected technical challenges that may delay the program. Assess the cost and include funding in the baseline for risk mitigation activities that address the highest risk to the W76 future life extension programs, and before beginning a life extension program, assess the risk, cost and scheduling needs for each military requirement established by DoD.

Mr. D'AGOSTINO. I will answer it and then Don can follow up.

Mr. PASTOR. Sure.

Mr. D'AGOSTINO. Yes, from my standpoint those specific GAO items have been addressed and that is what we are incorporating into—as we look at life extensions out in the future.

An example probably would be—help again in this case to give you some idea of what that means. When we looked, we internally in the executive branch, particularly most recently, we looked at what drives the costs of our—what is driving the request that the NNSA is putting forth to the President and how do these things get traded off, which is a key point you brought up in one of the GAO recommendations.

So, we looked at that and with OMB we decided, you know, let's get together with the Defense Department and make sure we understand so we can evaluate tradeoffs internally so we do not add cost drivers into our programs over the next five years that we may not need, because it does end up coming back to the Defense Department relationship with the NNSA.

So, we spent—we had a Nuclear Weapons Council session—a couple of Nuclear Weapons Council sessions last fall to examine a couple of key pieces on, for example, numbers of W76s we were processing in a given year. Should the number be X or should the number be X plus what we originally thought it was going to be, which—and then we decided with the Defense Department as a result of that session is to go with the lower number when they realized that—because they wanted this number that it drove up costs by a certain amount of money, they said, well, maybe we do not need to go on that kind of a pace. Let's go on a slower pace.

And that same type of philosophy we used on the W76 warhead, we used that same type of philosophy on the B61 warhead, and we used that same type of philosophy in examining our approach for the W78/W88 study that we would like to do.

So, I think, since—I believe it has gotten better as a result of the GAO recommendations, and in particular, of the Administration working as a more integrated unit in this area. I have had the opportunity over the last four years, in the Nuclear Weapons Council, to see a couple of different models and it is largely driven by the Chairman of the Nuclear Weapons Council, who is Mr. Ash Carter—is our current chairman. So, this Chairman is absolutely committed to looking at ways to integrate our costs, understand what drives costs in order to push things forward.

And it is that same model we are using, actually, to examine these two large construction projects that we talked about earlier, the uranium project and the plutonium project, because we recognize that to get—you know, that it has to be a sustainable, reasonable approach, and executable, and we want to understand what DoD requirements drive our costs. That particular study is under way for these line item projects.

Don may have, if I could, ask you to provide a little more detail.

Mr. COOK. Sure, let me comment on some of the response to recommendations.

The W76 had a number of, basically, early life issues in getting ready for the full build and we are now in full build that required Sandia and the Kansas City Plant to work closely together, and they did that.

For the B61 we're taking a fairly formal project approach, these life extension programs we treat as projects, an element to deal with technology risk is to use the old NASA approach of technology readiness levels. They are being made quantitative. We will require that things be at the sub-system level, operated in a relevant environment before we commit to production, and that is a technology readiness level of 6.

There are associated earlier levels but following through on that formally is important.

A key element that we have found is that there had been issues in, I will just say, a lack of infrastructure funding over a number of years that were popping out as problems that were coming up in the life extension programs. So, you will notice in the President's request for 12, while the increase for weapon systems is 4.8 percent and for science, say, about 3.1 percent, the request for infrastructure is 21 percent. That fundamentally goes to the core of the kinds of issues that were addressed in the GAO report and with which we are familiar.

The W78 and 88 study that we hope to undertake and the request has been made will look at cost reduction possibilities that may come with commonality, with adaptability to two different missile systems, and with interoperability in the land based ICBM fleet and the sea based SLBM fleet.

Again, those we treated as projects.

In terms of the reporting level, most of the work has been in the field, and so the restructure that we have done for the site office managers, to elevate their reporting level, they now report directly to my office in Defense Programs, and that means that they are tasked and they are held accountable for site oversight in the same way, that the key program leaders and the LEPs——

Mr. FRELINGHUYSEN. How had they been reporting prior to that?

Mr. COOK. One level down.

Mr. FRELINGHUYSEN. Okay.

Mr. COOK. To one of the units that reported to Defense Programs. And lastly I will comment that we have in place a national work breakdown structure now that we have undertaken and are fully in the step of populating a modern tool, we call it EPAT, or the Enterprise Performance Assessment Tool. It is standardized software but applied to our business.

Mr. PASTOR. Just one more question. Two barriers you have are personnel and infrastructure and you are trying to replace, or at least extend, an infrastructure that has been involved in the life extension of weapons. As you know, dealing with one particular weapon takes time because of risk factors——

Mr. COOK. Right.

Mr. PASTOR [continuing]. Including the infrastructure you have in place, and also the training or expertise of the people who are doing it.

Mr. COOK. Right.

Mr. PASTOR. I think one of the circumstances you are facing is that your personnel is now getting older in terms of retiring——

Mr. COOK. Yes, sir.

Mr. PASTOR. So, that is one issue. If you want to increase the life extension of some of these weapons you are going to need additional people——

Mr. COOK. Yes, sir.

Mr. PASTOR [continuing]. And they will need to have the expertise and the experience to be able to do it effectively, but the infrastructure that you have is old. Because of the nature of the work you are doing, it is very difficult to replace it or expand it. So, I believe that you have major problems in working with at least those two issues because in some of these labs, I do not know how old some of this infrastructure is, it is a very delicate type of infrastructure and to replace it, it is going to take a major effort.

Mr. COOK. Mr. Pastor, you have that exactly right. Personnel and infrastructure are two key areas. What we have learned about our personnel is that they want to do work, actual physical work on the stockpile, work that the country cares about, work on the nuclear security missions we have across the NNSA, to include nonproliferation. It is exciting work, they absolutely want to do it.

What we have with the Nuclear Posture Review, I believe, committedly believe, is a very defined path for the future. We have the New START Treaty, which identified the size of the stockpile the country needs, we have a Nuclear Posture Review, which is a road map or plan, on how we need to move forward. We previously had NPRs but we did not have what I would call kind of a national consensus behind the Nuclear Posture Review.

And I think there is large agreement by many, on both sides of the aisle, as well as inside of government and outside of government that now is the time to invest. And so the personnel actually have quite energized the older folks, like myself and older are quite energized that, hey, we have got a path forward, we know there is a defined set of work that has to get done, and so there is an opportunity to take those people that have those skills and expertise and

marry them up, if you will, with our next set, a future generation of nuclear security experts, to do this work for the next 10 years.

I think we have, kind of, one good opportunity to really put that in place in this upcoming 10 years. This is a pivotal year, a pivotal set of years for the enterprise. If we miss this opportunity, I believe, we will have a more—the ability to recover is going to be difficult.

Infrastructure, you are absolutely right, some of it dates back to 1952, particularly these plutonium and uranium pieces, and that is why we are moving forward with an approach that recapitalizes both of those capabilities.

Because of the way the work is laid out, W76 work is largely at Pantex and Y12. The B61 analysis work is largely at Los Alamos and Sandia. The W78 work is at Livermore and Sandia. We have spread it out, so I think it is manageable, but there is a golden opportunity—there is an opportunity before us and I think we want to take advantage of it.

Mr. FRELINGHUYSEN. Thank you. Mr. Alexander.

Mr. ALEXANDER. Thank you, Mr. Chairman. When Mr. Rehberg found out he was not going to get to ask the first question, he left. I hope you did not offend him.

Mr. Administrator, you may yield to the General, but we hope, at least I do, that the weapons are loaded and locked into place that might be needed to protect our interests if the need arises without having to wake a ground crew up in the middle of the night to do so.

A few years ago there was a report released that the media got a hold of and led the public to believe that for whatever reason a crew was just flying around, for no particular reason, unaware that their B–52 was loaded with nuclear weapons. Have steps been taken to prevent that from happening again? We want the public to know that we know what we are doing—at least you all. They know that we do not know what we are doing, but we want them to think that the Military knows what they are doing.

Mr. D'AGOSTINO. Why don't I start? And obviously this is a question—the details of the operational questions that the Air Force and the Department of Defense would be in the best position to answer because I will—my role on the Nuclear Weapons Council, General Finan is our representative on the working Committee, the Nuclear Weapons Council Standing and Safety Committee.

Below that, what I can say is I have seen a sea change in focus on the topic of maintaining and operationalizing the deterrent in a way that exercises the components. When you don't exercise something, you tend to get a little rusty, and when you do exercise something, it tends to sharpen focus on, wow, we did not realize that you had that problem, we better go work on that particular area.

My experience in submarine operations, led me to really appreciate that in a real way. I know we would always grumble when we had to do the fire drill or the collision drill, but at the end of the day, because of some real world events, we were able to respond, and I think there is the same thing with the Air Force. Do you want to add?

Mr. FRELINGHUYSEN. You have to get your oar in the water.

General FINAN. Obviously, this is an Air Force issue and I will tell you having been a part of the things that occurred after that flight.

The Air Force has taken a great deal of time and effort in changing their culture, changing the way they do business, reemphasizing the nuclear aspects of our mission. They stood up a new command, they stood up a new division up at the headquarters to focus on nuclear issues.

So, while obviously I defer to them to answer specifically, I assure you, they have taken a great deal of time and effort and done a number of things to ensure that that type of event does not happen again.

Mr. ALEXANDER. Well, we certainly appreciate the need for operations to take place with loaded weapons and armed weapons, but we just hope that the public is not led to believe that the pilot did not know that they were on there. That just was not real good, it was bad for all of us.

Mr. Administrator, the GAO has raised concern that you all are often unable to determine precisely how much it costs to operate and maintain the infrastructure simply because there are multiple sources of funding.

If we are to accept that significant increases by the Administration will place the weapons complex on a path to sustainment, how are we to understand that the full cost associated with your facilities is being looked at and taken care of?

Mr. D'AGOSTINO. Thank you, sir. I am aware of the GAO report in this particular capacity and I will tell you the actions we have taken as a result of that and then the GAO, most recently, has come out with their assessment of our progress in that area. I will share some insight on that.

Don or General Finan, if you would like to follow up.

Step one is changing our project management policy. The way we go about, in the Department, implementing our projects, and it has changed significantly. You have heard me mention this idea of before we come to the committee and say we know how much something costs, we will actually go through and finish 90 percent of the design work in order to have a better sense of what that costs. But that is not enough just to do that. You need to have the policy changes also put forth, the idea that we would do independent cost estimates at every critical decision point in the project, not wait for just the times which we were required before which is only do it twice during the life of the project, but in each of the four critical decision points dramatically increase the review of costs associated as the project goes on. But in addition to that, we have also decided that independent peer review of our projects is critically important, peer review from outside of the organization itself, because these people are not beholden to pressures that they might feel if they were within the organization.

So, those three things taken together along with a reorganization that Don—that we mentioned, which is putting forth an oversight and project management organization separate from the program, Don runs the program, I oversee that particular program that reports directly to me in this particular capacity.

Third element is having the right people. You heard me mention about bringing on board limited federal employees that are project management experts. That absolutely has to be done. The GAO recognized that that was important to do to make progress in that particular area.

And I think from a results standpoint we are seeing some early signs that this is yielding some benefit. The two Project Management Institute Awards that I mentioned earlier indicate particularly for the NIF project which started off 10 years ago with a major problem, for the last 10 years, has been, from a construction standpoint, has been delivering consistently from that standpoint.

The one thing also I would mention which is important is the right federal oversight. We have quite a few changes internally, bringing in folks and expertise from the Office of Management and Budget that understand how to track and link budget formulation to budget execution, and that is the piece that we did not have before which is the piece that Don is bringing into his organization.

Don, did you want to add anything?

Mr. COOK. Sure, a couple of quick points. The Defense Programs restructure that I did over eight months ago put in place a new unit that is actually called infrastructure and construction, and that is where we are building the capability and the excellence on the operational side.

The area that the administrator and deputy administrator have changed is the oversight in the policy, both of these are required and must work together. At a practical level from the GAO report, what they understood and what we understood was each of the M&Os has a fairly robust financial system but they are not identical and we did not have a method of taking the financial information in a step-by-step way and putting it together, so the way we addressed that correctly is back to put in place a national work break down structure that has definitions that are agreed to by all and then a methodology which is populated by the M&O financial systems, but it puts it into a government format that we can use to report to both authorizing and appropriations committees in the House and Senate.

Mr. ALEXANDER. We would appreciate it if you would not use that word, "robust financial system." That does not set with the public too well. Thank you, Mr. Chairman.

Mr. FRELINGHUYSEN. Mr. Olver.

Mr. OLVER. Mr. Chairman, I appreciate you taking me, but I think that said you were going to take people in the order that they appeared.

Mr. FRELINGHUYSEN. All right, well, I will take that back. Mr. Nunnelee.

Mr. NUNNELEE. I yield to Mr. Olver.

Mr. FRELINGHUYSEN. Mr. Olver, back to you, then we go to Mr. Womack. Your long distinguished service puts you up front.

Mr. OLVER. Thank you Mr. Chairman. Thank you for your testimony, all of you, and all of you for your service. I mainly want to try to understand context here. You mentioned, Mr. Administrator, that part of the reason we are doing some of the things we are doing is because of the New START Treaty. The New START Treaty takes us down to 1,550 warheads? Is that correct?

Mr. D'AGOSTINO. Operationally deployed, you are right, sir.

Mr. OLVER. How many do we have deployed at the present time?

Mr. D'AGOSTINO. Right now operationally deployed, we are at about 2,200 operationally deployed. To be clear, there are warheads that we need to maintain back here, if you will, to make sure those operationally deployed are fully ready. So, we have to take care of two types of war buckets, warheads.

Mr. OLVER. And what happens to those other 700 or thereabouts?

Mr. D'AGOSTINO. The operationally—the 700 that are not operationally deployed that, you know, if you will, takes us from 2,200 down to 1,550, the details do matter in this particular case and I would be happy—it would be classified, but we can show you specifically. We put together a 10-year plan, a very detailed 10-year plan, and a slightly less detailed 20-year look ahead on numbers of warheads by year, by weapons type, and in many cases—in some cases the warheads—elements of those 700 go back into what we—what could be euphemistically called the reserve stockpile, if you will——

Mr. OLVER. But these are all old?

Mr. D'AGOSTINO. These are—some of these are old, some of these are very old, and some of them were taken apart. A number of those——

Mr. OLVER. The details, maybe. I do not have but five minutes here. Your answer is going to take me beyond five, I think.

Mr. D'AGOSTINO. Well, what may be best, actually, is to come in and give you a classified brief with the details, because some of those 700 actually we will take apart, will become decommissioned never to be used again. Some of them, because they are of a specific type of warhead, we will actually keep as a reserve.

Mr. OLVER. And all of the ones that you are talking about are new weapons, I heard B61, maybe I didn't get—a W78 and so on, are all of those related to the 1,550?

Mr. D'AGOSTINO. Yes, sir. Yeah.

Mr. OLVER. And you are taking whatever are the warheads which are now obsolete which may go back into a reserve stockpile——

Mr. D'AGOSTINO. Right. None of these are——

Mr. OLVER. Is there much cost involved in taking down these 700?

Mr. D'AGOSTINO. We have a line item in our program for dismantling warheads, specifically to take warheads apart——

Mr. OLVER. Is it included in the 11.78?

Mr. D'AGOSTINO. 11.78?

Mr. OLVER. The 11.78——

Mr. D'AGOSTINO. Oh, yes, sir. It is.

Mr. OLVER. Is that considered a Nunn Lugar activity?

Mr. D'AGOSTINO. Well, some might consider it that though it is not specifically called that, no. It's cooperative threat reduction.

Mr. OLVER. Is that included in this 11.78?

Mr. D'AGOSTINO. Yes, we have a cooperative threat reduction program in effect in our nonproliferation activities. We have $2.5 billion that we are asking for nonproliferation work out of the overall NNSA budget request. Elements of that $2.5 billion do go off to protect and consolidate nuclear material around the world.

Mr. OLVER. I am having a hard time making these numbers total up. It is $2.5 billion for Nunn Lugar activities? It's $7.6, I guess it was, for the regular NNSA activities? There is $1.2 for naval reactors. And there is some other item there, future nuclear security enterprise, that must, in sum total, lead to three, seven, That is $11.2. Is it only——

Mr. D'AGOSTINO. There is about $450 million that we are asking for which is called a Program Direction Account——

Mr. OLVER. Future Nuclear——

Mr. D'AGOSTINO. No, sir, the Program Direction Account pays for federal salaries. We have 1,984 federal employees, which is different.

Mr. OLVER. Then I'm not getting to the number for——

Mr. D'AGOSTINO. I think you actually got it correct, sir. You talked about $1.2 billion for naval reactors, $7.6 billion for the weapons activities account, $2.5 billion for our nonproliferation work, and about——

Mr. OLVER. I am trying really to just get structurally what is going on here.

Mr. D'AGOSTINO. Right.

Mr. OLVER. All right, so then it is in the NNSA's part of the Nunn Lugar activities, the Nunn Lugar activities which are mostly in Defense, I guess.

Mr. D'AGOSTINO. Yeah, there is—the Nunn cooperative threat reduction work happens across State Department, Defense, and NNSA, the National Nuclear Security Administration, which is what we are here today talking about, and because——

Mr. OLVER. I am particularly concerned that here we are in the President's budget, which you are defending for your activities, and he is freezing for five years the budgets in discretionary expenditure for all of the non-security agencies, and this one is going up by, I guess it's a total over 10 years of $85 billion, but it includes, basically, in the one-year frame, 5 percent for the weapons activities and 19 percent for another group, in your testimony, and a 21 percent increase for infrastructure and a 7.8 percent for the Naval Reactors Program, all of them are going up. This is just in one year. Those are sizable percentages though the total numbers may not come to more than a billion dollars in sum total.

I am concerned about that, because we are making those kinds of reductions and there are moves around to make even vaster reductions in the five-year. So it is something I think we can all understand.

Sustainability here for this weapons program comes at the cost of a lot of other things that go on.

Mr. D'AGOSTINO. If I could make a comment on that, I think it would be important. The work in the weapons activities account, this is a specific financial account, supports nuclear security work broadly. I will give you some categories: one is nuclear nonproliferation, making sure material does not end up in the hands of terrorists; one is a nuclear counterterrorism program, which provides counterterrorism experts to support the FBI and the Defense Department, these would be actually the weapons experts, because we do want the nation's best people working, God forbid, if there was an improvised nuclear devise somewhere on those programs.

Mr. OLVER. Is any of the counterterrorism in NNSA?

Mr. D'AGOSTINO. Yes, sir. Yes, sir. It is. Absolutely.

Mr. OLVER. But some will be coming out from Homeland Security as well?

Mr. D'AGOSTINO. It is an integrated program. We work with the Department of Homeland Security, we work with the FBI, we work with the Defense Department, because each of us have different authorities. What we have, sir, is the technical expertise. The nation's invested, during the Cold War, and most recently in the last decade and a half, in making sure we can maintain nuclear experts, the best experts in the world, to not only take care of the stockpile, the smaller stockpile, but also make sure that those experts are available to the agencies that have to respond to a nuclear emergency.

So, we provide the scientists, the engineers, the people that say cut the blue wire, not the red wire, these types of—this type of expertise. And whether the nation has, you know, a larger number of warheads or a smaller number—we are talking about two numbers, sir—we feel, the President feels, that it is important to maintain that expertise because as stockpiles change, with a decrease over time, maintaining that expertise is going to become even more and more important and more and more relevant.

So, that is our job. That is why the President put forward this budget request. We recognize that it is an increase, we do stand out in the Administration, but it is an increase that we feel is justifiable.

Mr. FRELINGHUYSEN. Mr. Olver, I can return to you. I want to give Mr. Womack a chance. Thank you.

Mr. WOMACK. Thank you, Mr. Chairman. Let the record reflect that I got here before my colleague, Mr. Lewis. It means I get to go before him and it is not because the younger, good-looking guys go first.

I'll pay for that later. Last night Secretary Clinton called for United Nations to finalize global negotiations on its nuclear bomb making material. I have two questions, one general and one specific. The general question is: how does it affect the work in this budget as proposed? And more specifically, how does it affect the weapons modernization efforts by your agency?

Mr. D'AGOSTINO. Okay. I will address broadly, and if I could, the General and Don Cook might want to add something to that. I was talking about the Fissile Material Cut-off Treaty, which is a treaty which looks to get a global agreement to not produce more weapons usable—we call it special nuclear material, than we currently have. This nation currently maintains a—the number is classified, but an amount of plutonium and an amount of uranium that it feels it needs to do that, and so what we are seeking to do, because an element of our program, of course, is to make sure the security is right around all this material around the world, is the fewer places in the world that have this material, and the less of the material that is out there, the easier it is to protect it. I mean, it is just that approach.

Dr. Cook can talk about the impacts of this on the specifics, the second part of your question.

Mr. COOK. Sure. I would say first, given the two materials that are special nuclear materials that we use in the weapon program, we have largely a closed cycle as far as plutonium is concerned. So, when we take weapons apart, we recover the plutonium, we purify it, we reuse it in newly manufactured weapons.

Now, the enriched uranium is a different issue. We require highly enriched uranium for our weapons systems, and once again, that element is a largely closed cycle. The low enriched uranium that we use to generate tritium is another issue. It requires access to an indigenous source of enrichment to continue to both make tritium and to provide capabilities to support Naval fuel production.

So, I think I have addressed the key concern. And we certainly are working with the State Department and Departments of Defense and Energy on this.

Mr. WOMACK. Thank you very much. I will yield back, I would like for myself to organize for the classified brief that you discussed earlier. I sure would like to have that.

Mr. D'AGOSTINO. Sure, glad to do that, sir. Be glad to do that—provide you with great details.

Mr. FRELINGHUYSEN. Thank you, Mr. Womack. I would like to recognize Mr. Lewis from California who chaired the Overall Appropriations Committee and is a valuable member of any subcommittee. Mr. Lewis.

Mr. LEWIS. Thank you, Mr. Chairman. Mr. Nunnelee, are you sure you—okay.

The last hearing I was participating in we were talking a lot about the importance of coordination between agencies within that department.

Mr. D'AGOSTINO. Right.

Mr. LEWIS. And there we were discussing questions like do we capture enough money from people who are producing value from mines, et cetera, are we getting the revenue we need to be able to implement the enforcement in the territory, should we sell property or otherwise?

The need to communicate between agencies was emphasized by me by saying that for the longest time, during my years on the Defense Subcommittee, we could not figure out exactly how to get the Navy and the Marine Corps to communicate with one another. We spent a lot of money and effort developing the software to effectuate that.

Effective coordination and communication could not be more important in all the agencies than it is within this task that you have——

Mr. D'AGOSTINO. Right.

Mr. LEWIS [continuing]. And I certainly hope that you have the wherewithal as well as the challenge to make sure that we are maximizing GIS capabilities, applying software, et cetera, so that we can break down the standard barriers that exist between, we call them stovepipes, but it is really important. If you can communicate effectively with the FBI I want to know about it but in the meantime, are you sure that all of that is going forward well?

Mr. D'AGOSTINO. I believe it is going well. I have seen tremendous improvements in the last few years. It kind of covers across a broad variety of fronts, we have this coordinating body called the

Nuclear Weapons Council. That body, as I described earlier, has taken a very aggressive stance on making sure the Defense Department understands if it asks for something that it has an impact over here in this particular program. And by making sure that all our cards, all that information is on the table, we have actually broken through a couple of key pieces on that.

We are starting this process aggressively for these two large projects, these are multibillion-dollar projects. The Defense Department is keenly interested in reducing the costs there. The Secretary and I, as well as Don and the team are keenly interested because we recognize that, you know, it is first of all our obligation to the taxpayers to do this right, but second of all, there has to be something if it is not authorized or appropriated, then you are not going to do it. And so we have to figure out ways to make sure that we build what the country needs and not what the country does not need, and something bigger than that point.

The global information systems that you talked about is something that we are implementing in the NNSA to tie together to have a common work breakdown structure and common way we look at numbers across our enterprise. We are not quite there yet. We need to do a lot more in this particular area.

Don has brought in an individual in his organization that was doing this across the Department of Energy to specifically apply to this particular area. I believe there is a lot of opportunity in that area to get to improve.

We are not quite finished with what we need to do. Don, I don't know if you have anymore to add here?

Mr. COOK. I would not add that but I point to General Finan. The key commission of the Department of Defense, General Finan, although new in her term has been traveling with the new head of Strategic Command of General Bob Kehlor. She has been over at the Pentagon probably half the time in one form or another working with both the Navy and the Air Force and connectedness there is pretty high. I would ask her if she wishes to comment further?

General FINAN. Absolutely. As far as coordination with the DoD, that is essentially what I am here for, to make sure that the requirements that they have get translated over, that the capabilities that the DoE and NNSA has, that they understand as well, so that together the two agencies can chart a path forward. That process comes together through the Standing Safety Committee and the Nuclear Weapons Council when senior decision makers can look at both sides of that and chart that path forward.

Additionally I have about 30 officers in the NNSA of all the branches of services, so that also helps us with the coordination at the Working Group level so that we get that communication and coordination at the lowest levels so it works its way all the way up the chain. So as far as DoD, we have a structured process in place and we also have the informal military officers over at the NNSA who also facilitate that level of communication.

Mr. LEWIS. Well, across the board of government I cannot think of a responsibility where communication is of the highest priority, and certainly money pressures should not stand in the way of our implementing that.

Mr. D'Agostino, I am sorry.

Mr. D'AGOSTINO. Yes, sir.

Mr. LEWIS. You mentioned the labs and we are very proud of the work of those labs and their development over time. I have been thinking about trying to think through a visitation to our labs. A close friend of mine is on the Board of Regents at the University of California, and he is interested in joining me on such an effort.

But, Mr. Chairman, I would suggest that we might very well have a cross-section of our Committee plan to visit the labs and try and get a better understanding of just how significant they are to the role we are playing here. So if there is a way I can help you implement that.

Mr. FRELINGHUYSEN. Some of us are on our way out to Los Alamos and Sandia and the Nevada Test Site at the end of the week and we are trying to make sure——

Mr. D'AGOSTINO. Are you really?

Mr. FRELINGHUYSEN. We have not forgotten California.

Mr. D'AGOSTINO. Well, good for you. Well, I think there is an extra seat on the plane, sir, actually.

Mr. Lewis, I would be happy, of course, to take you to the laboratories on your schedule or work with your office and work with Rob on the appropriate time, Mr. Chairman.

Mr. LEWIS. I assume that there are facilities there where the kind of intelligence briefing we were talking about could take place as well.

Mr. D'AGOSTINO. Absolutely there is.

Mr. LEWIS. There are significant items.

Mr. D'AGOSTINO. We are planning on talking to the Chairman and Mr. Pastor on those specific items this week. And when you come out, we would love to do the same for you to give you some insight as to how core science, technology, and engineering supports the Intelligence Community broadly.

Mr. LEWIS. Mr. Chairman, I apologize for being late. Thank you very much. I appreciate it.

Mr. FRELINGHUYSEN. Thank you very much.

Mr. LEWIS. Thank you.

Mr. FRELINGHUYSEN. Mr. Administrator, recognizing there may be limits to what you can say in this hearing room, will you provide for the members some context on how our weapons production infrastructure and experimental capabilities compare with the Chinese and the Russians? Specifically, we talk here about having a capability-based system here, which could produce up to 80 new pits a year. How does this capability compare to that of Russia and China? And have these countries declared, as we have, that they will not produce any new nuclear weapons?

Mr. D'AGOSTINO. Okay. I think the Chairman is absolutely—there will be some limit as to what I can say, but broadly we have decided on a—we in the United States have decided from a policy standpoint to approach taking care of our stockpile as you described, maintaining capability. And when we need to work on the stockpile, we work on the stockpile and the W76 warhead, for example, and a B61 are some examples.

The approach taken by our colleagues in Russia is a bit more of keeping their enterprise fully exercised, the production enterprise

exercised, and cycling systems through. It is an approach, frankly, that is, I believe, more expensive, but, at the same time, exercises just kind of a full threat in a more aggressive way. And that, in fact, that is why the approach we were, you know, moving forward in over the next few years, pursuing life extensions to modernize these very old systems, recapitalizing our infrastructure, investing in science is so important because those three things taken together will provide that exercising of the workforce that was described. We have to exercise the workforce.

Mr. FRELINGHUYSEN. Are they taking similar steps?

Mr. D'AGOSTINO. They are actively—the "they" in this case would be the Russians—are actively pursuing actual production operations and have been for the number of years while we have both stopped underground testing because we have committed as a policy to take care of our stockpiles without underground testing. So the Russians have said, well, we are not going to stop production. We are just going to take our old systems out, rebuild them, and put them back in. We have decided instead of recycling a lot of nuclear weapons and materials around this country, we have decided we are going to take care of the ones we have where they are. And then when it comes to the point we actually have to do something, which we are at in certain systems, we are going to bring them back, work on them, and put them back out.

The Chinese, I would say, we are a little bit more limited in our knowledge there and probably it would not be appropriate to go into any great detail.

Don, did you have anything to add on that particular point?

Mr. FRELINGHUYSEN. And speak somewhat in generalities here.

Mr. COOK. The thing that I would add to what the Administrator has said is that the investment that the nation made, has made in stockpile stewardship capabilities. And this exhibit is, for example, in high-energy density physics science at the National Ignition Facility at Livermore, the Z machine at Sandia. And in hydrodynamics one of the best capabilities, the dual-access radiographic hydro test capability at Los Alamos, something we call DARHT.

Mr. FRELINGHUYSEN. I like the acronym. I know the acronym.

Mr. COOK. DARHT. You know those really address the capabilities, respectively, of what we need to understand in weapon science without resorting to underground testing. In the case of NFIDs what happens in secondaries; in the case of DARHTs what happens in primaries. And we put together the knowledge with some of the best computational capabilities, which is where the researchers put models together.

We are at the forefront still in all of those areas, although, you know, the Chinese supercomputer capability is clearly growing, still with American chips, but something we monitor all the time, so.

Mr. FRELINGHUYSEN. So to answer my question, by and large we are pretty transparent somewhat with what we do.

Mr. COOK. I think that is correct.

Mr. D'AGOSTINO. Yes.

Mr. FRELINGHUYSEN. But in reality you are not characterizing what they have.

Mr. D'AGOSTINO. Right.

Mr. FRELINGHUYSEN. So does that mean that we know what they have, but we cannot discuss it here? But how would you discuss then their capabilities? Are they increasing the capability of their weapons and their infrastructure, in a general sense?

Mr. D'AGOSTINO. In a general sense, yes. In a general sense, I believe the infrastructure capabilities are improving. Don gave a great example of the Chinese capability with supercomputing, which, of course, is not just applications from a national security standpoint. It drives innovation and technology, which helps economies grow.

But in the general sense, I believe that what we have is a commitment and understanding on the part of these other nation states that you need to exercise your workforce and capability to maintain it, and that they are being—we obviously talk about ours a lot more than is talked about publicly there; that in the '90s and earlier part of this century, if you will, there was an approach that we undertook which was making sure that we stay on top of our science and technology and engineering, drive it as best as we can so we can observe what is happening with our stockpile, where the Russians would look at it, well, that is good, they are going to do a little bit of that, but they are also going to actively work on the warheads themselves, so.

Mr. FRELINGHUYSEN. We are obviously proud of what our men and women are doing.

Mr. D'AGOSTINO. Yes.

Mr. FRELINGHUYSEN. This would be in accord with Mr. Lewis at all our laboratories. And sometimes our citizens are unaware of what we are doing, the whole need to have reliable nuclear weapons and never the thought that they would ever be utilized, but, you know, the ability to sign off on what we have, their veracity, their ability to be used if we had to, but just in the overall context of what the Chinese and Russians are doing.

Mr. D'AGOSTINO. Yes.

Mr. FRELINGHUYSEN. Yes. And where are they?

Mr. D'AGOSTINO. Well, the Chinese are building the—have decided to go forward with the process of making sure that they have a deterrent. They say it is going to be the minimum size that they are going to need to ensure their sovereignty and their nation's security. As you rightly mentioned, you know, these warheads are not static. Once you build them and you put them here, they are not going to stay like that forever. It is like your dashboard on your automobile. You set it out and park it on the street, 10 years later the dashboard is cracked. Well, why does that happen? Well, because the sun is shining on it and heating it up.

But we have components. Our stockpile is safe and secure, but these things are not static. General Chilton, who was the previous strategic commander, called them little chemistry experiments, you know, moving along, and they are, and that is why it requires constant surveillance and constant attention. And that is why we have asked for increased resources in our surveillance area. We will move that number up from about 180 million up to $240 million per year because we know we have to watch these things. They are not static.

And in our observations, the watching we have been doing over the last five years or so dictates to us we need to move forward aggressively on our B61 Life Extension Program, move forward aggressively on the W78 study because things are changing in these systems. They are safe now, but they require attention.

Mr. FRELINGHUYSEN. Mr. Pastor.

Mr. PASTOR. Mr. Administrator, we have invested heavily in the experimental facilities over the last few years, and Dr. Cook just went through a litany of them: the Z, the DARHT, I guess you could talk about the Sequoia.

Mr. COOK. Absolutely, absolutely.

Mr. PASTOR. And we are trying to find, as you say, the chemistry, the physics, the what do we do to ensure that we can certify our aging stockpile without nuclear testing. I mean, that is the whole intent and so we invested all this money.

Mr. D'AGOSTINO. Right.

Mr. PASTOR. As I see your Life Extension Program schedule, it is, I think, very aggressive. You know, but that is my opinion and I think you may want to classify it, too, as you want to get on with it. You are slated to make major decisions regarding the technology on the B61, the W78, and now I think the W88, too.

I guess the question is about time. Is there sufficient time to conduct the experiments and then enough time to incorporate sufficient experimental data into the decision-making? Because sometimes they are not parallel. And as I recall, one of the GAO recommendations was you may have to slow one down to ensure that the investment you are making pays off.

And so my question is with all the experimental stuff that we are doing and your schedule, which I think is aggressive, is there enough time? Have you considered time to implement your experimental data to ensure that the Life Extension Program is going to be profitable in terms of being efficient?

Mr. D'AGOSTINO. And the answer is yes, I believe there is enough time to do it. And the reason why I believe that is because of some of the project systems that we have in place. Within the defense programs area the scientists have worked together. This is led by the federal managers here that Dr. Cook has in his organization to establish what is known as a predictive capability framework, which outlines over the next 10 years the specific experiments, you know, broadly what goals and milestones need to be achieved, and then the specific experimental schedules, the sub-critical experiments to get the data so we can put them into the computers.

We are actually in a pretty good spot because what we have right now, as you have described, is the finishing up of very significant investments in building scientific tools. And now we are transitioning from building the scientific tools into operating the tools, actually conducting the experiments, and putting that data into these large computers—the Sequoia, for example—to get the data out of it.

The timing is pretty good in this area. Don, if you might want to——

Mr. COOK. Sure.

Mr. PASTOR. But that is the question. You are doing this and I do not know what the timeline is in terms of where you have suffi-

cient information from your data you are collecting experimentally, but right now you are still aggressively working on these weapons systems.

Mr. D'AGOSTINO. Yeah.

Mr. PASTOR. So right now, as we speak, there is probably a weapons system, a pit right now being modified, and yet are we going to use the best science and that we have invested so much time to do?

Mr. COOK. If I can answer again with just a few specifics. The time scale is aggressive. We would certainly agree with that. It is also well planned. So the Administrator talked about the predictive capability framework. This is focused on codes, understanding the basic data, doing the design work that is required.

We have a counterpart to that now, which is called the component maturation framework. This is the one that deals with the technology readiness levels that I addressed earlier. And it is basically a conscious choice of what we have ready for the B61, what we believe we could get ready, and a boundary that says we cannot get something ready in time for the B61, therefore, we choose not to use it. We continue to advance it for the W78 and beyond that for the W88 that follows. We have now been integrating that kind of, you know, fairly disciplined project planning into the components themselves.

In the case of the B61, the importance on having the first production unit in 2017 is actually driven by the fact that we will have to replace the power source, the neutron generators, and a portion of the radars anyway. And so we either do that as a separate block of activity and then do the life extension later or we choose what we can do and we do the life extension and the replacement of those components at the same time.

Mr. PASTOR. But once you open it up, though, you want to be able to do the best job as possible because you cannot be opening and closing things as many times as you want.

Mr. COOK. Well, that is correct. It is the best job that is possible within a defined set of conditions. And those conditions are the hardware that we put in must work and the first production unit must be completed within 2017.

For the W78, where we are again driven by some lifetime limits, that will follow, but its first production unit does not occur until 2021. So we have enough time to do the design. We are requesting approval to begin the 6–1 or the conceptual drawing study. That will take us the better of a year. And then a two-year period for the W78 to do the engineering study and the detailed cost assessment. The reason that we have asked, as has the Department of Defense, to incorporate the W78 arming, fusing, and firing system in that is that is a unit that needs to be updated as we did with the W76. And if we do that thinking and planning in concert with the W78, we can again look at the opportunities to save cost through having common features or adaptable features.

Mr. D'AGOSTINO. It is probably worth describing life extensions. There are basically three main steps. We are clearly—it sounds like a lot of work and it is, the 76, the 61, and the 78/88 study, but they are all in different phases. The W76 is in the production phase, so that uses up a couple of our sites kind of fairly aggressively.

Mr. PASTOR. Which warhead are you waiting for the F35? So you have more time on that one.

Mr. D'AGOSTINO. The B61 is being driven by two things. It is in the production engineering phase and that was because of these components that failed. That is in the production, engineering, and design phase to support the Air Force's need for the F35, but also it is driven by the fact that components are aging. So that is in actually the production engineering phase.

And 78 is in the study phase, so it uses different elements. We are actually fully utilizing all of our pieces, but if we have de-conflicted the overlap so that we do not have this kind of crisis of two things arriving at the doorstep at the same time. And that is kind of how we have our work laid out.

Mr. COOK. Yeah, and what I would say is it is an opportunity—there is an opportunity to read the—I am sorry, as we go on year by year to update and refine the 12–51 report, and that is the one with a 10-year horizon. It talks about the detailed nature of what we are doing to each of the weapons systems. I——

Mr. PASTOR. Go ahead.

Mr. COOK. I just think it is a good question. I mean, a good question that should we be concerned about all the activity we have to do? I would say absolutely, and we are managing it and structuring it to make it workable.

Mr. PASTOR. One more question. This deals with, as you do, the various experimental studies that obviously you may end up with a result or data that says you can do this better in terms of whether it be ignition or whatever the fifth component may be. But you have a fine line because you really cannot. You are required, I guess, by treaties that you cannot cross that line because it may be modified as a new weapon. Who is the one that makes those decisions in terms of what stays with what is proper or what would be certified as a——

Mr. D'AGOSTINO. Sure.

Mr. PASTOR. Because it is such an improvement that you are talking about a new weapon.

Mr. D'AGOSTINO. Yes, in the end, the Nuclear Posture Review provides us very specific guidance from a policy standpoint. Our focus is to modernize the existing stockpile. Extend the life of our existing stockpile. Put the best technology into that existing stockpile in order to do the job it was originally intended to do, not design new warheads for new capabilities. Okay? So that is kind of—that is the first point.

The second point is we want to make sure our designers, our laboratory directors specifically, as they make recommendations to the Federal Government, that they are given the opportunity to examine all the different ways that they can extend the life of that stockpile, but ensure, at the same time, that we drive as much 21st century safety and 21st century security into that stockpile. I mean, that is a good thing. We want the best safety and security in our stockpile. We do not want, you know, the seat belts from the 1960s on our automobile of the 2010s, right? And so our lab directors have full flexibility to provide recommendations.

If there is a sense that that recommendation would require a modification to a nuclear component, a very significant modifica-

tion to a nuclear component that some might construe as a new nuclear warhead, we are obligated and all of our decisions pass through to the President—to the President—who would just make that decision if we decided to move forward with what we have called a, you know, a replacement, if you will, of that component. In all cases, we are going to stick to no underground testing and we are going to use components that are based on previously tested designs.

So, there is a fairly rigorous process in the Nuclear Weapons Council for making those types of decisions. Our opportunity, if you will, with the B61 work, is to figure out, as Don had described, what components are mature enough to actually go into that stockpile and then he will recommend to me and the Nuclear Weapons Council this is the way we think we ought to move forward with this particular system. We will be in pretty good shape on that one.

Mr. COOK. Yes, I have nothing to add to what you said. I would add in General Finan's area we have also got a very close interaction on all of these LEAPs with the commander of Strategic Command and his folks with the Air Force and the Navy for systems for which they are accountable and with all of the civilian ranks of the Department of Defense, both in the policy line and in the acquisition line.

Mr. PASTOR. Thank you.

Mr. FRELINGHUYSEN. I want to refocus on your funding priorities. We are proceeding to construct the UPF at Y12 at Oak Ridge. We are doing the CMRR at Los Alamos. These are primarily new investments. They are expensive. They will continue to be expensive for the foreseeable future. Where are they in the overall scheme of things in terms of your setting priorities?

We have existing infrastructure we are trying to maintain and modernize.

Mr. D'AGOSTINO. Right.

Mr. FRELINGHUYSEN. And they are obviously an essential element of life extension.

Mr. D'AGOSTINO. Yes, sir.

Mr. FRELINGHUYSEN. But how do you prioritize?

Mr. D'AGOSTINO. The priority for me, in my view, is to move as aggressively into the future as we can. And, you know, obviously, as you described, we will have to maintain some funding to do deferred maintenance on facilities and to invest in some of our old, early 1950s facilities.

Let me take the plutonium and then talk to uranium.

Mr. FRELINGHUYSEN. Yeah, please do.

Mr. D'AGOSTINO. I think you want some specifics.

Mr. FRELINGHUYSEN. Yes, I do.

Mr. D'AGOSTINO. Yeah. So on plutonium, we have an existing chemistry, metallurgy, and research facility. There are eight wings of this particular facility at Los Alamos. And what we had been doing over the last few years was getting ourselves out of that facility. We are down into essentially our last two wings. We have moved all of our operations because it is too expensive to maintain the rest of it. And now we are down into that last two wings or so that we have to stay there until a new chemistry and metallurgy facility comes back online.

And from my standpoint, I think we have—I would call it like squeezing maybe a sponge, if you will. It was a sponge at first because we managed to get ourselves out of a lot of that space and reduce our costs there. But I cannot go any further in that particular area.

So what we were trying to do is spend, you know, frankly, the minimum amount I can, just enough to maintain the safety systems in that facility because I would rather have more of the resources go towards building a future capability.

Mr. FRELINGHUYSEN. The existing facility, obviously it has to be maintained and protected and so forth.

Mr. D'AGOSTINO. Yes. But what we have done in the meantime is not maintain the whole existing facility. We have actually said we are only going to maintain these last wing and a half to two wings of capability at Los Alamos, and the rest of it is going to go away. We are letting it—we are not maintaining it. We have gotten stuff out of it. It is in a safe position, but we are not doing—you know, not changing ventilation filters and we are not, you know, doing the painting of the hallways and so on.

The same kind of problem we have in the uranium facility and capability at Y12. We have a building called 9212. Don is very familiar with this facility.

Mr. FRELINGHUYSEN. And I visited there.

Mr. D'AGOSTINO. Yes, you visited, I remember that. And then what we—that is a little bit more challenging because we actually need basically almost all of that 9212 capability while the uranium processing facility comes up. So we have a risk reduction program that Don can describe some of the details on that where, with the Defense Board, we have—and looked at—but we have come up with—we looked at a list of what do we have to maintain and what investments do we have to make on the order of tens of millions of dollars a year that is not going to build the new UPF, but is going to maintain that existing capability.

We do have——

Mr. FRELINGHUYSEN. Maintain and protect.

Mr. D'AGOSTINO. Maintain and protect. Now, our most important is safety to the workers and environment and the people in the area. At the same time, we do get into differences of opinions with the Defense Board—I think that is just natural; technical people will disagree—differences of opinion on whether we need to make that investment to do whatever it is, and Don may have some examples, or should we use that money to build the new UPF. I am always—it is a tradeoff. It is something that is fairly dynamic and gets managed fairly regularly.

Don, can you provide some additional insight?

Mr. COOK. Sure. On a couple of issues, it is important to recognize, and we do, that what we need to do, both at Los Alamos and at Y12, is construct new facilities, that they are new nuclear facilities, that they are replacing facilities that are 60 or in one case more than 60 years old, and that we have got to meet modern safety and security standards. So the first and best way to constrain the cost is not to make them any bigger than we have to. That is why the interactive planning that we have done with the Depart-

ment of Defense is so important. And we call them capability-based facilities rather than capacity-based.

We structured them so that we could do 50 to 80 primaries or secondaries per year in these, but not larger than that. We are not betting on the Com; we have an agreement for the future of the national deterrent, nuclear deterrent, that we will not require something larger.

The intermediate space, that is the next 10 years, as you mentioned earlier, sir, is the one that we are structuring to live through, and we must. And when it comes to discussions with the Defense Nuclear Facility Safety Board the key issue in their mind is, is the schedule going to wander? You know, if it wanders and it is not trustable, if we cannot make the commitments, then they will say we need to make more investment in the current and old facilities. That is not a very good economic bargain. The better bargain was to put in place a schedule and execute the schedule.

Something we have done in the past nine months to enable remember that and make it more probable is the management and operations entities have big companies and several are big nuclear builders; Bechtel and BWXT [phonetic] are two. They are in both of our sites. We have asked them to help us with the options: the learning, the planning, the deep integration, and to phase these projects in such a way that CMRR would lead and UPF would lag, but not by more than 24 months so that we can really apply the lessons learned.

And I mentioned earlier that the nuclear structures would be in place in 2020—the comment was 10 years—so they will be in place in 2021. But the planning right now for implementation of the tool sets and the people and the technologies, we are in the guts of that. And so 2023, we intend to be fully in operation at the new CMRR in 2025.

Mr. FRELINGHUYSEN. What is the role of this ominous group, the CAPE? What are they doing relative to both of these facilities? Maybe even go through that acronym so everybody knows it.

Mr. COOK. Sure, sure. It is a DoD entity. Neile Miller, the Deputy Administrator to the Administrator sitting behind me, has been active on this. We have a strong interaction and a good one with OMB. The Cost Analysis and Program Evaluation, or CAPE, Unit of the DoD is basically their independent arm to look at costs.

We have an equivalent independent arm within the Department of Energy and we asked each of those two independent arms to do an independent cost evaluation.

Mr. FRELINGHUYSEN. They are doing a review now.

Mr. COOK. They are doing—yes, yes. CAPE is just getting into the beginning parts for the CMRR whereas our arm completed that work for UPF. And they are now working together to do that.

Mr. FRELINGHUYSEN. So, when will the review be completed?

Mr. D'AGOSTINO. I would say it is going to take—yes.

Mr. COOK. Spring to summer, late spring to early summer.

Mr. FRELINGHUYSEN. So they come up with their recommendations and observations, but are you sort of proceeding nonetheless with design and construction?

Mr. COOK. Yes, the answer is we are proceeding with design. We do not have standing armies. We have armies of very competent

people who are doing the design and they have got to get the design right. We are proceeding and we will take into account prior to setting the baseline for the facilities, we are going to get the cost estimates from CAPE and from our internal arm, and we will compare that. If they are reasonable and if we have—if we feel we have a good understanding of the cost, then we will proceed once the engineering is beyond 90 percent done to set the performance baseline and hold the control.

Mr. FRELINGHUYSEN. I do not mean to be facetious, you have got armies over in Savannah, don't you?

Mr. COOK. We have big sites. We have a lot of work, so I am not sure which army at Savannah you are talking about.

Mr. FRELINGHUYSEN. Yes.

Mr. COOK. We will certainly have a lot of activities in tritium.

Mr. FRELINGHUYSEN. Yeah. Well, let me get——

Mr. COOK. And the construction on the other side.

Mr. FRELINGHUYSEN. Let me get to the Tritium Readiness Program.

Mr. COOK. Sure.

Mr. FRELINGHUYSEN. The GAO has investigated the Tritium Readiness Program this past year and raised some, I think, fairly serious questions about your ability to provide a reliable source to maintain the nation's nuclear weapons stockpile for the future. They recommended that a comprehensive plan be developed to manage the technical challenges and production requirements. Can you talk to us about their recommendations?

Mr. D'AGOSTINO. Absolutely.

Mr. FRELINGHUYSEN. This is, of course, on top of all the other things that you are doing, right?

Mr. D'AGOSTINO. Yes.

Mr. FRELINGHUYSEN. All the other priorities.

Mr. D'AGOSTINO. Right.

Mr. FRELINGHUYSEN. And some of the priorities that we have mentioned.

Mr. D'AGOSTINO. Right.

Mr. FRELINGHUYSEN. New investments.

Mr. D'AGOSTINO. Yes, sir.

Mr. FRELINGHUYSEN. Your desire, obviously, and all of our desire to deal with the legacy of an ancient, you know, nuclear infrastructure that is——

Mr. D'AGOSTINO. The training piece is absolutely critical to our efforts. And GAO identified a couple of concerns that they had. One of them had to do with a large number of uncosted balances that are the results of the program. That was strictly a matter of how the contracts were initially structured and the GAO made a recommendation on that and we are implementing that recommendation to do more of a year-by-year approach instead of putting all the money out there and then waiting for seven years for all that money to get spent. So that was purely a matter of structure, but we are going to make that change.

The second element of their concern had to do with the amount of tritium-producing burnable absorption rods—or TP BARS as it is called—and whether we had the right number and the right

agreements in place with the Tennessee Valley Authority in WattsBar Unit 1 in order to irradiate these. They are currently——

Mr. FRELINGHUYSEN. This is where there is one and potentially three.

Mr. D'AGOSTINO. Right, right. Absolutely, sir. There is one and potentially three reactors that we can use in this case.

Don, since the tritium is in your area, could you add some of the details on that? But there are good options for the enterprise in order to make sure we maintain this tritium capability. I am confident that we will.

Mr. FRELINGHUYSEN. But maybe before Dr. Cook answers, with the size of the stockpile going down are the requirements for reducing tritium going down as well or?

Mr. D'AGOSTINO. It changes a little bit because we do have an operationally deployed stockpile decreasing in size, as you know, sir.

Mr. FRELINGHUYSEN. Yes.

Mr. D'AGOSTINO. There is an overall size of the stockpile we need to maintain. And so some of the details associated with that series of warheads, the group of warheads that are not part of the operationally deployed set of units. We have different requirements within the Defense Department on, you know, keeping tritium bottles full on this handful and because they are in the more ready state, and then we have a secondary readiness state where we do not have to worry about it as much.

The bottom line is that there is a tightly integrated—Don has a group of folks that track tritium, you know, by the liter and by the milliliter most likely, to make sure, you know, with the decay of tritium and the requirements curve going up, to figure out when and where we have our issues out into the future.

Mr. FRELINGHUYSEN. So you are going to tell us how all those pieces are going to fall together?

Mr. COOK. I am going to describe that we have a plan.

Mr. FRELINGHUYSEN. Oh, good.

Mr. COOK. Tritium decays with a half-life of about 12 years, so that is clearly in our plan. We are in the early stages of really the engineering and production of tritium, so the tritium extraction facility which takes tritium out of the BARS, our contracts with companies such as Westdyne and the relationship with TVA, we have worked through.

You know, a technical issue, tritium is permeating through the BARS and the early licensed condition that was established had one assumption. We continue to make progress on containing the tritium, but for 10,000 tritium atoms we contain all but 4 and we hope to get that down to containing all but 2 and all but 1. This is the reason why having the expansion to three reactors rather than one is so important. Under no condition will we go past the EPA limits. The question about the——

Mr. FRELINGHUYSEN. There is a lot of angst on the first one, right?

Mr. COOK. The angst on the first one is we can—yes, there is. And we are—you know, we will not exceed the license conditions certainly that TVA has with NRC and with environmental organizations.

Mr. FRELINGHUYSEN. Even for that one you have to have some sort of a——

Mr. COOK. That is correct. So we developed a plan——

Mr. FRELINGHUYSEN [continuing]. Side by side or something.

Mr. COOK. Yeah. And we are, again, working this with a decrease in the stockpile, the return of older weapons. And again, General Finan has been right in the thick of this with the Department of Defense because that is one of the deliveries we produced. So, every 18 months we have a cycle of these TP bars go through the reactor, a TVA reactor. And we have——

Mr. FRELINGHUYSEN. So the side-by-side of what I talked about was sort of a retention area, right, or the clean up? And is that budgeted for? Is that—because that is a cost that I would assume somebody must have anticipated.

Mr. COOK. The answer is yes.

Mr. FRELINGHUYSEN. It is budgeted for?

Mr. COOK. The answer is it is budgeted for.

Mr. D'AGOSTINO. It is budgeted right next to the tritium extraction—excuse me, right next to the tritium extraction facility. That is Savannah River. I think it is Building 232. It is an older facility, but the pipe goes from one end to the other facility. And it is in that old facility where the old bottles come in from the stockpile, the tritium is cleaned up, the gasses are separated because it does decay as Dr. Cook was describing. And so having these things scrubbing out these particular isotopes is what happens in that building. And that all feeds—all that data comes in on a very regular basis to feed the database that tries to—that keeps on top of the decay of tritium, then the stockpile needs and our production requirements.

Mr. FRELINGHUYSEN. But the TVA, the area around the reactor had some issues. Aren't there cleanup issues there?

Mr. D'AGOSTINO. Associated with the——

Mr. FRELINGHUYSEN. Tritium, yeah.

Mr. D'AGOSTINO. Yes.

Mr. FRELINGHUYSEN. Yeah, the leakage issue.

Mr. D'AGOSTINO. As reactor coolant comes out during sampling and the like, it has got a little bit more tritiated water than is normally expected. In this goes to the 4 atoms out of 10,000 versus what we are going to get to is 2 out of that 10,000.

Mr. FRELINGHUYSEN. So there are costs associated with that.

Mr. D'AGOSTINO. We are working with TVA. I am not familiar with the specific costs associated with them, but we have been working very closely with TVA on this as well as the licensing. We can provide the Committee some specifics on costs.

Mr. COOK. Yes, if I can quickly address two issues. There was an impression early in our working with GAO that they thought the large uncosted balances were because we were not making technical progress. I want to just clarify it was because we had long-term contracts structured. We did not want to lose the supplier of these TP BARS. They are also a critical supplier to TVA.

But the real issue at hand is the timing at which TVA and with our support can achieve a change in the license condition. If it looks like that is going to be too long off, then to meet the tritium needs we will have to use more than one reactor. We will still lose

the same amount of tritium, but in two or three different places rather than one. If the license condition can be changed in time, then we only have a need to use one.

Mr. FRELINGHUYSEN. A lot of things have to fall in place. Is that another way of——

Mr. COOK. A lot of things need, yes, need to be worked into place.

Mr. FRELINGHUYSEN. Yeah.

Mr. COOK. That is correct.

Mr. D'AGOSTINO. Mr. Chairman, we would be glad to get some of the specifics on cost to you.

Mr. FRELINGHUYSEN. Let me yield to Mr. Pastor to see if he has some additional questions.

Mr. PASTOR. There are a lot of things that have to fall into place, but we have a plan for it, that is the good news. The question I have is about warhead dismantlement. In the review, Nuclear Posture Review, it states that modernization will allow you to accelerate dismantlement of retired warheads. But yet in this budget there is a reduction. I think you had $96 million in fiscal year 2010 and this year, 2012, you were talking about $57 million.

Mr. D'AGOSTINO. Right.

Mr. PASTOR. Why is the funding going down if the review states that you can accelerate the dismantlement?

Mr. D'AGOSTINO. The dismantlement work, there was an—we had a one-time increase in fiscal year '10, as you pointed out, to accelerate some safety studies that we needed to do for a couple of our warhead systems, the W84 and the B53 warheads, as well as by the tooling because these are special tools that you need in order to take apart the warheads. The dismantlement, we put together an accelerated schedule a few years back and, in effect, we are implementing on the particular track on the accelerated schedule.

There is not a one-to-one correlation between dollar appropriated and number of warheads dismantled because each of these warhead systems are different. The larger warhead systems, for example the B53, for example, takes many, many weeks to take apart just one. In some of our earlier systems you can take apart a warhead in just two shifts' worth of work. So it is very difficult to, in my view, ascribe just a dollar and say $1 million provides you 1 warhead, so 58 gets you 58 warheads.

The key for me is not speed of warhead dismantlement, but safety of warhead dismantlement. We are very careful not to pressure our contractor, Babcock and Wilcox down at Pantex, to take them apart faster or to exceed some goals because these are systems that have been together in some cases for 45 years, you know, high explosives and polymers and metals that have been put together under pressure for 45 years, and the key is to do it safely. So I know that there is a lot of value. The more warheads that we have taken apart, the safer I feel because it separates the high explosives from the special nuclear material. But speed is not one thing that drives me because I am concerned about safety.

Don, do you want to maybe comment as well to Mr. Pastor?

Mr. COOK. Yes. Sure. And I think the observation that the funding levels are different is very clear. And the key difference is, as the Administrator said, the investment that was made in the tool-

ing and in the safe systems for the 21st century. SS21 is what we call it at the plant. Those are all complete. So for the first time in more than a decade, Pantex now has full safety authorization to disassemble or to reassemble any of the elements in the present stockpile or all parts of the retired stockpile. So——

Mr. PASTOR. So—oh, okay, go ahead.

Mr. D'AGOSTINO. Yes. So, I do not have a concern that we will meet our dismantlement levels to which we have committed. And it will take—once again, the important activity in weapon dismantlement is to ensure it is absolutely safe. And keeping it at a steady pace from now on where we are is going to be the driving requirement.

Mr. PASTOR. Well, you are saying that there is not a one-to-one ratio. And so—but the $96 million, as I understand it, was basically an acceleration, but it went into, I guess, infrastructure?

Mr. D'AGOSTINO. Yes, special tools that were designed——

Mr. PASTOR. So, it went into having the equipment, having the infrastructure, so that you could do a more efficient job of dismantlement.

Mr. D'AGOSTINO. Yes, sir, that is right. And the way—you know, obviously there are ways to speed things up.

Mr. PASTOR. I understand.

Mr. D'AGOSTINO. We could bring up a whole new—we could hire people specifically for the shop as a new shift. The concern I have kind of from a sustainable planning standpoint is if we decided, for example, that it was so important that we wanted to—you know, now that we have our tools, we want to fully utilize them 24/7, if you will. That way we can get the work done faster. That is certainly possible, but it would require, I think, some significant hiring of production technicians down in Pantex. These are some fairly expensive people to bring on board because we have to make sure—it is not just hiring a mechanic off the street. We process security clearances and give them their training, and so about a year after they get on board they are actually doing some useful work. And then I would be in the business of laying off a whole bunch of people about five or six years from now, or maybe more like seven or eight years from now, after all the work is done. And that provides a bit of a bubble in our workforce. So there is an element of that that goes into the planning. Associated with that is the numbers of technicians that we have balanced off against the existing work that we currently have.

Mr. PASTOR. So I guess the policy decision was to take the money in 2010 and, for safety reasons, get the equipment that would allow us to safely be able to dismantle a number of weapons?

Mr. D'AGOSTINO. Right.

Mr. PASTOR. So, now you have the equipment?

Mr. D'AGOSTINO. Right.

Mr. PASTOR. And you decided to run one shift because you did not want to bump the personnel because five years out, six years out, whatever the time length, you would have to lay off the other two shifts because of the number of weapons that needed to be dismantled.

Mr. D'AGOSTINO. Yes, sir. It is a policy and a financial decision as informed by the financial piece of it because it would cost a lot to bring people up and——

Mr. PASTOR. Sure.

Mr. COOK. If I can make two other connections. When it comes to nuclear explosives safety we have got the Sandia lab strongly integrated in our work at Pantex. We also have the Y12 activities, so when a weapon is dismantled at Pantex, even if we might choose to do it faster there, we wind up piling up the secondary systems that have to go to Y12 to be taken apart. And what we have been driving toward is a sustained capability for the next decade at a rate that all elements of the complex can work, too.

Mr. PASTOR. So, because now you have a strategy pretty much planned to go through the decade, would it be realistic for me now to say, well, $57 million will be kind of the yearly expense that we are looking at for this?

Mr. D'AGOSTINO. Yes, sir. I would have to look at my stat table to find out how it changes. It changes a little bit over time.

Mr. PASTOR. But that it is basically what it is around, is that correct?

Mr. D'AGOSTINO. Yes, where we can partition that off specifically for this particular activity. It is supported by the rest of the tooling because it is obviously utilizing the Pantex plant. It utilizes the production technicians, the gauges and testers that get used as these things get taken apart.

Some of this work is also supported by the surveillance program because when we take things apart, we—instead of just taking them apart and then destroying the components, some of these components actually will get looked at for how they have aged. Because there is a lot of data that we can extract from this dismantlement activity, so elements of that are supported by the surveillance program. But those specifically focused on taking apart retired warheads are part of this unique dismantlement plan.

Mr. PASTOR. So let me go again. The $96 million allowed you to buy the equipment or the tools. And for safety reasons, we needed them.

Mr. D'AGOSTINO. Yes.

Mr. PASTOR. A decision was made not to bring on additional personnel because you wanted to keep a steady flow.

Mr. D'AGOSTINO. Yes, sir.

Mr. PASTOR. So, now we have a plan for 10 years, more or less. One of the problems being that the secondary institution, wherever it may be——

Mr. COOK. Y12, yes.

Mr. D'AGOSTINO. Right.

Mr. PASTOR [continuing]. Wherever it may be, does not have the capacity, so that is another limiting factor.

Mr. D'AGOSTINO. Right. Yes, sir.

Mr. COOK. So, it——

Mr. PASTOR. Right?

Mr. D'AGOSTINO. Yes, sir.

Mr. COOK. That is all correct the way you said it.

Mr. PASTOR. So are we really accelerating dismantlement or are we just on the same program? And if we are increasing it, what is the baseline that we are using to say we are increasing it?

Mr. D'AGOSTINO. So the baseline is established in a report, a classified report, provided to Congress. We will provide it to the Committee. I would be happy to provide it to the Committee.

Mr. PASTOR. I guess I did not have the clearance to read it, so.

Mr. D'AGOSTINO. No, no. No, you have the clearance, sir, there is no question about it. You might not have a safe in your office, but we will make sure the Committee gets that report. But also, what we have actually is very significant——

Mr. PASTOR. Well, the question is in the 10 years are we really accelerating or are we status quo or——

Mr. D'AGOSTINO. Yes. I will explain.

Mr. PASTOR [continuing]. Are we decreasing? I mean, I guess that is probably what we are looking for.

Mr. D'AGOSTINO. No, we actually are accelerating, Mr. Pastor. The report provides the baseline. That is our commitment.

Mr. PASTOR. Okay.

Mr. D'AGOSTINO. That is step one. Step two is we are accelerating. Just last year, in fiscal year '10, Pantex exceeded its dismantlement plan by 26 percent. It did 120 percent of that workload. In FY10, fiscal year '10, the previous fiscal year I think they were up about 10 percent. And what we have realized is as a result of this baseline and these new tools that have been brought in place, that these new tools drive the efficiency of the dismantlement and the safety of dismantlement rate up much better than we had expected to.

So what we are in the business of—and, hopefully, we are always in this business—but it is underpromising and overdriven. You know, I do not want to promise something that we cannot deliver on, but I always want to promise something that I know I can at least deliver on and hopefully exceed that piece.

So our commitment to the President earlier on was to get that whole retirement set of workload done by about 2021, 2022 timeframe, 10 years out.

Mr. PASTOR. Ten years out.

Mr. D'AGOSTINO. But our data shows us we will probably actually get there sooner. That is a good story.

Have we re-baselined our old report? No, sir, we have not. Could we? We probably could and kind of re-normalize the curve, if you will. So that is in our acceleration piece. We are accelerating as a result of that. But it is as a result of the workforce down at the plant with the new tools and the new processes that we put in place. It is actually a good story, I believe.

Mr. COOK. Yes, if I could just comment. I was looking at my notes. Earlier, sir, you said that the—earlier, sir, you said the barriers were personnel, infrastructure, and training.

Mr. PASTOR. Right.

Mr. COOK. And I think that is pretty clear. So, you know, we had been training people at Pantex through '09 and '10. Much of the new tooling was implemented in '10. It will be kept operating in '11, '12, and beyond. And the budget for dismantlement is relatively flat into the future.

In order to deal with the backlog that we had at Y12 we are doing planning activities right now. But in terms of another key infrastructure item is having safe systems, you know, having the business practices and the safety approvals. That tended to be the dominant one at Pantex besides the training of people and the new tooling. At this point, all three are in place. And so we expect to have now a sustained level of dismantlement that is at a higher rate compared to years 7 and 8. So clearly a higher rate and that ought to be sustained for a decade.

Mr. PASTOR. So what do we do in 2012 in terms of dismantlement? We say we are done and——

Mr. COOK. In 2020?

Mr. D'AGOSTINO. 2020, 2022.

Mr. PASTOR. 2022, I am sorry. Yeah, 10 years from now, right.

Mr. COOK. My belief is that as the weapon numbers come down because we are going to take things off operational alert——

Mr. PASTOR. Right.

Mr. COOK [continuing]. The 2,200 down to the 1,550. And as newly manufactured weapons are put in place that will have other weapon systems that we need to take apart, we will want to recover special materials, we want to safely dispose of the high explosives. And that time scale of 2022 will probably move out, but the number will taper off to a relatively steady state.

Mr. PASTOR. Within the scope, yes. Thank you.

Mr. COOK. Sure. Good question.

Mr. FRELINGHUYSEN. He is every bit persistent. We are approaching noon and I just want to get back in here and then we are going to——

Mr. PASTOR. We finally got the review, so that was the good news.

Mr. FRELINGHUYSEN. A lot of what we are talking about here is sequencing——

Mr. D'AGOSTINO. Yes, sir.

Mr. FRELINGHUYSEN [continuing]. And your ability to sort of get things done. And Mr. Administrator, you spoke earlier about your relationship with the Defense Nuclear Facilities Safety Board. And there seems to be some disagreement between NNSA and that board regarding some safety issues at CMRR. Are there some issues there relative to seismic issues?

Mr. D'AGOSTINO. Well, yes. I would not call them issues per se. I would call them technical differences in approaches on the chemistry. The CMRR, which is the replacement facility that we have right now before us, the Board and the Department have agreed and certified a particular design, and that is the approach that we are moving forward on.

What we are looking at is to make sure as—you know, obviously as you said earlier and I have said earlier, our understanding of what it is going to cost to provide these facilities has changed. We want to make sure we understand what drives the cost change. Because it is important for us to understand what drives the cost change and to make sure that we understand those particular drivers.

And this is not a matter of backing off on safety at all. On the contrary, it is a matter of taking a look at making sure we under-

stand what drives costs. And if we need to change, we have not made any views on changing the design approach, if we need a change, we understand what we are getting into changing.

The current CMRR, the replacement building design, is designed to withstand a certain seismic load, if you will, the 1 in every 10,000 or 1 in every long period of time type of an earthquake. A priority, of course, is balance, you know. What we do is we have to manage risk. And we manage risk—each and every one of us manages risk at any point in time, and so I expect—obviously as designs mature and as decisions need to be made on, well, should we put this in the building or should we put that in the building, we will have differences of views and we will resolve those.

But one thing that is important from my standpoint is the Board provides an independent input into the Department on safety issues. It is critically important for us to get that input because they give us an independent set on something that is so important, which is nuclear safety. We as a department, as the Executive Branch, have the responsibility to take that input, make sure it is duly considered in the policy decisions as we move forward, and then balance the tradeoffs.

Don may have some specifics associated with any particular specific differences of views that currently exist, but.

Mr. COOK. We have asked some questions of Los Alamos. Let me tell you what they are and why they were asked.

So CMRR has really two functions: it replaces a CMR capability that we have and it also has a storage vault for special nuclear materials. That is like HEUMF at Y12 for storage of uranium. Here it is a storage of plutonium. The material went into—in that vault is not considered material at risk. Because the requirements for the number of pits that we need to be manufactured at Los Alamos is now in a clearly defined fine range—the 50 to 80, and at the beginning of CMRR years ago the number was larger—there is the potential to deal with more material in the vaults, better process in the actual manufacturing processes, and less material at risk.

And I asked the question of the Los Alamos team have we done the best job we can to minimize the material at risk in all of the process flow, all of the glove boxes that we have, all the transportation of material. Because it is only when material is in that case that if an earthquake occurred—and we do understand the seismology of the region better—and then if that triggered a fire, certainly earthquakes have been known to trigger fires in the place, and then if we had a fire suppression system fail and be required to active ventilation through all of this fault sequence, the amount of money that we have to invest in all of that is critically dependent on the material at risk.

And so my question is have we gotten that material at risk at the lowest level possible? I sent a letter to Los Alamos and also sent immediately a copy of the letter to the Defense Board so they can see what we are doing.

Mr. FRELINGHUYSEN. So is there likely to be a delay or not at Los Alamos?

Mr. COOK. There is not likely to be a delay. The issue—we have a current design for the plant. The question is not whether we need to have more in the plant, but whether the safety systems have to

work at the level assumed in the past, and it may well be the case, or whether we can reduce the material at risk and take a minor change in the safety systems. That is the question at hand.

Mr. FRELINGHUYSEN. I think we have covered quite a lot of territory this morning. And I want to thank all three of you for your testimony—hearings often do not get through on time——

Mr. D'AGOSTINO. Yes, sir.

Mr. FRELINGHUYSEN. In closing, Mr. D'Agostino, please ensure that the hearing records, the questions for the record, and any supporting information requested by the Subcommittee are delivered in final form to the Subcommittee no later than four weeks from the time you receive them. The members who have additional questions for the record will have until close of business tomorrow to provide them to the Subcommittee staff.

And I want to thank you all for being here, for your participation, for your education, and may I say for the work that you do each and every day. And I know you have got a lot of supporters in the back of the room who have dedicated their lives to the same purpose, and we would like to recognize their efforts and dedication.

Mr. D'AGOSTINO. Thank you, Mr. Chairman and Mr. Pastor.

Mr. FRELINGHUYSEN. We stand adjourned. Thank you.

QUESTIONS FOR THE RECORD
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HOUSE COMMITTEE ON APPROPRIATIONS

NATIONAL NUCLEAR SECURITY ADMINISTRATION:

WEAPONS ACTIVITIES BUDGET HEARING

MARCH 1, 2011

OVERALL INVESTMENTS AND END STATE

Subcommittee. Administrator D'Agostino, there is more than a little bit of confusion regarding what the Administration has actually pledged to modernize the Nuclear Security Enterprise over the next several years. For instance, the Administration announced last year that it would be requesting approximately $9.2 billion through 2017 more than a "baseline", but in your written testimony, you only refer to a commitment to invest $85 billion over the next decade.

These are huge numbers, but this is the most critical responsibility of the Department of Energy. I'd like to take a moment to drill down into what you're really asking for, and why.

- In your planning, what do the infrastructure and stockpile look like ten years from now? What is different from today?

- Is $9.2 billion the right number to get us there? Will this amount be enough to fully implement the Nuclear Posture Review? Are there any major investments that will be needed that are NOT included in this figure? If so, why not?

Mr. D'Agostino. Since the Uranium Processing Facility (UPF) and the Chemistry and Metallurgy Research Replacement-Nuclear Facility (CMRR-NF) are not baselined, the investment over the next decade is estimated to vary from $88-$89 billion. This figure is arrived at by adding the yearly totals found in February 2011 Section 1251 Report. Due to this range, NNSA often simply refers to the "more than $85 billion" figure.

The comprehensive description of the plan for infrastructure and stockpile over the next two decades is sent to Congress in the FY 2012 Stockpile Stewardship and Management Plan (SSMP), which includes classified details in its annexes.

The Stockpile Stewardship and Management Plan is not without risk, and it will be annually updated as studies and designs are completed and requirements change. However, it is currently the best approach to fully implement the Nuclear Posture Review and ensure a safe, secure, and effective nuclear deterrent as long as nuclear weapons exist.

Hearing Date/Question Number: March 1, 2011 / Question 1

INTERNATIONAL CONTEXT

Subcommittee. Mr. Administrator, recognizing that there may be limits to what you can say in this hearing room, would you provide for the members some context on how our weapons production infrastructure and experimental capabilities compare with China and Russia? Specifically, we talk here about having a "capability-based" system here, which could produce up to 80 new pits a year.

- How does this capability compare to that of Russia and China?
- Have these countries declared, as we have, that they would not produce any new nuclear weapons?
- Are there any signs that they are increasing the capability of their weapons or infrastructure?

Mr. D'Agostino. While limited in my comments by the current environment, I can nevertheless state that the capability-based system outlined in the Stockpile Stewardship and Management Plan, which will be able to produce up to 80 new pits per year, will support the President's requirement to maintain a safe, secure, and effective nuclear deterrent for as long as nuclear weapons exist. Moreover, our science, technology and engineering base remains second to none. Remaining unchallenged, however, will require consistent long-term support and continued investment.

No, the United States has taken the lead in declaring that it will not produce any new nuclear weapons – other countries have not made the same commitment.

While the U.S. has made the decision not to design and produce new nuclear warheads, we will still preserve our capability for doing so. The capabilities needed to design a new warhead include knowledgeable designers, along with a responsive, capable R&D and manufacturing infrastructure. These are the same capabilities and skill sets utilized when completing weapon life extensions. The NPR recognized the need for increased investment in the Nuclear Security Enterprise stockpile, infrastructure, and Science, Technology and Engineering (ST&E). The decision not to design new warheads should not imply the U.S. would be unable to do so should national security missions require it in the future.

Unfortunately, we need a different setting to address any increase in the capability of other countries weapons or infrastructure in any significant context.

Hearing Date/Question Number: March 1, 2011 / Question 2

GAO HIGH RISK LIST

Subcommittee. The recent release of the Government Accountability Office's High Risk series shows that the NNSA has made major strides in improving its contract and project management, recognizing that these efforts must ultimately be demonstrated through project performance.

However, two criteria remain: having the capacity (people and resources) to resolve the problems, and monitoring and independently validating that the many corrective measures it has taken are both effective and sustainable over the long term.

- What are you doing to address these remaining criteria?

Mr. D'Agostino. To address the staffing issue, NNSA has developed a staffing model algorithm, modeled after one utilized by the Department of Defense and endorsed by DOE's Office of Engineering and Construction Management. This algorithm compares the Federal Project Director's proposed staffing needs to the model results. As a result of running the model for NNSA's three (3) largest nuclear projects, I included an additional $14 Million in the FY12 Program Direction Budget Request to support the increased staffing needs. This additional Program Direction funding will be used to obtain Limited Term Federal employees to provide assistance to the Federal Project Directors for these three (3) projects: Pit Disassembly and Conversion (20 FTEs), Uranium Processing Facility (27 FTEs) and the Chemical and Metallurgy Research Replacement Facility (9 FTEs). I will continue to request similar funds to maintain this capability in future budget requests. In the interim, the federal project teams have retained other government agency support as well as direct contracting of subject matter experts.

To address the issue of monitoring and independently validating the corrective measures that are in use for our projects, I have recently reorganized my staff and I am creating the Office of Acquisition and Project Management. This combines two critical elements of project execution oversight and is responsible for monitoring the performance of all NNSA projects. This new organization will report directly to me which will streamline communications and ensure that I am kept informed of any project issues that may arise so that prompt action can be taken when necessary. I have regular monthly meetings where the Office of Acquisition and Project Management provides a project assessment of NNSA's troubled projects along with recommendations and corrective actions being initiated to bring these projects into acceptable performance metrics. The Office of Acquisition and Project Management is not part of the Line or Program Office and thus maintains a non-advocate, independent role in oversight of NNSA's projects. In addition, we rely on the DOE Office of Engineering and Construction Management (OECM) to provide a level of "external" oversight to our project execution processes.

NNSA also follows new DOE monitoring and independent validation practices: by having peer reviews conducted annually; reporting in the Project Assessment and Reporting System (PARS II) which shares detailed, real-time project performance data; and having OECM as a monitor and independent validator of ongoing project performance.

Hearing Date/Question Number: March 1, 2011 / Question 3

THE MULTI-YEAR MODERNIZATION EFFORT

Subcommittee. Mr. Administrator, in addition to the increases you requested in fiscal year 2011, you report you are adding another $4.1 billion to the Weapons Activities budget over the next five years.

- Where are you prioritizing your investments to ensure that at the end of the ten year period, we will be on a sustainable and affordable trajectory for maintaining an aging stockpile, as well as the infrastructure and skilled personnel?

- Where do you see the main challenges for modernization?

- What are you doing to address these challenges?

Mr. D'Agostino. We prioritize our Weapons Activities investments each year as we update the Future-Years Nuclear Security Program (FYNSP). This five-year view of the FYNSP is complemented by a twenty-year view in the Stockpile Stewardship and Management Plan (SSMP). The SSMP balances between meeting the near and mid-term needs of the stockpile and doing those things that sustain our long-term ability to conduct stockpile stewardship.

Maintaining an appropriate, highly technical federal and contractor workforce is a continuing challenge. Major capital infrastructure projects and other critical construction projects represent a second challenge. Finally, making the necessary improvements to the business practices and other processes of the Nuclear Security Enterprise is a third challenge.

These challenges are addressed in detail in the SSMP, which the NNSA will update on an annual basis. When planning for future requirements for the workforce, the physical infrastructure and the processes of weapons activities, it is important to remember that the entire nuclear deterrence posture is inherently rooted in and inseparable from scientific and technical excellence. Critical decisions ranging from annual assessment of specific systems to changes in manufacturing methods, testing, and deployment are inevitably derived from highly technical methodologies. As the stockpile ages, new challenges and unforeseen issues will continue to arise. In order to ensure timely and effective responses to these issues, the Science, Technology and Engineering (ST&E) base both people and facilities—must be robust.

Hearing Date/Question Number: March 1, 2011 / Question 4

SECURITY, SAFETY, USE CONTROL AND SURETY

Subcommittee. The September 2009 JASONs review of the Life Extension Program notes that an end-to-end analysis of the safety and security requirements of the stockpile will be required in order to assess surety needs and benefits as the stockpile evolves. I understand that the Department of Defense is considering a JASON Group assessment of current security, safety and use-control measures, as well as risk mitigation measures and long-term surety improvements. Are you aware of this study? If you are, can you provide an update on the progress, if any?

Mr. D'Agostino. Yes. The results of the JASON's summer study, "*Nuclear Weapon Surety*" (report number JSR-10-103), were published last year. The JASONs released their report in two forms: a Secret-Restricted Data document, and a separate Top Secret-Sigma 15 report. It was briefed to the Nuclear Weapons Council in December 2010. The study provides insights, recommendations and findings across a broad sweep of categories including: overarching surety issues, physical security, insider threats, suggested near and mid-term actions, weapon-level and intrinsic surety technologies, and recommendations for various weapons in the stockpile. Regarding implementation of the JASONs recommendations in the LEPs, NNSA's position is that with sufficient investments and efforts, necessary technologies are feasible for future LEPs, including the B61 LEP. We feel that the current plan in collaboration with the DoD, to modernize the safety, security, and use control features of our nation's nuclear weapons is consistent with all of the JASONs findings and recommendations.

Subcommittee. Last year's National Defense Authorization bill required the NNSA to develop criteria for how to judge whether or not to implement new safety and surety features during warhead life extensions. Will you have those criteria in place as you develop the B-61 and W78 life extensions?

Mr. D'Agostino. Before the requirement appeared in the National Defense Authorization Act for FY 2010, the NNSA national laboratories were developing methodologies and criteria to help assess the level of safety and security risk incurred throughout different lifecycle stages of a nuclear weapon, and to gauge the level of benefits that would be realized if modern safety and security features were to be implemented. The NNSA will continue to develop and review the criteria and determine the proper path forward considering implementation, certification, ability to produce and benefit to the specific weapon system. This work will be done in collaboration with DoD. We will continue to develop our approach and will then use this methodology to inform risk/benefit decisions associated with the B61 and W78 life extension programs, as well as other systems. As required by the FY 2011 NDAA, NNSA will report to Congress on this entire subject by March 2012.

Subcommittee. Last year in the Subcommittee mark, the Secretary of Energy was directed to jointly commission, with Department of Defense (DoD), an independent analysis from the JASON group of scientific advisers, setting forth meaningful criteria for evaluating how much intrinsic nuclear warhead safety and security is enough when measured against the plausible range of deployment scenarios and threats likely to confront the future stockpile, and

providing an analysis of the specific costs and benefits of installing such feature or features in the warhead. While I understand this Subcommittee cannot direct the DoD, what actions has the NNSA taken regarding this study?

Mr. D'Agostino. The NNSA/DoD path forward to modernize the safety, security, and use control features of our nation's nuclear deterrent is strongly aligned with the recommendations and findings of the recently completed JASONs "*Nuclear Weapons Surety*" study; and we will adopt and start applying by the end of this year a risk/benefit methodology which will include clearly applied criteria that will help inform the surety implementation decisions that will be made by the Nuclear Weapons Council.

Hearing Date/Question Number: March 1, 2011 / Question 5

B61-12 JASONS STUDY

Subcommittee. Mr. Administrator, this subcommittee asked during the 111th Congress that NNSA commission an analysis from the JASONs group of scientific advisors on the B61 mod-12. Specifically, "any warhead safety and/or security feature proposed for evaluation…not previously installed in U.S. nuclear weapons of the same general type."

- Will this JASONs study be complete before the 6.3 milestone in 2012? If no, how else can you assure Congress that there is independent scientific validation of your ability to certify the technologies selected at 6.3?

- If the JASONs study finds that some of the technologies you are planning for the B61 LEP are not feasible, how would this affect the funding requirements identified in the five year plan?

Mr. D'Agostino. The JASONs "Nuclear Weapon Surety" report has now been completed and released. The B61 LEP study is being conducted in alignment with the recommendations and findings contained in this report. NNSA will apply, in collaboration with DoD, a risk/benefit assessment methodology to help inform the decisions associated with surety options that the Nuclear Weapons Council will make before we embark on any Engineering Development (Phase 6.3) activities for the B61 LEP.

The funding requirements for the B61 LEP effort will be defined for all alternatives and options during the ongoing feasibility and cost-estimate study. This Phase 6.2/6.2A effort will be completed by the beginning of FY 2012. If the Nuclear Weapons Council decides not to implement certain safety and security options, the cost of the overall B61 LEP effort would be reduced by the Phase 6.2A amounts associated with these features. Once the Phase 6.2A cost report is completed, we will be able to provide the costs of these features.

Hearing Date/Question Number: March 1, 2011 / Question 6

REDUCING THE SIZE OF THE STOCKPILE

Subcommittee. The Nuclear Posture Review states the United States will retain the ability to "upload" some nuclear warheads as a technical hedge against any future problems with delivery systems or warheads, or as a result of a fundamental deterioration of the security environment. It also states that by investing in modernizing our aging nuclear facilities, as this budget request does, we can substantially reduce the size of the technical hedge.

- When will a reduction in the size of the hedge begin to occur? Is this only after the Uranium Processing Facility (UPF) and the Chemistry Metallurgy and Research Replacement (CMRR) are up and running?

- Does this statement introduce any new requirements to maintain war reserve warheads, specifically those that are not operationally deployed, at higher readiness levels than was required before the Nuclear Posture Review?

Mr. D'Agostino. The projected future stockpile is premised on a number of assumptions and events, listed below. As these assumptions and events are realized, reductions in the size of the hedge can begin to occur.

1. New START implementation occurs as scheduled (New START entered into force on February 5, 2011).

2. Successful LEPs for several warheads increase stockpile safety, security, and reliability.

3. NNSA demonstrates capability of its infrastructure to produce components and life-extended weapons. The CMRR and UPF are expected to be at full operational functionality by 2023 and 2024, respectively.

4. A favorable geopolitical nuclear security environment.

The size of the projected future stockpile is updated annually based on the Department of Defense assessment and over time will factor in LEPs, NNSA progress in infrastructure recapitalization, and on the geopolitical security environment. Actual future stockpile levels will be based on these annual assessments. So, having UPF and CMRR up and running is one of the events needed for stockpile reductions to occur, as described above.

There is no new requirement to maintain war reserve warheads at higher readiness levels than was required before the Nuclear Posture Review. As before the Nuclear Posture Review, some ability to "upload" non-deployed nuclear weapons on existing delivery vehicles will be retained as a hedge against technical or geopolitical surprise.

Hearing Date/Question Number: March 1, 2011 / Question 7

RECONSTITUTING A PLUTONIUM CAPABILITY AT LOS ALAMOS

Subcommittee. Mr. Administrator, we know that construction of the Chemistry Metallurgy and Research Replacement (CMRR) is only one part of the overall infrastructure necessary to reconstitute some of the plutonium capabilities lost with the closure of Rocky Flats. Proponents of the CMRR project often focus only on construction of the Nuclear Facility, providing an inaccurate picture of the overall investments necessary for this mission.

- What other infrastructure improvements need to be made in order to establish a sustainable capability to remanufacture pits at Los Alamos? Please include additional waste handling capabilities, reconfiguration of PF-4 as a pit remanufacturing space, and any pit staging and storage requirements you must build.

- Are all of these investments fully funded in your ten year modernization plan? If not, which ones are still unfunded and how much might those investments cost?

- Why do we need to reconstitute this capability if we are not making new warheads?

Mr. D'Agostino. Sustainment of pit manufacturing requires investment in the PF-4 (the manufacturing facility) and its support functions. We are recapitalizing PF-4 through the Technical Area 55 Reinvestment Project (TRP) II and III line item projects. We are recapitalizing waste treatment facilities through the Radioactive Liquid Waste Treatment Facility (RLWTF) and the TRU Waste Facility line item projects. We are recapitalizing key security features of PF-4 via the Nuclear Materials Safeguards and Security Upgrades Project Phase II line item project.

We are also using operating funds to upgrade process equipment and to make other production enhancements and to make other changes within PF-4 to provide the pit manufacturing capacity as needed to support Life Extensions Programs.

The TRP II is fully funded for all years within the President's Budget and in the out years as reflected in the FY 2012 Stockpile Stewardship and Management Plan. The costs of TRP III, the Transuranic Waste Facility, and RLWTF have not yet been determined; we intend to fund it in the first budget submission after approval of a cost and schedule baseline.

Pit manufacturing is a capability required for the Nuclear Security Enterprise. These upgrades will provide the production capability for the Life Extension Programs (LEP). The extent to which this capability is needed will be determined in the study phase of each LEP.

Hearing Date/Question Number: March 1, 2011 / Question 8

LIFE EXTENSION PROGRAMS

Subcommittee. Mr. D'Agostino, the requested life extension programs require significant budgetary resources. Congress will require a rigorous analysis to ensure that the taxpayers' funds are well spent, particularly in light of the other planned recapitalization work.

In 2009, the Government Accountability Office (GAO) published a report finding that the NNSA and DoD had not effectively managed cost, schedule, and technical risks for the two most recent life extension programs, the B61 and the W76. They recommended four specific actions for NNSA to develop realistic schedules for the W76 and future life extension programs.

- What have or are you doing to implement these recommendations?

- How does your approach to the latest B61 life extension represent an improvement over the W76?

In the same review the GAO found that the NNSA's problems in the program are compounded by the lack of a consistent approach for developing a cost baseline. A consistent approach and rigorous process for tracking cost and schedules is fundamental for proper management and oversight, both at the agency level as well as for the Congress.

- Can we expect a consistent, rigorous process for future life extension programs? What specifically are you doing to ensure that all the life extension programs have consistent milestones and performance measures?

Mr. D'Agostino. The Life Extension Program (LEP) uses a staged process for product development (warhead/bomb being the product). Industry best practices have been identified and the management of future LEPs will be enhanced to incorporate the principles and techniques for successfully managing these projects. NNSA will employ review teams to ensure that this occurs.

Also in our response to the 2009 GAO report, NNSA committed to develop more realistic schedules, improve our assessment of DoD requirements, and improve our risk management processes, including funding contingency and management reserves associated with technical risks. We have formalized these new initiatives as part of the integrated phase gate (IPG) methodology, which supplements the existing joint DoD/NNSA Phase 6.X weapon refurbishment process. The B61 LEP is the first to implement this new IPG methodology.

In developing the IPG methodology and program planning for LEPs, NNSA has considered the lessons learned from the W76-1. In addition to IPG implementation, this analysis has resulted in additional improvements. For example, the B61 LEP is using new cost estimating guidance to improve the rigor, quality and traceability of the cost estimates submitted as part of the Phase 6.2A Weapon Design Cost Report, which supports the first Selected Acquisition Report (SAR) to Congress. The data will support establishing an "acquisition program baseline" (APB) in Phase 6.3. The added rigor of the APB and implementation of the integrated phase gate process

will yield increased confidence in budget assumptions and the tracking of costs. The B61 LEP is also improving the development and control of a complex-wide integrated master schedule to integrate both site and product realization team schedules. This scheduling system will improve planning and execution of the LEP.

These improvements will be applied and we expect will result in a consistent, rigorous process for future life extension programs. The addition of integrated phase gate methodology, integrated master schedules, and common methods for the management of costs, risks, and benefits will provide the consistency in LEP management.

Hearing Date/Question Number: March 1, 2011 / Question 9

CONTROVERSY SURROUNDING LIFE EXTENSION ACTIVITIES

Subcommittee. Mr. D'Agostino, as you know, there are critics of the life extension programs who maintain that some of the planned Life Extension Programs are essentially building a new weapon.

- Can you respond to this criticism?

Mr. D'Agostino. Life Extension Programs (LEPs) extend the life of weapons already in the stockpile. As part of the life extension process, Design Laboratories will evaluate insertion of features to enhance safety, security, reliability, and use control. The LEPs will not support new military missions or provide for new military capabilities.

Hearing Date/Question Number: March 1, 2011 / Question 10

WARHEAD DISMANTLEMENTS

Subcommittee. The Nuclear Posture Review states that investments for modernization will allow us to "accelerate dismantlement of retired warheads". Yet, this budget request cuts funding for dismantlements from $96 million in fiscal year 2010 to $57 million in fiscal year 2012.

- Why is funding for dismantlements going down if the NPR clearly states that dismantlements can now be accelerated?
- Are you planning on rapidly increasing them in the later years? Why?
- What are the budgetary or policy reasons behind this delay?

Mr. D'Agostino. Previous year expenditures not only reflect dollars spent on actual dismantling and disposition activities, but also necessary preparatory efforts associated with the design and fabrication of tooling, and nuclear safety assessments and approvals necessary for performing future dismantlement activities. Additionally, unique to FY 2010, the weapons dismantlement program included funding at Y-12 for capabilities needed by the dismantlement program (such as containers, storage capacity, and materials). The amount of money reflected in the FY2012 FYNSP for weapons dismantlement and disposition is the correct budget profile necessary to accomplish the comprehensive program that needs to be executed. The FY2012 Stockpile Stewardship and Management Plan provides Congress detailed information concerning what this effort will do, including specific dismantled quantities, by year and weapon type, through FY2022. In the past year, NNSA completed the W62 dismantlement a full year ahead of schedule. At the same time, it began dismantlement work on the B53 and the W84. These accomplishments also indicate that NNSA is now authorized to perform dismantlements on all weapon systems in the active, inactive, and retired stockpile. In coming years, we will continue to improve the efficiency of weapons dismantlements at Pantex and Canned Subassemblies (CSAs) dismantlements at Y-12.

The detailed dismantlement plan, provided in the FY2012 Stockpile Stewardship and Management Plan, reflects similar dismantlement quantities from FY2011 through FY2018, then larger quantities between FY2019 and FY2022. The number of weapons dismantled in a given year varies depending on the complexity of the system. While the number of dismantlements may increase or decrease, the level of effort remains relatively consistent. The current plan remains to dismantle all nuclear weapons retired prior to FY 2009, no later than the end of FY 2022.

The dismantlement and disposition plan defined in the FY2012 SSMP is being executed on schedule. It is not delayed. NNSA believes that if the funding levels indicated in the FY2012 budget submittal are sustained, the dismantlement and disposition endeavor will be on track to complete the plan described in the FY2012 SSMP no later than the end of FY2022. During the last six years, a steady dismantlement rate demonstrates NNSA's commitment to reduce the number of weapons awaiting dismantlement and make available fissile material for down-blending.

Hearing Date/Question Number: March 1, 2011 / Question 11

FUNDING FOR THE B61 LIFE EXTENSION PROGRAM

Subcommittee. Dr. Cook, your budget request states that funding requested under the B61 Life Extension Program is for Phase 6.3 Development Engineering activities.

- Since you have not requested additional funds for the yet-to-be-completed 6.2/6.2a study, will you be able to complete it with existing funds?

- If no, how much funding in the request is included, but not identified, to complete the Phase 6.2/6.2a study?

It is not clear why you cannot clearly identify the amount of funding required to complete the study this far along.

- Can you give us some insight on the pending decisions and the work that is still required to come to a decision on the scope of the life extension? Are the military requirements still shifting?

Dr. Cook. Yes. We are on schedule to complete the Phase 6.2/6.2A study by September 30, 2011, and do not require additional funds to complete the study.

Consistent with the Nuclear Posture Review (NPR), we are addressing options to refurbish both nuclear and non-nuclear components that meet the draft B61-12 Military Characteristics (MCs) including the requirements for a 30-year service life. What is still being studied are options that address the implementation of enhanced surety technologies into the baseline nuclear and non-nuclear LEP. The decision to implement enhanced surety technologies will be made by the Nuclear Weapons Council as part of the Phase 6.3 decision. Funds to complete Phase 6.3 are budgeted in the FYNSP.

Military requirements for the LEP are not shifting. The draft B61-12 Military Characteristics document is complete. The document will be approved by the Nuclear Weapons Council upon entry into Phase 6.3.

Hearing Date/Question Number: March 1, 2011 / Question 12

W76-1 PRODUCTION

Subcommittee. Dr. Cook, there have been many delays and issues associated with ramping up to full production of the W76 Life Extension Program. You are requesting more funds each year just to get to the original production rates. It also looks as if you are planning to continue production for another year past 2017, the end date in the Nuclear Posture Review.

Yet up until last year, you were reporting near attainment in meeting your performance targets for reducing the W76 production costs per warhead. This year, you have completely left out all performance measure reporting in your budget request.

- Why do the annual funding requirements for the W76 continue to rise?
- When do you expect to reach full production?
- What performance measures are you establishing for this program to ensure that a baseline is set and that you are monitoring performance against that baseline?
- Is there any intention to maintain the W76-0 in the war reserve after the W76-1 production run is complete, or will it be completely retired and dismantled?

Dr. Cook. The budget for the W76-1 LEP activities is summarized in the following table:

FY 2010	**FY 2011**	**FY2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**
Actual	Requested	Request	Request	Request	Request	Request
$ 232M	$ 249M	$ 257M	$255M	$255M	$255M	$260M

The number of W76-1 warheads produced per fiscal year is steadily ramping up since full scale production began in FY 2010. Our detailed plans, overviews of which are provided to Congress in the FY 2012 Stockpile Stewardship and Management Plan (SSMP), will double the annual number produced by FY 2013. We will then sustain, between FY 2014 and FY 2018, annual production of W76-1 warheads at rates that are slightly more than double the FY 2010 amount. The budget profile necessary to execute this plan is seen to be relatively flat throughout this period (approximately $255M/year). If Congress appropriates funds at this level, we will complete the W76-1 plan outlined in the FY 2012 SSMP.

We will complete production of W76-1 warheads by FY 2018, if Congress appropriates the requested funds. A few months after the NPR Report was released, the DoD finalized assessments that now determine the number of W76 warheads that will remain in the stockpile to support current national policy guidance. The required number of W76-1 life extended warheads is larger than NNSA assumed in its original FY 2011 budget plans. NNSA adjusted its plan accordingly to ensure the W76-1 LEP is completed in FY 2018, a one-year adjustment that was endorsed by the Nuclear Weapons Council. This adjustment should not affect the timelines for B61 or W78 life extensions.

The execution details of the W76-1 life extension program are summarized in the FY 2012 Stockpile Stewardship and Management Plan. The classified Annex B for this plan includes annual production rates to be delivered by the baseline W76-1 program. As in the case of all life extension programs, we will manage the effort effectively through the use of integrated master schedules, integrated phase gate approval processes (adapted from industrial approaches), and cost/risk/benefit management methodologies.

A detailed response to the question pertaining to maintaining the W76-0 in the war reserve would be classified and cannot be provided in this forum. The classified Annex B of the FY 2012 Stockpile Stewardship and Management Plan contains Chapter I—Stockpile Composition. This section answers the questions you pose. I can say in this forum that some W76-0 warheads will remain in war reserve for periods of time beyond the end of W76-1 production.

Hearing Date/Question Number: March 1, 2011 / Question 13

W88 LIFE EXTENSION ACTIVITIES

Subcommittee. Mr. Administrator, the update to the 1251 Report detailed a requirement to include consideration of common W78/W88 warhead as part of the W78 Life Extension conceptual study which you would like to start in 2011.

You have added several hundred millions of dollars in the out years to the W88 and state an intention to begin production on a new Arming Fusing and Firing (AF&F) set at Pantex in 2018.

- With a new AF&F set to cost hundreds of millions of dollars, is this not considered a major life extension activity? Do you consider AF&F replacement a limited life component exchange?

- Does the consideration of commonality drive a new requirement for another life extension program into the ten year period?

- With the production challenges involved in completing the W76-1 and commencing the B61-12, how do you intend to undertake another major production activity in the same period of time? Is there sufficient capacity to carry out all three production lines?

Mr. D'Agostino. The replacement of the W88 arming, firing and fuzing assembly (AF&F) is a major acquisition but not a life extension program (LEP) or a limited life component exchange. The W88 surveillance program conducted jointly with the Navy consumes through destructive evaluation and flight testing a number of AF&Fs annually. If the W88 AF&F program does not proceed as planned, the NNSA and Navy will not be able to simultaneously maintain the required W88 stockpile quantities and perform the required surveillance. Through the use of a modular design, NNSA plans for the replacement AF&F to be forward compatible with future re-entry system LEPs, so in that sense, this program is an activity that will contribute to extending the life of the stockpile.

Concerning commonality and an LEP requirement in the coming ten year period, pursuing commonality is not the driver to perform an early concepts study for a W78 LEP in FY 2011. Instead, we need to begin the process now so we can extend the life of a warhead that has been in the stockpile a significant amount of time beyond its original service life requirement. We need to deliver extended-life W78 warheads to the Air Force in FY 2021, so that the land-based ballistic missile deterrent can be properly sustained in the manner outlined in last year's Nuclear Posture Review. This is the reason for this LEP to appear in our schedules between FY2011 and FY2024. Given the need to commence this LEP process now, it is incumbent upon us to take advantage of this opportunity to also address commonality alternatives. As stated in the NPR: "*This study will consider, as all future LEP studies will, the possibility of using the resulting warhead also on multiple platforms in order to reduce the number of warhead types.*" Also, by investigating the feasibility of W78 commonality options now, we can synchronize most effectively with the study that is happening for a new W88 AF&F. Linking these two studies will increase the chances that commonality alternatives can be fleshed out fully, and if a decision is made to proceed down such a path, that commonality can be implemented into the stockpile in a timely, cost effective manner.

You also ask about the challenges associated with conducting LEP activities on the W76-1 and the B61-LEP while we simultaneously address the alteration of the W88, and the possibility this creates for multiple production lines. I agree that the work outlined in our FY2012 Stockpile Stewardship and Management Plan (SSMP) is ambitious. But I also believe that if it is adequately funded and scheduled, the production complex can efficiently transition from the W76 production to the W88 beginning in FY16 for long-lead items. Further, the Nuclear Security Enterprise has sufficient capacity to complete this and the B61 concurrently. Please note that classified details concerning production rates associated with these LEPs are provided in the FY 2012 SSMP Annex B.

Hearing Date/Question Number: March 1, 2011 / Question 14

INTEGRATING EXPERIMENTAL DATA IN LIFE EXTENSION PROGRAMS

Subcommittee. Mr. Administrator, the taxpayer has invested heavily in experimental facilities over the last few years to be able to certify our aging stockpile without nuclear testing.

Because of these efforts, we now have as national capabilities the National Ignition Facility, the second axis of DARHT, a refurbished Z facility, the microelectronics research and fabrication facility MESA, and we are about to retake the mantle for the world's fastest supercomputer with the deployment of Sequoia.

However, your LEP schedule is very aggressive. You are slated to make major decisions regarding the technology in the B61, the W78, and now the W88.

- How is there sufficient time to conduct experiments and incorporate that data into the decision making?

- What is the rationale of pressing ahead with major modifications, as opposed to allowing time for our scientists to conduct experimentation and perform analysis, particularly since that was the purpose of investing in those capabilities

Mr. D'Agostino. The Phase 6.X process for extending the life of the weapon systems is methodical and formulated to take advantage extensively of the unique science, technology, and engineering (ST&E) capabilities that NNSA possesses as a consequence of national investments. As fully laid out in the FY2012 Stockpile Stewardship and Management Plan (including the classified "*FY 2012 Science, Technology, and Engineering Base of Defense Programs Annex C (U)*", we now have some predictive capabilities which combine numerical simulations with validation experiments to assess the performance of nuclear explosive packages; to gauge the impact that safety and security features might have if incorporated in future warheads and bombs; to understand the response of weapons to radiation and blast environments; and to assess the engineering performance of components, subsystems, and full-up nuclear weapons. Many of these capabilities were used in the ongoing W76-1 LEP effort. All of these capabilities will be brought to bear on the B61 and W78 LEP endeavors. Whether the W88 AF&F is replaced as a stand-alone alteration or as part of a common W78/W88 LEP, these capabilities will be employed as well. Already, the national laboratories have performed computational and experimental simulations to benefit the ongoing feasibility and cost-estimate studies (Phase 6.2/6.2A) for the B61 LEP, including early assessments of safety concepts being considered for the bomb's nuclear primary, the performance of its neutron generators, and the response of the bomb to potential fuel fire accidents.

The success of our ST&E investments and the stewardship program now allows us to confidently consider improvements to the safety and security of our stockpile without recourse to underground nuclear tests. This could not have been done twenty years ago. As such, due to various system lifetime issues, we plan to take the opportunity to make improvements to these important systems.

Hearing Date/Question Number: March 1, 2011 / Question 15

MANUFACTURING FOR PIT REUSE

Subcommittee. Mr. Administrator, when Congress approved and funded the reestablishment of your capability to certify a remanufactured pit, the explanation was that this capability was needed to replace W88 war reserve warheads for the W88. However, the fiscal year 2012 request states that funding is now needed for development of the capability to produce a second pit type.

- What pit type do you intend to produce and why?
- What is the primary driver for reestablishing this capability? Would this capability be needed for the advanced surety improvements being considered for the B61-12? Will the W78 need pit work if you do not pursue a common W78/88?
- If this is needed for the B61-12, how and where do you intend to do pit work starting in fiscal year 2017, when the Chemistry Metallurgy and Research Replacement (CMRR), where pit work is to take place, will not be ready for full operations until 2022?

Mr. D'Agostino. Please allow me to correct several misconceptions that surround this topic. First, our nation's ability to manufacture pits is an essential capability that the nation must sustain for its nuclear security. The ability to handle and process plutonium pits is a capability that cuts across all nuclear weapon "tail numbers".

Second, until the feasibility and cost estimate studies (Phase 6.2/6.2A) are fully complete for the B61 and W78 life extension programs, and the Nuclear Weapons Council renders selection decisions amongst alternatives, we will not know with confidence what pit manufacturing work will be needed for each system. Accomplishing the specific goals for a warhead or bomb LEP might require extensive, moderate, or minimal remanufacturing of its pit. We will know what will be specifically required for the B61-LEP pit in early FY 2012.

Third, we must move away from our existing research and development state in which we can only manufacture ten to twenty pits per year, to a future state where modern upgrades to the existing manufacturing facility and equipment therein will allow the enterprise to remanufacture up to 80 pits per year (ppy). These higher manufacturing rates are required to support future anticipated stockpile life extension efforts. This capability, once fully demonstrated, will help ensure we maintain an effective nuclear deterrent as outlined in the Nuclear Posture Review.,

With respect to the primary driver for establishing this capability, we need to maintain the agility of the highly skilled plutonium manufacturing capability that exists in PF-4. We have proven our ability to produce pits for conventional high explosive (CHE) systems – the W88. As the stockpile moves to a safer, more secure family of weapons, we must be able to transition to weapons based entirely on insensitive high explosive (IHE). Whether the W78 proceeds as a single LEP or is worked as a common W78/88 LEP, the desire is to use IHE in the weapon. If this decision is made, we will need the capability to produce the needed pits. Until a decision is made, the plutonium technicians will be able to sharpen their skills by manufacturing a second pit type.

With respect to potential B61-12 work and the relationship to CMRR being available, let me start by clarifying the location of various pit operations at LANL. PF-4 is being refurbished and upgraded in place (while all required essential operations continue) to accommodate the significant number of other manufacturing steps required to recycle and cast metal, and/or to perform all the machining, welding, inspection and exacting qualification processes required for pit types in the active stockpile at a remanufacture rate of 80 ppy. CMRR-NF will provide the analytical and material characteristics capability and capacity to verify that as many as 80 ppy meet War Reserve quality for introduction into the stockpile in nuclear weapons. Although this may sound trivial, the number of analyses to be performed in CMRR-NF for 80 ppy is on the order of 16,000, about 200 per qualified pit. CMRR-NF will also provide sufficient nuclear material storage capacity to accommodate the throughput of old pits required to either recover metal for pit production or perform reuse operations on them.

Hearing Date/Question Number: March 1, 2011 / Question 16

MAINTAINING THE HUMAN CAPITAL BASE

Subcommittee. Mr. Administrator, we have a tendency to focus most of our discussion on the infrastructure investments needed to keep the stockpile safe and secure. That's just one part of the equation. In reality, however, the infrastructure means little without a dedicated and skilled workforce to design and carry out the program. Study after study has cited this as a major challenge for the Department.

The GAO recently investigated this issue and found that NNSA lacks comprehensive data on the critical skills and levels needed to maintain stockpile stewardship capabilities. They stated NNSA primarily relies on the maintenance and operating contractors to maintain the workforce.

- What are you doing to recruit and retain the best and the brightest personnel to maintain the weapons stockpile?

- How are you improving the way you work with individual contractors to ensure that the correct skills and capabilities are being retained?

To address this problem, the GAO recommended that NNSA establish a plan with time frames and milestones for the development of a comprehensive contractor workforce baseline that includes the identification of critical human capital skills, competencies, and levels needed to maintain the nation's nuclear weapons strategy.

- Are you accepting the GAO recommendation to develop this comprehensive workforce baseline?

Mr. D'Agostino. For the Federal workforce, NNSA is taking steps to retain the current skilled workforce and to develop the future workforce. These efforts include the development of "knowledge capture" programs, pipeline programs, beneficial temporary assignments, workplace flexibility initiatives, and mentoring programs.

For the contractor workforce, each NNSA site is concerned with the loss of critical knowledge and has developed a site-specific strategy to recruit, train, and retain new employees. Knowledge preservation programs have been in place since the end of nuclear testing. These include archiving underground test data, countless documents, and hundreds of videotaped interviews. Additionally, some sites have developed mentoring and cross-training programs in high-profile areas. Working closely with a number of universities and industry, the national laboratories and production plants have developed specific curricula to help fill the needs in each discipline. Other than closely monitoring and supporting these efforts of the M&O contractors, NNSA is also focused on providing sustained meaningful work of national importance that is accomplished in modern and in many cases unique and state-of-the-art facilities.

These efforts are detailed in the FY 2012 Stockpile Stewardship and Management Plan and represent the best way to achieve the recommendations established by the GAO.

Hearing Date/Question Number: March 1, 2011 / Question 17

CONTRACTOR PENSIONS

Subcommittee. The cost of funding pension plans of contractor employees has grown to be a major issue. Of the $4.1 billion added this year to the five year plan for Weapons, $1.1 billion of that was specifically for contractor pensions.

- What are you doing to managing the increasing costs of contractor pensions?

We understand that last year was the first time that Los Alamos employees had contributed a portion of their salaries to offset the government contribution.

- Can you provide, by site, how much each contractor employee contributes to their pension plan? Are you looking into other ways of restructuring benefits currently offered to contractor employees to save costs?

Mr. D'Agostino. Pursuant to DOE/NNSA contracts with their contractors, the U.S. Government reimburses reasonable pension costs. Market downturns and interest rate decreases have increased these pension funds' long-term liabilities, and new statutory requirements have increased their near-term funding requirements. The Administration is fully committed to continuing to reimburse contractors for these pension costs in accordance with their contracts. The Administration's FY 2012 budget request will therefore cover total pension reimbursement estimated to be $875 million for all of NNSA for FY 2012. This represents $300 million more than the amount provided in FY 2011. Over the five-year period, FY 2012 to FY 2016, the Administration's FY 2012 budget request will provide a total of $1.5 billion above the FY 2011 level.

The Administration will conduct an independent study of these issues using the appropriate statutory and regulatory framework to inform longer-term decisions on pension reimbursements. The Administration is evaluating multiple approaches to determine the best path to cover pension plan contributions while minimizing the impact to mission. Contractors are evaluating mitigation strategies, such as analyzing plan changes, identifying alternative funding strategies, and seeking increased participant contributions. Also, contractors have been directed to look into other human resource areas where savings can be achieved in order to help fund pension plan contributions.

Hearing Date/Question Number: March 1, 2011 / Question 18

LABORATORY DIRECTED RESEARCH AND DEVELOPMENT (LDRD)

Subcommittee. Mr. D'Agostino, laboratory directed research and development has been touted by both the labs and senior leadership at the NNSA as necessary to retain the best and the brightest. As you know this Subcommittee has been concerned over the years that this funding, to the extent that it is used be directed to projects that have a direct connection to the NNSA's mission.

- What steps have you and the lab directors taken to ensure that the activities undertaken with this funding build the skills that the complex requires most?

Mr. D'Agostino. One of the NNSA missions is to support the United States leadership in science and technology. In the Defense Authorization Act of 1991 (P.L. 101-510), Congress authorized the creation of LDRD to maintain the vitality of the laboratories in defense-related scientific disciplines in support of the national security mission. The 2002 Homeland Security Act (P.L. 107-296, Section 309, 6 USC 189(6)(f) requires that Department of Homeland Security (DHS) funds for LDRD at DOE be used in support of the missions of the DHS. These are the needs we must meet. At each Laboratory, a strategic plan driven by national needs guides a forward-looking LDRD program plan. DOE/NNSA approval and oversight at the program and project level ensures that LDRD investments are at the technical cutting edge and relevant to current and future national security missions. Guided by these strategies, the Laboratories carry out their strategies via a competitive market for ideas that inspires their best and brightest researchers. The combination of strategic guidance and peer-reviewed competition provides a stream of innovation that is essential for the Laboratory mission. The challenge of LDRD work is important for recruiting and retaining staff, for example, supporting 60 percent of post-doctoral researchers at least in part that are working on LDRD investments that meet the needs stated above.

LDRD was essential to the development of accelerating aging of weapons materials and to the supercomputers at the heart of today's weapons modeling. Science and technology driven by one mission, like nuclear weapons, provides benefits to national security taken broadly. An example is the advanced radars developed for timing and fusing of nuclear warheads led to synthetic aperture radars that are essential to nuclear nonproliferation.

An annual analysis by the NNSA laboratories and DOE for 2010 funded projects was conducted and the results of the review showed approximately 60 percent of the projects supported defense and national security mission areas. This assessment is based on the premise that many of the FY 2010 LDRD projects will benefit and apply to more than one mission area. External reviews affirm the excellence of our labs' workforce and the R&D that they carry out and its relevancy to the mission needs.

Hearing Date/Question Number: March 1, 2011 / Question 19

SCIENCE CAMPAIGN INCREASES

Subcommittee. Mr. Administrator, your request for the Science Campaign is nearly 35% above the appropriation for fiscal year 2010. We understand that you include this increase to support the weapons infrastructure modernization goals, but what specifically is this increase needed to fund?

- For instance, how many people will be hired, and to do what? At what sites?
- Or perhaps this funding is needed for additional research projects and experiments? If so, for what?

Mr. D'Agostino. We do not envision bringing on many new staff. The increased funding will provide for the conduct of small scale and subcritical experiments that had been significantly reduced in the FY05-FY10 timeframe as budgets were reduced. As an example, hydrodynamic experiments typically cost $10M for design and hardware procurements. The increase will support execution of one to two hydrodynamic experiments per year under Advanced Certification. This experimental work is essential to our ability to certify the safety and surety improvements envisioned in the upcoming LEPs.

Hearing Date/Question Number: March 1, 2011 / Question 20

NATIONAL IGNITION CAMPAIGN

Subcommittee. Mr. Administrator, ignition remains an important scientific pursuit for the Nuclear Security Enterprise. Results from these experiments will be critical in ensuring the long-term reliability of our stockpile. While this program has improved over the last several years, it has long been plagued with delays and cost overruns. Most recently, you were not able to achieve ignition this year, even though that was at least proposed as a goal earlier.

- How far behind is the national ignition campaign in pursuing ignition? What is the cause of these delays?

- What steps are you taking to make up for these delays?

Mr. D'Agostino. Once the National Ignition Facility (NIF) was completed in March 2009, it then began a period of commissioning and preliminary experimental operations. Between December 2009 and August 2010, NIF operations focused on the installation of equipment required to begin ignition experiments including diagnostics, tritium handling equipment, safety equipment and upgraded optical components. NIF resumed experimental operations and completed the first cryogenically layered experiment at the close of FY 2010. NIF subsequently entered a period of intense experimentation successfully completing a number of layered cryogenic experiments, shock timing experiments and a productive month of stockpile stewardship experiments. Numerous technical challenges have arisen, particularly in the area of target technology, and the NIF team has done an excellent job of responding to these challenges. We are presently obtaining excellent data from tuning experiments, and are now routinely performing experiments at 1.3MJ of laser energy.

All experiments and capabilities required to begin ignition experiments that may produce gain will be complete by the end of FY 2011 and the goal is to demonstrate ignition or gain equal to one by FY 2012. Gain equals one means the capsule will produce more energy than delivered to the hohlraum target. This schedule represents a rebaselining of twelve months.

An NNSA panel chaired by Under Secretary Dr. Steve Koonin has been formed to advise on technical progress. The most recent review shows that the National Ignition Campaign (NIC) is making excellent technical progress although at an experimental pace somewhat slower than what was expected. While favorable results could lead to recovering some significant fraction of the twelve months in schedule delays, the principal focus is to ensure that the most rapid reasonable progress is made on completing the scheduled ignition efforts. NNSA's major concern is to ensure that further delays do not occur, except as a result of presently unknown technical issues that might have to be resolved.

Hearing Date/Question Number: March 1, 2011 / Question 21

EXASCALE COMPUTING

Subcommittee. Mr. D'Agostino, the Administration has been pushing for several years now to develop exascale computing. Your justification has been that this next level of computing capability is required for ensuring our weapons are reliable.

- What specifically can only be achieved with exascale computing? Would you be able to continue to certify the stockpile without exascale? If not, by when?

- How much funding in the Advanced Simulation and Computing Campaign is dedicated to the pursuit of exascale computing? Is there any funding requested within the Office of Science to pursue this goal?

- Can you please provide us with some detail in how you intend to manage the implementation of this effort in the coming years? For instance, how many platforms will be needed? Will there be competition between laboratories, or will one particular laboratory take the lead?

Mr. D'Agostino. Thermonuclear boost, the impact of novel aging phenomena, and advanced safety and surety options are classes of problems that cannot be confidently evaluated with even today's fastest computers. More specific examples are classified and can be provided. It is only through better understanding of such physical processes, enabled by extreme scale simulations and experiments, that we will increase confidence as we are forced to extrapolate answers to questions beyond our test experience.

Under our current computing capability, we are reaching the limits of issues that can be resolved. We have cases where either military requirements have been modified or operational constraints have been imposed due to lack of a predictive simulation capability, limiting our military options. Since the way these issues are handled involves many tradeoffs, it is not possible to say when we will not be able to continue to certify the stockpile without exascale.

The FY 2012 NNSA budget request of $36M will fund exascale activities. Investments will initiate research in critical technologies such as low power memory and new programming models. Without starting these investments, the competitive advantage the US currently enjoys will erode. The DOE Office of Science (SC) request includes $91M for complementary unclassified research activities. NNSA's exascale planning is fully coordinated with the SC request.

Subject to Congressional approval of the FY12 budget request, NNSA ASC and the Office of Science (SC) ASCR intend to jointly request proposals for research, development, engineering and acquisition projects leading to exascale systems by the end of the decade. We intend to issue requests for proposals that would result in two acquisition tracks to exascale. Two tracks are necessary for competition in achieving best value for the government and for risk reduction in realizing the final system. Both tracks would be executed by collaborations of laboratories from both NNSA and SC. We expect both classified and unclassified systems to be delivered from

both collaborations in a phased way that will support the missions of NNSA and SC and healthy business models for the winning vendors.

The goal of our collaborative program is the advancement of science through extreme-scale simulation, a mission-critical goal to both NNSA and SC. Our approach is to engage these world leaders in a tight collaboration with a common goal for application to specific missions, thereby leveraging constrained resources to maximize results.

Hearing Date/Question Number: March 1, 2011 / Question 22

ANALYZING FOREIGN NUCLEAR WEAPONS

Subcommittee. Mr. Administrator, the Nuclear Posture Review argues that a primary reason for investing in a modern nuclear infrastructure is to maintain broader capabilities for nuclear security. Mr. D'Agostino, you have argued along those same lines that the nuclear weapons complex is in fact a Nuclear Security Enterprise which provides a workforce with the same skill set also required to analyze foreign nuclear weapons program and to establish a nuclear forensics capability. However, none of the increases appear to directly support these activities.

- Which programs in your request directly support these sorts of activities? Are you increasing investment? Why or why not?

- Are you going to maintain the legacy codes, which are essential for our ability to analyze foreign nuclear weapons programs? If not, how does constructing a new facility better maintain these sorts of capabilities over preserving the tools that are directly used to conduct those activities?

Mr. D'Agostino. NNSA's existing Defense, Nonproliferation, Counter-Terrorism, and Emergency Response Programs directly support capabilities to analyze foreign nuclear weapons programs and to establish a nuclear forensics capability. Within Defense Programs, increases for Science, Technology and Engineering capabilities can add to the toolkit of capabilities that can be used to analyze foreign nuclear weapons programs. The same design codes and computer platforms supported through the ASC Program used for calculating performance of the US stockpile are also used in calculations supporting intelligence and nonproliferation missions. Facilities at Nevada, supported through the Science Campaign and RTBF are routinely used to understand signatures and performance of foreign systems. And the great array of NNSA experimental facilities that were developed for supporting our stockpile – NIF, the Z machine at Sandia, LANSCE, the DARHT radiographic facility, and JASPER at NNSS – are also regularly available for providing data needed to understand foreign nuclear programs.

NNSA has also advanced specific programs to strengthen support for non-stockpile missions. Partnerships formed during the last two years provide a strong foundation for coordination. The Supplemental Act of 2009 allocated $30 million to support a sustainable capability to analyze nuclear and biological weapons intelligence, resulting in more effective management and technical coordination between NNSA and the intelligence community. Defense Programs also increased support for existing technical efforts that both advance foreign assessment and strengthen capabilities for stockpile stewardship. For FY12 NNSA requests funding for the National Security Applications program, which will support collaboration with DTRA and other agencies. Furthermore, the Science Campaign requested an increase in FY11. A portion of this increase is devoted to strengthening capabilities for anticipating technological surprise under Advanced Certification.

Going beyond FY12, Defense Programs within NNSA plans to advance a program that would strengthen the science and technology capabilities needed for assessing foreign nuclear weapons activities. By building on the infrastructure supporting stewardship of the US stockpile, this

program will ensure an enduring technical foundation for intelligence missions. Capabilities developed under this program will advance the development and interpretation of intelligence indicators, the assessment of military capabilities for foreign weapons, and the mitigations of threats associated with technical advances. A proposal for this program was recently briefed to the quadrilateral Mission Executive Committee that oversees strategic capability investments for national security missions.

The plan going forward is to move away from legacy codes and use modern ASC codes to assess foreign nuclear weapons programs. Modern codes are more accurate and have a stronger science basis than legacy codes. The legacy codes were calibrated to U.S. test data and no longer offer the soundest possible basis to support the evolving U.S. stockpile. For non-U.S. systems, for which we do not have a great wealth of nuclear testing data, the need for predictive science-based codes is even more acute. Modern ASC codes also perform much better than legacy codes on today's large supercomputing platforms.

Hearing Date/Question Number: March 1, 2011 / Question 23

TRITIUM READINESS

Subcommittee. Mr. Administrator, there is some concern that there are still some major challenges for maintaining the stockpile that are not addressed by your modernization plan. For instance, the Government Accountability Office (GAO) investigated the Tritium Readiness program this past year and raised serious questions about the NNSA's ability to provide a reliable source of tritium to maintain the nation's nuclear weapons stockpile for the future.

They recommended that a comprehensive plan be developed to manage the technical challenges and meet the production requirements.

- Are you taking those recommendations to heart and developing this comprehensive plan?

- With the size of the stockpile going down, are the requirements for producing tritium also go down?

When the Government Accountability Office (GAO) investigated the Tritium Readiness program this past year, it described a number of issues related to the excessive tritium being released into the coolant.

- What is the status of any environmental or regulatory concerns that have resulted from the excessive leakage of tritium?

The report also states excessive tritium in the coolant water at the Tennessee Valley Authority may require construction of a large holding tank or a tritium removal system that could cost up to $60 million per reactor. However, despite the costs of using more reactors and the possibility of greater costs due to additional investments, the tritium readiness program is mostly flat through the five year period.

- Do you expect your request for Tritium Readiness to increase during the five year period? What changes to the program planning would cause the request to increase?

Mr. D'Agostino. Our plans for providing the tritium needed for today's and tomorrow's stockpile are comprehensive, robust, and will fully support demands created by limited life components that include neutron generators, tritium gas transfer systems, and power supplies. Under the Tritium Readiness campaign, as outlined in the FY2012 Stockpile Stewardship and Management Plan, the present baseline capacity for irradiating 544 tritium-producing burnable absorption rods (TPBARs) per reactor fuel cycle is sufficient for our needs through FY 2015. Our plan then calls for the long-term, steady state rate of 1,700 TPBARs per cycle to be achieved by FY 2019. We are planning for future capacities of up to 2,500 TPBARs per cycle to have margin for dealing with any eventualities. The detailed quantities that will be necessary are contingent on decisions yet to be made by the Nuclear Weapons Council as part of the Phase 6.X nuclear weapons development, production, and approval process. Furthermore, our Tritium Responsive Infrastructure Modifications (TRIM) plan remains well-aligned with NNSA's current modernization objectives and any other foreseeable strategic direction in which tritium

missions endure. TRIM intends to relocate capabilities from an old, oversized H-area facility to existing, nearby facilities at the Savannah River Plant. TRIM will also provide improved tritium handling capabilities at the Savannah River National Laboratory to conduct R&D activities efficiently. Again, our plan gives us confidence that we will meet the objectives of the NNSA tritium mission now and tomorrow.

The steady-state requirement in 2005 was 2,960 TPBARs per cycle compared to 1,700 per cycle today, a 42 percent reduction. Current efforts to ramp up production are from low rates to the ultimate steady-state rate that will maintain the inventory. Production quantities are defined by the demands created by exchanges of limited life components in existing weapons, plus that needed for replacement components to be used in life extension programs. Depending on how exchange and LEP schedules align, and on design alternatives decisions yet to be made by the Nuclear Weapons Council, future requirements for tritium may actually increase. To illustrate, future tritium gas transfer systems that LEP weapons may incorporate, could involve larger tritium loads than designs utilized in past weapons. These future gas transfer systems would result in better performance margins for the nuclear explosive package and, therefore, higher confidence in the nuclear design even without a need for underground nuclear tests – but also higher tritium consumption. Our plans, indeed, account for this very possibility.

NNSA's baseline capability for tritium production today (544 TPBARs per reactor fuel cycle) is sufficient to meet stockpile requirements through FY 2015. Such production rates are achieved while meeting all existing environmental and regulatory demands. As I have already described, our comprehensive tritium readiness plans anticipate higher future production rates starting in FY 2016. Consequently, NNSA will complete a Supplemental Environmental Impact Statement (SEIS) between FY 2011 and 2013. If the SEIS finding is "no-impact", the Tennessee Valley Authority will then move forward to request the Nuclear Regulatory Commission for a license amendment. The license amendment request will be to allow for a higher environmental release of tritium that is expected to be well within Environmental Protection Agency water limits. Our plans indicate the request will be made in FY 2014, with potential NRC approval by FY 2015.

We should not anticipate results from the SEIS and NRC license amendment processes, efforts which have not fully commenced yet, until the SEIS has had an opportunity to identify alternatives more fully. We do anticipate that the SEIS process will consider several mitigation approaches to reduce the impact of tritium permeation through the cladding of the TPBARs into the coolant water. One mitigation approach now being pursued at TVA is the installation of a large effluent holding tank at Watts Bar to allow more advantageous timing of planned effluent releases, for which we have a preliminary planning estimate of $14M. The $60M cited by GAO was based on evaluating a new technology for a water de-tritiating facility. At this time, this technology is not sufficiently mature for consideration and the economics are not persuasive.

The annual requirements to support tritium production will naturally increase as we ramp up from 544 to 1700 TPBARs per cycle, as this is a production program, and approximately 50% of the annual costs vary directly with production volume. As for foreseeable cost increases in the program, the only area of uncertainty at this point is the cost of providing a continuing supply of unrestricted uranium fuel. We are working to identify unrestricted enrichment services that will be available in the long term. In addition, fuel prices may be tied to the nuclear industry and also

may be affected by fuel prices in the energy sector as a whole. I assure you, that as we move to execute our comprehensive Tritium Readiness plans, we will keep this and other Congressional committees fully apprised of the latest developments.

Hearing Date/Question Number: March 1, 2011 / Question 24

OMEGA AND Z FACILITY

Subcommittee. Funding for other High Energy Density lasers, including the OMEGA laser at the University of Rochester and the Z Facility at Sandia National Laboratories, has been going down within the ICF and High Yield Campaign over the past few years.

- Is there a continuing need for all of these facilities now that the National Ignition Facility is complete?

- What is the future of these facilities in stockpile stewardship?

Mr. D'Agostino. Yes. Even with the completion of the National Ignition Facility (NIF), there is a continuing need for other High Energy Density (HED) facilities, including the OMEGA Laser Facility at the University of Rochester and the Z Facility at Sandia National Laboratories.

The OMEGA Laser Facility is an essential component of the stockpile stewardship infrastructure and is a central part of the investigation of thermonuclear ignition, HED weapons issues, and basic HED science. An important component of OMEGA's role is the development of platforms, diagnostics, and experimental techniques for the NIF. The relatively high repetition rate and low per-shot cost of the OMEGA Laser Facility allow the large number of shots required for this development, greatly increasing the likelihood of successful deployment on the NIF. It is anticipated that there will be more than 1,500 shots on the OMEGA Laser Facility in FY 2012.

The Z Facility provides complementary capabilities to the NIF. While it cannot access the full range of high energy density conditions that can be accessed on the NIF, it provides extremely large radiation outputs for effects testing and is a world leading platform for material studies at pressures less than the maximum on the NIF. It can be used for diagnostic development. It is used to study pulsed power Inertial Confinement Fusion (ICF), a potential alternate route to ignition.

The OMEGA Laser Facility at the University of Rochester and the Z Facility at Sandia National Laboratories will continue to play a major role in stockpile stewardship into the foreseeable future for the reasons described above. Much of the required stockpile work can be performed on these facilities that support the flagship National Ignition Facility.

Hearing Date/Question Number: March 1, 2011 / Question 25

SCALED EXPERIMENTS

Subcommittee. Mr. Administrator, there have been discussions in the press about plans the NNSA has to conduct "scaled experiments" with larger amounts of plutonium than we currently use. We understand that these still would be sub-critical experiments, but need to understand the advantages that these experiments might provide.

- Why should scaled experiments be incorporated into the stockpile stewardship management plan?
- Will scaled experiments be required to certify modifications to the stockpile?
- Do you think that scaled experiments will be required to ensure certification of an aging stockpile under a Comprehensive Test Ban Treaty (CTBT)? If the Administration decides not to pursue ratification of the CTBT, then does a significant rationale for scaled experiments disappear?
- Given that we now do not do scaled experiments to certify and assess the stockpile, how expensive an addition to the subcritical experimental program do you expect the scaled experiments activities to be over the next decade?

Mr. D'Agostino. There are many advantages to scaled experiments as a potential component of stockpile stewardship. From the beginning of the stockpile stewardship program, an improved understanding of plutonium behavior under the conditions of a nuclear weapon implosion has been a key scientific goal. Today, we have achieved an unprecedented ability to obtain images of imploding mock primaries using DARHT and our other radiographic and diagnostic facilities. To confidently understand the linkage of this data to both small scale materials science and integrated nuclear weapons performance models requires high pressure data from plutonium under implosion conditions. The design, fabrication, and execution of these subcritical experiments also will contribute to the maintenance of unique skills required for stewardship as we train the next generation of stockpile scientists without the need for a return to nuclear explosive testing.

Hydrodynamic experiments, both at full scale with surrogate materials or subscale with plutonium, help validate the material properties and codes used in the stockpile assessment process, but the certification of the stockpile remains the responsibility of the national laboratory directors using the science and technology tools proven over decades of experiments and testing. Hence we cannot say that any particular technique or tool in itself is required for certification. But certification is not the only job of the laboratories.

Our historical underground test database is a keystone of our ability to steward the stockpile, and integrated subcritical experiments will always provide valuable data to support stockpile modernization and stewardship data for existing systems.

Options under consideration include integral hydrodynamic and subcritical experiments in support of improving warhead safety and security features without adding new military capabilities and without the need for underground explosive nuclear weapons testing. This program might include scaled experiments that could improve the predictive capability of numerical calculations by providing data on plutonium behavior under compression by high explosives.

With regard to CTBT, again the certification of the stockpile is the responsibility of the directors. It is not possible to say with certainty all the capabilities that will be required for stockpile stewardship without testing into the future, but subcritical experiments have been a keystone capability since the inception of the stockpile stewardship program. The stockpile stewardship program, since its inception in 1993 has been designed to be consistent with CTBT. The requirement for a robust subcritical experiments program will not change if CTBT is ratified, as we have no intent or expectation of an imminent return to underground testing.

In order to thoroughly evaluate the future needs for both subcritical and hydrodynamic experiments, to assess its cost effectiveness, and to ensure that there is a sound technical basis for any such effort, the Administration will conduct a review of these proposed activities and potential alternatives to determine which experiments would best provide the data needed to support improved predictive capabilities.

Hearing Date/Question Number: March 1, 2011 / Question 26

PRIORITIZING INVESTMENTS: MAINTAINING VICE ADDING CAPABILITY

Subcommittee. Mr. Administrator, a consensus has been built around the idea that our core weapons activities have been underfunded, undermining our ability to maintain the nation's nuclear weapons stockpile. For instance, the Department of Defense has noted that an area that needs significant additional investment is surveillance, which monitors the health of our weapons as they age.

The bulk of the additional funding appears to support life extension programs, and construction of the Uranium Processing Facility at Y-12 and the Chemistry and Metallurgy Research Replacement (CMRR) Facility at Los Alamos. These are primarily new investments.

- What is being done in this five year plan to address maintaining the infrastructure that we already have? Similarly, what is being done to address maintaining the rest of the stockpile that is not up for a life extension, including funding for surveillance activities?

- How is the funding to maintain our current capabilities prioritized against adding new or reconstituting lost capabilities?

Mr. D'Agostino. The Readiness in Technical Base and Facilities (RTBF) funding during the five-year period will continue to maintain and support the investment needed to address the aging of the current NNSA weapons complex and move towards an integrated Nuclear Security Enterprise. While supporting the existing infrastructure continues to be a challenge due to its deteriorated condition and increased safety requirements associated with operating aging nuclear facilities, the RTBF program will sustain the critical infrastructure needed for science and production at our sites.

Surveillance and other Directed Stockpile Work activities are essential elements that contribute to sustaining the stockpile including weapons that are not currently being life-extended. Concerning surveillance activities, beginning in FY 2010, the surveillance budget has increased by 50 percent, from $158 million to $239 million. In the FY 2012 budget request, the NNSA sustains the required surveillance activities with this increase throughout the FYNSP.

The current and anticipated future needs of the stockpile determine prioritization of our resources. Prioritizing requires balancing near and mid-term needs with long term investments. Surveillance, assessment, production and replacement of limited life components, and the conduct of Life Extension Programs are examples of the near and mid-term needs. Our investments in science, technology, and engineering capabilities, and maintenance/ recapitalization of core capabilities, such as plutonium and uranium component production, are examples of the second. The long-term investments provide the trained workforce, technologies, facilities, and certification tools needed to meet future needs. Achieving this balance is not easy; it requires extensive planning, a clear understanding of interdependencies between activities, and corporate risk-based decisions.

Hearing Date/Question Number: March 1, 2011 / Question 27

DEPARTMENT OF DEFENSE REVIEW OF CMRR AND UPF

Subcommittee. Why is the Department of Defense's cost analysis and performance evaluation group, also known as the CAPE, investigating the Uranium Processing Facility and the Chemistry Metallurgy and Research Replacement (CMRR) projects?

Mr. D'Agostino. The Department of Defense (DoD) Cost Assessment and Program Evaluation (CAPE) office is reviewing the independent cost estimates for these two large and high cost projects to evaluate the cost drivers of each facility and determine if there are cost saving opportunities that can be achieved while meeting the programmatic requirements for the nuclear weapons stockpile. CAPE will rely on independent cost estimates done to date by the DOE Office of Cost Analysis and the United States Army Corps of Engineers, and numerous internal NNSA reviews to evaluate these cost drivers.

Subcommittee. When will this review be completed?

Mr. D'Agostino. The DoD schedule indicates 3rd quarter of FY 2011.

Subcommittee. If the specific requirements and capabilities for these facilities are still being debated or need to be validated, why are you proceeding with the design and construction?

Mr. D'Agostino. The specific requirements and capabilities for these facilities are not being debated. The CAPE review will provide an outside perspective on cost efficiencies that will meet UPF and CMRR requirements and capabilities. Modern nuclear facilities with complicated processes require substantial planning and detailed design development to ensure full understanding of requirements, especially those relating to safety and security. The CAPE review is appropriate due diligence at their current design maturity.

Subcommittee. How do you expect the results of their review to shape the requirements, scope, and project plans for the construction of those facilities?

Mr. D'Agostino. CAPE's findings and recommendations will be incorporated in the two projects where appropriate and will provide DOE and DoD a common understanding of the cost drivers for these new facilities.

Subcommittee. Will you keep Congress informed of any decisions to change the scope, requirements or capacities of those facilities?

Mr. D'Agostino. Yes. Congress will be informed of changes that impact mission deliverables or scope described in the project data sheet.

Hearing Date/Question Number: March 1, 2011 / Question 28

COST ESTIMATES FOR MAJOR CONSTRUCTION PROJECTS

Subcommittee. This year, you performed cost estimates on your two major new facility construction projects, the Uranium Processing Facility to be built at Y-12 in Tennessee and the Chemistry Metallurgy and Research Replacement (CMRR) building to be built at Los Alamos in New Mexico. Subsequently, the cost estimates for these facilities have increased dramatically. NNSA's estimate prepared in 2007 reported the Uranium Processing Facility would cost between $1.4 and $3.5 billion to construct, more than double the 2004 estimate. Now you report it could cost up to $6.5 billion to construct the facility. A similar story can be told for CMRR, though the cost requirements appear to be slightly less at up to $5.8 billion.

What is the main driver for this cost growth?

Mr. D'Agostino. Construction of large, one-of-a-kind facilities such as these presents significant challenges. The 2007 cost estimate is considered an early cost estimate because it was based on preliminary design. The main drivers in the cost increases for the UPF and CMRR projects are: 1) delaying the completion beyond original plans and 2) improved understanding of safety, security, and processing equipment integration costs as the design matured. As the design progressed, the project acquired much better definition of how the requirements for seismic ground motion, nuclear quality assurance, and security affected the design.

Subcommittee. Will these new facilities represent the minimum capabilities needed or will they be 'gold plated' with new capacities and capabilities?

Mr. D'Agostino. The UPF and CMRR-NF are being designed around the minimum essential capabilities needed to support the NNSA's commitments for the stockpile. Both projects have been reviewed several times and consistently shown to support the capability required.

Subcommittee. Given the remaining uncertainties, how can you assure there is fidelity in the latest estimates?

Mr. D'Agostino. The most recent estimates have been reviewed by several independent groups that include the United States Army Corps of Engineers, the DOE Office of Cost Analysis, and numerous internal NNSA reviews. We believe the ranges provided by these estimates are accurate and expect later estimates to narrow these ranges as the design matures.

Subcommittee. What are you doing to keep costs from continuing to rise?

Mr. D'Agostino. Recent cost reviews have validated that the cost ranges are reasonable. These ranges include cost contingency for additional project adjustments. NNSA has advised the CMRR-NF and UPF project teams that the current cost ranges will not be adjusted upward.

NNSA will continuously evaluate the costs and scope of the projects for cost savings opportunities for the life of the projects. At DOE's request, DOD is currently performing an independent review of the projects to assess the cost estimates, the project scopes in relation to

DOD deliverables and the requirements for project execution. This review team is also tasked to evaluate options that will lower project costs.

Subcommittee. The Government Accountability Office (GAO) reported in November that the technology readiness levels for many of the UPF procurements would still be lower than that called for in GAO's best practices until after award of one of its critical decisions.

Mr. D'Agostino. Several of the UPF technologies have been proven in a relevant environment (Technical Readiness Level 6). The GAO recommends that these technologies be demonstrated at a higher readiness level. NNSA understands the risks of not reaching a higher level and believes the risk is manageable because prototype demonstrations (which we have done) differ little from demonstrations in the final operating environment. The project's contingency reflects the risks associated with the readiness levels of technologies to be used in UPF.

Subcommittee. Are you making any changes to your project plan to ensure that the project management of these projects reflects GAO best practices?

Mr. D'Agostino. DOE is in the process of revising the Cost Estimating Guide to align with best practices as GAO recommends. The projects will be implemented using these practices.

Subcommittee. Even assuming that the increases in the budget requests are forthcoming, these facilities will have large budgetary requirements in the years of construction. What other needs of the weapons complex will be sacrificed, if any, to meet these funding requirements? How will you budget for both facilities at the same time? Or will the facilities have to be sequenced?

Mr. D'Agostino. The FY 2012 budget request and other documents addressing funding beyond the FYNSP period support the President's commitments for the nuclear stockpile. The CMRR-NF and UPF construction will be phased by 18 – 24 months. This phasing will reduce the peak funding needs in the out years and will facilitate transfer of experience and resources from the CMRR-NF (the earlier project) to UPF.

Hearing Date/Question Number: March 1, 2011 / Question 29

MODERNIZING THE ENTIRE WEAPONS INFRASTRUCTURE

Subcommittee. The Uranium Processing Facility and the Chemistry and Metallurgy Research Replacement (CMRR) are the only two projects specifically mentioned in the Nuclear Posture Review. However, there are many more facilities over the eight NNSA sites that must be maintained.

What other modernization investments will be needed across the Nuclear Security Enterprise?

How well are the costs for these investments known?

Mr. D'Agostino. New construction has a key role in enterprise modernization. The NNSA has prioritized a portfolio of new construction projects linked to the FY 2012 Future Years Nuclear Security Program (FYNSP) and the FY 2012 Stockpile Stewardship and Management Plan. In the SSMP there are nine (9) FYNSP approved projects with over forty (40) priority projects that are tentatively scheduled to be resourced starting with preliminary design in FY 2013 through FY 2031. In addition to capital projects, NNSA's operating funds are sustaining existing facilities and disposition of excess facilities. The costs of these proposed investments are known at a level appropriate to their design maturity.

Subcommittee. Which of these projects are funded in your five year plan?

Mr. D'Agostino. In addition to UPF and CMRR, the following Defense Program projects are funded in the FYNSP:

- Test Capabilities Revitalization – Phase II (SNL)
- Nuclear Facility Risk Reduction, (Y-12)
- Transuranic (TRU) Waste Project Engineering and Design and Construction, (LANL)*
- TA-55 Reinvestment Phase II (TRP II) (LANL)
- High Explosive Pressing Facility (HEPF) (Pantex)
- Radioactive Liquid Waste Treatment Facility (RLWTF), (LANL)*
- TA-55 Reinvestment Phase III, (LANL)*

* Projects approved but not necessarily fully funded since they do not have approved baselines.

Subcommittee. Have you developed a comprehensive plan for modernizing the entire enterprise?

Mr. D'Agostino. Yes. The FY 2012 Stockpile Stewardship and Management Plan (SSMP) summarizes the overall plan for modernizing the Nuclear Security Enterprise. The SSMP relies on a Corporate Physical Infrastructure Business Plan and individual ten-year site plans to present an integrated plan for the revitalization of the enterprise's physical infrastructure.

Subcommittee. Are funding priorities being primarily driven by the need for capabilities to conduct life extension activities or by the deterioration of aging facilities?

Mr. D'Agostino. Both. The stockpile and physical infrastructure have exceeded or are approaching the end of their design life. For example, approximately 50 percent of the enterprise physical assets are greater than 50 years old based on gross square footage.

Hearing Date/Question Number: March 1, 2011 / Question 30

TOTAL COSTS OF OPERATING THE WEAPONS COMPLEX

Subcommittee. Mr. Administrator, the GAO has raised the concern that NNSA is often unable to determine precisely how much it costs to operate and maintain its infrastructure, at least partly because your sites use multiple sources of funding to support these activities. This practice appears to continue in your budget request for 2012.

For instance, your justification shows that base funding in "RTBF Operations of Facilities" for PF-4 at Los Alamos is supplemented by additional support under "Plutonium Sustainment."

If we are to accept that the significant increases requested by the Administration will place the weapons complex on the path to sustainment, how are we to understand the full costs associated with your facilities if this practice continues? Do you have enough understanding of your costs to provide a table of funding requirements for each major facility to the subcommittee, detailing which facilities are funded where in this budget request? Please provide this table along with your answers to the questions for the record.

Mr. D'Agostino. NNSA's Readiness in Technical Base and Facilities budget is organized around the multiple facets of facility operations and maintenance and not just around facilities. This structure and the associated Government Performance and Results Act (GPRA) units facilitate holding managers accountable for results, but do have the drawback of requiring additional effort to identify the total funding associated with the operations and maintenance of sites and facilities. NNSA is addressing this drawback through implementation of a national work breakdown structure (WBS) that will facilitate the association of infrastructure costs with the mission element requiring that infrastructure. The new WBS and associated software are being piloted during preparation of the FY 2013 budget.

The national WBS, organized by capabilities, will provide better insight and granularity of the costs required to operate and maintain facilities. Implementation of a new WBS will also enable NNSA to track costs by the core capabilities provided at each site. Until this national WBS and a supporting uniform cost initiative reaches maturity, we only collect and track cost by site rather than by individual facilities or capital assets.

Hearing Date/Question Number: March 1, 2011 / Question 31

IMPROVING CONGRESSIONAL CONTROLS FOR INFRASTRUCTURE

Subcommittee. Mr. Administrator, I'm also concerned about this practice of requesting infrastructure funding in multiple lines of your budget. The subcommittee is prepared to work with you to budget according to actual needs, but we all need to be comfortable that the Administration understands the full costs associated with each part of the infrastructure and is taking appropriate action if particular sites are misrepresenting their costs. We also need to know that the Administration is no longer "gaming the system" by purposefully under-requesting in areas that Congress has traditionally had interests. What can be done this next year to assure us that you're requesting adequate amounts of funds for infrastructure in a consistent, transparent manner?

Mr. D'Agostino. The President's FY 2012 Budget Request is organized along programmatic lines with infrastructure funding requests located to best communicate their relationship to program and national goals. While this may complicate culling out a purely infrastructure view, it provides a clearer picture of the linkage of infrastructure investments to NNSA's larger strategic goals. This manner of presentation also best communicates how infrastructure investments support the missions of each site. We believe this presentation provides total transparency of the reasons for each infrastructure investment. We also provide an annual Stockpile Stewardship and Management Plan to Congress that is intended to provide an integrated long-term perspective on our enterprise including the infrastructure.

Hearing Date/Question Number: March 1, 2011 / Question 32

FOOTPRINT REDUCTION

Subcommittee. Both the Uranium Processing Facility (UPF) and the Chemistry Metallurgy and Research Replacement (CMRR) facilities will be considerably larger than the legacy facilities they are meant to replace.

You report that Uranium Processing Facility will add approximately 400,000 square feet to the footprint at Y-12. The CMRR was originally conceptualized to be smaller than the facility it will replace, but that is no longer the case.

Mr. D'Agostino. The Uranium Processing Facility (UPF) will be approximately 400,000 square feet in size and will replace the HEU production capability now performed in approximately 800,000 square feet in four existing facilities. The existing Chemistry and Metallurgy Research (CMR) facility is 571,458 square feet and is being replaced with two buildings, Radiological Laboratory/Utility Office Building (RLUOB) and CMRR-Nuclear Facility that total over 600,000 square feet.

Subcommittee. Have you given up your footprint reduction efforts?

Mr. D'Agostino. NNSA is continuing its footprint reduction efforts within the limits of available funding. The FY2012 Stockpile Stewardship and Management Plan (SSMP) conveys the NNSA's strategy to consolidate and modernize the Nuclear Security Enterprise (NSE).

Subcommittee. How do you intend to meet the Congressional requirement to eliminate facilities of an equivalent size, (called the 1for 1 requirement) if the new facilities you are constructing are larger than the legacy facilities?

Mr. D'Agostino. The NNSA complies with the Energy and Water Development Subcommittee FY 2002 Conference Report 107-258 for reduction of footprint. For the period 2002 through 2009 the NNSA constructed 1,447,865 gross square footage (gsf) and eliminated 3,700,620 gsf resulting in an escrow (banked) of eliminated footprint of 2,252,755 gsf. NNSA will continue to meet this requirement by taking down excess facilities as funds allow and by using "banked" space to ensure the offset requirement is met.

Subcommittee. In the past, the only dedicated funding for disposition has been provided under the Facilities and Infrastructure and Revitalization Program (FIRP), which is set to complete in 2013. It is clear that facilities disposition is not being budgeted for as part of the costs of new construction. How much funding is provided to demolish old facilities and reduce the footprint in the five year plan and where is it being funded?

Mr. D'Agostino. Beyond 2013, when the Facilities and Infrastructure Recapitalization Program (FIRP) ends, the NNSA is formulating a proposal (to be decided upon during the FY 2013 budget process) to use FIRP's business model in a new capabilities-based infrastructure investment approach to continue progress toward modernization, recapitalization, and footprint reductions. The proposed Capability Based Facility and Infrastructure (CBFI) subprogram would be an element of RTBF and be responsible for the disposition of non-process

contaminated facilities excess to the mission. FIRP dedicates $5M annually for the disposition of non-process contaminated facilities.

Subcommittee. Please provide a summary report by site on the square footage you intend to add to the footprint by facility in carrying out your ten year modernization effort, and detail how you intend to offset that growth to meet the 1for 1 Congressional requirement.

Mr. D'Agostino. The summary table below does not include the CMRR-NF and UPF.

Summary of proposed Defense Programs Line Items for FY 2012 – FY 2021:

Site	Facility Construction	Gross Square Footage	1 up for 1 eliminated	Total GSF
KCP	No Line Item (LI) Construction	N/A	N/A	N/A
LANL	TRU Waste	28,700	Use Bank	28,700
	TRP II & TRP III	1,200		1,200
	TA-55 Entry Control	9,000		9,000
	UPS Bldg	2,000		2,000
	Rad Liquid Waste Treatment Facility	16,000		16,000
	RLUOB	210,000		210,000
LLNL	No LI Construction	N/A	N/A	N/A
NNSS	No LI Construction	N/A	N/A	N/A
Pantex	HE Pressing Facility	45,000	Use Bank	45,000
SNL	Test Capabilities Revitalization II	10,000	Use Bank	10,000
SRS	No LI Construction	N/A	N/A	N/A
Y-12	Nuclear Facility Risk Reduction	N/A	N/A	N/A
			Total	321,900

Hearing Date/Question Number: March 1, 2011 / Question 33

GETTING WORKERS OUT OF AGING FACILITIES AT Y-12

Subcommittee. The Committee remains concerned about the facility condition of building 9212 and several others at Y-12. The Uranium Processing Facility was originally envisioned to replace building 9212 and some other aging facilities at Y-12. We now know that construction of the Uranium Processing Facility is only one step towards getting all workers out of building 9212.

- What exactly needs to happen to completely move out of building 9212?
- Will it require construction of another facility?
- If so, when will this facility be ready?
- What is your plan to maintain 9212 in a safe condition until all activities can be moved to other facilities?

Mr. D'Agostino. The first and most urgent step toward moving out of the building 9212 complex is construction and startup of the UPF facility. This will enable relocation of highly-enriched uranium (HEU) operations followed by a period of characterization and demolition during which personnel will continue working within portions of the 9212 complex on lower risk depleted uranium operations.

The second and less urgent step toward completely moving out of the building 9212 complex is relocation of the depleted uranium operations that are conducted in a newer 200,000 square feet wing within building 9212. Funding constraints and other factors make it very likely that depleted uranium relocation will occur after construction and startup of UPF. A timeline for evaluation of alternatives for relocation of depleted uranium has not been established and is not expected to begin until we are closer to completion of UPF.

NNSA has performed a detailed study of the risks associated with operating the building 9212 complex until it can be replaced. NNSA has implemented the study's recommendations through the Nuclear Facility Risk Reduction line item project and a variety of smaller efforts funded via operating funds. Taken together, these efforts will replace and repair the infrastructure systems in buildings 9212 and 9204-2E with the highest risk of failure and ensure continuity of capability and continued safe operations until the operations are relocated. This study has been shared with the Defense Nuclear Facility Safety Board and is updated periodically.

Hearing Date/Question Number: March 1, 2011 / Question 34

WEDNESDAY, MARCH 2, 2011.

DEPARTMENT OF ENERGY, DEFENSE NUCLEAR NONPROLIFERATION AND NAVAL REACTORS

WITNESSES

THOMAS D'AGOSTINO, UNDER SECRETARY FOR NUCLEAR SECURITY
ANNE HARRINGTON, DEPUTY ADMINISTRATOR FOR DEFENSE NUCLEAR NONPROLIFERATION
ADMIRAL KIRKLAND H. DONALD, DEPUTY ADMINISTRATOR FOR NAVAL REACTORS

Mr. FRELINGHUYSEN. I'd like to call the hearing to order. Good morning to everybody.

VOICES. Good morning.

Mr. FRELINGHUYSEN. Today's hearing will continue this week's focus on the national security programs at the Department of Energy. Administrator D'Agostino and Admiral Donald, welcome back to the Subcommittee. Ms. Harrington, welcome to your first hearing. It's nice to have you here.

As I said yesterday, our Committee is not immune to the reality that we must do our part to reduce federal spending and our huge deficit. Our resources will be constrained, even for the most essential activities under our jurisdiction and all programs, even vital security programs must be considered in that context.

I consider the Department of Energy's national security programs to be its most important mandate. The two accounts we'll consider here today, Naval Reactors and Defense Nuclear Nonproliferation, are critical components of our nation's defenses.

The Administration's request for nonproliferation programs is $2.5 billion, $140 million below last year's.

Given the attention the President has given to nonproliferation programs, including his attempt to secure fissile material overseas in four years, I look forward to hearing how this budget moves those efforts ahead.

I hope that you will also assure us that you are able to meet the growing challenges in Libya, Iran and North Korea, among other areas, and that our national security needs are met under this budget request.

Admiral Donald, your budget request for Naval Reactors is an 8% increase over your last year's, and a 22% increase over your current operating level.

Your programs are critical to national defense and give our naval forces the next-generation propulsion systems that maintain our Navy's edge.

Since the Naval Reactors program is split with funding from the Navy, the NNSA component is only part of the story. I hope you'll take some time this morning to clarify for us all how that relationship works, and what complications it causes.

Admiral Donald, I consider it our Constitutional responsibility, first and foremost, to fully support national defense and also to fully protect the hard-earned tax dollars of Americans that only House members can raise.

Frankly, there are still many questions to be answered about the Administration's planning to modernize our nation's nuclear submarines and therefore we don't have a good grasp on what your budget to support this program needs to be. Perhaps you will be able to shed some light on these plans for us today.

Again, I'd like to welcome our witnesses to the Subcommittee. Mr. D'Agostino, please ensure that the hearing record, questions for the record, and any supporting information requested by the Subcommittee are delivered in final form to us no later than four weeks from the time you receive them. Members who have additional questions for the record will have until close of business tomorrow to provide them to the Subcommittee office.

With that I will turn to Mr. Pastor, the Ranking Member, for any remarks he may have. Mr. Pastor.

Mr. PASTOR. Good morning, Mr. Chairman, and thank you very much.

Mr. Administrator, good morning and welcome again.

Mr. D'AGOSTINO. Thank you, sir.

Mr. PASTOR. And Admiral Donald, good to see you again. And Ms. Harrington, good morning and welcome to the hearing, and we all look forward to the testimony you will give us this morning.

As the Chairman said, this President has been very aggressive in terms of securing these materials and wants to do it in four years and it is a surprise to me that this budget is reduced, as the Chairman explained to us, so I would like to understand why, given all the attention to securing this material, this account sees a decrease when the remainder of NNSA is increasing.

Once again the magnitude of the increase raises concern whether the increase can be effectively executed in a single year, and I look forward to your testimony today on how this funding can be effectively used.

As you are discussing the budget today, I would also like you to address how flat funding for your organization in 2011 will impact your activities.

Admiral, your organization sees a large increase over 2010 and over the 2011 request. The requested level for nuclear reactors is a 22 percent increase over 2010. Again, there are issues of execution with that magnitude of increase. I look forward for your explanation how this funding will be used.

I look forward to your testimony regarding the areas of national security and thank you, Mr. Chairman, for the time. And I yield back.

Mr. FRELINGHUYSEN. Mr. Administrator, the floor is yours.

Mr. D'AGOSTINO. Thank you, Mr. Chairman, Ranking Member Pastor, Mr. Alexander. I appreciate the opportunity for us to join you again today and talk about our nuclear security programs.

Since I joined you yesterday, I will keep my opening remarks brief. Mr. Chairman, NNSA will comply with your request to provide responses in the timeframes you requested.

Last year the Nuclear Posture Review reaffirmed the vital role that nuclear submarines play in our strategic deterrent. For fiscal year 2012 President Obama has requested $1.1 billion for NNSA's Naval Reactors Program. The Nuclear Posture Review highlighted the need to build a replacement for the Ohio Class submarine, which will start to be retired from service in 2027.

Our fiscal year request continues the design work on the propulsion unit for that Ohio Class replacement submarine in order to meet the Navy's required procurement date of 2019.

The budget request also includes critical investments in modern and sustainable fuel infrastructure at Naval Reactors site in Idaho National Laboratory. This will allow us to move fuel from wet to dry storage and ultimately dispose of it while we maintain the capacity necessary to receive spent fuel generated during sustained, increased periods of fuel handling in our shipyards.

Finally, the budget request also seeks the resources to refuel the land-based prototype reactor in upstate New York.

Mr. Chairman, these three investments support our historic and essential role in helping power America's nuclear Navy. Admiral Donald is here with me today, of course, and he will provide a few comments in a few minutes here.

With respect to our nuclear naval—I am sorry—our nuclear nonproliferation programs, the President is seeking the resources required to implement his unprecedented nuclear security agenda he outlined in Prague.

On any given day we have people working around the world in more than 100 countries to reduce the global nuclear threat.

If I could, I would like to make a simple but important statement. Preventing the spread of nuclear weapons and keeping dangerous nuclear material out of the hands of terrorists is a vital national security priority. These are, without a doubt, national security programs that we have here.

As President Obama said, the threat of terrorists acquiring and using a nuclear weapon is the most immediate and extreme threat we face. His 2012 budget includes $2.5 billion in FY12 and $14.2 billion over the next five years to reduce the global nuclear threat by detecting, securing, safeguarding, disposing, and controlling nuclear and radiological materials as well as promoting the responsible application of nuclear technology and science. This includes stemming the risk of expertise proliferation through innovative science and technology partnerships around the world.

The President's request provides the resources required to meet commitments secured during the 2010 Nuclear Security Summit. For fiscal year 2012 it includes $1.1 billion or close to $1 billion to remove and prevent the smuggling of dangerous nuclear material around the world and enable NNSA to continue leading international efforts to implement more stringent standards for physical security and protection of material in facilities worldwide.

The President is also seeking $890 million for the Fissile Material Disposition Program, which supports the continued construction of a mixed oxide fuel fabrication facility, the waste solidification building, and efforts to baseline the pit, disassembly and conversion project at the Savannah River site in South Carolina.

Not only will these facilities be used to permanently eliminate more than 34 metric tons of surplus weapons plutonium, but it will be done in a way that produces electricity for America's consumers.

As I like to say, this is the ultimate swords to plowshares program and a key element of the President's nuclear nonproliferation agenda.

Finally, the budget request directs more than $360 million to the research and development required to create new technologies for detecting nuclear proliferation or testing and for monitoring compliance with nuclear nonproliferation and arms control treaty agreements. To me, this last point is the key. Investing in the science and technology underpinning our programs is critical to implementing the President's nuclear security agenda.

This is serious business. We need the best minds in the country working at our national laboratories and sites to develop the tools that will keep the American people safe and enhance global security.

Investing in a modern, 21st century nuclear security enterprise is essential to preventing nuclear terrorism or nuclear proliferation. These missions are interrelated, they rely on the same skill sets, the same people, and many of the same facilities.

This is a major part of the reason why we need to complete the uranium processing facility at Y–12, the National Security Complex, and the Chemistry and Metallurgy Research Replacement Facility at Los Alamos Laboratories.

These projects are critical to maintain the nation's expertise in uranium processing and plutonium research and I strongly encourage this Committee to continue supporting them.

Mr. Chairman, these are some of the highlights of this request as it relates to nuclear nonproliferation, naval reactors. I look forward to answering any questions and I would request Admiral Donald provide a few minutes on his program, sir.

[The information follows:]

Statement of Thomas P. D'Agostino
Under Secretary for Nuclear Security and Administrator
National Nuclear Security Administration
U.S. Department of Energy
on the
Fiscal Year 2012 President's Budget Request
Before The
House Appropriations Committee
Subcommittee on Energy and Water Development

March 1, 2011

Thank you for the opportunity to present the Fiscal Year (FY) 2012 President's Budget Request for the National Nuclear Security Administration (NNSA). This budget request will allow the NNSA to meet its commitments to the American people and our international partners to provide for nuclear deterrence, to reduce nuclear dangers around the world, and to provide the capabilities to address the broader national security challenges of the 21st century.

The vision of NNSA is to make the world a safer place. **NNSA's mission is to enhance global security through nuclear deterrence, nonproliferation, counterterrorism, naval nuclear propulsion, and to support national leadership in science and technology.**

Recognizing the economic challenges facing our nation and the budget pressures being felt throughout the federal government, the President demonstrates through this FY 2012 budget request his strong commitment to the nuclear security of our country and our allies by proposing an unprecedented investment in NNSA's mission. This investment is a commitment to recapitalize the nuclear security enterprise and do it in a way that makes sense.

The FY 2012 President's Budget Request provides $11.78 billion to **invest in a modern, 21st century nuclear security enterprise, implement the President's nuclear security agenda, and improve the way the NNSA does business and manages its resources.**

The FY 2012 request represents an increase of 5.1 percent over the $11.2 billion requested for FY 2011, reflecting a commitment to investing in a modern enterprise that can support the full range of nuclear security missions. The request highlights the vital role NNSA plays in implementing the President's nuclear security agenda and the broad, bipartisan consensus that has developed over the last two years regarding the role NNSA plays in enhancing our nation's security and the resources needed to get the job done.

Investing in the Future
Secretary of Energy Chu and I work closely with Secretary of Defense Gates and other Defense Department (DoD) officials to ensure that NNSA remains focused on a strong interagency partnership that meets our national security requirements and promotes NNSA's sustainability. As a result, the President's request includes $7.6 billion for the **Weapons Activities** appropriation, an 8.9 percent increase over the President's FY 2011 request and a 19.5 percent increase over the FY 2010 appropriation to **invest in the future of the nuclear security enterprise**. These resources will

support, among other things, the operation and construction of the modern research facilities needed to do cutting edge science and attract the next generation of nuclear security experts. It continues implementation of the President's commitment to invest $85 billion over the next decade to sustain the nuclear deterrent and to modernize the infrastructure that supports it, as well as to implement the agenda outlined in the Nuclear Posture Review, the Stockpile Stewardship and Management Plan and the updated Section 1251 Report submitted to Congress.

NNSA's budget request also includes associated out-year projections in the Future-Years Nuclear Security Program (FYNSP) that identifies resources needed to meet the continuing requirements for significant long-term investments in the deliverables, capabilities and infrastructure of the enterprise.

These resources will help us invest in a modern, 21st century Nuclear Security Enterprise that can sustain the stockpile and support our full range of nuclear security missions. With these investments, NNSA will be able to continue to move toward an enterprise that is safer, smaller, more secure, more efficient, more sustainable, and more adaptable.

The request includes an increase of 3.1 percent over the FY 2011 level to protect and advance the scientific capabilities at the U.S. national security laboratories and a 21 percent increase for infrastructure improvements, including continuing work on the Uranium Processing Facility (UPF) at the Y-12 National Security Complex and the Chemistry and Metallurgy Research Replacement facility (CMRR) at Los Alamos National Laboratory. These capital projects are key for ensuring safe, secure, and reliable uranium and plutonium capabilities for nuclear security and other important missions.

To power the nuclear navy, the budget request includes $1.2 billion for the NNSA's **Naval Reactors** program, an increase of 7.8 percent over the FY 2011 President's Request. The programs in this appropriation support the U.S. Navy's nuclear fleet. Specifically, the request supports the Administration's decision to recapitalize the sea-based strategic deterrent. The OHIO Class ballistic submarines, the most survivable leg of the nation's strategic deterrent, are reaching the end of their operational life. The request will enable Naval Reactors to continue reactor plant design and development efforts begun in 2010 for procurement of long-lead reactor plant components in 2017, in support of Navy procurement of the first OHIO Class submarine replacement in 2019. Providing the OHIO Class replacement a life-of-the-ship reactor core will require substantial advances in manufacturing technology to provide a new cladding and a new fuel system. The request also supports the refueling of a land based prototype reactor, providing a cost effective test platform for these new technologies.

Increased funding is also requested for the Spent Fuel Handling Recapitalization Project (SFHP), which will replace the over 50-year old Expended Core Facility (ECF) as the location for naval spent nuclear fuel receipt, inspection, dissection, packaging, and secure dry storage. FY 2012 funding continues the conceptual design for the facility, equipment, and related systems, as well as continues meeting the National Environmental Policy Act's requirements and project oversight (e.g., engineering procurement and construction management). Detailed project engineering and design work will commence in FY 2013 and construction will commence in FY 2015.

These vital projects will replace facilities that date back to the dawn of the Cold War with modern facilities that can support the full range of nuclear security missions – including maintaining the nuclear deterrent, preventing proliferation, securing vulnerable nuclear material, powering the nuclear Navy and providing the nation with the best emergency response and counterterrorism capabilities possible. They will also ensure that NNSA can continue to work with the Department of Defense and other interagency partners to keep the nation safe.

Implementing the President's Nuclear Security Agenda
The FY 2012 budget request also provides the resources required to continue **to work toward the President's commitment to secure vulnerable nuclear material around the world within four years, a key national security goal**. The budget request includes $2.5 billion for **Defense Nuclear Nonproliferation** in FY 2012 and $14.2 billion over the next five years to reduce the global nuclear threat by detecting, securing, safeguarding, disposing and controlling nuclear and radiological material worldwide, as well as promoting the responsible application of nuclear technology and science.

This request reflects the significant accomplishments of NNSA's nuclear nonproliferation programs in the past year, and seeks the resources needed to complete the President's goals. This budget request provides the resources required to meet commitments secured from international partners during the 2010 Nuclear Security Summit to remove all remaining highly enriched uranium (HEU) from Belarus, Ukraine, Mexico, and other countries by April 2012 and to work with the Defense Department to improve international nuclear security cooperation.

The request of $2.5 billion is a decrease of 5.1 percent from the FY 2011 President's Request, but an increase of 19.6 percent over the FY 2010 appropriation. This 5.1 percent or $138 million decline flows logically from the FY 2011 request which was 'front loaded' to accelerate the effort to secure vulnerable nuclear materials within the President's stated timeframe. Even with this decrease, the NNSA's budget request remains consistent with our overall strategy to ensure that programs supporting the President's commitment to lead an international effort to secure all vulnerable nuclear materials around the world in four years are fully funded in the Request. The Global Threat Reduction Initiative efforts related to radiological material, as well as the International Nuclear Material Protection and Cooperation program's activities to enhance the ability of our foreign partners to detect nuclear smuggling at border crossings and in megaports have been prioritized to accommodate accelerated nuclear material lockdown efforts. The decrease in the request for Fissile Materials Disposition reflects the completion of long-lead procurements for the MOX and Waste Solidification projects, as well as the decision to wait to request additional funds associated with the $400 million U.S. pledge for the Russian program until agreement is reached on milestones for the program. Prior Year unobligated balances of $30 million associated with contingency funds for construction under the Elimination of Weapons Grade Plutonium Production Program are proposed for cancellation, due to the program's anticipated completion of CD-4 activities in the June 2011 timeframe.

Improving the Way NNSA Does Business
Consistent with the President's commitment to deliver on critical national nuclear security missions at the best value to the American taxpayer, the FY 2012 budget request will enable NNSA to continue to **improve the way it does business and manages resources.** The President's Budget

Request for Federal oversight and staff included in the **Office of the Administrator** appropriation is $450.1 million, an increase of 0.4 percent over the FY 2011 request and an increase of 7 percent over the FY 2010 appropriation.

NNSA recognizes that the FY 2012 budgetary investments come at time of severe economic challenge for our country and a renewed commitment to reduce the deficit. To maintain bipartisan support for the NNSA programs, the enterprise has a responsibility to work together as "One NNSA," a fully integrated enterprise that operates efficiently, is organized to succeed, that performs its work seamlessly, and speaks with one voice. This "One NNSA" needs to be a true partnership among Headquarters, the Site Offices and our Management & Operations (M&O) partners.

Changing the way NNSA does business is an important part of the effort to transform a Cold War nuclear weapons complex into a 21st Century Nuclear Security Enterprise. NNSA simply cannot expect Congress to support major investments in its programs and its facilities unless the enterprise can demonstrate that the Department of Energy is a responsible steward of the taxpayer's money.

NNSA needs to do better, which is why the federal sector leadership is working with its M&O partners to streamline the enterprise governance model in order to devote more resources to critical mission work and maximize NNSA's ability to complete its mission safely and securely.

NNSA is making sure that it has the right contracting strategy in place. The agency is improving its project management by, for example, ensuring that NNSA no longer sets cost and schedule performance baselines on construction projects until design work is 90 percent complete, ensuring it has the right leadership teams in place, and performing independent cost reviews. NNSA has also created a new policy and oversight office for managing major projects. The new office reports directly to the Administrator. This will help ensure that project management gets the high level focus it requires.

We are already beginning to see results. NNSA is increasingly recognized for its efforts to be an effective steward of tax dollars. For example, since 2007, NNSA's Supply Chain Management Center has saved $213 million by using pooled purchasing power to drive efficiencies across the enterprise. In the last year NNSA's Kansas City Plant won the prestigious Malcolm Baldrige Award, America's highest honor for innovation and performance excellence. Two other NNSA programs were recognized with Project Management Institute (PMI) awards. In 2010, the Global Threat Reduction Initiative became the first federal project to receive PMI's Distinguished Project Award, while the National Ignition Facility at Lawrence Livermore National Laboratory received PMI's project of the year.

Conclusion

The Nation has carefully evaluated its security needs in an international landscape that remains challenging and uncertain. NNSA has charted a path forward that shows our unwavering commitment to the Nation's security and enhances our formidable capabilities to address broader security challenges.

The NNSA is a technically based organization with a strong nuclear heritage that serves as the base for our contribution to a wide range of national security solutions. NNSA is rooted in the

management of our Nation's nuclear weapons stockpile and the application of nuclear energy for naval propulsion. Additionally, NNSA capabilities support a broad range of U.S. and international activities that address existing dangers, identify and prepare for future challenges, and advise the U.S. Government and our international partners on nuclear security matters.

This budget request takes the NNSA into the next decade and strengthens the capabilities that are themselves integral elements of our nuclear deterrent. The challenge is to retain the capabilities that continue to be essential, and to identify and develop those needed for the future.

Appropriations Detail
Following are more detailed descriptions of each of the four specific NNSA appropriations.

*****

National Nuclear Security Administration

Appropriation and Program Summary Tables
Outyear Appropriation Summary Tables

FY 2012 BUDGET TABLES
National Nuclear Security Administration

Overview
Appropriation Summary

(dollars in thousands)

	FY 2010 Actual Approp	FY 2011 Request	FY 2011 CR	FY 2012 Request	FY 2012 vs. FY 2010 $	FY 2012 vs. FY 2010 %	FY 2012 vs. FY 2011 $	FY 2012 vs. FY 2011 %
National Nuclear Security Administration								
Office of the Administrator	420,754	448,267	420,754	450,060	29,306	7.0%	1,793	0.4%
Weapons Activities	6,386,371	7,008,835	7,008,835	7,629,716	1,243,345	19.5%	620,881	8.9%
Defense Nuclear Nonproliferation	2,131,382	2,687,167	2,136,709	2,549,492	418,110	19.6%	-137,675	-5.1%
Naval Reactors	945,133	1,070,486	945,133	1,153,662	208,529	22.1%	83,176	7.8%
Subtotal, NNSA	**9,883,640**	**11,214,755**	**10,511,431**	**11,782,930**	**1,899,290**	19.2%	**568,175**	**5.1%**
Transfer of prior year balances	-10,000	0	0	0	0	0%	0	0%
Total, NNSA	**9,873,640**	**11,214,755**	**10,511,431**	**11,782,930**	**1,899,290**	**19.2%**	**568,175**	**5.1%**

Outyear Appropriation Summary
NNSA Future-Years Nuclear Security Program (FYNSP)

(dollars in thousands)

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
NNSA					
Office of the Administrator	450,060	442,992	441,242	441,522	440,591
Weapons Activities	7,629,716	7,948,673	8,418,480	8,683,538	8,905,597
Defense Nuclear Nonproliferation	2,549,492	2,771,068	2,907,934	2,983,984	3,038,395
Naval Reactors	1,153,662	1,232,278	1,289,917	1,474,200	1,569,800
Total, NNSA	**11,782,930**	**12,395,011**	**13,057,573**	**13,583,244**	**13,954,383**

Office of the Administrator

Overview
Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2011 Continuing Resolution	FY 2012 Request
Office of the Administrator				
Office of the Administrator	418,074	448,267	410,754	450,060
Congressionally Directed Projects	13,000	0	0	0
Use of Prior Year Balances	-10,320	0	0	0
Subtotal, Office of the Administrator	**420,754**	**448,267**	**410,754**	**450,060**
Transfer of Prior Year Balances	-10,000	0	0	0
Total, Office of the Administrator	**410,754**	**448,267**	**410,754**	**450,060**

Public Law Authorization:
Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)

Outyear Appropriation Summary by Program

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Office of the Administrator	**442,992**	**441,242**	**441,522**	**440,591**

Office of the Administrator

Congressionally Directed Projects
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects	13,000	0	0

Weapons Activities

Overview
Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2011 CR	FY 2012 Request
Weapons Activities				
Directed Stockpile Work	1,564,290	1,898,379		1,963,583
Science Campaign	294,548	365,222		405,939
Engineering Campaign	149,679	141,920		143,078
Inertial Confinement Fusion Ignition and High Yield Campaign	457,486	481,548		476,274
Advanced Simulation and Computing Campaign	566,069	615,748		628,945
Readiness Campaign	106,744	112,092		142,491
Readiness in Technical Base and Facilities	1,810,279	1,848,970		2,326,134
Secure Transportation Asset	240,683	248,045		251,272
Nuclear Counterrorism Incident Response	223,379	233,134		222,147
Program	95,575	94,000		96,380
Site Stewardship	63,308	105,478		104,002
Defense Nuclear Security	769,823	719,954		722,857
Cyber Security	123,338	124,345		126,614
National Security Applications	0	20,000		20,000
Congressionally Directed Projects	3,000	0		0
Use/Recission of Prior Year Balances	-81,830	0		0
Total, Weapons Activities	**6,386,371**	**7,008,835**	**7,008,835**	**7,629,716**

Public Law Authorization:
National Defense Authorization Act for Fiscal Year 2010 (P.L. 111-84)
Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)
National Nuclear Security Administration Act, (P.L. 106-65), as amended

Outyear Appropriation Summary by Program*

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Weapons Activities				
Directed Stockpile Work	2,111,439	2,327,859	2,529,992	2,630,707
Science Campaign	418,216	416,284	394,315	404,097
Engineering Campaign	168,418	165,898	159,449	158,693
Inertial Confinement Fusion Ignition and High Yield Campaign	476,381	471,668	485,237	495,026
Advanced Simulation and Computing Campaign	616,104	628,100	643,120	659,210
Readiness Campaign	130,753	130,754	133,706	135,320
Readiness in Technical Base and Facilities	2,484,259	2,742,504	2,729,657	2,734,890
Secure Transportation Asset	249,456	252,869	261,521	267,773
Nuclear Counterrorism Incident Response	219,737	232,680	236,045	242,205
Facilities and Infrastructure Recapitalization Program	94,000	0	0	0
Site Stewardship	104,699	175,370	207,488	212,706
Defense Nuclear Security	729,795	729,173	756,110	814,967
Cyber Security	125,416	125,321	126,898	130,003
National Security Applications	20,000	20,000	20,000	20,000
Total, Weapons Activities	**7,948,673**	**8,418,480**	**8,683,538**	**8,905,597**

* The annual totals include an allocation to NNSA from the Department of Defense's (DoD) Research, Development, Testing and Evaluation (RDT&E) account entitled: "NNSA Program Support." The amounts for Weapons Activities included from this DoD account are FY 2013, $433.172 million; FY 2014, $550.902 million; FY 2015, $854.900 million; and FY 2016, $637.933 million.

Directed Stockpile Work

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Directed Stockpile Work			
Life Extension Programs			
B61 Life Extension Program	0	0	223,562
W76 Life Extension Program	231,888	249,463	257,035
Subtotal, Life Extension Programs	**231,888**	**249,463**	**480,597**
Stockpile Systems			
B61 Stockpile Systems	114,195	317,136	72,396
W62 Stockpile Systems	2	0	0
W76 Stockpile Systems	65,451	64,521	63,383
W78 Stockpile Systems	52,167	85,898	109,518
W80 Stockpile Systems	20,107	34,193	44,444
B83 Stockpile Systems	36,689	39,349	48,215
W87 Stockpile Systems	53,848	62,603	83,943
W88 Stockpile Systems	42,743	45,666	75,728
Subtotal, Stockpile Systems	**385,202**	**649,366**	**497,627**
Weapons Dismantlement and Disposition	**95,786**	**58,025**	**56,770**
Stockpile Services			
Production Support	300,037	309,761	354,502
Research & Development Support	37,071	38,582	30,264
Research & Development Certification and Safety	189,174	209,053	190,892
Management, Technology, and Production	183,223	193,811	198,700
Plutonium Sustainment	141,909	190,318	154,231
Subtotal, Stockpile Services	**851,414**	**941,525**	**928,589**
Total, Directed Stockpile Work	**1,564,290**	**1,898,379**	**1,963,583**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Directed Stockpile Work				
Life Extension Programs				
B61 Life Extension Program	279,206	320,894	396,869	426,415
W76 Life Extension Program	255,000	255,000	255,000	260,099
Subtotal, Life Extension Programs	**534,206**	**575,894**	**651,869**	**686,514**
Stockpile Systems				
B61 Stockpile Systems	72,364	72,483	70,488	71,534
W62 Stockpile Systems	0	0	0	0
W76 Stockpile Systems	65,445	63,580	63,537	65,727
W78 Stockpile Systems	151,207	329,354	333,978	316,507
W80 Stockpile Systems	46,540	50,457	58,898	59,775
B83 Stockpile Systems	57,947	72,516	65,941	54,663
W87 Stockpile Systems	85,689	68,774	63,638	65,492
W88 Stockpile Systems	105,582	78,602	163,626	226,060
Subtotal, Stockpile Systems	**584,774**	**735,766**	**820,106**	**859,758**
Weapons Dismantlement and Disposition	**43,404**	**52,090**	**54,205**	**55,495**
Stockpile Services				
Production Support	319,805	320,614	332,371	341,203
Research & Development Support	31,059	31,824	33,116	33,904
Research & Development Certification and Safety	241,658	242,424	250,963	255,747
Management, Technology, and Production	199,080	207,290	215,468	222,137
Plutonium Sustainment	157,453	161,957	171,894	175,949
Subtotal, Stockpile Services	**949,055**	**964,109**	**1,003,812**	**1,028,940**
Total, Directed Stockpile Work	**2,111,439**	**2,327,859**	**2,529,992**	**2,630,707**

Science Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Science Campaign			
Advanced Certification	19,269	76,972	94,929
Primary Assessment Technologies	82,838	85,723	86,055
Dynamic Materials Properties	86,371	96,984	111,836
Advanced Radiography	28,489	23,594	27,058
Secondary Assessment Technologies	77,581	81,949	86,061
Total, Science Campaign	**294,5483**	**65,222**	**405,939**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Science Campaign				
Advanced Certification	97,229	103,271	82,000	84,174
Primary Assessment Technologies	88,893	85,894	88,368	88,831
Dynamic Materials Properties	114,980	114,170	106,398	114,620
Advanced Radiography	26,816	26,528	27,421	26,473
Secondary Assessment Technologies	90,298	86,421	90,128	89,999
Total, Science Campaign	**418,216**	**416,284**	**394,315**	**404,097**

Engineering Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Engineering Campaign			
Enhanced Surety	41,928	42,429	41,696
Weapons Systems Engineering Assessment Technology	17,977	13,530	15,663
Nuclear Survivability	20,980	19,786	19,545
Enhanced Surveillance	68,794	66,175	66,174
Total, Engineering Campaign	**149,679**	**141,920**	**143,078**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Engineering Campaign				
Enhanced Surety	51,922	50,810	47,649	48,773
Weapons Systems Engineering Assessment Technology	21,233	21,502	21,244	21,699
Nuclear Survivability	24,371	25,691	26,079	26,318
Enhanced Surveillance	70,892	67,895	64,477	61,903
Total, Engineering Campaign	**168,418**	**165,898**	**159,449**	**158,693**

Inertial Confinement Fusion Ignition and High Yield Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Inertial Confinement Fusion Ignition and High Yield Campaign			
Ignition	106,575	109,506	109,888
Support of Other Stockpile Programs	0	0	0
Diagnostics, Cryogenics, and Experimental Support	72,144	102,649	86,259
Pulsed Power Inertial Confinement Fusion	4,992	5,000	4,997
Joint Program in High Energy Density Laboratory Plasmas	4,000	4,000	9,100
Facility Operations and Target Production	269,775	260,393	266,030
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**457,486**	**481,548**	**476,274**

Outyear Funding Profile by Subprogram*

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Inertial Confinement Fusion Ignition and High Yield Campaign				
Ignition	74,410	65,000	60,000	55,000
Support of Other Stockpile Programs	35,590	45,000	50,000	55,000
Diagnostics, Cryogenics, and Experimental Support	76,267	70,159	70,517	69,617
Pulsed Power Inertial Confinement Fusion	5,000	5,000	5,000	5,000
Joint Program in High Energy Density Laboratory Plasmas	9,500	9,500	9,500	9,500
Facility Operations and Target Production	275,614	277,009	290,220	300,909
Total, Inertial Confinement Fusion Ignition and High Yield Campaign	**476,381**	**471,668**	**485,237**	**495,026**

* Outyear funding profile does not include adjustments in response to the FY 2013 change in Self-Constructed Asset Pool (overhead rate at Lawrence Livermore National Laboratory). These adjustments will be reflected in the FY 2013 President's Budget.

Advanced Simulation and Computing Campaign

Funding Schedule by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Advanced Simulation and Computing Campaign			
Integrated Codes	140,882	165,947	160,945
Physics and Engineering Models	61,189	62,798	69,890
Verification and Validation	50,882	54,781	57,073
Computational Systems and Software Environment	157,466	175,833	181,178
Facility Operations and User Support	155,650	156,389	159,859
Total, Advanced Simulation and Computing Campaign	**566,069**	**615,748**	**628,945**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Advanced Simulation and Computing Campaign				
Integrated Codes	160,170	163,287	167,194	171,377
Physics and Engineering Models	69,567	70,922	72,617	74,434
Verification and Validation	56,794	57,899	59,284	60,767
Computational Systems and Software Environment	170,462	173,782	177,937	182,389
Facility Operations and User Support	159,111	162,210	166,088	170,243
Total, Advanced Simulation and Computing Campaign	**616,104**	**628,100**	**643,120**	**659,210**

Readiness Campaign

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Readiness Campaign			
Stockpile Readiness	5,670	18,941	0
High Explosives and Weapon Operations	4,583	3,000	0
Nonnuclear Readiness	19,625	21,864	65,000
Tritium Readiness	68,245	50,187	77,491
Advanced Design and Production Technologies	8,621	18,100	0
Total, Readiness Campaign	**106,744**	**112,092**	**142,491**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Readiness Campaign				
Stockpile Readiness	0	0	0	0
High Explosives and Weapon Operations	0	0	0	0
Nonnuclear Readiness	65,000	65,000	65,000	65,000
Tritium Readiness	65,753	65,754	68,706	70,320
Advanced Design and Production Technologies	0	0	0	0
Total, Readiness Campaign	**130,753**	**130,754**	**133,706**	**135,320**

Readiness in Technical Base and Facilities

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Readiness in Technical Base and Facilities			
Operations of Facilities			
Kansas City Plant	117,895	186,102	156,217
Lawrence Livermore National Laboratory	86,083	80,106	83,990
Los Alamos National Laboratory	338,479	318,464	318,526
Nevada National Security Site	79,326	80,077	97,559
Pantex	131,227	121,254	164,848
Sandia National Laboratory	103,618	117,369	120,708
Savannah River Site	131,129	92,722	97,767
Y-12 National Security Complex	228,601	220,927	246,001
Institutional Site Support	120,041	40,970	199,638
Subtotal, Operations of Facilities	1,336,399	1,257,991	1,485,254
Program Readiness	72,873	69,309	74,180
Material Recycle and Recovery	69,224	70,429	85,939
Containers	23,321	27,992	28,979
Storage	24,558	24,233	31,272
Subtotal, Operations and Maintenance	**1,526,375**	**1,449,954**	**1,705,624**
Construction	283,904	399,016	620,510
Total, Readiness in Technical Base and Facilities	**1,810,279**	**1,848,970**	**2,326,134**

Outyear Funding Schedule by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Readiness in Technical Base and Facilities				
Operations of Facilities	1,655,922	1,673,863	1,681,568	1,699,396
Program Readiness	88,900	89,511	90,780	91,504
Material Recycle and Recovery	104,940	102,782	105,021	106,642
Containers	25,016	23,997	24,809	25,396
Storage	32,347	31,872	33,647	34,208
Subtotal, Operations and Maintenance	**1,907,125**	**1,922,025**	**1,935,825**	**1,957,146**
Construction	577,134	820,479	793,832	777,744
Readiness in Technical Base and Facilities	**2,484,259**	**2,742,504**	**2,729,657**	**2,734,890**

Secure Transportation Asset

Overview
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriaton	FY 2011 Request	FY 2012 Request
Secure Transportation Asset (STA)			
Operations and Equipment	144,542	149,018	149,274
Program Direction	96,141	99,027	101,998
Total, Secure Transportation Asset	**240,683**	**248,045**	**251,272**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Operations and Equipment				
Operations and Equipment	141,560	142,270	146,865	150,561
Program Direction	107,896	110,599	114,656	117,212
Total, Operations and Equipment	**249,456**	**252,869**	**261,521**	**267,773**

Secure Transportation Asset

Operations and Equipment
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Operations and Equipment			
Mission Capacity	79,787	84,010	79,641
Security/Safety Capability	27,160	27,001	32,261
Infrastructure and C5 Systems	24,399	23,681	25,997
Program Management	13,196	14,326	11,375
Total, Operations and Equipment	**144,542**	**149,018**	**149,274**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Operations and Equipment				
Mission Capacity	69,715	69,033	73,476	72,771
Security/Safety Capability	32,715	32,817	32,923	33,030
Infrastructure and C5 Systems	26,583	27,621	27,411	31,444
Program Management	12,547	12,799	13,055	13,316
Total, Operations and Equipment	**141,560**	**142,270**	**146,865**	**150,561**

Secure Transportation Asset

Program Direction
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Program Direction			
Salaries and Benefits	78,301	83,311	87,307
Travel	7,337	7,746	8,024
Other Related Expenses	10,503	7,970	6,667
Total, Program Direction	**96,141**	**99,027**	**101,998**
Total, Full Time Equivalents	**584**	**637**	**622**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Program Direction				
Salaries and Benefits	91,067	93,307	96,888	99,038
Travel	8,301	8,550	8,806	8,984
Other Related Expenses	8,528	8,742	8,962	9,190
Total, Program Direction	**107,896**	**110,599**	**114,656**	**117,212**
Total, Full Time Equivalents	**649**	**649**	**649**	**649**

Nuclear Counterterrorism Incident Response

Funding by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Nuclear Counterterrorism Incident Response (Homeland Security)*			
Emergency Response (Homeland Security)*	140,481	134,092	137,159
National Technical Nuclear Forensics (Homeland Security)*	10,227	11,698	11,589
Emergency Management (Homeland Security)*	7,726	7,494	7,153
Operations Support (Homeland Security)*	8,536	8,675	8,691
International Emergency Management and Cooperation	7,181	7,139	7,129
Nuclear Counterterrorism (Homeland Security)*	49,228	64,036	50,426
Total, Nuclear Counterterrorism Incident Response	**223,379**	**233,134**	**222,147**

Outyear Target Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Nuclear Counterterrorism Incident Response				
Emergency Response (Homeland Security)*	136,918	138,440	140,098	142,816
National Technical Nuclear Forensics (Homeland Security)*	11,694	11,577	11,828	12,274
Emergency Management (Homeland Security)*	6,629	6,506	6,694	6,776
Operations Support (Homeland Security)*	8,799	8,749	9,000	9,110
International Emergency Management and Cooperation	7,139	7,032	7,276	7,664
Nuclear Counterterrorism (Homeland Security)*	48,558	60,376	61,149	63,565
Total, Nuclear Counterterrorism Incident Response	**219,737**	**232,680**	**236,045**	**242,205**

* Office of Management and Budget (OMB) Homeland Security designation.

Facilities and Infrastructure Recapitalization Program

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Facilities and Infrastructure Recapitalization Program			
Operations and Maintenance (O&M)			
Recapitalization	70,483	79,600	81,980
Infrastructure Planning	6,153	9,400	9,400
Facility Disposition	8,976	5,000	5,000
Subtotal, Operations and Maintenance (O&M)	**85,612**	**94,000**	**96,380**
Construction	9,963	0	0
Total, Facilities and Infrastructure Recapitalization Program	**95,575**	**94,000**	**96,380**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Facilities and Infrastructure Recapitalization Program				
Operations and Maintenance (O&M)				
Recapitalization	86,600	0	0	0
Infrastructure Planning	2,400	0	0	0
Facility Disposition	5,000	0	0	0
Subtotal, Operations and Maintenance (O&M)	**94,000**	**0**	**0**	**0**
Construction	0	0	0	0
Total, Facilities and Infrastructure Recapitalization Program	**94,000**	**0**	**0**	**0**

Site Stewardship

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Site Stewardship			
Operations and Maintenance	63,308	90,478	104,002
Construction	0	15,000	0
Total, Site Stewardship	**63,308**	**105,478**	**104,002**

Outyear and Over Target Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Site Stewardship				
Operations and Maintenance	102,458	175,370	192,488	197,706
Construction	2,241	0	15,000	15,000
Total, Site Stewardship	**104,699**	**175,370**	**207,488**	**212,706**

Safeguards and Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriations	FY 2011 Request	FY 2012 Request
Safeguards and Security (S&S)			
Defense Nuclear Security (Homeland Security)			
Operations and Maintenance	720,823	667,954	711,105
Construction	49,000	52,000	11,752
Total, Defense Nuclear Security	**769,823**	**719,954**	**722,857**
Cyber Security (Homeland Security)	**123,338**	**124,345**	**126,614**
Total, Safeguards and Security	**893,161**	**844,299**	**849,471**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Safeguards and Security (S&S)				
Defense Nuclear Security (Homeland Security)				
Operations and Maintenance	729,795	729,173	756,110	814,967
Construction	0	0	0	0
Total, Defense Nuclear Security	**729,795**	**729,173**	**756,110**	**814,967**
Cyber Security (Homeland Security)	**125,416**	**125,321**	**126,898**	**130,003**
Total, Safeguards and Security	**855,211**	**854,494**	**883,008**	**944,970**

Defense Nuclear Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Defense Nuclear Security			
Operations and Maintenance (Homeland Security)			
Protective Forces	453,779	414,166	418,758
Physical Security Systems	74,000	73,794	107,636
Information Security	25,300	25,943	30,117
Personnel Security	30,600	30,913	37,285
Materials Control and Accountability	35,200	35,602	34,592
Program Management	83,944	80,311	77,920
Technology Deployment, Physical Security	8,000	7,225	4,797
Graded Security Protection Policy (formerly DBT)	10,000	0	0
Total, Operations and Maintenance (Homeland Security)	**720,823**	**667,954**	**711,105**
Construction (Homeland Security)	49,000	52,000	11,752
Total, Defense Nuclear Security	**769,823**	**719,954**	**722,857**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Defense Nuclear Security				
Operations and Maintenance (Homeland Security)				
Protective Forces	405,145	402,755	417,474	451,148
Physical Security Systems	129,491	130,266	132,872	140,537
Information Security	29,540	30,148	31,406	33,806
Personnel Security	39,063	39,375	39,862	41,205
Materials Control and Accountability	33,206	33,502	34,831	37,412
Program Management	86,706	86,363	92,631	103,527
Technology Deployment, Physical Security	6,644	6,764	7,034	7,332
Total, Operations and Maintenance (Homeland Security)	**729,795**	**729,173**	**756,110**	**814,967**
Construction (Homeland Security)	0	0	0	0
Total, Defense Nuclear Security	**729,795**	**729,173**	**756,110**	**814,967**

Cyber Security

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Cyber Security (Homeland Security)			
Infrastructure Program	99,838	97,849	107,618
Enterprise Secure Computing	21,500	21,500	14,000
Technology Application Development	2,000	4,996	4,996
Total, Cyber Security (Homeland Security)	**123,338**	**124,345**	**126,614**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Cyber Security (Homeland Security)				
Infrastructure Program	106,826	106,711	108,193	111,233
Enterprise Secure Computing	14,000	14,000	14,000	14,000
Technology Application Development	4,590	4,610	4,705	4,770
Total, Cyber Security (Homeland Security)	**125,416**	**125,321**	**126,898**	**130,003**

National Security Applications

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Operations and Maintenance	**0**	**20,000**	**20,000**
Total, National Security Applications	**0**	**20,000**	**20,000**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Total, National Security Applications	**20,000**	**20,000**	**20,000**	**20,000**

Weapons Activities

Congressionally Directed Projects
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects	**3,000**	**0**	**0**

Defense Nuclear Nonproliferation

Overview
Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2011 CR	FY 2012 Request
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research and Development	311,274	351,568		417,598
Nonproliferation and International Security	187,202	155,930		161,833
International Nuclear Materials Protection and Cooperation [a]	572,749	590,118		571,639
Elimination of Weapons-Grade Plutonium Production	24,507	0		0
Fissile Materials Disposition	701,900	1,030,713		890,153
Global Threat Reduction Initiative	333,500	558,838		508,269
Congressional Directed Projects	250	0		0
Total, Defense Nuclear Nonproliferation	**2,131,382**	**2,687,167**	**2,136,709**	**2,549,492**

Public Law Authorization:
Energy and Water Development and Related Agencies Appropriations Act, 2010 (P.L. 111-85)
National Nuclear Security Administration Act, (P.L. 106-65), as amended National Defense Authorization Act for Fiscal Year 2010 (P.L. 111-84)

Outyear Appropriation Summary by Program

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Defense Nuclear Nonproliferation				
Nonproliferation and Verification Research and Development	479,191	506,243	503,328	519,455
Nonproliferation and International Security	163,000	168,000	171,999	174,999
International Nuclear Materials Protection and Cooperation	519,000	633,000	656,000	531,723
Fissile Materials Disposition	1,112,877	963,691	991,657	1,071,940
Global Threat Reduction Initiative	497,000	637,000	661,000	740,278
Total, Defense Nuclear Nonproliferation	**2,771,068**	**2,907,934**	**2,983,984**	**3,038,395**

Nonproliferation and Verification Research and Development

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Nonproliferation and Verification R&D			
Proliferation Detection (PD)	175,813	225,004	218,350
Homeland Security-Related Proliferation Detection [Non-Add]	[50,000]	[50,000]	[50,000]
Nuclear Detonation Detection (NDD)	135,461	126,564	127,800
University of California Pension Payments and Contractor Pension Cost	0	0	71,448
Total, Nonproliferation and Verification R&D	**311,274**	**351,568**	**417,598**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Nonproliferation and Verification R&D				
Proliferation Detection (PD)	222,623	227,838	228,517	242,357
Homeland Security-Related Proliferation Detection [Non-Add]	[50,000]	[50,000]	[50,000]	[50,000]
Nuclear Detonation Detection (NDD)	139,568	145,405	145,811	154,098
University of California Pension Payments and Contractor Pension Cost	117,000	133,000	129,000	123,000
Total, Nonproliferation and Verification R&D	**479,191**	**506,243**	**503,328**	**519,455**

Nonproliferation and International Security

Funding Profile by Subprogram*

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Nonproliferation and International Security			
Dismantlement and Transparency	72,763	49,207	0
Global Security Engagement and Cooperation	50,708	47,289	0
International Regimes and Agreements	42,703	39,824	0
Treaties and Agreements	21,028	19,610	0
Nuclear Safeguards and Security	0	0	53,925
Nuclear Controls	0	0	48,496
Nuclear Verification	0	0	46,995
Nonproliferation Policy	0	0	12,417
Total, Nonproliferation and International Security	**187,202**	**155,930**	**161,833**

* The Nonproliferation and International Security Program is proposing a budget structure change staring in FY 2012. The structure change creates a more efficient and clearer program organization with activities aligned along functional lines that reflect United States nonproliferation priorities and initiatives. The new structure depicts more clearly the alignment of people, technology, and resources to meet and implement nuclear nonproliferation objectives.

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Nonproliferation and International Security				
Nuclear Safeguards and Security	56,038	57,757	59,132	60,163
Nuclear Controls	50,396	51,942	53,178	54,106
Nuclear Verification	43,662	45,001	46,073	46,876
Nonproliferation Policy	12,904	13,300	13,616	13,854
Total, Nonproliferation and International Security	**163,000**	**168,000**	**171,999**	**174,999**

International Nuclear Materials Protection and Cooperation

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
International Nuclear Materials Protection and Cooperation			
Navy Complex	33,880	34,322	33,664
Strategic Rocket Forces/12th Main Directorate	48,646	51,359	59,105
Rosatom Weapons Complex	71,517	105,318	80,735
Civilian Nuclear Sites	63,481	59,027	59,117
Material Consolidation and Conversion	13,611	13,867	14,306
National Programs and Sustainability	68,469	60,928	60,928
Second Line of Defense	272,446	265,297	263,784
International Contributions [a]	699	0	0
Total, International Nuclear Materials Protection and Cooperation	**572,749**	**590,118**	**571,639**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
International Nuclear Materials Protection and Cooperation				
Navy Complex	8,146	3,900	3,750	3,600
Strategic Rocket Forces/12th Main Directorate	42,014	6,150	5,900	5,650
Rosatom Weapons Complex	51,560	46,061	39,442	38,876
Civilian Nuclear Sites	48,292	44,249	46,996	46,996
Material Consolidation and Conversion	64,627	64,627	66,433	50,000
National Programs and Sustainability	39,006	39,006	41,734	39,006
Second Line of Defense	265,355	429,007	451,745	347,595
Total, International Nuclear Materials Protection and Cooperation	**519,000**	**633,000**	**656,000**	**531,723**

Elimination of Weapons-Grade Plutonium Production

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Elimination of Weapons-Grade Plutonium Production (EWGPP)			
Zheleznogorsk Plutonium Production Elimination (ZPPEP)	22,507	0	0
Crosscutting and Technical Support Activities	2,000	0	0
Total, Elimination of Weapons-Grade Plutonium Production (EWGPP)	**24,507**	**0**	**0**
Cancellation of unobligated balalnces			**-30,000**

Outyear Funding Profile by Subprogram

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Elimination of Weapons-Grade Plutonium Production	0	0	0	0

Fissile Materials Disposition

Funding Profile by Subprogram

	(dollars in thousands)		
	FY 2010 Current Appropriation	FY 2011 Request	FY 2012 Request
Fissile Materials Disposition (FMD)			
U.S. Surplus Fissile Materials Disposition			
Operations and Maintenance (O&M)			
U S Plutonium Disposition	91,659	278,940	274,790
U S Uranium Disposition	34,691	25,985	26,435
Supporting Activities	312	0	0
Subtotal, O&M	**126,662**	**304,925**	**301,225**
Construction	574,238	612,788	578,754
Total, U.S. Surplus FMD	**700,900**	**917,713**	**879,979**
Russian Surplus FMD			
Russian Materials Disposition	1,000	113,000	10,174
Total, Fissile Materials Disposition	**701,900**	**1,030,713**	**890,153**

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Fissile Materials Disposition				
U S Surplus Fissile Materials Disposition (O&M)	422,575	480,280	531,134	686,135
Construction	637,802	430,661	402,773	354,805
Russian Surplus Fissile Materials Disposition	52,500	52,750	57,750	31,000
Total, Fissile Materials Disposition	**1,112,877**	**963,691**	**991,657**	**1,071,940**

Global Threat Reduction Initiative (GTRI)

Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Global Threat Reduction Initiative			
Highly Enriched Uranium (HEU) Reactor Conversion	**102,772**	**119,000**	**148,269**
Nuclear and Radiological Material Removal			
Russian-Origin Nuclear Material Removal	94,167	145,191	147,000
U.S.-Origin Nuclear Material Removal	9,889	16,500	9,000
Gap Nuclear Material Removal	9,111	108,000	56,000
Emerging Threats Nuclear Material Removal	5,556	16,000	5,000
International Radiological Material Removal	8,333	45,000	20,000
Domestic Radiological Material Removal (Homeland Security)*	17,778	25,000	20,000
Subtotal, Nuclear and Radiological Material Removal	**144,834**	**355,691**	**257,000**
Nuclear and Radiological Material Protection			
BN-350 Nuclear Material Protection	9,109	2,000	2,000
International Material Protection	41,463	57,000	50,000
Domestic Material Protection (Homeland Security)*	35,322	25,147	51,000
Subtotal, Nuclear and Radiological Material Protection	**85,894**	**84,147**	**103,000**
Total, Global Threat Reduction Initiative	**333,500**	**558,838**	**508,269**

* Office of Management and Budget (OMB) Homeland Security designation.

Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2013	FY 2014	FY 2015	FY 2016
Global Threat Reduction Initiative				
HEU Reactor Conversion	**175,000**	**230,000**	**254,000**	**269,000**
Nuclear and Radiological Material Removal				
Russian-Origin Nuclear Material Removal	112,000	110,000	105,000	100,000
U.S.-Origin Nuclear Material Removal	8,000	3,000	3,000	3,000
Gap Nuclear Material Removal	56,000	20,000	10,000	5,000
Emerging Threats Nuclear Material Removal	5,000	5,000	5,000	5,000
International Radiological Material Removal	20,000	20,000	25,000	25,000
Domestic Radiological Material Removal (Homeland Security)*	20,000	20,000	28,000	29,000
Subtotal, Nuclear and Radiological Material Removal	**221,000**	**178,000**	**176,000**	**167,000**
Nuclear and Radiological Material Protection				
International Material Protection	50,000	86,000	87,000	91,000
Domestic Material Protection (Homeland Security)*	51,000	143,000	144,000	213,278
Subtotal, Nuclear and Radiological Material Protection	**101,000**	**229,000**	**231,000**	**304,278**
Total, Global Threat Reduction Initiative	**497,000**	**637,000**	**661,000**	**740,278**

* Office of Management and Budget (OMB) Homeland Security designation.

Defense Nuclear Nonproliferation

Congressionally Directed Projects
Funding Profile by Subprogram

(dollars in thousands)

	FY 2010 Actual Appropriation	FY 2011 Request	FY 2012 Request
Congressionally Directed Projects	**250**	**0**	**0**

Naval Reactors

Overview
Appropriation Summary by Program

(dollars in thousands)

	FY 2010 Actual Appropriations	FY 2011 Request	FY 2012 Request*
Naval Reactors Development			
Operations and Maintenance (O&M)	877,533	997,886	1,069,262
Program Direction	36,800	40,000	44,500
Construction	30,800	32,600	39,900
Total, Naval Reactors Development	**945,133**	**1,070,486**	**1,153,662**

* FY 2012 includes $27,800 DoD support for the Expended Core Facility M-290 Receiving Discharge Station line-item construction project

Public Law Authorizations:

P.L. 83-703, "Atomic Energy Act of 1954"
"Executive Order 12344 (42 U.S.C. 7158), "Naval Nuclear Propulsion Program"
P.L. 107-107, "National Defense Authorizations Act of 2002", Title 32, "National Nuclear Security Administration"
John Warner National Defense Authorization Act for FY 2007, (P.L. 109-364)
FY 2008 Consolidated Appropriations Act (P.L. 110-161)
National Nuclear Security Administration Act, P.L. 106-65), as amended
FY 2009 Consolidated Appropriations Act (P.L. 111-8)
FY 2010 Energy and Water Related Agencies Appropriation Act (P.L. 111-85)

Outyear Appropriation Summary by Program*

(dollars in thousands)

	FY 2013	FY 2014	FY 2015	FY 2016
Naval Reactors Development				
Operations and Maintenance	1,093,038	1,181,847	1,234,610	1,245,900
Program Direction	47,040	49,670	52,390	54,200
Construction	92,200	58,400	187,200	269,700
Total, Naval Reactors Development	**1,232,278**	**1,289,917**	**1,474,200**	**1,569,800**

* The annual totals include an allocation to NNSA from the Department of Defense's (DoD) Research, Development, Testing and Evaluation (RDT&E) account entitled: "NNSA Program Support." The amounts included for Naval Reactors from this DoD account are FY 2013, $5.7 million; FY 2014 $1.7 million; and FY 2015 $0.4 million.

Mr. FRELINGHUYSEN. Thank you, Tom. Admiral, good morning.

Admiral DONALD. Good morning, sir.

Mr. FRELINGHUYSEN. We have got two submariners at the dais.

Mr. D'AGOSTINO. Yes, sir.

Mr. FRELINGHUYSEN. One in uniform, one without.

Mr. D'AGOSTINO. Sir, with your permission I would like to introduce two guests that I have here with me today. The first is my wife of 37 years, Diane. She's been on this journey with me, this naval career, and supported me and I would not be here without her. Also, her sister is here, Terri, who is just returning from an eight month tour in Afghanistan, a Navy Reservist serving our country.

Mr. FRELINGHUYSEN. Well, we salute you.

Mr. ALEXANDER. Where are they?

Mr. FRELINGHUYSEN. We thank you all for your service and for those of you who did not see the Washington Post this morning, General Kelly, there is a rather poignant story I commend to your attention. He does not advertise that he lost a son, but we should reflect every day how blessed we are by the service of so many young men and women and some not so young, serving in the military, and their families, each and every day. We are extraordinarily proud.

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. All of us here are proud.

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. Admiral.

Admiral DONALD. Yes, sir. Chairman Frelinghuysen, Mr. Pastor, Mr. Alexander, thank you for the opportunity to testify here today on the Naval Reactors fiscal year 2012 budget request. The request is for $1.15 billion.

This funding provides the resources to sustain a nuclear fleet of 71 submarines and 11 aircraft carriers that comprise over 40 percent of the major combatants in the United States Navy and the most survivable leg of our strategic nuclear deterrent, 14 fleet ballistic missile submarines.

Our FY12 request also supports the modernization of our nation's nuclear deterrent with funding for the reactor plant design and land based prototyping to replace the existing *Ohio* Class ballistic missile submarines.

The *Ohio* Class ships will start retirement from service in 2027 and to meet the Navy's required procurement date of 2019, my program's work is underway now. Further, that land based prototyping work will provide a training platform for one-third of my nuclear operators for the future for the next 20 years once it is back on service.

And finally, this budget funds the modernization and sustainment of our aging spent nuclear fuel infrastructure in Idaho.

As the Administrator pointed out, we have to do this to ensure that we remain in compliance with the Idaho Settlement Agreements of 1995 for movement of fuel from wet storage to dry storage and to ultimately dispose while we maintain the capacity necessary to receive spent fuel generated during a sustained, intense period of fuel handling in our shipyards.

Sir, I realize I come before you today at a very challenging time for our nation and I know I am not alone in asking for funding for claimed important programs. As you deliberate and make the difficult decisions that you must, I ask that you consider the following: the Naval Reactors Program operates and maintains 103 nuclear reactor plans on submarines, aircraft carriers, and ashore at training, and research and development facilities. We perform complex engineering and technical work to develop and maintain highly capable reactor plans and associated equipment for their 30 to 50 year lifespan.

Our ships are deployed around the globe and they are welcome in over 150 ports worldwide. Nuclear powered ships are home ported in eight United States cities and in Yokosuka, Japan. That unfettered access to ports and the associated operational flexibility is only possible because the public trusts us, and that trust is derived from confidence in our record of safe operations, in environmental stewardship, in managing complex nuclear technology that has high consequence in the case of failure.

Similarly, our performance in reactor plant operations, in our shipyards and in spent fuel handling operations in Idaho has engendered trust within our workforce and in the local communities.

We have built our record through a singular focus on safety that has been facilitated by having the necessary resources to ensure the highest standards are maintained, to allow us to address small problems before they become big problems, and to conduct our engineering in a conservative, defense, in-depth approach.

The Naval Nuclear Propulsion Program has historically been a good steward of the taxpayer's dollars. We have a record of delivering projects of the highest quality, on time, and on cost. The *Virginia*-Class submarine program, cited as the standard for major acquisition programs in the Navy, is the latest example of that performance. Further, when challenged to prepare spent fuel for dry storage and ultimate disposal in a land repository, we successfully constructed the complex facilities within our budget and establish a production process that ensures we fulfill our commitments to the citizens of Idaho.

Our stewardship is not limited to major projects, but rather it is engrained in our day to day work and it starts with our headquarters staff, a lean staff comprised primarily of engineers who conduct the oversight of all of our activities.

Our laboratories and our unique industrial base are focused not only on safety and effectiveness of our propulsion plants, but also on cost-wise performance, always seeking opportunities to improve. This effort enabled a 15 percent reduction in the cost of a Virginia Class propulsion plant after the final design was completed.

This is a unique time in the 60-year history of the Naval Nuclear Propulsion Program. In addition to ensuring day-to-day safety and effectiveness of an aging nuclear fleet that is maintaining a very high operational tempo, as I highlighted earlier, we are on the cusp of a required modernization effort in the Department of Defense and the Department of Energy that has no precedent. This effort will challenge our proven technical and project management skills.

Finally, we are in the early stages of a workforce demographic shift where many of our seasoned veterans will be replaced by very

bright, energetic, but relatively inexperienced, newcomers, and while I do not underestimate the challenge, I am very confident of our ability to be successful and to execute. That confidence is derived from the facts that we have a track record of excellence in similar endeavors, that our requirements for our projects are fully defined and fully validated by the Department of Defense and the Department of Energy and the Office of Management and Budget, and that we have maintained focus on and demonstrated continuous improvement across the full spectrum of nuclear propulsion operations.

Further, all of our projects represent evolutionary as opposed to revolutionary technology. We have the essential experience that serves to minimize cost, schedule, and quality risk.

Our new projects require many years to bring to fruition. We are in the early stages of concept development and design that will, for the most part, define overall cost and time to deliver. Sufficient resources at this time in the life of major projects is absolutely critical as they allow us to sufficiently mature designs prior to construction start, a condition widely recognized as essential to project success.

Mr. Chairman, Members, our success would not have been and will not be possible without the strong support of this Subcommittee. Historically the combination of our proven performance, our rigor in developing our requirements, our efficiency in executing those requirements, and the acknowledgment of the complexity and high consequence of failure in nuclear technology has been recognized with appropriate funding for our request.

It is with that understanding that I am concerned over the fact that the Naval Reactors Program sustained a cut in the Energy and Water Appropriations funding in FY10 of $58 million.

Further, HR1, which passed the House in February, provided $103 million less than our FY11 request. The combined effects have been delays in hiring qualified people to do the work to prepare for the aforementioned demographic shift, impeded progress in the critically important early design work, and the resultant substantial increased risk to all projects.

While the shortfalls are relatively small in the context of overall department budget, the impact is particularly disproportionate in the early stages of these projects. In short, we will not be successful in the long term if this funding trend continues.

I believe we have provided all of the information requested by the Subcommittee that supports our request and we stand by to answer any further questions or provide any further information.

I would also welcome the opportunity to host you at one of our laboratories. I believe your visit would give you a unique perspective in both the diversity and magnitude of the ongoing work made possible by your support of this program. I respectfully request your support for the full amount of my FY12 budget and on behalf of the men and women of the Naval Nuclear Propulsion Program, thank you for your support, and I look forward to answering any questions that you may have.

[The information follows:]

Oral Statement by Admiral Kirkland H. Donald, USN
Director, Naval Nuclear Propulsion Program
House Energy and Water Development Appropriations Subcommittee

March 2, 2011

Chairman Frelinghuysen, Ranking Member Visclosky, members of the subcommittee, thank you for the opportunity to testify today on the Naval Reactors Fiscal Year 2012 budget request. The request is for $1.15 billion, which represents about 10% of the NNSA budget and about 4% of the overall Department of Energy budget. This funding provides the resources to sustain a nuclear fleet of 82 submarines and 11 aircraft carriers that comprise over 40% of the major combatants in the United States Navy and the most survivable leg of our strategic nuclear deterrent - 14 fleet ballistic missile submarines.

Our FY12 request also supports modernization of our nation's nuclear deterrent with funding for the reactor plant design and land-based prototyping to replace the existing OHIO-class ballistic missile submarines. The OHIO-class ships will start retirement from service in 2027, and to meet the Navy's required procurement date of 2019 my program's work is underway now.

Finally, this budget funds the modernization and sustainment of our aging spent nuclear fuel infrastructure in Idaho. We must do this to ensure we remain in compliance with the Idaho Settlement Agreement of 1995 for movement of fuel from wet to dry storage and ultimately for disposal while we maintain the capacity necessary to receive spent fuel generated during a sustained, intense period of fuel handling in our shipyards.

I realize that I come before you at a very challenging time for our Nation, and I know I am not alone in asking for funding for claimed "important" programs. As you deliberate and make the difficult decisions that you must, I ask that you consider the following:

This program operates and maintains 103 nuclear reactor plants on submarines, aircraft carriers, and ashore at training and research and development facilities. We perform complex engineering and technical work to develop and maintain highly capable reactor plants and associated equipment for their 30-50 year lifespan. Our ships are deployed around the globe and are welcome in over 150 ports worldwide. Nuclear powered ships are homeported in eight U. S. cities and in Yokosuka, Japan. That unfettered access to ports and the associated operational flexibility is only possible because the public trusts us, and that trust is derived from confidence in our record of safe operations and environmental stewardship in managing complex nuclear technology that has high consequence in the case of failure. Similarly, our performance in reactor plant operations in our shipyards and in spent fuel handling operations in Idaho has engendered trust within our workforce and in the local communities. We have built our record through a singular focus on safety facilitated by having the necessary resources

to ensure the highest standards are maintained, to address small problems before they become big problems and to conduct our engineering with a conservative, defense-in-depth approach.

The Naval Nuclear Propulsion Program has historically been a good steward of the taxpayer's dollars. We have a record of delivering projects of the highest quality, on time, and on cost. The VIRGINIA-class submarine program, cited as the standard for major acquisition programs in the Navy, is the latest example of that performance. When challenged to prepare spent fuel for dry storage and ultimate disposal in a land repository, we successfully constructed the complex facilities within our budget and established a production process that ensures we will fulfill our commitments to the citizens of Idaho. Our stewardship is not limited to major projects, but rather is engrained on our day-to-day work. It starts with our lean headquarters staff, comprised primarily of engineers charged with oversight of all of our activities. Our laboratories and our unique industrial base are focused not only on safety and effectiveness of our propulsion plants, but also on cost-wise performance, always seeking opportunities to improve. This effort enabled the 15 percent reduction in the cost of a VIRGINIA-class propulsion plant after the final design was completed.

This is a unique time in the over 60 year history of the Naval Nuclear Propulsion Program. In addition to ensuring the day-to-day safety and effectiveness of an aging nuclear fleet that is maintaining a very high operational tempo, as I highlighted earlier, we are on the cusp of a required modernization effort in both the Department of Energy and the Department of Defense that has no precedent. This effort will challenge our proven technical and project management skills. Finally we are in the early stages of a workforce demographic shift where many of our seasoned veterans will be replaced by very bright, energetic, but relatively inexperienced newcomers. While I do not underestimate the challenge, I am very confident in our ability to be successful. That confidence is derived from the facts that we have a track record of excellence in similar endeavors, that our requirements for our new projects are well defined and fully validated by the Departments of Defense and Energy and OMB, and that we have maintained focus on and demonstrated continuous improvement across the full spectrum of nuclear propulsion operations. Further, all of our projects represent evolutionary as opposed to revolutionary technology - we have the essential experience that serves to minimize risk to cost, schedule, and quality.

Our new projects all require many years to bring to fruition. We are in the early stages of concept development and design that will, for the most part, define overall cost and time to deliver. Sufficient resources at this time in life of major projects is absolutely critical as they will allow us to sufficiently mature designs prior to construction start, a condition widely recognized as essential to project success.

Our success would not have been and will not be possible without the strong support of this subcommittee. Historically, the combination of our proven performance, our rigor in developing our requirements, our efficiency in executing those requirements, and the acknowledgement of the complexity and high consequence of failure in nuclear

technology has been recognized with appropriate funding for our requests. It is with that understanding that I am concerned over the fact that the Naval Reactors program sustained a cut in Energy and Water Appropriations funding in FY10 ($58 million). Further, HR 1, which passed the House in February, provided $103 million less than our FY11 request. The combined effects have been delays in hiring qualified people to do the work and to prepare for the aforementioned demographic shift, impeded progress in the critically important early design work, and the resultant substantial increased risk to all projects. While the shortfalls are relatively small in the context of the overall Department budget, the impact is particularly disproportionate in the early stages of the projects. In short, we will not be successful in the long term if this funding trend continues. I believe that we have provided all of the information requested by the subcommittee that supports our requests, and we stand by to address any further questions. I would also welcome the opportunity to host you at one of our laboratories. I believe your visit will give you a unique perspective of both the diversity and magnitude of the ongoing work made possible through your support of our program. I respectfully request your support for the full amount of our FY12 budget.

On behalf of the men and women of the Naval Nuclear Propulsion Program, thank you for your support and I look forward to working with you to answer any questions you may have.

Mr. FRELINGHUYSEN. Thank you, Admiral. Ms. Harrington, any comments you might have?

Ms. HARRINGTON. No, sir.

Mr. FRELINGHUYSEN. Okay, thank you. Admiral Donald, your fiscal year 2012 request, as you said, is $1.153 billion, an increase of 19 percent over the continuing resolution level. It continues a trend of large increases in your budget requests over the last two years. Requests which have not generally been supported by Congress, at times, appropriators, and authorizers, but not just appropriators.

By fiscal year 2016 your proposed budget will grow to $1.57 billion, double the 2008 amount of $774 million. Why does the Naval Reactors need to be twice as large as it was before the start of this Administration when it has so successfully executed its mission in the past?

Admiral DONALD. Yes, sir. I would characterize it in two places, first is the day-to-day operations of the fleet. The fleet size is essentially the same and will be essentially the same over the period of time that you mentioned. The operational temp will remain the same, so there is a baseline of technical support that has to be provided to that operating fleet that is included with our baseline budget.

The increases that you are seeing, aside from what you would account for in inflation, the increases that you are seeing are involved in the major projects that I mentioned in——

Mr. FRELINGHUYSEN. This is what you classified as cost drivers?

Admiral DONALD. Yes, sir. Absolutely. That is the three major projects within the Department of Energy, that is the Ohio replacement reactor plant design, the SAG land-based prototype refueling, and the recapitalization of the spent fuel facility in Idaho, those three drive the cost. They are expensive projects, no doubt, but all of them there is a valid timeline that they have to be done that in many cases is physics based.

For instance, the *Ohio* Class submarines, they start coming off service in 2027. That will happen based on the fact that the fuel will be depleted, based on the fact that the life of the submarines will reach 42 years. They will come off service, so if I cannot deliver by that time, that means force structure will have to come off and the fleet will be smaller and less likely to be able to meet the requirements.

The prototype in New York, there is fuel, it is running out of reactor fuel. That will happen if I do not refuel that by 2017. That means I cannot do the prototyping work I need for the Ohio replacement core design, that means I will not have one-third of my training capacity to support the students that have to go through and become reactor operators in the fleet.

And then finally the replacement for the water pit, that is the recapitalization in Idaho, that is really a water pit replacement out there. That has to be done at that time because of the fuel that is coming out of the aircraft carrier fleet. We are in a heavy period of refueling as each aircraft carrier comes heel to toe for their midlife refueling or end of life, and as that fuel moves into Idaho, if I cannot accept it in the water pit facility, if the water pit is not capable or we have a material problem that puts it out of commission, I cannot take fuel off of those ships and leave it in the ship-

yards. That would mean the ships could not be refueled. That means operational capability is lost to the Navy.

So, that is why you see the profile, why the ramp up is so high at this particular point in time in the early stages of these projects.

Mr. FRELINGHUYSEN. Is there something happening in the fleets of our competitors which is also driving the need?

Admiral DONALD. I would not characterize it as much at a specific fleet of a competitor as I would if you just look at the world environment right now and what the Navy is doing. If you look at the operational temp of our aircraft carrier, submarines, and really all of our ships, it is as high now as I have seen it, really, in my career. At any given time half of the fleet is underway.

There is a significant demand in the Western Pacific as the rise of China, as they have more influence out into the blue water. Some concern about stability in that region and support of our allies in that area. Similarly in the Gulf. It is a very taxing operational tempo, so the need for those ships right now is as great as I have seen it in the course of my career, and we are a relatively smaller fleet. If you compare where we were in 1989 with roughly a 600 ship Navy, we are at 284 ships in the Navy right now. Half the size, yet our commitment——

Mr. FRELINGHUYSEN. It is dangerously low.

Admiral DONALD. Yes, sir. But our commitment has really not changed worldwide.

Mr. FRELINGHUYSEN. So, you have got three simultaneous cost drivers, facing you at the same time. Why are they coming at the same time?

Admiral DONALD. It is—believe me, sir, I would prefer that they did not come all at the same time, but it is—again, it is driven—two of them, in fact, driven by physics, the fact that the fuel is—the fuel in the reactors that are operating——

Mr. FRELINGHUYSEN. Of the ones that are operating now.

Admiral DONALD. The ones that are operating now, the *Ohio* Class, the *Ohio* Class that is on deterrent patrol right now, and the lifetime of those ships. I remind you, those ships—the *Ohio* Class, we built those with the plan that they would last for 35 years. We have extended the life of those ships to 42 years. We do not believe it is possible to take them any further. That is, if you look from a submarine point of view, you start getting concerns about safety of ship, safety of the crews. Forty-two years is as long as we should be operating those ships.

So, there is a hard stop right there and we know how long it takes to design and build a new ship to come online in 2027 and now is the right time that has to be done.

Similarly, the refueling of the prototype in New York, we know it runs out of fuel in the vicinity of 2017, now is the time I have to start designing the reactor to go in it, building it, and then having it ready to be installed when the refueling starts in 2017.

The water pit, little more—it is a little more challenging when you start trying to define it, but they are really—if I could talk just a little bit about what this is. In Idaho this is a water pit where we take all our spent nuclear fuel, we store it in there for a period of time to allow it to cool down. We also store it in there to be examined as part of our technical work that we do. But this is housed

in a building that is about 1,000 feet long and 400 feet wide. It is over four million gallons of water in this water pit with 25 metric tons of nuclear spent fuel in it. Parts of that water pit were built 50 years ago. The newest part was built 30 years ago. It has cracks in it. It has some leaks in it. It has some structural issues that we have just spent a lot of time and money and effort and inefficiency in the work we do out there to make sure we are no having a safety issue or an environmental issue.

There is not a soul that I have not taken through that water pit to take a look at it that comes away saying, Admiral, you need to—they say, you need to replace this thing. It is time. It does not meet current standards.

So, it has to be done. And the impacts are this: If I have a material problem and it shuts that water pit down, which is something I cannot predict right now, then I am out of business refueling aircraft carriers, and they stay. The ones that need to be refueled stay in port.

If, even under the best of circumstances as I am refueling all of these aircraft carriers, the schedule is significantly crunched and the only way we could get out of that schedule crunch and be able to meet the commitments to the United States Navy for schedule is to compress the refueling cycle. To do that we had to put a new shipping system in place and the water pit is not prepared to handle fuel from that shipping system. It has to be in place by 2020, otherwise I will start either backing fuel up, which I cannot do in the shipyards, or have to invest in new container systems at $20 million a pop to store the fuel onsite, to cask it onsite, before handling in the water pit.

So, the timing is really driven by the operational needs of the United States Navy and it is driven, in some ways, by physics associated with the platforms and with the need to recapitalize the SSBN4.

Mr. FRELINGHUYSEN. I have been out to Idaho. That is an ongoing cost driver right there.

Admiral DONALD. Yes, sir. It is.

Mr. FRELINGHUYSEN. It is. Maybe just the last question before I go over to the Ranking Member, Mr. Pastor. The issue of affordability of the new *Ohio* Class, can you talk about that for a minute?

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. We have been trying on this committee, as you know, to get our hands around it. I think we know we have to do what we have to do——

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN [continuing]. To be supportive, but the issue of affordability is something which the Navy has taken a look at, the Department of Defense has taken a look at. You know how many programs across the services have been——

Admiral DONALD. Absolutely.

Mr. FRELINGHUYSEN. We have to have this——

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN [continuing]. This new generation of sub. How are you proceeding with the design and how is all that working out?

Admiral DONALD. Yes, sir. Maybe I can touch on the question you asked in the very beginning about the relationship between the Navy and the Department of Energy as far as who does what and what the shared responsibilities are and I am really at the nexus of that because my responsibility, ultimately, is to deliver a propulsion plant. That is the reactor plant which is the reactor itself and associated systems that provide the auxiliary systems to support that reactor.

Mr. FRELINGHUYSEN. And you do that for the *Virginia* Class now, right?

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. The ones that we have given you two every year, right?

Admiral DONALD. Yes, sir. I have—our program has done that since Nautilus went to sea on January 17, 1955. This will be our 27th design that we do.

But that reactor plant is the responsibility of the Department of Energy, always has been. The rest of the propulsion plant, the steam turbines, the reduction gears, all of the other auxiliaries that go, that you actually take that power generated by the reactor and turn it into propulsion or electricity, that is a responsibility of the United States Navy. I execute that responsibility within the United States Navy.

So, the significance of, and the reason the system—this was put in place back in the day by Admiral Rickover, was to have one person responsible for that propulsion plant that can coordinate and synchronize what is a very complicated undertaking to have it arrive on time, on the ship, ready to support construction of the ship. So, that is the relationship and how we do that.

From a point of view of afford——

Mr. FRELINGHUYSEN. We know you follow in the Admiral's shoes, and we are admiring of that.

Admiral DONALD. I am proud to be.

Mr. FRELINGHUYSEN. And you have done, I think, a magnificent job under your predecessor. Even growing up I had a chance to meet Admiral Rickover. I think I was around—I have my Nautilus pin and ribbon and all that. I am supportive. No one fools around with submariners.

But times have changed——

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN [continuing]. For a lot of these platforms we are talking about here.

Admiral DONALD. They sure have.

Mr. FRELINGHUYSEN. But this is one that we need. We need to get a move on here.

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. And there has been a debate within the Navy, the big Navy, the Department of Defense about, you know, cost estimates today are tomorrow's cost overruns.

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. And there have been some big numbers associated here.

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. And the submariners often get what they want but, you know, we have got other parts of the Navy that we may need to fund as well and we do not want to—you know, it may affect them.

I want to sort of get back to the design here. We have not been able to get our hands around exactly what this new version is going to look like and what it is going to cost.

Admiral DONALD. Yes, sir. The program has just recently completed its Milestone A, the Defense Acquisition Board signed off by the Undersecretary Dr. Carter. This is the first major program of the Navy to go through the revised DoD acquisition process. Having experienced that for the first time, I can assure you it was quite rigorous and a number of steps had to be accomplished to get there to drive the cost down.

From the point of view of the Department of Energy, what is different about this propulsion plant and what we are trying to accomplish, I would say, are two key things. The first is—well, three. The first is, we are trying to build a life of the ship core for this ship. Right now the *Ohio* Class goes in for a midlife refueling at about the 20 or so year—20, 21 year point. We believe that we have the technology and the ability to build a core that will last for, in excess, of 40 years.

If we can do that and if we can eliminate that midlife refueling, significantly reducing the amount of time the ship has to spend in a shipyard, it allows the Navy to buy fewer ships, we believe, assuming they can get the rest of the maintenance for the ship to match our maintenance plan and we think we can do that.

That eliminates that refueling, so instead of, for instance, 14 SSBNs now, we believe we can meet the requirement for the combatant commander with 12. That is a $10 billion savings assuming we are successful in building this core.

The second technical piece that we are after is stealth is imperative for an SSBN. You have to remain undetected if you are going to achieve your mission. Acoustic stealth is critically important. The only way, we believe, that we are going to be able to achieve the stealth goals to ensure this ship is undetected on mission is we need a change in the propulsion system, we need to go to electric drive.

Right now the ship is propelled by a turbine that drives a reduction gear that drives the shaft. We are going to change that to generate electricity to drive a motor that drives the shaft. Significantly quieter. We are looking at a ship that is going to be around until 2080. You need to build the acoustic margin in now to make sure that you are able to support that requirement further out in the future.

Those are the key technologies. And then the third is affordability and what we are going after on affordability is——

Mr. FRELINGHUYSEN. Where is size in the overall equation here?

Admiral DONALD. Size is——

Mr. FRELINGHUYSEN. Size has a lot to do with what you are carrying on that—its mission.

Admiral DONALD. It does, and we——

Mr. FRELINGHUYSEN. That is a debate that goes on.

Admiral DONALD. There is a debate as to how many tubes, missile tubes. Right now the program calls for a 16-tube ship. That was a matter of—it was versus 20—that was a trade off that was made—the United States Navy made that trade off based on affordability. We thought that was the best that we could do given what the demands were for the budget for the rest of the Navy, for the rest of the—really, for the American taxpayers.

Mr. FRELINGHUYSEN. Who pays for the electric drive, DoE or the Navy?

Admiral DONALD. There will be—the electric drive, for the most part, is under a Navy-funded program.

Mr. FRELINGHUYSEN. Each year we sort of try to figure out who is doing what here.

Admiral DONALD. Exactly. Reactor plant design, the life of the ship core and that work, that is primarily within the DoE. The propulsion system is a Navy-funded responsibility. It does—I would be the first to admit to you that there is probably a little bit of murkiness in it because you end up having to do the integration and make sure that they fit together, so there has got to be a very close coupling, very close coordination among the engineering organizations, to make sure that it will work when we get out to the end of it, but that is the basic delineation.

Mr. FRELINGHUYSEN. We want to understand the murkiness. We also want to know what it is going to cost, if it is going to be affordable.

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. You know, and what the cost of maintaining the number that we are able to get if we can afford the number that you desire.

Let me yield to Mr. Pastor, and excuse me for going on at such length.

Mr. PASTOR. Not a problem, Mr. Chairman.

How do you minimize the murkiness? What are you doing, you know, if you have propulsion at one end, probably the Navy is controlling that, and you have the core reactor, and you said that you would admit yourself that it is murky. How do you minimize that? What are you doing to do that? Because that is a hell of a lot of money that is being spent, number one, and after the money is spent, you do not want to—well, you do not want to have the engineering not be able to fit.

Admiral DONALD. Right.

Mr. PASTOR. So, what are we—what are you doing to ensure? Or, what are you and the Navy doing to ensure that?

Admiral DONALD. Well, I guess I would characterize the term murky, and murky in the sense that people who—when I am trying to explain it or when you are looking at it, I am sure that you would ask—you ask, and certainly do, we get a number of questions about how we have answered questions last year about what the specific work is that the Department of Energy does versus the specific work that the Navy does. That is well defined.

We have very detailed work programs aligned to funding that comes from the Department of Navy and the Department of Energy, so I can go in and—again, we did this last year, provided the very detail work of what the dollars are going to buy, line item by

line item. It is a technical work plan that we review, a budgeting plan that we review twice a year to make sure that the money is in the right place, the right work is getting done, and it is being done affordably.

So, I do not want to be mischaracterized in saying that we do not know where that money is. We know exactly where that money is and we know what it is being spent on, and I can demonstrate to you what it takes to do the work.

But it does take very close collaboration between the Navy and a very close synchronization to make sure that all the pieces come together at the right time so that the ship construction can occur on time. Very elaborate, and often you are shooting very far in the future to be able to do this. I mean, I am talking about having to do work today to have a component show up in the shipyard in 2019 within a matter of days. I mean, that is the nature of what it is that we are after.

So, I want to assure you that I can very clearly show you exactly where the money goes and what we are doing for affordability on this ship.

If I might, what our approach on this ship has been is that aside from the two key technologies that I mentioned to you, the life of the ship core and the electric drive, we are, to the greatest extent possible, reusing components from the *Virginia* Class design that we have already done, and wherever we can possibly do that, that is what we are going to do because those—you know, the mechanical systems, you do not tend to have the obsolescence concerns that you have with electronics, for instance, and we feel comfortable with a pump or a valve or something that we have used before, using that again and having it around until 2080. You will see, we have done that extensively throughout this design.

And then also with the modular construction work that we learned on the *Virginia*, to increase affordability like we did on *Virginia*, we will continue to do that on this class of ship.

So, it has been made clear to me, and as a taxpayer as well, and as a member of the United States Navy, that the affordability of this thing is critically important because it is going to affect the entire shipbuilding program.

Mr. PASTOR. You touched on the water pit——

Admiral DONALD. Yes, sir.

Mr. PASTOR. And as I remember, in 2010, I think we—I think there was $7 million and this year I think you are requesting $53 million?

Admiral DONALD. Yes, sir.

Mr. PASTOR. What is the status? What are the activities that are going on right now in Idaho in the expenditure of these monies and also to further the development of this water pit?

Admiral DONALD. Yes, sir. The work that is going on right now, this is a—this will be a major project, obviously——

Mr. PASTOR. Right, I understand.

Admiral DONALD [continuing]. In significant numbers. We are following the Department of Energy's plan for major project management, so there are critical design milestones that we have to meet as we are working our way through this. We have done our Mission Needs Statement. We are now defining the concept for

what this facility needs to look like based on what the capabilities are that it has to provide. That work has to all wrap up such that we can start the construction by 2015, so it will be a progression of concept then into detailed design and then ultimate constructions start in 2015, completion in 2020.

So, the work that is going on right now is to make sure of one's siting. There is also the Environmental Protection Agency NEPA surveys that have to be done to make sure that we are compliant there. And then the technical design work to make sure that the facility meets the needs of the facility out there.

Mr. D'AGOSTINO. If I could add one thing on the project management piece. Admiral Donald mentioned the Department of Energy's project management approach. That approach has changed. Similar to what has been going on in the Defense Department with respect to looking at affordability and understanding very clearly what commitments the Executive Branch is putting itself forward to with respect to mortgages, out year mortgages, the same thing happened in project management space. We are going to be asking for a very rigorous design process to go through so that we do not commit to a cost scope or a schedule until the 90 percent very significant design stages are met. That way that ensures that when we get to the next critical decision, and the critical decision after that where we are requesting a commitment of additional resources, we absolutely know what we are getting into, how much it is going to cost, over what period of time.

I think with Naval Reactors' track record in some of their capital projects, they are well situated in being able to respond to that.

So, I am looking forward to getting that next critical decision paperwork through ourselves.

Mr. PASTOR. The authority on the Idaho water pit just came in—maybe I should——

Mr. D'AGOSTINO. He is loaded.

Mr. SIMPSON. I just walked in, eight people walked out.

Mr. PASTOR. So, we are four years away from beginning construction.

Admiral DONALD. Yes, sir.

Mr. PASTOR. Where are we on the siting?

Admiral DONALD. The preliminary siting survey has been done. We have got—there are two options that we are looking at from a siting perspective and what we have to do now is there are surveys that have to be done on those sites, for instance, bore holes to determine is the soil construct, is it adequate.

Mr. PASTOR. Right.

Admiral DONALD. All of that has to be done. And that is—in fact, that is in progress right now as we speak to go and do that and determine the correct——

Mr. PASTOR. What is your timeline on the siting—making sure that you do the borings and make sure you are—from the two sites that you are looking at, which one is going to be the best one?

Admiral DONALD. Well, we know where we would prefer to have it. We have got a preferred site——

Mr. PASTOR. Sure.

Admiral DONALD [continuing]. And we will have to come through that decision in 2012 to finally decide——

Mr. PASTOR. So, you have maybe about a year, then, to do that.

Admiral DONALD. Yes, sir. To complete that work.

Mr. PASTOR. But then the siting will be done in 2012.

Admiral DONALD. Yes, sir.

Mr. PASTOR. I don't know, and Mike can probably tell me, if these sites are quite a distance apart or they are relatively close.

Admiral DONALD. In the sense of Idaho——

Mr. PASTOR. The question is this: Obviously you are required to do an Environmental Impact Statement.

Admiral DONALD. Yes, sir. NEPA survey.

Mr. PASTOR. NEPA. Right. And so are you doing one on each site, or are we waiting until you get the preferred site? Where are we at on that?

Admiral DONALD. We have got the preliminary work underway now, the non-site specific. There is always some baseline work that you have to do in support of it. That work is underway right now and the environmental survey work is aligned to the site survey work so that they synchronize and arrive at the same place at the same time.

So, we are doing the environmental, the NEPA survey, the NEPA process, on the specified site once it is decided. So, that is coordinated right now.

Mr. PASTOR. And the site will be picked 2012.

Admiral DONALD. Yes, sir.

Mr. PASTOR. And how much further environmental studies will you need to do before you start construction on 2015?

Admiral DONALD. It is a standard NEPA process that will follow that will take, and I would have to get back to you on the specific timeline on when it would be complete, but it obviously has to be complete before we commence the construction in 2015.

Mr. PASTOR. Right.

Admiral DONALD. So, it is in that timeframe between 2012 and 2015.

Mr. PASTOR. Do the site locations cause you any design considerations that are different from each other?

Admiral DONALD. It could, but at least right now based on the two sites that we have selected, the facility would look essentially the same. There may be some supporting activities, some supporting services such as rail lines and things of that sort that would need to be relocated based on which site we picked, but for the most part the facility would be the same.

Mr. PASTOR. All right, well, I will yield back and wait for the second round.

Mr. FRELINGHUYSEN. Thank you, Mr. Pastor. Mr. Alexander, thank you for your patience.

Mr. ALEXANDER. Thank you, Mr. Chairman. And good morning to you all. The Chairman was over there with his pen a while ago trying to figure out how old he will be in 2080.

Mr. Administrator, I hope—I know you touched on it a little bit during your opening statements and I hope my question is not connected or parallel with some of the questions already asked, but the Mixed Oxide Fuel Fabrication Facility at the Savannah River site is currently scheduled to convert 34 metric tons of surplus plutonium into commercial nuclear fuel and the Pit Disassembly and

Conversion Facility is essential to provide that feedstock. Could you tell me when the Department will move forward with the decision on that Pit Disassembly and Conversion facility?

Mr. D'AGOSTINO. Yes, Mr. Alexander. I will do that. And I might ask Ms. Harrington to add as well to my answer, that way you have the benefit of getting input from both of us.

We have—we go through a process, as the Admiral described and as I talked about, on critical decision points within the Department where we start off with the mission need, which is, is there a mission, a need for this facility, the critical decision zero stage, move it forward to critical decision one, where we look at options and we start base lining and getting ranges down on our options, what we think the most likely—and every time we look at or move forward down that process, we always reexamine the previous critical decision to make sure that as time has passed, as clarity comes forward on what a facility costs and what the nation needs, that we reexamine the mission need to make sure that the basis for moving forward stayed the same. That's the process we're undergoing right now, and if you can talk a little bit about some specifics and then I can add to that if we need to.

Ms. HARRINGTON. Certainly. Several years ago there was a proposal that we looked at an alternative for the original Greenfield design for that facility to locate it in the K reactor area at the Savannah River site. We have done that review now, and we are in the process as the administrator said of going through the final internal hurdles before moving forward with the decision. Throughout this process, one of the main emphases that we have had internally in the department is how to contain the costs, but still provide the feedstock capacity for the Max Fuel Fabrication Facility that's required. Fortunately, we also have that feedstock issue covered because we already have at Savannah River sufficient plutonium oxide available to begin operations, including testing, of the facility when we're ready to proceed with that. So I think we're confident at this point that we have a good plan, and we hope to see that move forward quickly.

Mr. D'AGOSTINO. Consistent with that, the question of affordability and sustainability that we want to look at, as it drives all of our large projects whether they are in naval reactors or the nonproliferation program or in the weapons program, we want to make sure that each of these critical decision points we are able to wring out as much of that as possible so we have put forward a realistic plan. As Anne mentioned, we are in the final stages of that. We should be seeing something soon that we can go public with and to the Committee as well.

Mr. ALEXANDER. Okay, thank you. Ed, just a couple of questions. You said that it would cost about $20 million to dispose of or contain spent fuel oil on sight. How would you do that? What would it be? A pit or a tank or what?

Admiral DONALD. No. What I am referring to in that is if for some reason the water pit were not available, the new water pit were not available, to accept the new configuration of fuel that is coming off the ships in 2020 or if some material problem occurred, some equipment problem occurred, in the water pit that would preclude that fuel from being loaded into the water pit, then we would

have to manufacture canisters and they are the canisters that we are going to be using to ship the fuel from the shipyard to Idaho by rail. The same canister system would have to be used, buy more of those and just hold those canisters on station in Idaho. In other words, the fuel would not be able to be offloaded into the water pit, would not be able to be examined, would not be able to be processed through the water pit to dry storage, holding on station. Each one of those canisters cost about $20 million. And, for example, on USS Enterprise, when she is de-fueled starting in 2012 it takes about eight of those to take a load of fuel, a shipload of fuel, off of that ship. So that is eight times $20 million. That is how much it would cost to temporarily store it in those canisters. We do not believe that to be the right way to do business, but that is what we are talking about.

Mr. ALEXANDER. Okay. And you expressed the desire to go from steam propulsion to electricity——

Admiral DONALD. Yes, sir.

Mr. ALEXANDER. Would the same power plant propel both?

Admiral DONALD. Yes, sir. It is really a matter of converting the energy from—it is still a pressurized water reactor plant. It still generates steam. The steam will turn turbines that generate electricity as opposed to turning a mechanical reduction——

Mr. ALEXANDER. So the cost to DOE would not be any different?

Admiral DONALD. Would not be any different, that is correct. Yes, sir.

Mr. ALEXANDER. Thank you, Mr. Chairman.

Mr. FRELINGHUYSEN. Mr. Simpson, I think, was next in line. Welcome.

Mr. SIMPSON. Thanks, Mr. Chairman. It is nice to be here. Sorry I missed yesterday's hearing. And I just came from one with the EPA so let me say first of all, thanks for the work that you do.

Mr. FRELINGHUYSEN. Appreciate it.

Mr. SIMPSON. Bet you did not hear that before.

Mr. FRELINGHUYSEN. Thank you. That is a great way to start, sir.

Mr. SIMPSON. No, I have appreciated working with you and the work that you do in nonproliferation naval nuclear reactors and other types of things. You guys, I think, do a great job.

Mr. FRELINGHUYSEN. Thank you.

Mr. SIMPSON. Admiral Donald, let me ask you first. We talked yesterday about what the implication would be if the facility in Idaho is not built for the recapitalization for the new storage facility for spent nuclear fuel. What impact would that have on the Navy?

Admiral DONALD. I would characterize it in two parts. The first question is why replace this facility and first it is old. It is getting old and is starting to show wear and tear. It does not meet the current code for being lined. It is an unlined water pit. So the potential exists that a material problem could result or an equipment problem could result that would shut that water pit down, and then that would preclude moving fuel out of the shipyards. If you cannot move it out of the shipyards, you cannot take it off the ships. That means the ships cannot be refueled. That means the ships cannot go to sea after the refueling is done. The second part

of it is why now, why it has to be done now. And again, part of it is age of the facility, but the other part of it is as we reach this period of time when there is heel-to-toe aircraft carrier refuelings. One comes in, gets refueled, it goes out, another one comes in right behind it. We cannot do that unless we change the way we remove the fuel from the ships. To be able to do it more efficiently, we had to have a new shipping container and a new fuel handling system, and that water pit is not ready to accept that type of fuel. It has to be ready by 2020 to do that. So if I cannot have it done by 2020, I will be restricted in the amount of fuel I can take off the aircraft carriers, and that will impact the ability to get those ships refueled and get them back out to sea.

Mr. SIMPSON. And as was mentioned by Mr. Alexander, if that is not built, we have to buy some containers?

Admiral DONALD. Yes, sir.

Mr. SIMPSON. What is it, M290 shipping containers?

Admiral DONALD. Yes, sir, M290——

Mr. SIMPSON. What is the cost of each one of those containers? Do you know?

Admiral DONALD. $20 million.

Mr. SIMPSON. $20 million?

Admiral DONALD. Yes, sir.

Mr. SIMPSON. Who pays for that? Whose budget would that come out of?

Admiral DONALD. Those canisters would come out of Navy budget.

Mr. SIMPSON. Out of the Navy budget. Okay. How many of those containers would we end up having to build? Any idea?

Admiral DONALD. Well, as an example, I used the Enterprise for instance, and we have shipping containers to handle the Enterprise fuel, but as an example, it takes eight of those canisters to handle a shipload of fuel off of the Enterprise. So you would have, granted a Nimitz is smaller. It has only two reactors instead of eight, but it is still a substantial number of canisters that you would have to buy to store that stuff on station.

Mr. SIMPSON. So if we do not build this facility, it could be the prime example of what is penny wise and pound foolish?

Admiral DONALD. Yes, sir.

Mr. SIMPSON. I had something else I wanted to ask, and I cannot remember what the heck it was, but I will think about it in just a minute. Let me ask you a question about our nonproliferation efforts.

Mr. D'AGOSTINO. Yes, sir.

Mr. SIMPSON. The money requested in the 2012 budget is lower than the nonproliferation money in the 2011 budget, right?

Mr. D'AGOSTINO. In the 2011 request, right.

Mr. SIMPSON. In the 2011 request.

Mr. D'AGOSTINO. Yes, sir.

Mr. SIMPSON. I would have thought, given the recent agreement between Russia and the United States in reducing the stockpile, that our nonproliferation budget might actually go up. How did it go down?

Mr. D'AGOSTINO. It went down for a couple of reasons. Ms. Harrington can provide some of the details, but there are a couple of

core reasons. One of the key reasons is the request from '11 was significantly higher in our Global Threat Reduction Initiative because, as you rightly stated, the President laid out a very aggressive nuclear security agenda to secure material around the world in four years. We knew four years sounds like a long time, but actually it is not. It goes by quickly, particularly with this kind of work. And so we put money in our FY11 request, frontloaded the request if you will, in order to get that early work under way. That is a big part of why it goes up relative to FY10. The FY12 number is very significant, but Anne, if you want to add to that——

Ms. HARRINGTON. Yes, sir. The FY12 budget in fact is almost half a billion dollars higher than the 2010 request, about 20 percent. The FY11 was a significant bump up for all of those reasons. We did frontload a lot of activity in calendar year 2010 in Chile, in Belarus, in Ukraine. Hundreds of kilograms of nuclear materials were removed and secured. In 2012 we feel confident that we can continue the pace that we have set with the budget request. The main part of the reduction in that budget is the removal of $100 million for our plutonium disposition effort with Russia. And that does not indicate that we are having problems with that effort with Russia. What it indicates is that they have not yet provided the milestones to us on their progress forward on plutonium disposition against which this money would be released.

Mr. SIMPSON. What type of milestones are you talking about?

Ms. HARRINGTON. The pace at which they will build their facility to produce mixed oxide fuel, the testing and the timing of that. We have quite a well-established schedule for South Carolina's operations right now. They do not have a similar schedule, so we are not going to ask Congress for money that we do not know that we can spend yet. We will come back to you at a point on that when we feel confident that the Russians have provided a reliable schedule.

Mr. SIMPSON. How has the relationship with Russia been recently? Have they been more cooperative in allowing us access to some of the closed cities and other places?

Ms. HARRINGTON. I have to say that both the combination of the new START Agreement and ratification of the 123 Agreement have really opened a lot of doors for our cooperation with Russia. Those two things were extremely important to them. A lot of activities were being held in abeyance while those two actions were considered. But we have a whole series of high-level meetings coming up with Russians, particularly looking at opportunities in the commercial energy sector under the 123 Agreement. That is not our area, but we work extremely closely with our colleagues in DOE's Nuclear Energy office because part of our commitment to expanding nuclear power worldwide is that it not expand at the expense of security. So that is part of a very close partnership internally in the department, and we look forward to coming back and discussing our progress with the Russians on that with you.

Mr. D'AGOSTINO. I might want to add just a little bit on that. On the first of April in 2009, President Obama signed an agreement with President Medvedev which looked at how do we bring the cooperation of our two great countries together so we can work together on issues that are of import to our nations. So there were

a number of bilateral, what I would call groups, underneath that agreement that were formed. One in commerce, in the arts, but specifically for this area, in nuclear security and civil nuclear power, this group is chaired by Deputy Secretary Poneman and Mr. Kiriyenko who is the Director of the ROSATOM which has responsibility for all these types of functions. That has been absolutely marvelous in providing high-level, focused attention with direct milestones to push forward actions, things that we think are important for our equities which is moving forward on these milestones and making sure we have those milestones. This group allows us to tee that up for decision. You cannot shy away from it when your bosses are meeting, and we meet regularly twice a year at the high level. So those types of senior-level forcing functions are wonderful tools. We take maximum advantage of that and actually, as Anne mentioned, just the recent new START Treaty and 123 Agreement have really opened up the doors for us. So I think this is going to be a great year for our relationship, and we are looking forward to what we can do to improve that access, if you will, to insure U.S. dollars are being spent wisely.

Mr. SIMPSON. As you know, we have had concern for a number of years about the Russian position relative to Iran and essentially helping Iran's nuclear program. How is that? Is that something you can talk about?

Mr. D'AGOSTINO. We would love to be able to talk to you in a closed session or in classified parry on that, in that area. I think you would be pleased.

Mr. SIMPSON. Okay, I appreciate that.

Ms. HARRINGTON. But we could add in that area that the Russian negotiation with Iran on provision and take-back of the reactor fuel is extremely important, and as you know we engage in that activity on a worldwide basis. But that was a significant step, and Russia really pushed very hard for that agreement. So we feel there is a better partnership than there was on that issue some time ago.

Mr. SIMPSON. Okay. Let me just state finally, and I suspect somebody might have stated it yesterday, as we have looked at reducing the overall spending in our budget, I think everybody in the room, everybody realizes, that you cannot borrow $.42 on every dollar you spend, and you are going to have to make some reductions. And that we have, at least on our side of the aisle, said that when we did HR1 we were going to reduce non-security, non-defense, spending. Some people do not understand that the energy and water budget includes things that would be considered security such as NNSA, naval reactors, some of the other things that we do in this budget that ought to be considered as part of the security. It is easier just to say it is easy for people that put together these numbers for us to have to then make an appropriation to say well, we are going to exempt out Defense, we are going to exempt out Homeland Security, exempt out Veterans Affairs, and all the rest of the budgets will be reduced by X number of dollars without looking at the fact that the energy and water budget does have a national security component of it that ought to be taken into consideration when we are given our 302Bs to look at the reductions because the work you do is just as important as the work, in some

ways more important, than the work that we do in some of the other areas that we are exempting out of not taking any cuts. So I just kind of wanted that on the record and for people to know that this is an important function that you do, and you are one of the examples that I hold up of a government agency that works, that does their job, and I appreciate the work you all do.

Mr. D'AGOSTINO. Thank you, sir.

Ms. HARRINGTON. Thank you.

Mr. WOMACK [presiding]. Thank you, Mr. Simpson. Mr. Nunnelee.

Mr. WOMACK. I understand in some previous testimony you have been able to determine which alternative to pursue to develop feedstock for MOX. Why have there been so many delays in selecting an alternative?

Mr. D'AGOSTINO. Mr. Womack, I will start and then I will ask Ms. Harrington to add to that. Because these are potentially multibillion dollar facilities that we are embarking on, we are very keen on making sure that we reexamine the basis, make sure that our mission need still exists. In this case it is very clear we do need feedstock for the MOX facility. Our plan right now in our FY12 budget request does go forward and ask for resources to continue the design effort. What we are working on in the department is moving forward with our next critical decision, our critical decision one, on the feedstock for MOX, and that decision is fairly close to being finished. Anne, you want to add a little bit to that?

Ms. HARRINGTON. Specifically on the feedstock issue, because there have been some delays, in part to look at an option of combining this function together with other activities dealing with plutonium at the K reactor facility at Savannah River rather than do a Greenfield construction, which would be more costly and potentially much more limiting in terms of options and ramp-up availability. We have taken another look at K-Reactor as well as a series of options to both reduce cost and maintain the feedstock. Because there have been some delays, we have looked at the feedstock issue very seriously. And we have both available feedstock at Savannah River stored currently in the K-Reactor as well as other feedstock that we can get from Los Alamos through their ARIES Project which actually belongs to my colleague, Don Cook, who was here yesterday. But between those two and some other excess feedstock that we have identified, we can keep the MOX plant running for a number of years while the Pit Disassembly and Conversion project comes on line. So we are confident that those timelines will fit together very well.

Mr. WOMACK. You spoke a moment ago in reference to another question about not requesting certain funds until you can have reasonable assurance that they can be expended. What assurances can you give the Committee that you have a plan to execute the funding for this project as you have requested?

Ms. HARRINGTON. Well, as the administrator said, we have a very defined set of critical decision steps for any large construction project. As we go forward into the next step, and that would be the CD–1 decision, that then moves us into the design phase. We will be carefully reviewing the results of the options and the cost savings that can be realized out of those options in this design phase

study period. And then as we go forward, if we find that we can save money, we will reflect that in future year budgets certainly.

Mr. D'AGOSTINO. One thing I would add is in fiscal year 12, of course, we are asking for resources for this activity. The activities that we plan on doing include some of the finishing off of the design work that has to happen, particularly if we believe we are going to end up with this K-Reactor option. But in either case, whether it is this K-Reactor option or if it is a new Greenfield site, unlikely that it will be because we believe that is much more expensive, we need to have certain components and equipment inside that facility in order to convert the plutonium metal into an oxide. And that will be needed regardless of approaches, so we want to give you the strongest assurances that this request for FY12 does support what we need to do in order to put us on track. The critical decision piece is an important element of our path forward and decision on moving forward, but it is one that we want to get right. And it is worth it for us to take a little bit more time to make sure the numbers are right and that we identify options for cost savings within that critical decision so we do not obligate the taxpayer down a track that could put us in essence heading down a less-affordable track because affordability is very important for us.

Mr. WOMACK. What are the numbers?

Mr. D'AGOSTINO. $220 million or so in fiscal year 12 is what we are asking for. It is certainly a significant amount of money, but it is money in order to purchase glove boxes and equipment in order to make these things go forward.

Mr. WOMACK. And in relation to the total cost?

Mr. D'AGOSTINO. Well, this is part of the critical decision point. There are ranges. The previous Greenfield site had a very significant cost range that was draft but that was in the many multi-billions of dollars. We are looking for ways of taking billions of dollars off of that, appropriately given the fact that we are going to reuse an existing building. We think in general the idea that reusing a building that already exists and essentially outfitting the inside of it will be cheaper than building a new building that has the same type of equipment in it and that ultimately the nation will have to take care of that old facility. So in the end the D&D costs will hopefully—the overall lifecycle costs we believe are significantly lower. And earlier on Ms. Harrington talked about a study that we had performed about a year and a half or so ago looking at that, and that helps us push toward the K-Reactor approach as being the critical decision that will likely come forward in the near future.

Mr. WOMACK. Okay. Mr. Pastor.

Mr. PASTOR. I think you have another member who has not had a chance to ask a question.

Mr. WOMACK. He waived his right.

Mr. PASTOR. Oh, did he? Okay. All right. When you were asked the question about the difference in the budgets and how the weapons end is going up, nonproliferation is going down, whether or not that was a step back from the Prague Commitment. How do you see it? Are we stepping back from Prague?

Mr. D'AGOSTINO. Absolutely not, sir. We are actually stepping forward with the Prague Commitment with both feet. We recognize

these are very complicated programs, whether it is naval reactors, nonproliferation, or the weapons program, programs are fairly dynamic. They go up and down depending on when we are recapitalizing a facility or what work is coming online when. Early on for the nonproliferation activity, we knew we needed to step forward fairly quickly in order to meet the President's four-year commitment. And Anne's program has a very well-defined set of work that is going to get done. And the plan that we have forward, including this dip which is very little of that dip is actually due to the security effort which is part of our planned program of work. It is just get the work done early because we expect some challenges later on as we go off and implement it. So let us start them early, and that is what happened in the nonproliferation side. The weapons side is the recapitalization of these very large facilities. These just so happen to be facilities that serve not only the weapons program, but serve the nonproliferation program and actually serve the naval reactors program. All the highly enriched uranium that Admiral Donald uses in his submarines or the nation uses in its submarines comes through the Y12 plant and will be coming through the uranium processing facility and our highly enriched uranium materials facility in Tennessee. So these are facilities even though they are in the weapons budget and make it look like we are spending more money on weapons, actually it is a nuclear security program budget because these are facilities that address that. Because in a recapitalization effort you usually spend some money upfront, figuring out what your design is and then you really get into construction with some large dollars later on, we are in that transition mode on these two recapitalization projects. We have been shifting. We have been spending a fair amount of money on the design effort, and over the next few years we are going to be shifting that design effort into construction so the dollars will look bigger. So taken as a one-page standpoint, it looks like more money on weapons, less money on nonproliferation. The reality of it is it is more money on nuclear security because that is what the President's agenda was all about.

Mr. PASTOR. I was very happy to hear this morning that Russia with the START Treaty and other agreements had become more cooperative because I was under the impression that some high-level Russian officials had less commitment to nuclear security with us. And my understanding was that this would have caused us some problems, obviously with nuclear security. But in my new understanding I am very hopeful and happy to hear that there is greater cooperation. Go ahead.

Ms. HARRINGTON. I was going to add that Russia unfortunately is also a frequent target of terrorist attacks, and that is a common theme in our undertakings with them. An explosion at an airport is one thing, but an explosion in an airport contaminated with cesium would have been far different. And so these are topics that may not make a lot of headlines, but certainly these are issues that we discuss in a very serious way.

Mr. PASTOR. You also spoke about some other countries. I think I heard Chile where you had removal and there were some other countries. Have we negotiated other cooperative agreements for

safeguards or security for removing nuclear materials? Are there countries that we have created agreements with?

Ms. HARRINGTON. Yes. We have a number of countries that we are moving forward on, some of which we have already accomplished some of the removals, but have not yet completed the work, for example, Belarus and Ukraine. At the end of last year, Belarus in particular was a huge breakthrough for us because that is a country with which we have not had very positive relationships for many years because of the leadership. So the fact that working together with Secretary Clinton and the State Department, we were able to execute that agreement and then begin removing materials was very significant. Much closer to home we already have an agreement with Mexico on removal of material, and I think you understand the immediacy of accomplishing that. Vietnam is another country, but basically we have fundamental agreements or have moved far toward them for all of the major target countries that are under the lockdown program.

Mr. PASTOR. You mentioned earlier about the $100 million that you will not be spending in Russia.

Ms. HARRINGTON. Yet, spending yet.

Mr. PASTOR. Yet because of the milestones, they have not met some of the milestones.

Ms. HARRINGTON. Right.

Mr. PASTOR. At least in the past it has been my experience that because of lack of transparency with the Russians and what they are doing, what they want to do, costs, et cetera, that in our budgets we commit X number of dollars, and they get frozen up and then it cannot be used for other purposes. So this transparency is very important and I am assuming that you are committed more and more to develop this transparency so that we are not locking up money for these programs which can't be used for other needed purposes?

Ms. HARRINGTON. That is absolutely correct. I have been working in Russia since 1991 and have a lot of lessons learned from that experience. So, yes, watching where our dollars go has always been one of our very high priorities and that covers the whole scope of issues, whether it is insuring that we are not taxed on provision of assistance to actually having the opportunity to see where our equipment goes and how it is being used and open access to the books basically. So, yes, that will not become any less of a focus for us.

Mr. PASTOR. After reading the Nuclear Posture Review, I decided to focus more on the GAO studies. In December, GAO came back and said that the President has started this initiative and it will take many agencies working together. And one of the concerns GAO had was that there was not enough detail in terms of how these agencies were going to cooperate and be able to implement the initiative. They talked about what sites, what facility in those sites, et cetera, what the plans were and all that. And yet I guess as you develop this budget, it had hopefully looked at the estimated costs and timeframes and the scope of work. Were those considerations given in developing your budget or what consideration was given to that lack of detail that the GAO pointed out a couple of months ago?

Ms. HARRINGTON. Well, I am happy to say that the flaw that the GAO identified does not exist anymore. There is a very strong interagency team that is led by the National Security Staff. We meet on a regular basis. We have a system for prioritizing, both material risk and country risk, that drives how we schedule our programs. And that is not just our programs, but similar efforts out of the Department of Defense, Department of State, and so forth. In fact, we will be having one of our regular, what we call our bridge meetings, with the DOD and Defense Threat Reduction Agency folks next week, the sole purpose of which is to coordinate our work and to figure out how by working together we can make these material removals better and faster. So I would like to reassure you that the interagency cooperation is functioning well on this.

Mr. PASTOR. Does functioning well also include greater detail or more specific responsibility and timelines and costs, et cetera.

Mr. D'AGOSTINO. Yes, we do have a very clear plan because you appropriate essentially the largest nonproliferation program the country has. In fact, I would say in the world comes out of the support the Subcommittee provides us. We have a very clear four-year plan on this. GAO identified some improvements that need to be made in the interagency coordination to make sure that we are well integrated and complement each other in driving some consistency across the enterprise, and we take that advice very seriously. That does need to move forward. I will say there are some areas of the report that we did not quite completely agree with the GAO on, though the report was helpful. The security upgrades were performed by the NNSA on the civilian research reactor sites. The key for us is moving even beyond that as the GAO identified in what is known as material consolidation and conversion. We want to convince and I believe have got a good plan with our Russian colleagues to convert their research reactors. And as a result, of course, of the GAO's attention and our attention on this topic, we verified the shutdown of three Russian research reactors. We have secured commitments to shutdown five more, and we have actually started the feasibility studies because these reactor conversions are a fairly big deal, turning it from highly enriched uranium to low enriched uranium, we started the feasibility studies on the number I think are even up to a half a dozen or so on this area. So what the GAO study helps us do is make sure that people are aware of it, identify some things that we think we did slightly better than the GAO report identified, but of course I am a little parochial being the administrator. At the same time, I think there is a good point on interagency coordination, and that report has helped us put some attention on that.

Mr. PASTOR. Maybe I am wrong, but I recall the number 71 for research reactors to convert?

Mr. D'AGOSTINO. I think 69, not 71, have been converted.

Mr. PASTOR. There are three in five? Is that what I heard?

Mr. D'AGOSTINO. That is right. There will be I think——

Ms. HARRINGTON. The feasibility study, which is by the way being supported by Argonne, is being undertaken now and the scientists are already working on this to look at six new, six reactor conversions in Russia. Part of the challenge with Russia is they

have a lot of different types of research reactors. They did not have a consistent model. So we are looking specifically at that new set of reactors and hope to move forward fairly quickly on that. I should note that on the reactor conversions worldwide, Russia already is working with us in terms of taking back the spent fuel from reactors that they have built overseas. So when we talk about spent fuel or HEU removals from Belarus and Ukraine, for example, those materials are not our burden in the United States. Those are going back to the country of origin, which is Russia. So we have a very close working relationship already on that front.

Mr. D'AGOSTINO. Mr. Pastor had it right. There were three that were shut down with commitments on five more, which would add to the total of 69 or 71 that are currently done. There are many tens more that need to be done of different types of research reactors in Russia alone, and this is where what we call the Poneman-Kiriyenko Working Group will allow us to work with our Russian colleagues to drive them to finish the job there in that area. It will take years. I will not pretend it is going to be done quickly, but it will take years to do this work.

Mr. PASTOR. I have been informed that GAO has said that the studies, the six studies, are delayed right now.

Ms. HARRINGTON. They have started. They have started.

Mr. PASTOR. Oh, they have. They were delayed and now they have started?

Ms. HARRINGTON. Correct. Correct, and as the administrator said, it is in part to the high-level pressure that we can continue to put on these issues through the Poneman-Kiriyenko channel.

Mr. D'AGOSTINO. They do not typically happen if it is done at staff level because there are always a million excuses that maybe both sides might even use if you will and say, well, I have to get my boss to agree. But when you have the bosses in the room, you can get agreement pretty quickly and that is a wonderful thing.

Mr. PASTOR. I will let the chairman get resettled and then I will yield back.

Mr. FRELINGHUYSEN [presiding]. Okay. Mr. Simpson.

Mr. SIMPSON. Thanks, Mr. Chairman. Sometimes we make your job more difficult, I'm sure, when you are dealing with Russia and other foreign countries. The last time Ed and I were there, watching Ed talk to the Russians in Spanish, and the Russians answering in Russian, and we just sat back and it looked like they understood each other. We thought it was an amazing piece of diplomacy, but we had no idea what they said.

Mr. D'AGOSTINO. Maybe he signed us up for more reactors.

Ms. HARRINGTON. Military diplomacy with Cuba.

Mr. SIMPSON. That is how we got to 69 instead of 71. Anyway, I remembered what——

Mr. PASTOR. All of them, whatever the number is.

Mr. SIMPSON. I remember what I was going to ask, Admiral. We have a Governors' Agreement. The DOE has agreements with most states. You come into play because the naval reactors are out at Idaho, and we have this spent fuel stored in Idaho. We all know that the cave in Nevada is in limbo or off the table or wherever it is, it is out there in the ether somewhere. The Blue Ribbon Commission is going to make some recommendations. We all anticipate

that reprocessing or recycling of fuel will be one of their recommendations, although we do not know that yet. What are the challenges for the Navy in reprocessing their fuel versus commercial fuel that is stored around the country?

Admiral DONALD. Yes, sir. We are not privy to what the Blue Ribbon Commission's final decision is going to be on that, but we have briefed them and made them aware of what our system is like, what our fuel looks like, and how it is different. And that is really the essence of it. Two points. First off, our fuel is very different from what commercial fuel is. And for a closed hearing if you would like more details about how that is, I can do that, but it is classified at this point. But it is very different. It would require a different system for reprocessing if you chose to do that. Essentially, a similar technique, but a different system, a different facility to do it in if you were going to do it in an efficient manner and that is very expensive. And the amount of fuel that we are talking about in a relative sense, if you look at what Yucca Mountain was, it was about 65,000 tons metric tons of fuel would go in that mountain when it was complete. Of that 65,000, we would be 65 metric tons so almost negligible if you consider the amount. So the idea that reprocessing would be a part of our future in that I would say is probably unlikely. So some other type of a long-term storage would have to be the solution I would believe. Now, obviously the Commission will evaluate that, and we will see where we come out on it, but that is——

Mr. SIMPSON. So essentially you are talking about a completely different reprocessing facility for a very small quantity of the overall fuel, which would make it fiscally impractical to do that?

Admiral DONALD. Yes, sir.

Mr. SIMPSON. Which means at some point of time, we are still going to have to have a geological repository somewhere? I am not suggesting it is Yucca Mountain, but somewhere, to store this at. How is that going to affect the Governors' Agreement that you have with the state of Idaho in the year 2035? And I say that in terms of we have to remember what the Governors' Agreement is, that there are timelines that have to be met in there and there are penalties that are acquired if we do not meet those timelines and those steps along the way. But the overall intent of the Agreement was to get both the DOE and the Navy busy in trying to find a permanent repository. To me the year 2035, while I would get the crap kicked out of me, I guess, is the best way to put it. To me it is not—I do not think it is written in stone. It is that the people of Idaho want to see progress toward a permanent repository on things, and that to me is the important thing. What do you think all of this does to the 2035 deadline with the State of Idaho and with the deadlines we might have with other states? Of course, those are DoE things.

Admiral DONALD. Yes, sir. As you are aware, I am sure, we had some concerns about that 2035 date and what it really meant from the beginning because we obviously had a desire, and I believe it was a mutual desire with the State of Idaho, that we not leave Idaho, that we do have a—there is a function that the Idaho National Laboratory and the naval reactor facility fulfills for national security and it is important work. And based on that mutual agree-

ment we did sign an addendum to the Governor's agreement that provided for a future beyond 2035. It still does not relieve us of our responsibility for preparing our fuel, our spent fuel, for ultimate disposal, notionally a land repository. That is what it was in the beginning. So there is still a significant issue hanging out there about what are we going to do with this fuel absent Yucca Mountain or where it turns out to be the right answer.

What we have tried to do is to the extent that I can control, the things that I have control over that we are living up to our obligations of preparing to be among the first, which is a specific requirement of the Governor's agreement, among the first to move fuel to whatever that location may be. We have committed to that. We have done that. We built the facility and we are moving fuel into dry storage. And I think right now I have something on the order of 38 shipping containers of fuel that is ready to go. It is road-ready to be shipped. And we will continue that.

And we are on track, if you look at the trajectory, to get the fuel out of the water pit, ready for going. We will meet our obligations absent the fact I do not have anywhere to put it right now.

Mr. SIMPSON. Right.

Admiral DONALD. And the State has been remarkably patient with us and supportive of what it is that we are doing. We as a nation have an obligation to come up with the final solution. And when that is ready, we will be ready to support it.

Mr. SIMPSON. And dry storage is safe, secure, and not a threat to the aquifer or any of that kind of stuff, isn't that true?

Admiral DONALD. Absolutely. Yes, sir.

Mr. SIMPSON. Thank you. One other area that I would like to ask, Administrator, is the Middle East, we know, is kind of in a turmoil right now.

Mr. D'AGOSTINO. Yes, sir.

Mr. SIMPSON. We have spent a lot of money on mega ports, our second line of defense, in that we wanted to be able to intercept nuclear material and other contraband before it got to the United States through these mega ports. We visited some in Alexandria and in Oman, countries that—well, obviously Alexandria; Oman is in that region.

What is the threat to these mega ports? Are they still working? Do we anticipate that? What are we doing to make sure that they still function as intended and to ensure that the officials operate those ports as intended.

Mr. D'AGOSTINO. Right. Right.

Mr. SIMPSON. We just kind of supply the equipment and stuff.

Mr. D'AGOSTINO. Yes, sir, we do, but we also have agreements, operating agreements, with those countries to make sure over a period of time that they are maintaining the equipment. It is U.S.-supplied equipment, so we have an interest in making sure the operations continue, make sure they are maintaining equipment. If it is part of the Secure Freight Initiative and Container Security Initiative, that information comes in actively on a regular basis in—and I don't know if these two particular ports are—it comes into a central location here in the U.S.

Because of the types of programs these are that require active involvement of folks in Anne's program, we have essentially regular communication with folks.

As I mentioned earlier, we operate in over 100 countries around the world. The fact that these folks are kind of engineers or technicians or experts, you know, when the political conditions change, they go up and down, but it is very well understood at the ground floor of the deck plates we say in the Navy that this is an important thing to keep up. So what we found is the people, our colleagues, if you will, in these other nations that maintain this equipment, love to get this kind of cooperation, want to maintain it. They have a strong interest in doing so. I don't have any specific information in the last two weeks or so that say we have a problem, yet that is probably something that we should check on.

Mr. SIMPSON. If we were to find out in one of these countries that, for some reason, due to the turmoil or whatever, that they stopped doing these inspections and stuff would we then reject any shipments that came from those ports?

Mr. D'AGOSTINO. Well, that is——

Mr. SIMPSON. I mean, some of them, if you look at Salalah and it is huge, you know. Essentially you are going to stop commerce.

Ms. HARRINGTON. Yeah.

Mr. D'AGOSTINO. That is a great question. But Anne, and then I will jump in, okay?

Ms. HARRINGTON. Well——

[Laughter.]

Mr. D'AGOSTINO. I can do that since I——

Ms. HARRINGTON. Thank you.

Mr. D'AGOSTINO. And she has to like it.

Ms. HARRINGTON. Now, Bill, as you know, you know, very few shipments come to us directly from these ports. Most of those shipments would be transshipped through another port.

Mr. SIMPSON. Right.

Ms. HARRINGTON. So because we have a fair amount of outreach and excellent cooperation, for example, in the major transshipment ports, you know, in Europe, in Asia, et cetera, those shipments if we have suspicions even that they are not being properly inspected, we can always alert other ports to increase their inspection of the cargo.

I would just like to illustrate, though, that, you know, by working as a team across NNSA we helped build this community of, you know, really quite dedicated officials throughout the world. I mean, these people understand what the risks are because many of their countries have been subject to terrorism and many lives have been lost.

Mr. SIMPSON. Right.

Ms. HARRINGTON. Yesterday, I had a conversation with Admiral Krol, who heads our Emergency Operations Group, and he had just been out on a training mission. We do joint training missions together, you know, for port security and emergency response. And, you know, was doing basically refresher course, reminding people of the proper use of the equipment. And, you know, he came back and saying, okay, I have a whole new approach how we are going to do this the next time out. So this is a constant renewal process

that we have. Once—you know, and the sustainment of these facilities and of these networks is absolutely critical.

Mr. SIMPSON. How much do we spend in our budget maintaining these facilities and these mega ports? And is there a point in time when it becomes the responsibility of the host country to maintain these facilities? And, I mean, we provide the equipment and stuff and a lot of the training and other things. And I understand we do it because it is in our own best interest to do so.

Ms. HARRINGTON. Right.

Mr. SIMPSON. Will it always be a part of our budget?

Mr. D'AGOSTINO. Well, what I would say on that is sustainability and partnership is a key element of this, so there is—you know, we do provide the equipment and the operating protocols. There is a commitment on the part of the incoming nation to operate the equipment, to provide data, to work cooperatively with us. In Russia, for example, just as an example, in our second line of defense core program we have an agreement to install well over 300 radiation detectors at key border crossings around Russia. Russia has agreed to pick up all of that responsibility to maintain these facilities, a hundred percent their cost associated with doing that.

Mr. SIMPSON. Just out of curiosity let me ask you, why do we pay for that? I mean, as you said, Russia has been the subject of attacks and so forth.

Ms. HARRINGTON. Right.

Mr. SIMPSON. And it is in their best interest to do that. Are we doing it just because they cannot afford it? And obviously, we cannot either. Is that how that works?

Mr. D'AGOSTINO. No, no, that is not—well, how it works is to ensure to—you know, we do want to lead. We are the United States. We are—we believe—and I think—and this is one of the key elements of the Prague speech is to make sure—and the Nuclear Security Summit we had last year, is we want to lead, but we also want to say that this is not—we are not going at this alone. This is not our job. This is not our complete responsibility. Obviously, we have a great interest in making sure there is not an RDD, radioactive dirty device or an improvised nuclear device that goes off anywhere in the world.

Mr. SIMPSON. Right.

Mr. D'AGOSTINO. Certainly not in the United States. And from that standpoint, leading in—you know, I would say obligates us to a certain extent. And we have taken that obligation for a number of years in saying we have got the equipment, we have the technology, we want to share it with you because it is important. We want you to install this and then we want you to pick up the load. And that is where we are right now with Russia and with other countries.

And this is the whole point of the second-line of defense programs is equipment is relatively inexpensive. So usually the longer costs are the year-to-year-to-year operating costs associated with it because you have to have people and you have to train them and you have to exercise them. And so what we want to do is provide this relatively inexpensive part of this very complex job and have other nation states pick up the responsibility. And we are seeing that come into play.

Are we completely absolved of our financial or what we believe our financial obligations here? Not yet. I think this is a transition period that has to happen. I am a firm believer in we have to get these 47 nations and hundreds of other nations that we—or a hundred other nations that we work with to get to that point.

Anne, you might have more to add on that.

Ms. HARRINGTON. I think another essential element of this is for us to feel comfortable that what is being sent through these ports or coming across these border crossings is actually being detected properly. We want to understand what the system architecture is, maybe have a hand in helping design that system architecture, understand how capable their response forces are, their analytical capabilities, et cetera.

It is one thing to just hand over equipment, but it is another thing to then come back here and feel confident that what is coming through those ports is actually being properly screened. And that really is the long-term objective is to have that insurance for us.

So if that means, in some cases, we might do a little bit more training because we feel there are still some gaps, that could be possible. But the bottom line is that in a three-year transition period we should go from our role being major to being very minor and just being in sustainment mode.

Mr. SIMPSON. Okay, thank you. Sir.

Mr. FRELINGHUYSEN. Thank you, Mr. Simpson. Mr. Womack, thank you for standing in for me. I had a chance to——

Mr. WOMACK. My honor, Mr. Chairman.

Mr. FRELINGHUYSEN [continuing]. Mix it up with the Secretary of Defense and Admiral Mullen. I could not resist, so——

Mr. WOMACK. Well, you came back quickly. I am fearful that maybe you were unsuccessful.

Mr. FRELINGHUYSEN. The time is yours.

Mr. WOMACK. Mr. Chairman, I have no further questions.

Mr. FRELINGHUYSEN. Great.

Mr. WOMACK. Thank you, sir.

Mr. FRELINGHUYSEN. I asked some questions about Libya and no-fly zones and evidently it got some feathers ruffled.

Admiral, I want to get back to where we left off, and I apologize for my absence. I sort of want to understand where we stand on the final design for the reactor technologies that are going into the new Ohio class. And what is the timeline here? And what is the final design going to look like? We have talked about it.

Admiral DONALD. Yes, sir. We are——

Mr. FRELINGHUYSEN. In other words——

Admiral DONALD. Sure.

Mr. FRELINGHUYSEN [continuing]. You own the reactor technology for everything we have now——

Admiral DONALD. Yes, sir, we do.

Mr. FRELINGHUYSEN [continuing]. That the Navy has.

Admiral DONALD. We do.

Mr. FRELINGHUYSEN. You know, you have the experts. You have talked about the workforce and the need to keep it up to speed, but where are we?

Admiral DONALD. We are, right now, in the—it is the concept development and preliminary design work that is going on right now. For instance, if you look at the reactor itself, we have to make a decision here in 2012 on materials that would be used in that reactor itself. And that is a key decision because the material choice will determine whether or not we can achieve a 40-year lifetime on that core.

Once that material selection is made, then you start going through the qualifications of those materials to ensure that you can manufacture it. You go through the thermal hydraulic testing. You have to prove that the dimensions are correct in the core, all very finely set. But that piece of it is going on right now.

At the same time, we are working on arrangements within the ship itself, and that is very important.

Mr. FRELINGHUYSEN. This is the narrowing——

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN [continuing]. To the ship's——

Admiral DONALD. Exactly.

Mr. FRELINGHUYSEN. The design of—yeah.

Admiral DONALD. You have a certain constraint in size, so you have got to fit this thing in the size. You also have to size the reactor plant for whatever the speed requirement is that the ship has to go, whatever the acoustic quieting piece has to be. And then you have got to—in the end you have to got to fit it all in the ship, and that is no small feat in a submarine as confined as the spaces are. So that arrangement piece is very important and that will be a key part of what we do over the next year.

Ultimately, we will have to have the individual equipments designed sufficiently mature so that when we go and start ordering materials, we start ordering the components themselves, such that they can actually arrive in the shipyard on time between 2017 and 2019, we are ready to do that. And the timeframe for all of that, that early design work, is right now. That is when we have to settle all of these key issues and essentially lock in the design and the capability of that ship really over the next year.

Mr. FRELINGHUYSEN. How do you know—and this is the life of the ship-type core—that you are actually going to get what you want to get?

Admiral DONALD. We——

Mr. FRELINGHUYSEN. You have explained why you are going to achieve savings.

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. But in reality, how are you going to make what is, you know, a considerable leap here?

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. We understand the rationale behind it.

Admiral DONALD. Yes, sir. There are two pieces to it. The first is there is a physics element of it that we have had great experience in the cores that we have built previously. For example, if you look at the Nautilus when it was built, it went to sea in 1955. That core lasted for two years. The Virginia that is at sea, the class is at sea right now, that core will last for 33 years. So we understand the physics associated with it and we have also got experience with all of the materials. Maybe for this particular core not all these ma-

terials in the same combinations, but at least in the sense of we have worked with these materials before and we are very confident that we can get the proper amount of fuel, the physics performance, and the thermal hydraulic performance out of this core that will last for 40 years based on experience and on the science itself.

Mr. SIMPSON. So are there alternatives within the areas that you are examining, to the materials that you are contemplating using?

Admiral DONALD. Yes, sir. As with any engineering decision that you make there are tradeoffs. There are tradeoffs between capability, between cost, and certainly that is a matter of importance to us. There is a tradeoff on manufacture ability. Can you actually make it in a production sense in an affordable way? All of those trades are what are being considered right now in this early stage of the design work.

Mr. FRELINGHUYSEN. We still mint *Virginia*-class submarines. We have given you a green light to go ahead. I mean——

Admiral DONALD. Yes, sir, you have.

Mr. FRELINGHUYSEN. I mean, and I think people were generally happy about that.

Admiral DONALD. Sure, it worked.

Mr. FRELINGHUYSEN. It maintained the industrial base. It keeps a lot of people working. What is the mix for this new generation of Ohio sub? You have some of the same workforce needs, right? Is there any transferability of people?

Admiral DONALD. There is, yes, sir.

Mr. FRELINGHUYSEN. It is a little bit of a mystery to me why some of the good people that have been working in the uniform as well as our industrial base can't sort of, should we say, recommit their intelligence and institutional knowledge to what you are doing.

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. We are not talking about a separate—setting up a new industrial base here, are we?

Admiral DONALD. No, absolutely not. In fact, there is a—one of the—in the early stages of decision-making to start this design, one of the key considerations was the industrial base and the engineering and design workforce because we were coming off of the *Virginia* design at that time. We were starting to come off of the design work that is being done on the *Ford*-class aircraft carrier reactor plant.

And there was a genuine concern back in the early, you know, 2004/2005 timeframe that if we did not have work for these folks to do, that we would lose them and that would be a very difficult thing and very expensive thing to reconstitute. So we looked at that very carefully. And there will be a significant transfer of talent, engineering and design talent, between those projects that will move over and start working on the Ohio replacement program. We will have to deal with, again, that aging demographic that we talked about. Some of these folks are going to retire and not be around.

And then the second thing, there is a ramp-up, a natural ramp-up in the number of people that it takes to actually do the design itself. But it is less than what it would have been had we waited much longer and allowed the design force to decay.

Mr. FRELINGHUYSEN. Your budget request indicates that naval reactors intends to hire 800 contractors this year?

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. And program direction for Federal employees continues to increase?

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN. This is over and above the existing workforce that has many of these same——

Admiral DONALD. Some of that——

Mr. FRELINGHUYSEN [continuing]. You know, talents and expertise and——

Admiral DONALD. There is a combination. Some of that is a ramp-up for the new work. There is also some hiring associated with accounting for attrition and for retirement. but there is, in fact, an increase in personnel needed to support the new design work.

Mr. FRELINGHUYSEN. All right.

STAFF. I believe that you wanted to wrap up the hearing by 12 o'clock. Could you talk about the pensions?

Mr. D'AGOSTINO. Certainly. Absolutely.

STAFF. You have I think 71 million in this budget, another 168 in weapons activity, and most of these are monies to pay pensions for legacy employees, for the people who work for University of California, as I understand.

Mr. D'AGOSTINO. That is right, sir. Yes, there is——

Mr. FRELINGHUYSEN. Well, if you would like to explain it because I——

Mr. D'AGOSTINO. Absolutely. It is a little complicated, for sure. I mean, the——

Mr. FRELINGHUYSEN. But as bright as you are you can do it in a few minutes.

Mr. D'AGOSTINO. Absolutely. Yes, sir.

Mr. FRELINGHUYSEN. You have got 10 minutes.

Mr. D'AGOSTINO. Hopefully, I will do it in less, sir.

Well, pensions have become—it used to be a topic we did not spend a lot of time talking about, but because of a combination of a couple of events together got us on this topic about two years ago and it really ramped up. Basically the events were the financial markets' reduction in equity—in the financial markets, the value of the financial markets, combined with low interests rates because that has an impact on how actuaries take a look at how much needs to be in the fund in order to pay forward. And if you don't have the growth that you expect, then you have got to put more money in.

Combined, the third thing, it is like the perfect storm. The third thing is putting the Pension Protection Act requirements on—as a liability on to these particular contracts. So those three things together got us on the topic in the Department on the subject of pensions.

At the same time, a few years ago, if you recall, we had transitioned the University of California out of being the sole management and operator of two of our major laboratories. And so that caused us to separate our pension pools, but still there was a liability in order to make sure that the UC part of the pension pool that

had former Department of Energy workers that it be maintained. And that maintenance gets spread across. Normally, pension costs and in the case of the NNSA we still have our pension costs as an indirect cost that gets attributed across because it is the cost of doing business, but because these were split out separately into this other pool, we had to—and the liability was in the couple hundred million dollar range, as you have described, we had to assign that responsibility to two particular program lines: one in the nonproliferation account based on the ratio of work that they had done there and the other in the weapons activities account. And that goes into describe why we had this hundred-plus liability in one program and this $75 million liability or so in the nonproliferation program.

So that essentially is how that looks. You would not have normally seen kind of a specific call-out. Normally, you would not—normally it is in there, if you will, as an indirect cost. And the rest of the liability, of course, is in there as an indirect cost because we still have ongoing employees and we have employees that have retired outside of the UC system.

Thank you, sir.

Admiral DONALD. Mr. Pastor.

Mr. PASTOR. Yes.

Admiral DONALD. Could I just go back to—no, it is just I wanted to loop back on a question you had asked me earlier about the environmental impact statement for the——

Mr. PASTOR. Right, in Idaho.

Admiral DONALD [continuing]. Idaho facility. Between now and the end of 2012, we will have completed the site selection and submitted the draft environmental impact statement for public comment. So we will be well into the impact statement by the end of fiscal year '12.

And there was one other issue I just wanted to clarify. I misspoke when I mentioned the M290s, the number that it would take the shipping containers that we would take. On the Enterprise it takes 16—or, excuse me, it takes 16 shipping containers for Enterprise. We have bought or are buying a total of 25 of these shipping containers to just deal with the refuel handling for the aircraft fleet and the submarine fleet for the future of the force. If we were to have to task fuel from aircraft carriers at Idaho because the facility was not available, for each one of the *Nimitz* class that is nine shipping containers. So you would need nine of those to put on the rail side just to hold that fuel at $20 million apiece. So I wanted to make sure I got that correct.

Mr. PASTOR. Thank you.

Mr. FRELINGHUYSEN. I just want to get clarity on the payment of pensions for contractor employees. Why is it a responsibility of the nonproliferation program?

Mr. D'AGOSTINO. Because associated with the work that goes on at the UC laboratories, that had gone on at the UC laboratories, we felt that this was the right splitting up of liabilities between the two programs.

Mr. FRELINGHUYSEN. And heretofore it had been where?

Mr. D'AGOSTINO. Well, heretofore it had been part of our—one of the indirect charges that get assigned to all of the programs lines.

So about—so the majority of the costs—normally we would not even be—we would not talk about this because the pension funds would be fully funded. And so they would be assigned, if you will, as part of an element of every dollar that gets spent goes to pay for, you know, the pensions and health care and things like that.

Mr. FRELINGHUYSEN. So we have more transparency.

Mr. D'AGOSTINO. Yes, sir, and in this case, because of the economic times, this has driven us to spend a lot more time in this area. In fact, I think that is actually trying to find the good out of a very challenging time. Because of the increased focus on the topic of pensions, the Department's CFO—chief financial officer—and the team there have spent a lot of time looking at are we reporting data consistently across all of our MNOs. And, you know, maybe at the time we were not and now we are. We are using the same terminology, so we have a much better sense and understanding of what goes on in that particular area.

Mr. FRELINGHUYSEN. And lastly, to Admiral Donald, the refueling of the nuclear prototype which is used as a training platform for the Navy's nuclear operators has been directly linked to the R&D efforts of the Ohio replacement. Can you explain to the Committee how these two programs are linked?

Admiral DONALD. Yes, sir. What we are going to do with the refueling of the prototype, just for context, what this really is is if you took the reactor plant and basically the engine room out of the *Ohio*-class ballistic missile submarine and put it ashore. That is what this is. It was built back in the late 1970s really as the prototype of that ship.

Mr. FRELINGHUYSEN. You explained to me this is the updated version.

Admiral DONALD. That is what is there right now and it has got a nuclear reactor in it and it has been steaming and it is almost depleted of fuel. So when we go to refuel this, we are going to use technology, materials, and construction techniques to prove that we can manufacture this life-of-the-ship core in an affordable manner to prove that we can do that before we actually get into final production on the Ohio-class replacement core. So we will use materials, we will use production techniques, welding techniques, inspection techniques. All of that will go into building this core and it will go into the prototype, and then we will use that not only for R&D over the life of the really 20-year life of the platform, but it will also provide one-third of our training capacity for our Navy sailors that go out into the fleet.

Mr. FRELINGHUYSEN. So it is directly related to the Ohio replacement, but it also is there to maximize knowledge for every other——

Admiral DONALD. It is.

Mr. FRELINGHUYSEN [continuing]. Nuclear reactor——

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN [continuing]. That we have, whether it be, you know, aircraft carrier——

Admiral DONALD. Yes, sir.

Mr. FRELINGHUYSEN [continuing]. Or any of the other subs, so *Sea Wolf* and, you know, *Virginia* class, and so forth, right?

Admiral DONALD. Every one of our operators goes through our training program and will spend six months operating a live reactor. Mr. D'Agostino did it. I did it. Everyone will do that. This is one of the three that will remain to provide that critical training for our reactor operators. And I think you would be impressed if you walked out onboard a ship and you walk up to the reactor operator himself and say how old are you? And he will tell you he is 21 years old operating a nuclear reactor.

Mr. FRELINGHUYSEN. Well, you took me under the ice on the USS Annapolis and I was surprised how young they are.

Admiral DONALD. And they are really good.

Mr. FRELINGHUYSEN. And you have women in the submarine service now, too. I met—I am on the——

Admiral DONALD. They are heading that way.

Mr. FRELINGHUYSEN. Yeah, I am on the board of the Naval Academy, and I must say I met some very sharp young women who anticipate, I guess, being aboard some of our larger subs. And I can tell you they are highly qualified, highly interested, highly motivated. And it may have been a difficult cultural decision, but I think it is a good thing.

Admiral DONALD. Not difficult at all. In fact, the first group just graduated from nuclear power school a week ago.

Mr. FRELINGHUYSEN. Not difficult for me, but sometimes difficult for others. [Laughter.]

And on that happy note, any further questions?

Mr. SIMPSON. I think we better leave it there.

Mr. FRELINGHUYSEN. Thank you very much everybody.

VOICE. Thank you, Mr. Chairman.

Mr. FRELINGHUYSEN. We are adjourned.

QUESTIONS FOR THE RECORD

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HOUSE COMMITTEE ON APPROPRIATIONS

NATIONAL NUCLEAR SECURITY ADMINISTRATION:

DEFENSE NUCLEAR NONPROLIFERATION AND NAVAL REACTORS BUDGET HEARING

MARCH 2, 2011

DOUBLING OF FUNDING FOR NAVAL REACTORS BY THE ADMINISTRATION

Subcommittee. Admiral Donald, your fiscal year 2012 request is $1.153 billion, an increase of 19% over the CR level. It continues a trend of large increases in your budget requests over the last two years – requests which have not generally been supported by Congress. By fiscal year 2016, your proposed budget would grow to $1.57 billion, double the 2008 level of $774 million.

Why does Naval Reactors need to be twice as large as it was before the start of this Administration, when it has so successfully executed its mission in the past?

Admiral Donald. In 2010, Naval Reactors initiated the following major efforts: reactor plant design for OHIO Replacement, refueling the Land-Based Prototype, and the planned recapitalization of the 50 year old spent fuel handling facility. These three projects represent over 75% of the increase to Naval Reactor's funding between FY08 and FY16, as identified in the FY12 President's budget request. In addition, approximately 18 percent of this increase is due to inflation over this timeframe with the remaining portion devoted to addressing needed infrastructure improvements.

The need for the OHIO Replacement and Land-based Prototype, as well as their associated funding profiles, was first validated by NNSA, DOE, and OMB in 2008 as part of formulating the prior Administration's FY 2010 DOE budget request. Their need was revalidated in 2009 and 2010 as part of formulating the current Administration's FY 2011 and FY 2012 DOE budget requests, respectively. The need for the OHIO Replacement project was subsequently validated by DOD as this project directly supports the national security requirement to deliver the next generation ballistic missile submarine to sustain the Nation's sea-based strategic deterrence capability. The reactor core development effort included in the Land Based Prototype Refueling project supports the OHIO Replacement program's requirement for a life-of-ship core (40+ years of operation). The Land Based Prototype Refueling project is also needed to recapitalize this asset since it is the only operating reactor capable of prototypical testing of naval core technology and to enable the training and qualification of about one-third of the Navy's nuclear operators beyond 2021. DOD's endorsement for these two projects was codified in a 2010 DOD/DOE Memorandum of Agreement, which provided a transfer of $1.1B (FY11-15) from DOD to DOE for Naval Reactors efforts. The Spent Fuel Handling Recapitalization Project will recapitalize the over 50-year-old Expended Core Facility (ECF) as the location for naval spent nuclear fuel receipt, inspection, packaging, and secure temporary dry storage. Completion of the recapitalization of the spent nuclear fuel infrastructure is needed by 2020 to support the Navy's tight refueling and defueling schedule for nuclear-powered aircraft carriers.

Recognizing that the ramp-up of these new projects would place a significant burden on DOE resources, efforts were undertaken to critically review Program baseline efforts to free up resources and help mitigate this increased resource requirement. However, continuing activities to support new design projects and to address Program infrastructure precluded funding the increased resources for these projects out of current baseline funding.

Funding for Past Design Projects

For historical perspective, over the last 20 years, Naval Reactors has executed roughly the equivalent of one new design reactor plant at any given time within a relatively stable level of top-line funding. For example, Naval Reactors completed DOE-cognizant development on the S9G reactor plant for the VIRGINIA-class fast attack submarine in FY 2004. The ramp down in resources needed for this project was commensurate with an increase in resources for development of the A1B reactor plant for the GERALD R. FORD-class aircraft carrier which continues through FY 2015 to support construction, testing and delivery. On average, the equivalent of this one new design project represented about 15% of Naval Reactors' baseline efforts.

Historically, new technology development efforts continued simultaneously or between new design projects to ensure that potential reactor plant improvements that could provide needed capability improvements or reduce cost would be available for future design undertakings (e.g., thermo photo-voltaic direct energy conversion, supercritical carbon dioxide). These efforts demonstrably benefit current or future ship designs. As the A1B development program ramped down, Naval Reactors commenced development work in 2007 to improve the VIRGINIA-class S9G core to address the Navy's requirement to increase submarine construction to 2 hulls per year at the lowest cost. The result was the VIRGINIA Forward Fit (VAFF) Core, a technology which reduced acquisition costs by incorporating a new fuel technology developed and prototyped in the 1970s which can now be implemented by leveraging modern engineering tools and high performance computing capabilities. Specifically, the VAFF core will achieve longer lifetime from a lower amount of, and different source of, highly enriched uranium. This previous R&D effort performed decades earlier is illustrative of the types of research and development conducted for future ship designs that have paid dividends. Additionally, these R&D programs have sustained and replaced the critical skills and capabilities at Naval Reactors' laboratories essential to addressing emergent issues with the operating nuclear fleet and meeting future demands of the Navy for improved capability.

2006 Strategic Realignment

In 2006, Naval Reactors completed a major review of its priorities and related allocation of resources. The resulting "Strategic Realignment" was initiated to focus additional resources on much needed facilities and infrastructure improvements at Naval Reactors' four DOE sites as well as to properly prioritize the transfer of spent naval nuclear fuel from wet to dry storage at a production rate to meet a legally binding agreement with the State of Idaho.

At the time of this Strategic Review, the cost to maintain these aging facilities and support program needs was growing and threatened Naval Reactors' ability to effectively execute its mission. The increasing number of facilities and infrastructure over 50 years old ultimately created a difficulty in Naval Reactors' ability to fulfill its cradle-to-grave mission culminating in facilities and infrastructure that are inefficient and unreliable as well as a multi-billion dollar

backlog of inactive facilities and infrastructure waiting to be decontaminated and removed. [Note: Naval Reactors is wholly responsible for elimination of its inactive facilities and environmental liabilities (i.e., D&D). The DOE Office of Environmental Management is neither responsible for, nor performs Naval Reactors D&D work.]

In 1995, the Navy and DOE entered into a legally binding agreement with the State of Idaho that mandated the removal of all spent naval nuclear fuel from water pool storage by 2023 and ultimately from Idaho by 2035. (The Idaho agreement was modified in 2008 to allow for spent fuel handling post 2035.) To fulfill this agreement and to preclude the consequence of a court-imposed injunction on spent fuel shipments to Idaho, which could effectively prevent the refueling of nuclear vessels, Naval Reactors completed a new facility in 2007 and established first-of-a-kind processes to enable the transfer of spent naval nuclear fuel from the water pools to dry storage at a production rate needed to meet the agreements with the State of Idaho in a safe and efficient manner.

In line with Naval Reactors' longstanding commitment to self-finance increased requirements to the maximum extent that is practical, a top-line funding increase was not requested. Instead, the Strategic Realignment shifted resources from the long-term efforts that were ramping down or were of lower priority to needed facility improvements and the dry storage facility to ensure that the Naval Nuclear Propulsion Program (NNPP) infrastructure had the capacity needed to support the program's needs for the future. Having to make these hard choices on program priorities, this review and its subsequent actions severely reduced the resources available for new technology efforts and/or potential new design projects, which would have otherwise benefited from the ramp down of the A1B reactor plant and VAFF projects.

Through a critical scrub of our resources, Naval Reactors is addressing the deficiencies in managing facilities, infrastructure, and environmental liabilities, as well as taking on the new work scope related to dry storage of spent nuclear fuel. However, no additional resources were available to offset the required ramp-up for new project efforts.

Conclusion

The requirements to recapitalize facilities and infrastructure and transfer spent naval nuclear fuel from wet to dry storage necessary to meet Naval Reactors' mission were properly prioritized by the 2006 Strategic Realignment. Further, Naval Reactors' critical skills and capabilities are at a tipping point without any room for further decrement. Sustainment of these mission-required elements will remain alongside the OHIO Replacement, Land-Based Prototype Refueling, and Spent Fuel Handling Recapitalization projects. Accommodating these three new projects within pre-2010 baseline funding is not practical without undermining these other mission components.

Hearing Date/Question Number: March 2, 2011 / Question 1

OPERATIONAL TEMPO OF THE NAVY

Subcommittee. Over the last few years, there has been an increasing operational tempo for the deployed fleet. Can you let us know how this schedule is impacting Naval Reactors requirements to support the operational Navy? For example, have you had to respond to more maintenance issues? You have mentioned before that the Navy's shipyard schedule to refuel carriers over the next few years is aggressive - is this a driver for earlier or shorter refuelings?

Admiral Donald. Our rugged and durable reactors continue to perform in this demanding operational climate and Naval Reactors continues to support them in the fleet. Though OPTEMPO is high, Naval Reactors' enforcement of high standards for propulsion plant material readiness at all times, coupled with a rigorous, technically-based, routine maintenance program for nuclear warships have ensured our ships' capabilities are not limited.

The increasing age of the nuclear fleet and the relatively constant number of reactor plant designs being supported does represent an increased level of effort to our baseline Program technical efforts. For example, an aging nuclear carrier fleet is coping with the increased workload required to effectively, safely and efficiently operate and maintain these ships. High priority work items that require our laboratories to support ships' operations have doubled from 2004 to 2010. Similarly, the laboratory and shipyard effort to support ship modernization, availability planning and inactivation has also grown substantially.

The aggressiveness of the refueling schedule referred to in my testimony is driven by:

1. We are now in the process of the scheduled mid-life refueling of NIMITZ Class aircraft carriers and that effort will continue seamlessly for the next 24 years.

2. The OHIO Class submarines are receiving their scheduled mid-life refueling, an evolution that will continue seamlessly until 2020.

3. The LOS ANGELES Class submarines are reaching their scheduled end of service in larger numbers (reflective of the accelerated fleet introduction of these ships during the Cold War) and must have their nuclear fuel removed for inactivation.

4. USS ENTERPRISE (CVN 65) reaches the end of service life in November 2012. This will be the first inactivation of a nuclear powered aircraft carrier and, due to the ship's eight reactors of an older design, represents at least eight times the nuclear work effort of a typical nuclear ship inactivation. Compounding the challenge is the fact that the dry-dock period available for defueling the ENTERPRISE's eight reactors is in a narrow twelve month window between the USS ABRAHAM LINCOLN (CVN 72) and USS GEORGE WASHINGTON (CVN 73) Refueling and Complex Overhauls (RCOH). ENTERPRISE defueling efforts will also be the first to make use of the new M290 spent fuel shipping container shipping system presently under development, as there is insufficient time to modify existing shipyard reactor servicing facilities to accommodate differences in NIMITZ Class and ENTERPRISE reactor core configurations. The M290

system also addresses similar carrier defueling/refueling conflicts when USS NIMITZ (CVN 68) defuels in 2025, just prior to the USS RONALD REAGAN (CVN 76) refueling requirement.

5. There are only four shipyards currently certified to conduct reactor servicing involving spent fuel with a finite number of highly qualified technicians to conduct this exacting work. It is important to note that this work is only accomplished through verbatim compliance with highly detailed work procedures, which are developed in close coordination with our laboratories. Further, as the shipyards embark on this work, any unforeseen conditions in these aging plants must be fully analyzed and addressed, usually by highly controlled and detailed changes to the approach to the work and the related technical procedures.

In summary, the refueling schedule has not been affected by increased operational tempo, but rather reflects an expected workload based on the original designs of the ships and the capacity of the shipyards to conduct the work. Efforts to further improve the efficiency of these activities are being worked to accommodate this increased workload within the available capacity.

While we continually drive the shipyards to complete refuelings as efficiently as is prudent, we do not allow the schedule to drive maintenance activities to cut corners, eliminate requirements or dilute work standards in an effort to reduce refueling/ defueling timeframes.

Hearing Date/Question Number: March 2, 2011 / Question 2

TRANSPARENCY

Subcommittee. Admiral, this Committee has expressed concern with the lack of transparency in the Naval Reactors budget request, and most recently in the overall plans for the OHIO-Class ballistic missile submarine and recapitalization of facilities and infrastructure. The push for more transparency is not an effort to punish poor performers, but an attempt to ensure that stakeholders understand in detail how taxpayer dollars are proposed to be spent for every program. It is also critical to hold our agencies to the highest level of performance toward strategic planning goals.

This year, you have provided some additional detail in your justification and we thank you for working with us to increase the transparency of the Naval Reactors budget request. But more needs to be done.

What else are you doing to increase the transparency of your budget?

Are you integrating any of your financial transparency efforts with those of the rest of the Department of Energy?

Admiral Donald. Since the program's inception over 60 years ago, Naval Reactors has taken seriously its responsibility to be a prudent steward of the taxpayers' dollar. Our program practices have always been aimed at most efficiently and capably executing our responsibilities in a technically acceptable manner. As part of this responsibility, we consider the transparency of our efforts to be critical to our success. To that end, Naval Reactors stands ready to answer any and all questions from the committee. Naval Reactors is not aware of any open questions or requests for information from the Committee that are overdue.

Our budget is prepared based on detailed short and long-term technical work programs that define specific deliverables and that hold Program Managers accountable for effective and efficient execution. Specifically:

Naval Reactors validates 100% of its requirements twice a year as part of the Naval Reactors Technical Budget Plan (NRTBP) confirmation process. This event culminates in the refinement of priorities and the commensurate allocation of resources, which ultimately feed annual Technical Work Plans (TWP). This process encompasses over 2000 categories of deliverables across seven years and is used to breakdown work to provide sufficient visibility to support effective management. A laboratory technical manager is assigned at each level of the structure, ranging from Program and SubProgram to Task and Deliverable. The Director personally approves the twice-a-year NRTBP as well as personally reviews each annual TWP. The rigor inherent in this process ensures Naval Reactors performs only the work that needs be done and asks only for the resources needed to do that work.

The product of this internal planning ultimately feeds the NNSA and DOE budget programming processes. Naval Reactors actively participates in NNSA's annual Program Reviews, which culminate in NNSA's Future Years Nuclear Security Plan (FYNSP) budget request to DOE,

OMB, and ultimately to Congress. Prior to these budget program reviews, NNSA's Office of Planning, Programming, Budgeting, and Evaluation performs periodic evaluations of NNSA programs to determine the validity and reasonableness of budget estimates and associated requirements. NNSA's most recent evaluation of Naval Reactors was completed in February 2011 and found the requirements to be valid.

Naval Reactors budget justifications are organized primarily by function. For example, Naval Reactors Operations and Maintenance program is categorized by Plant Technology, Reactor Technology and Analysis, Materials Development and Verification, Evaluation and Servicing, Facility Operations, and Advanced Test Reactor (ATR) Operations and Testing. Aside from ATR Operations and Testing, which sustains the ATR facility on the Idaho National Laboratory, each subprogram represents a major aspect of how Naval Reactors performs the work.

One of the challenges in presenting a more detailed budget request is that descriptions of the work in the NRTBP (discussed above) are classified, while the budget request is unclassified. The classified information that provides more detail is readily available for the subcommittee if desired. In fact, last year, we provided additional, classified, information on the OHIO Replacement program for FY10 and FY11, including a breakout of work by WBS, planned deliverables, and a milestone schedule. We remain ready to ensure the Committee has access to the information, at the desired level of detail, to make informed decisions. Additionally, the FY12 Naval Reactors budget request provides additional explanation regarding both project and functional use and greater granularity for technology programs to aid the Committee's review. Naval Reactors has participated in the department's efforts to provide more definition and clarity to the department's work activities. For example, alongside other national laboratories, Naval Reactors' Bettis and Knolls Atomic Power Laboratories input pension and benefits data into DOE's new iBenefits system.

Hearing Date/Question Number: March 2, 2011 / Question 3

GROWING THE NAVAL REACTORS WORKFORCE

Subcommittee. Admiral, according to the Navy's latest 30-year shipbuilding plan, the number of nuclear ships the Navy will operate is set to go down.

The Navy reports it will reduce its submarine fleet by 10 fast attack and 2 ballistic submarines. The number of nuclear carriers will remain at 11, though only one class of ship will be built, as opposed to maintaining both the Enterprise and Nimitz Class carriers as we do now.

However, your budget request indicates that Naval Reactors intends to hire 800 contractors this year, and program direction for federal employees continues to increase.

Why can't you just simply shift your existing workforce to the new research activities as they complete their work on the VIRGINIA submarine and next generation carrier?

Admiral Donald. At our laboratories, we had originally planned to hire 867 contractors in FY11, and an additional 350 contractors in FY12. Some of these hires are to replace employees lost through normal attrition. As a result of the FY11 funding uncertainty, we have only added 306 new hires to payroll as of the end of March. Once the funding levels are clear, we will provide an update with the resultant impacts.

For historical perspective, over the last 20 years, Naval Reactors has executed roughly the equivalent of one new design reactor plant at any given time within a relatively stable level of top-line funding. For example, Naval Reactors completed DOE-cognizant development on the S9G reactor plant for the VIRGINIA-class fast attack submarine in FY04. The ramp down in resources for this project was commensurate with an increase in resources for development of the A1B reactor plant for the FORD-class aircraft carrier which continues through FY15 at nominal levels primarily to support reactor plant delivery to the shipyard and ultimately ship construction, testing and delivery. On average, the equivalent of this one new design project represents about a 15% increase to Naval Reactors' baseline efforts.

As the design work on the VIRGINIA-class completed, a portion of the contractors supporting this effort stayed with the VIRGINIA program and transitioned into the next phase of its operational support of the design, recognizing that VIRGINIA-class submarines will be in service through at least 2050 In this capacity, this workforce supported testing and evaluation as well as provided operational and maintenance support. Those who did not move into a fleet support role began working on the design for the Next Generation Carrier (FORD-class) as this program began ramping up.

The design work on the FORD-class, which peaked in FY02, is slowly ramping down through FY15, when the lead ship delivers and the project shifts to Fleet support. Those contractors currently working on the FORD-class design effort are required to ensure timely delivery of the ship. Like the VIRGINIA program, a portion of the workforce will stay with the FORD-class program as it moves into the operational fleet support of the design in parallel with operational fleet support of NIMITZ Class carriers and inactivation of USS ENTERPRISE (CVN 65). With

the addition of these two reactor plant designs, the required fleet support effort performed in Naval Reactors' baseline work has increased by approximately 70 personnel per year beginning in FY04 (for VIRGINIA) and adds an additional approximately 110 personnel per year starting in FY16 (for FORD).

Naval Reactors commenced development work in 2007 to improve the VIRGINIA-class S9G core while also switching to the use of lower enrichment former weapons material which also benefitted from experienced personnel freed-up from the FORD-class reactor plant design effort. The result was the VIRGINIA Forward Fit (VAFF) Core, a technology which reduced acquisition costs by incorporating fuel technology developed and prototyped in the 1970s and implemented by leveraging modern engineering tools and high performance computing capabilities. Specifically, the VAFF core will achieve longer lifetime from less nuclear fuel. As the VAFF core design efforts wrap up these resources are being applied to support the OHIO-class Replacement (OR) reactor plant design. However, these resources do not completely meet the OR design needs. Additionally, other program priorities compete for these resources.

Recognizing the increasing program needs due to increased Fleet support of more reactor plant designs, aging facilities and infrastructure, and efforts associated with transitioning to dry storage of spent naval fuel, Naval Reactors performed a major review of its priorities and related allocation of resources. The resulting "Strategic Realignment" placed a renewed emphasis on improving the condition of the facilities and infrastructure at Naval Reactors' four sites as well as properly resourced work scope involving the transfer of spent naval nuclear fuel from wet to dry storage at a production rate to meet a legally binding agreement with the State of Idaho. In line with Naval Reactors' longstanding commitment to self-finance increased requirements to the maximum extent practical, a top-line funding increase was not requested. Instead, the Strategic Realignment shifted manpower away from long term efforts that were ramping down or of lower priority. Having to make these hard choices on program priorities, this review and subsequent actions severely reduced resources available to support future new projects from within top-line resources.

This migration of workers from the VIRGINIA and FORD programs from specific project design work into fleet support roles for their respective programs, combined with the reallocation of manpower toward historically underfunded activities makes them unavailable to work on Naval Reactors three new projects (OHIO-class Replacement, Land-Based Prototype Refueling, and the Spent Fuel Handling Recapitalization), thus requiring Naval Reactors to hire additional personnel.

Similarly, increased program direction funds are needed to ensure the government's oversight of this additional workload remains rigorous and focused -- specifically in the areas of reactor design and development, reactor refueling and defueling, spent fuel processing, moored training ship design and development, training, and new ship construction. In addition, Naval Reactors is facing increasing demographic pressures. Right now, 20% of the civilian workforce is eligible to retire and 37% in the next five years. As a more experienced workforce retires, program direction resources are being used to retain and transfer critical corporate knowledge to a highly skilled, yet inexperienced workforce.

Subcommittee. With fewer ships to take care of in the future, why are so many more people needed to do the work of Naval Reactors? What ongoing work is expected to sustain this level of staffing? Or do you intend to hire these people as term employees?

Admiral Donald. In general, Naval Reactors personnel resource requirements are not directly tied to ship numbers but rather to the number of individual reactor plant designs that need to be supported and the average age of these designs. Over the next ten years, the number of reactor plants supported by the Program's baseline manpower remains relatively constant; the early design moored training ship, MARF prototype, and USS ENTERPRISE reactor plants will be retiring, but the new design moored training ships, VIRGINIA advanced design and FORD class reactor plants will be introduced. Additionally, the average age of the nuclear Fleet is increasing requiring additional ongoing support provided by baseline manpower.

The new prime contractor hiring target supports both our Navy and DOE funded efforts and is necessary for the startup of concurrent projects (OHIO-class Replacement, Land-Based Prototype Refueling, and the Spent Fuel Handling Recapitalization, Moored Training Ship Replacement). Due to the skill associated with the complex technology behind reactor plant design and operation, our prime contractors have not historically hired term employees and have no future plans to do so. Design cycles are relatively long (approximately 12-14 years) and new employees for one design cycle become the leaders on the next design. Overall laboratory manpower is managed through hiring and attrition to balance workload and available funding.

Hearing Date/Question Number: March 2, 2011/ Question 4

OHIO-CLASS BALLISTIC MISSILE SUBMARINE REPLACEMENT – STRATEGIC CONTEXT

Subcommittee. Admiral, one of the major cost drivers in your budget is the OHIO-Class Ballistic Missile Submarine Replacement. We will be asking you a series of questions regarding the design and probable cost, but I wanted to take a moment to place the new submarine in context.

- In this unclassified setting, what can you tell us of the need for this new submarine?
- What is happening in the fleets of our strategic competitors which may be driving the need for the OHIO-class replacement?
- What is happening within our fleets, if anything, which may be driving the timeline and need for a replacement class?

Admiral Donald. The OHIO Replacement SSBN will ensure continuous at-sea strategic deterrence once the current OHIO Class SSBNs come out of active service beginning in 2027.

The need for OHIO Replacement SSBN was validated by the Nuclear Posture Review's determination that our nation will require a continuous and credible at-sea strategic deterrent for the foreseeable future. In fact, the sea-based nuclear deterrent will play an even greater role as a result. As other countries improve their undersea warfare capability, the OHIO Replacement must have the requisite technology to ensure it remains as survivable in the future as OHIO-Class SSBNs are today, since survivability is the key to being "continuous and credible." To this end, OHIO Replacement SSBN will be designed to meet the same threats that OHIO Class SSBNs faces today, as well as the projected threats that will exist during the lifetime of the class. Additional discussion of the projected threat driving key OHIO Replacement design objectives can be discussed in a classified setting.

The current OHIO Class SSBNs were originally designed for a life of 30 years. After a rigorous analysis of the entire ship, including the pressure hull and reactor plant, the Navy extended the class' life to 42 years. Based on limitations in remaining fuel, aging systems, and maintenance costs, OHIO-Class SSBNs cannot be extended further. The Navy has identified a goal of maintaining this mission with a reduced force structure. This requires a new reactor plant design to eliminate the mid-life refueling and additional ship design improvements to extend the maintenance cycle, increasing operational availability.

The timeline for replacement is driven by the timeline for retirement of the current OHIO Class SSBNs executing this mission. The current ships will begin to decommission in 2027 and because the life-of-ship core reduces the required force structure by 2 submarines, OHIO Replacement SSBN will need to begin its first strategic patrol in 2029 when the third OHIO Class SSBN leaves active service. Based on the same 7-year construction timeline experienced on the initial VIRGINIA Class submarine (an aggressive, but achievable target for a ship over double the displacement of VIRGINIA Class submarines) and the required lead ship operational

testing before its first patrol, construction of OHIO Replacement must begin in 2019. Using historical timelines for ship design, but capitalizing on new design tools and processes to reduce this span, the design of the ship began in 2010 to support lead ship construction in 2019. This 18-year span between initial concept studies and lead ship delivery is comparable to previous submarine and aircraft carrier designs (OHIO, SEAWOLF, VIRGINIA, and FORD).

Hearing Date/Question Number: March 2, 2011 / Question 5

OHIO-CLASS BALLISTIC MISSILE SUBMARINE REPLACEMENT – COSTS

Subcommittee. Admiral, the Administration has reported to Congress that the cost to develop the OHIO-class replacement is $1.1 billion, with no funding required after 2015. However, your budget request reports that $150 million will be required in 2016 for the OHIO and $222.5 million for the linked S8G Prototype Demonstration Refueling.

What then are the real total costs of this project for Naval Reactors? Does funding continue to go up after 2016?

Why does there seem to be some measure of confusion on the part of the Administration in the reporting we've received? Does this indicate any misalignments across Departments?

Admiral Donald. The total DOE cost to develop the OHIO Replacement reactor plant through FY 25 is $1.46B. The FY12-16 requirements identified in this years' budget are consistent with this total funding requirement. The total cost to complete the S8G Land Based Prototype Refueling project is $1.51B, of which approximately $225M also supports OHIO Replacement reactor design efforts. These efforts peak in FY15 for OHIO Replacement and in FY18 for the S8G Land-Based Prototype Refueling.

Last year, in recognition of validated National Nuclear Security Administration (NNSA) requirements in support of the Department of Defense (DOD), a Memorandum of Agreement was signed by Secretary Gates and Secretary Chu on 3 May 2010 where DOD agreed to transfer $5.7 billion of budget authority in FY11-15 to the Department of Energy (DOE). Of this total, $1.1 billion went to Naval Reactors to support the design work for the OHIO Replacement submarine and refuel/overhaul the S8G Land-Based Prototype. This transfer amount is included in the program totals discussed below. However, the MOA does not cover the entire effort to refuel the S8G Land-Based Prototype or the out-year funding requirements for the OHIO Replacement design. Funding to support the design work for the OHIO Replacement submarine and S8G Land-Based Prototype continues through 2025 as shown in the attached table. A portion (~$225M) of this S8G Land-Based Prototype Refueling effort also is needed to support OHIO Replacement reactor design activities to provide a core that will last for the 42-year ship life. Specifically, efforts to develop an alternate reactor material to support the life-of-the-ship OHIO Replacement core and prove out manufacturing capabilities are undertaken within this project. Therefore, the total funding to develop the OHIO Replacement reactor plant design through FY25 is $1.69B, when including the S8G Land-Based Prototype Refueling funds that also contribute to the OHIO Replacement design.

The DOE and DOD funded portions of the OHIO Replacement propulsion plant design are tightly coupled reflecting the integrated nature of the DOE-funded reactor plant and the Navy-funded steam and electric plant. Close oversight and integration of these complimentary efforts by Naval Reactors prevents duplication or omission of work, and facilitates the integration of the reactor with the ship. The funding validated in the Memorandum of Agreement between DOE and DOD is completely aligned with both DOE and DOD funding requirements.

Subcommittee. Please provide for the Committee a detailed breakout of total costs, by year and program (e.g., Plant Technology, Reactor Technology and Analysis, etc.), for the OHIO-class replacement project through the life of project. This information should include associated costs, such as the S8G Prototype Refueling Program.

	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17-25*
OHIO Replacement DOE Total	**$49.0**	**$91.0**	**$121.3**	**$149.7**	**$169.8**	**$205.0**	**$150.3**	**$528.3**
E&S	$0 0	$0 0	$0 0	$0 0	$0 3	$1 2	$3 1	$25 4
MDV	$0 3	$1 9	$0 0	$3 1	$2 5	$2 0	$3 0	$6 7
PT	$22 5	$39 3	$55 8	$65 2	$77 1	$63 3	$49 4	$173 1
RTA	$26 2	$42 7	$65 5	$81 4	$89 9	$138 5	$94 8	$323 1
GPP	$0 0	$7 1	$0 0	$0 0	$0 0	$0 0	$0 0	$0 0
S8G Project (Related Costs)	*$22 0*	*$32 8*	*$37 4*	*$40 1*	*$29 5*	*$23 4*	*$17 5*	*$22 7*
S8G Project (Total Costs)	*39 5*	*70 6*	*99 5*	*123 1*	*138 0*	*168 0*	*222 5*	*$654 3*

*DOE OHIO Replacement funding peaks for all categories in FY15 and decreases gradually from FY17 through FY25. The component of the Land-Based Prototype Refueling Project that relates to OHIO Replacement peaks in FY13 and decreases gradually until FY21.

Hearing Date/Question Number: March 2, 2011 / Question 6

IMPLICATIONS OF DECISION-MAKING IN THE NAVY ACQUISITION PROCESS

Subcommittee. Admiral, I understand that the final design for the OHIO-replacement submarine has not yet been set. However, you expect to make a final decision on your reactor technologies by February 2012.

What general alternatives is the Navy considering? What are the advantages or disadvantages of each?

Admiral Donald. In 2009 the Navy completed the "Sea-Based Strategic Deterrent: Analysis of Alternatives (AoA)." Using guidance provided by the Navy and DoD, the AoA adopted a capabilities-based approach that considered platform characteristics, force structure, operational doctrine, and cost. The AoA analyzed three basic platform concepts (VIRGINIA Insert, OHIO-Like, and New Design) with 29 separate variants that had differing missile tube number, missile tube diameter, and hull diameter. The OHIO-Like concept had lower overall life cycle cost than the New Design alternative. However, the OHIO-Like would not meet the acoustic requirements necessary for survivability against projected future capabilities. The VIRGINIA-Insert operational availability is lower than the other two alternatives requiring a larger force structure (15 ships vs. 12 for the other two options) to meet the strategic operational requirements for the nation's sea based strategic deterrence (SBSD). Additionally, due to the added length and drag associated with the missile compartment insert, the VIRGINIA-Insert alternative's flank speed is reduced to less than the AoA-derived minimum SBSD requirement. Therefore, after extensive review, the Navy proposed a new design concept for the OHIO Replacement that included 16 tubes (87"), electric drive technology, and a 42 year service life without refueling. This design concept meets the strategic need at minimum cost. USD (AT&L) formally approved the Navy's request for entry into the Technology Development Phase in January 2011.

Subcommittee. Are there components being currently developed by Naval Reactors for the OHIO which are dependent on requirements that have yet to be set by the Department of Defense—such as speed, stealth, size, and mission?

Admiral Donald. The Navy identified ranges for ship speed, hull diameter, and stealth as well as operational availability requirements to support future force structure plans as part of the submarine concept proposed for Milestone A. During the refinement of the ship concept prior to Milestone A, the Navy identified reductions in capabilities that allowed Naval Reactors (NR) to refine the reactor plant concept design to meet the Navy's requirements at reduced cost. For example, the reductions in capabilities allowed NR to reduce the reactor rating, enabling reuse of some select VIRGINIA Class components, and reducing the overall design funding requirements. These chosen parameters are sufficient to make the basic design decisions for the OHIO Replacement propulsion plant concept, which includes a 42 year life-of--ship core and electric drive propulsion. The Navy plans to issue the initial draft of the Navy Capability Development Document (CDD), which will include further refinements to these performance requirements for use during the Technology Development Phase, by late 2011. This iterative process, common to any complex engineering design and typical in our experience for all of our

previous designs, will continue until completion of the final design. Based on test data and additional information regarding the technical challenges associated with manufacturing the alternate cladding material, a final decision will be made in 2012 regarding reactor materials to support the Navy's identified operational needs.

Subcommittee. How does the final design decision affect the Naval Reactor's R&D efforts? Specifically, if the Navy chooses a more conventional option that is closer to the VIRGINIA class, what impact does that have for Naval Reactors development of these core technologies? Would a more conventional option preclude insertion of the reactor technologies that you are seeking to develop?

Admiral Donald. The Navy, with DoD approval, will not pursue the VIRGINIA Insert concept for OR. A VIRGINIA sized and configured reactor would not achieve the performance parameters identified for this class (e.g., 42 year ship life without refueling), and, as a result, would require additional submarines to compensate for the projected loss of operational availability.

Hearing Date/Question Number: March 2, 2011 / Question 7

OHIO-CLASS BALLISTIC MISSILE SUBMARINE REPLACEMENT – TIMELINE

Subcommittee. Admiral, your budget justification states that work for the OHIO-replacement must ramp up now to support initial fabrication and procurement of long-lead components in 2017 and ship construction in 2019.

This subcommittee has repeatedly asked for a detailed schedule, including key milestones and a critical path analysis, on this project.

Specifically, what component procurements are needed in 2017, two years before the Navy requests its first ship procurement in 2019? Why?

Admiral Donald. Last year, in response to the subcommittee's request, Naval Reactors provided a detailed schedule and list of deliverables for the Ohio Replacement. Attached is the latest update to these schedules.

The OHIO Replacement reactor plant design efforts are planned to support Navy construction and delivery schedules, which target lead-ship construction start in FY19 and delivery in early FY26. The seven-year build span is comparable to that required for the lead VIRGINIA Class submarine, and is aggressive considering the larger – nearly double – displacement of the OHIO Replacement.

OHIO Replacement nuclear component procurements are planned for FY2017. Consistent with funding requirements for previous submarine classes (e.g., SEAWOLF, VIRGINIA), a two-year lead-time for nuclear components prior to ship construction start is imperative to ensure that the propulsion plant components arrive by the required-in-yard dates to maintain the planned shipbuilding schedule. These components are needed early in modular ship construction and take a long time to manufacture.

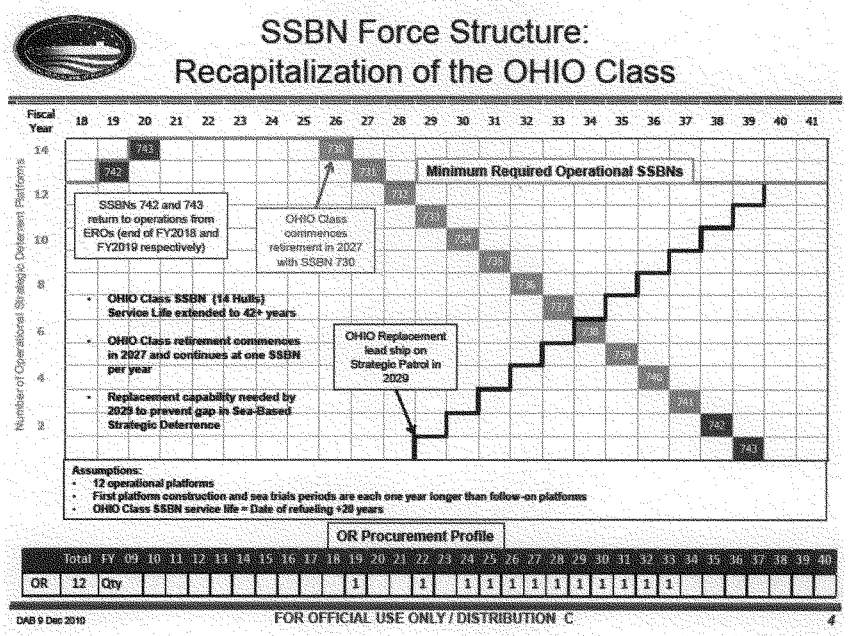
In FY2017, Naval Reactors will procure the reactor core and reactor plant heavy equipment, including the reactor vessel, closure head, pressurizer, core barrel and steam generators, as well as valves and pumps needed to support reactor plant modular construction.

Subcommittee. What is behind the Navy's 2019 date for first procurement?

Admiral Donald. The timeline for replacement is driven by the timeline for retirement of the current OHIO-Class SSBNs executing this mission. The current ships will begin to decommission in 2027 and because the life-of-ship core reduces the required force structure by 2 submarines, OHIO Replacement SSBN will need to begin its first strategic patrol in 2029 when the third OHIO-Class SSBN leaves active service. Based on the same 7-year construction timeline experienced on the initial VIRGINIA Class submarine (an aggressive, but achievable target for a ship over double the displacement of VIRGINIA Class submarines) and the required lead ship operational testing before its first patrol, construction of OHIO Replacement must begin in 2019. Using historical timelines for ship design, but capitalizing on new design tools and processes to reduce this span, the design of the ship began in 2010 to support lead ship

construction in 2019. This 18-year span between initial concept studies and lead ship delivery is comparable to previous submarine and aircraft carrier designs (OHIO, SEAWOLF, VIRGINIA, and FORD).

Procurement of the first OHIO Replacement SSBN is planned for FY19 to support mission requirements in 2029 as detailed in the Force Structure chart below.



Subcommittee. Please provide the detailed schedule, including a breakout of the funding requirements between the Navy and the Department of Energy, key milestones, and a critical path analysis, to the subcommittee not later than March 31, 2011.

Hearing Date/Question Number: March 2, 2011 / Question 8

OHIO-CLASS BALLISTIC MISSILE SUBMARINE REPLACEMENT – COMPARISON WITH PREVIOUS DESIGNS

Subcommittee. Admiral, as part of your development of the design of the reactor for OHIO-class replacement submarines, you are pushing to the next generation of reactor technologies in order to provide "life-of-ship" service.

Given the new capabilities it would offer, how does the level of effort and cost for the OHIO-replacement reactor differ from previous development efforts conducted by Naval Reactors? For instance, can you describe how the amount of work to develop the OHIO class replacement compares to the design efforts for the VIRGINIA core, next generation carrier (FORD Class), as well as to older efforts such as the S8G reactor (OHIO-class)?

Admiral Donald. The OHIO Replacement propulsion plant will be the most advanced design we have ever delivered. While the technological changes from previous designs are evolutionary, the results will be a propulsion plant designed to last 42 years with high operational tempo, reduced maintenance, and required stealth to ensure a credible and survivable platform through 2080. Historically, as we adapt to increased capabilities among our adversaries, our nuclear propulsion plants have incorporated new technology to meet these operational challenges. For example, our most recent design, the FORD Class aircraft carrier, will have three times the electrical generating capacity, 25% more energy to support increased operational availability, and require only half the engineering manpower to operate.

Despite the required improvements in the OHIO Replacement design, the scope of effort is comparable to, but slightly greater than that of our most recent designs, including the materials development work that is part of the Land-Based Prototype Refueling project. Specifically, the OHIO Replacement reactor design effort is about 4% greater than the design effort for the VIRGINIA and FORD Class reactors, and about 25% less than the SEAWOLF reactor design effort. As is our practice, the OHIO Replacement design heavily leverages previous reactor core design technology and processes to the maximum extent possible. This effort capitalizes on reuse of VIRGINIA Class materials, technology, and adoption of more efficient engineering design tools developed over the last ten years.

In addition, technological advances and modern engineering methods have reduced design labor and eliminated several engineering tests. The result has been successively more capable propulsion plants delivered in an affordable manner. For example, the SEAWOLF program required full-scale component flow and mechanical tests and built a specially instrumented prototype reactor core which was extensively tested at full power. These tests were eliminated for the VIRGINIA Class, and will not be required for the OHIO Replacement reactor developments, due to application of proven engineering analysis or modeling.

Hearing Date/Question Number: March 2, 2011 / Question 9

EXTENDING THE LIFE OF REACTORS TO A LIFE-OF-THE-SHIP CORE

Subcommittee. Admiral, unlike the OHIO-class design, which requires a mid-life nuclear refueling, the SSBN(X) is to be equipped with a life-of-the-ship nuclear fuel core [N.B., "life-of-the-ship" indicates a nuclear fuel core that is sufficient to power the ship for its entire expected service life of 40 years].

Why is this a requirement for the OHIO-Class replacement?

Admiral Donald. Achieving a life-of-ship-core, coupled with other design improvements to the operational availability of the class, will allow the Navy to meet the Nation's sea based strategic deterrent requirements with a force structure of 12 OHIO-Class Replacement SSBN (OR) submarines, two fewer than the previous OHIO class. This avoids the ship construction costs associated with two OHIO Replacement submarines and also eliminates the mid-life refueling, which will reduce the time each ship must spend in a shipyard and the cost of overhauls. An over 40-year service life without refueling cannot be supported using conventional reactor core technology in OHIO Replacement.

Subcommittee. What is the likelihood that the technology you are pursuing will deliver a life of the ship core?

Admiral Donald. Naval Reactors has already built and successfully tested in a prototype fuel cell the materials required to achieve the life-of-ship core as part of previous research, design and manufacturing efforts. The knowledge gained from these tests identified the further steps needed to be ready for its use on a production scale of manufacturing. Naval Reactors is confident in the feasibility of the life-of-ship core and will validate this through rigorous testing and manufacturing demonstrations over the next several years.

Hearing Date/Question Number: March 2, 2011 / Question 10

LINKAGE OF THE PROTOTYPE REFUELING WITH THE OHIO-REPLACEMENT

Subcommittee. The refueling of the nuclear prototype, which is used as a training platform for the Navy's nuclear operators, has been directly linked to the R&D efforts for the OHIO-Replacement.

Can please you explain how these two programs are linked?

Admiral Donald. The S8G Land Based Prototype is used for reactor and propulsion plant research, development and testing, as well as for training of operators of nuclear powered ships. Prototype cores have been primarily focused on proving out new reactor technologies that have improved the stealth, lifetime, and performance of nuclear powered warships while simultaneously supporting the training of nuclear plant operators.

To maximize the benefits of the Land Based Prototype, when it is refueled in 2018, it will have a core that will use many of the same materials required in the OHIO Replacement life-of-ship core. As a result, the project will validate solutions to many of the technical challenges posed by a life-of-ship core. The primary challenge to successful achievement is manufacturing a reactor with the alternate core materials on a production scale. These materials have been made and tested in a prototype fuel cell that was developed for previous research and design efforts, but we do not yet have experience in scaling that manufacturing to the levels required for a full OHIO Replacement core. The experience gained from the core development work for the Land Based Prototype Refueling project will provide Naval Reactors with the knowledge to validate that the alternate materials required for a 40+ year life-of-ship core can be manufactured on a production scale. Over $220M of the funds required to support the Land Based Prototype refueling effort have dual use in retiring risk for the OHIO Replacement reactor design.

Hearing Date/Question Number: March 2, 2011 / Question 11

R&D NOT IDENTIFIED WITH A SHIP PLATFORM

Subcommittee. Admiral, what other advanced reactor plant design concepts are funded in this budget request, other than the OHIO-replacement or next generation carrier? Are there any reactor or propulsion plant designs, such as supercritical carbon dioxide propulsion, being developed which are not specifically associated with a platform in the Navy's shipbuilding plan?

What is the requirement to perform this sort of work? How much is being spent developing reactor designs not associated with a Navy platform?

What is the value of spending any resources on these designs when the OHIO-replacement requires such a heavy level of effort?

Admiral Donald. Naval Reactors has always worked to advance nuclear propulsion technology in terms of capability, safety, effectiveness, and affordability. This work over the last 60-plus years has resulted in a nuclear fleet unmatched in the world today.

In total, research and development that is not directly tied to a fleet need or a new project accounts for less than 0.5% of the current program budget. These research and development programs are not plant design efforts but include work on design methods, safety improvements, computational techniques, component repair and inspection techniques, materials processing and component fabrication, experiments, technology readiness and impact studies, and other efforts necessary for the long-term success of the Naval Reactors program.

Over the last 40 years, this low level of investment has provided the following improvements:

Targeting improvements to unique Naval Reactors technologies in areas that limit current ship performance: The alternate, low-corrosion fuel cladding being adopted for OHIO Replacement is one example. Another example is the fuel element technology being used in the VIRGINIA Forward Fit reactor and OHIO-class Replacement to reduce manufacturing costs. Both alternate cladding and the fuel element technology were pursued through the 1970's and early 1980's to a useful conclusion. The technologies were then "put on the shelf," so Naval Reactors could focus resources on the SEAWOLF Class and subsequent VIRGINIA and FORD Class reactor plant designs. These efforts are now being harvested and brought into current projects because the Navy has identified a need to pursue longer-life reactor cores to improve operational availability.

Adapting current technologies outside the NR program to naval nuclear requirements: Examples include adopting modern power-electronics in electric plants, development of microprocessor-based instrumentation and controls, and developing ways to apply modern computational methods to reduce equipment and design costs.

Conducting exploratory work on alternate technologies to determine whether they provide worthwhile benefits to a warship: Examples include past work on direct heat-to-electricity energy conversion, research into supercritical carbon dioxide power conversion systems, and recent work on an alternative fuel element concept.

Designing procedures and mitigation strategies to prevent material degradation: Development of these techniques resulted from a concerted approach initiated in the early 1990's. This effort encompassed multi-discipline developments including state of the art testing techniques, improved materials processing, advanced material microcharacterization techniques, residual stress measurement techniques, non-destructive inspection techniques, and analytical modeling. This work has been instrumental in establishing fleet inspection and maintenance strategies that minimize cost and risk and will be used in design of the OHIO Replacement.

Advances in welding development: Efforts have addressed both short term emergent temporary repair of fleet components and longer term repair methods to last the life of the ship.

Developing component fabrication using new and innovative processing techniques: New techniques are currently being pursued to reduce costs and delivery schedule for valves, heat exchangers (e.g. hot isostatic press processing, explosion bonding, reduced distortion annealing) and other essential plant components.

Improvements in shield designs: Improved radiation shielding design methods allow for lighter and less costly shield designs. For example, relative to original designs, recently re-designed shielding saves more than $3M per ship for VIRGINIA Class and $7M for FORD Class ships. The FORD Class shielding for CVN 79 is also expected to be about 70 tons lighter than that of CVN 78.

Improved structural materials, materials surface treatments, coolant purification concepts, and coolant chemistry treatments: This work has reduced reactor plant after-shutdown radiation levels. The result is that, for newer ship classes, the cost and personnel radiation exposure associated with reactor plant maintenance have been significantly reduced.

Further, work in advanced concepts for nuclear technology keeps us abreast of worldwide developments, challenges our technical assumptions, and provides intellectual stimulation leading to new ideas. In addition, our relatively small investment in this area has attracted talented scientists and engineers into our business. Some of these individuals now hold senior positions at our prime contractors.

Today, our work in advanced concepts is limited to a small-scale laboratory test to evaluate potential system control methods for supercritical carbon dioxide systems. The test is being finished to obtain value from investments already made in the test equipment, and the data would be essential if Naval Reactors revisits this area in the future; the work will be completed in August 2012. The test data will also benefit ongoing industry efforts to adapt supercritical carbon dioxide systems to increase the efficiency of nuclear, solar, geothermal, and waste heat recovery systems.

There is also a small effort, using fewer than 10 people, in FY11 to study the potential benefits of an alternative type of fuel element that may reduce the cost of using nuclear power in ships in the future.

All other R&D supports new or existing ships.

Hearing Date/Question Number: March 2, 2011 / Question 12

STRATEGIC PLANNING FOR R&D

Subcommittee. Can you explain to the Committee your strategic planning for conducting research and technology development? How do you choose which technologies to develop and which concepts to pursue? For instance, do you only develop technologies that can be delivered over a certain time period, or do you leverage more basic investments to push technology envelopes?

Admiral Donald. Our research and development expertise and capability have long been the key to providing our Nation with safe and reliable nuclear propulsion. Maintaining our technical acumen requires that we preserve knowledge and skills in unique naval nuclear technical disciplines. Naval Reactors (NR) selects research and technology projects based on both near-term and long-term needs driven by operational needs of the Navy. The majority of ongoing development efforts are driven by specific needs for fleet operation or new plant designs over the Program's 60 year history. A small level of effort (<0.5%) is reserved for more fundamental technology investigations needed to push reactor plant design envelopes and best position naval nuclear propulsion plants to meet capability needs.

Research and development needed for the fleet or new design projects are tied to project schedules with clear deadlines. Examples of such projects include testing and analysis method developments that demonstrated satisfactory core cooling capability in the FORD Class reactor plant. The tests established reactor power limits for certain backup operating modes needed for warship operations.

Long-term, ongoing research and development projects are selected to address Program needs and pursued where there is an ability to achieve the desired results. Examples include:

Targeting improvements to unique Naval Reactors technologies in areas that limit current ship performance: The alternate, low-corrosion fuel cladding being adopted for OHIO Replacement is one example. Another example is the fuel element technology being used in the VIRGINIA Forward Fit reactor and OHIO Replacement to reduce manufacturing costs. Both alternate cladding and the fuel element technology were pursued through the 1970's and early 1980's to a useful conclusion. The technologies were then "put on the shelf," so Naval Reactors could focus resources on the SEAWOLF Class and subsequent VIRGINIA and FORD Class reactor plant designs. These efforts are now being harvested and brought into current projects because the Navy has identified a need to pursue longer-lived reactor cores to improve operational availability.

Adapting current technologies outside the NR program to naval nuclear requirements: Examples include adopting modern power-electronics in electric plants, developing microprocessor-based instrumentation and controls, and developing ways to apply modern computational methods to reduce equipment and design costs.

Conducting exploratory work on alternate technologies to determine whether they provide worthwhile benefits to a warship: Examples include past work on direct heat-to-electricity

energy conversion, research into supercritical carbon dioxide power conversion systems, and recent work on an alternative fuel element concept.

Designing procedures and mitigation strategies to prevent material degradation: Development of these techniques resulted from a concerted approach initiated in the early 1990's. This effort encompassed multi-discipline developments including state of the art testing techniques, improved materials processing, advanced material microcharacterization techniques, residual stress measurement techniques, non-destructive inspection techniques, and analytical modeling. This work has been instrumental in establishing fleet inspection and maintenance strategies that minimize cost and risk and will be used in design of the OHIO Replacement.

Advances in welding development: Efforts have addressed both short term emergent temporary repair of fleet components and longer term repair methods to last the life of the ship.

Developing component fabrication using new and innovative processing techniques: New techniques (e.g. hot isostatic pressure processing, explosion bonding, reduced distortion annealing) are currently being pursued to reduce costs and delivery schedule for valves, heat exchangers, and other essential plant components.

Improvements in shield designs: Improved radiation shielding design methods allow for lighter and less costly shield designs. For example, relative to original designs, recently re-designed shielding saves more than $3M per ship for VIRGINIA Class and $7M for FORD Class ships. The FORD Class shielding for CVN 79 is also expected to be about 70 tons lighter than that of CVN 78.

Improved structural materials, materials surface treatments, coolant purification concepts, and coolant chemistry treatments: This work has reduced reactor plant after-shutdown radiation levels. The result is that, for newer ship classes, the cost and personnel radiation exposure associated with reactor plant maintenance have been significantly reduced.

At present, due to a large number of near term projects requiring effort, Naval Reactors research and development resources are committed to solving specific, near-term fleet support issues or new projects. Technology development resources not tied to a specific fleet support or new design application have essentially been eliminated as technologies have matured and resource demands for other Program obligations have grown, including spent fuel management and maintenance of an aging infrastructure. The reduction in technology development resources and transfer to new project efforts has been managed in a way that has preserved essential reactor plant technical capabilities, but capacity has been reduced. The new design project work is vital to sustaining essential technical skills into the future.

Hearing Date/Question Number: March 2, 2011 / Question 13

FACILITIES RECAPITALIZATION PLANNING

Subcommittee. In its fiscal year 2011 report, this Committee directed Naval Reactors to prepare a report on your infrastructure recapitalization plan. What is the progress of this report? When can we expect to receive it? If this report will not be available in time for consideration of your fiscal year 2012 budget request, can you discuss your recapitalization plan to sustain the Naval Reactors infrastructure?

Admiral Donald. The substantial uncertainty of available FY11 funding has had significant adverse impact on Naval Reactors' (NR) ability to complete an executable update of the FY11 plan. The Program anticipates that a significant portion of the facilities recapitalization planned for FY11 will have to be deferred to FY12, due to current availability of FY 11 funding. Naval Reactors considers that an interactive briefing, on how it plans to execute facility/infrastructure recapitalization and the challenges it faces in doing so, would better meet the Committee's needs in understanding both the overall approach to recapitalization, the assumptions made in development of the FY12 budget request, and the outlook given the cuts which occurred in FY10 and those indicated in the proposed FY11 funding bills.

In general, our recapitalization plan is targeted to restore needed facilities to provide the capacity and capabilities needed to meet the mission. For many years, the Program has prepared formal documentation as part of its normal internal project management process for each planned project consistent with this overall recapitalization plan. Specifically, each project has a written description, a summary of the performance gap addressed by the project, a summary of project functional requirements, a funding profile and schedule, and critical decision milestones. Projects are prioritized and the prioritization is re-assessed as a part of each semi-annual work plan review.

Subcommittee. What are the primary drivers for recapitalization?

Admiral Donald. The primary drivers for recapitalization of our facilities are:

Nuclear Safety: Much of the infrastructure and recapitalization work at Kesselring Site in New York and the Naval Reactors Facility in Idaho, are required to meet nuclear safety standards. For example, well capacity is driven, in part, by providing cooling water during a design basis accident, and site air systems support operation of safety systems associated with the plants. All systems including back-ups need to be maintained and available.

Compliance with federal, state, and local regulatory requirements: Our infrastructure and systems must stay in compliance with the regulatory requirements of federal, state, and local governments. Requirements to perform work such as a new well at the Kesselring Site in New York were in response to the State changing regulations on the use of shallow wells for drinking water. The requirement for a new sewage lagoon for the Naval Reactors Facility was in response to changing Idaho State Regulations.

Age and condition of the facilities and infrastructure: More than 50 percent of NR facilities are over 50 years old. Aging infrastructure can and will impact the execution of the Program's mission. Many of the buildings, utilities, and general site support systems are gradually reaching the end of their service life creating a bow wave of requirements. Starting in 2006, efforts were initiated to stabilize declining facility conditions through increased maintenance and initiation of replacement of the deficient systems. Accordingly, NR has prioritized facility investment across all sites and shifted operating resources to infrastructure recapitalization and planning with the goal of sustaining the capabilities of the current mission while providing safe, productive spaces for the Program's workforce. If these projects are not accomplished, there is an increased risk that program facility constraints could become an impediment to the efficient accomplishment of the program's mission. At a minimum, without recapitalization the costs to maintain the aging facilities will continue to consume a larger percentage of NR Program funding.

Recruiting and retention of a qualified workforce: In order to recruit and retain a highly specialized incoming and future workforce, our facilities must be upgraded and not excessively lag appropriate standards for this technically complex and challenging work.

Subcommittee. Are new capabilities needed?

Admiral Donald. The majority of Naval Reactors' investments in facilities and related infrastructure will sustain the Program's baseline work. Many of the Program's legacy facilities and infrastructure are in need of recapitalization, thus the new facilities being constructed are mostly replacements for existing facilities or infrastructure. As these new facilities come online, inherent improvements associated with modern infrastructure such as increased energy efficiency, decreased maintenance burden, and compliance with modern construction standards, will be realized.

However, the Program will require facilities and infrastructure with new capabilities to continue support of the mission of handling spent fuel. One such example is the Expended Core Facility (ECF) M-290 Receiving/Discharge Station Project.

This project is planned to provide the capability to unload spent nuclear fuel from M-290 shipping containers into temporary storage overpacks until the fuel can be processed by the Spent Fuel Handling Recapitalization Project in FY 2020. The ECF M-290 Receiving/Discharge Station Project includes the following: 1) a new facility for transferring ENTERPRISE spent nuclear fuel from M-290 shipping containers to storage overpacks and reconfigures M-290 shipping containers with internals needed for NIMITZ class spent nuclear fuel, and 2) an overpack storage expansion building to store the canisters in concrete overpacks, and 3) related facilities and associated infrastructure such as additional rail siding for the longer M-290 shipping container railcars. The ECF M-290 Receiving/Discharge Station Project will also support the future shipment of loaded spent fuel canisters from NRF to temporary or permanent off-site disposal.

The existing facilities in Idaho do not have the capability to handle the larger, heavier M-290 shipping container and its associated railcar, thereby necessitating the need for this new facility. The newly developed M-290 shipping container system will allow direct loading of carrier spent

nuclear fuel without temporary storage and disassembly work at the shipyard as currently required. The M-290 direct loading method improves the efficiency of shipyard operations, supports future aggressive refueling and defueling (ship inactivation) schedules, and mitigates potential security risks associated with holding spent nuclear fuel at the shipyard for long period of time.

Subcommittee. Will recapitalization result in a growth in the steady state budget and staffing levels for Naval Reactors?

Admiral Donald. Personnel resources required to execute facility recapitalization activities do not contribute to an increase in staffing levels for the Naval Reactors Program because the majority of the recapitalization efforts are subcontracted. Funding to support overall recapitalization efforts is included in the Naval Reactors baseline budget.

Hearing Date/Question Number: March 2, 2011 / Question 14

NAVAL REACTORS FACILITY, IDAHO SPENT FUEL INFRASTRUCTURE

Subcommittee. Admiral Donald, you are requesting $53.8 million for the Spent Fuel Handling Infrastructure Recapitalization to replace the Expended Core Facility at the Naval Reactors Facility located at the Idaho National Laboratory. You previously reported the total cost to construct a new facility in Idaho will be $2.1 billion, with a requirement to complete the new facility by 2020. Please explain why this recapitalization is needed, as well as your cost and schedule drivers.

Admiral Donald. The Total Project Cost for the Spent Fuel Handling Recapitalization Project is estimated to be $1,249M (not $2.1B), and will recapitalize the over 50-year-old Expended Core Facility (ECF) as the location for naval spent nuclear fuel receipt, packaging, and secure temporary dry storage. Naval Reactors' ability to continue work in Idaho is dependent upon a viable, efficient fuel-handling infrastructure. Although the ECF continues to be maintained and operated in a safe and environmentally responsible manner, further deterioration of the infrastructure could profoundly impact the Naval Reactors mission. Uninterrupted receipt of naval spent nuclear fuel is vital to the timely, constant throughput of ship refueling and return of these warships to full operational status. If an interruption in ECF operations were to extend over long periods, the ability to sustain fleet operations would be negatively impacted since there would be no capacity available to receive Naval spent fuel, tying up shipping containers and halting defueling operations. Completion of the recapitalization of the spent nuclear fuel infrastructure is needed by 2020 to support the Navy's tight refueling and defueling schedule for nuclear-powered aircraft carriers. A delay to delivery of this new facility could result in costly and time-consuming workarounds (e.g. procurement of additional spent fuel shipping containers and associated equipment) or delays to the defuelings of nuclear powered warships.

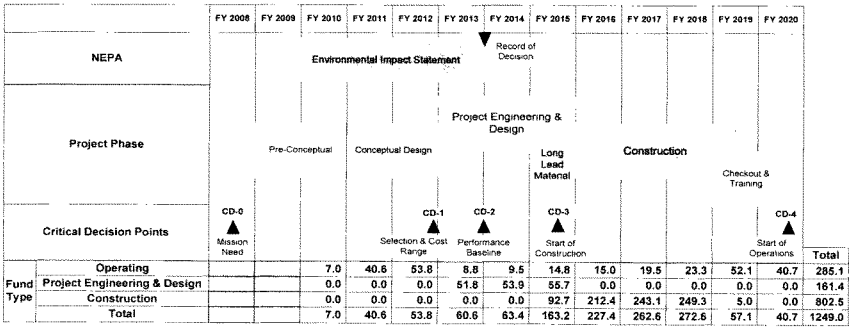
This estimate of the Total Project Cost is based on scoping studies conducted for a range of alternatives that could provide the required capabilities. Actual costs to design and fabricate similar equipment used at the ECF were considered in forming the basis of the approximate $400M equipment cost estimate. The cost estimate includes approximately $650M for the construction of new facilities as well as potential cost saving measures, such as modification of existing facilities for continued use with new facilities. Also included is approximately $200M of Other Project Costs that include items such as conceptual design, National Environmental Policy Act (NEPA) work, analysis, safety oversight, development of procedures and manuals, training, general facility engineering startup support, technical support, Decontamination and Decommissioning (D&D), etc. This Total Project Cost estimate has been reviewed by industry experts with experience in delivering large, complex construction project associated with nuclear material handling.

Included within the scope of the Spent Fuel Handling Recapitalization Project:

- Evaluation and selection of technology and processes for spent nuclear fuel handling.
- Design and delivery of a facility and facility systems in which the spent nuclear fuel handling will be performed.

- Design and delivery of infrastructure specifically needed to support spent nuclear fuel handling operations (power distribution substations, rail service to new facilities, etc.).
- Design and delivery of equipment needed for handling spent nuclear fuel.
- Design and delivery of equipment needed for packaging and disposal of waste generated during spent nuclear fuel handling operations.
- Ability to perform initial cursory external visual examinations.
- Test, operating, and preventive maintenance procedures, and drawings for the spent fuel handling process systems, equipment, facilities, and facility systems.
- Personnel training and development of training programs for the facilities, facility systems, and spent nuclear fuel handling equipment.
- Project management.
- Support services needed for the project.
- Management for subcontracts supporting the design and construction of the facilities, facility systems, and spent nuclear fuel handling equipment needed for this project.
- Reports and submittals, including those submittals required for Critical Decisions.
- NEPA analyses and actions.
- D&D analyses, reports, and strategy.

Based on the 2020 completion of the project, an overall timeline of project phases, key milestones and critical decision points, a funding profile was developed to support development of the rough order-of-magnitude cost estimate. The project funding and milestone schedule, presented below, provides the schedule basis for the rough order-of-magnitude estimate and associated resource profile. Full funding in the early years of the project remains critically necessary to ensure that the facility and equipment are sufficiently defined such that requests for FY 2013 Project Engineering and Design funds and FY 2015 Construction funds are fully justified and support the overall project schedule.



		FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Total
Fund Type	Operating			7.0	40.6	53.8	8.8	9.5	14.8	15.0	19.5	23.3	52.1	40.7	285.1
	Project Engineering & Design			0.0	0.0	0.0	51.8	53.9	55.7	0.0	0.0	0.0	0.0	0.0	161.4
	Construction			0.0	0.0	0.0	0.0	0.0	92.7	212.4	243.1	249.3	5.0	0.0	802.5
	Total			7.0	40.6	53.8	60.6	63.4	163.2	227.4	262.6	272.6	57.1	40.7	1249.0

A breakdown of the costs for labor and materials and subcontracts is provided below.

Labor		FY											
($M, Then-Year)		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Fund Type	Operating	6 0	28 1	35 1	5 2	4 5	9.8	9 3	9 4	15 1	32 3	28 5	183 3
	Project Engineering and Design	0 0	0 0	0 0	33 7	34 8	34.8	0 0	0 0	0 0	0 0	0 0	103 3
	Construction	0 0	0 0	0 0	0 0	0 0	1 3	21 2	17 6	17 4	0 0	0 0	57.5
Total		6 0	28 1	35 1	38 9	39 3	45 9	30 5	27 0	32 5	32 3	28 5	344 1

Materials and Subcontracts		FY											
($M, Then-Year)		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Fund Type	Operating	1 0	12 5	18 7	3 6	5 0	5 0	5 7	10 2	8 2	19 9	12 2	102 0
	Project Engineering and Design	0 0	0 0	0 0	18 1	19 1	20 9	0 0	0 0	0 0	0 0	0 0	58 1
	Construction	0 0	0 0	0 0	0 0	0 0	91 4	191 2	225 5	231.9	5 0	0 0	745 0
Total		1 0	12 5	18 7	21 7	24 1	117 3	196 9	235 7	240 1	24 9	12 2	905 1

Hearing Date/Question Number: March 2, 2011 / Question 15

NAVAL REACTORS FACILITY, IDAHO SPENT FUEL INFRASTRUCTURE – COSTS

Subcommittee. The $53.8 million in FY 2012, added to the $7 million spent in FY 2010 and the amount that will be spent this year, is a significant amount of funding for the activities outlined in your budget request to support this project: conceptual design, NEPA studies, and project management.

Are there other related activities that you are funding here? For instance, are you actually designing equipment typically funded as a part of the line item cost of the facility?

Admiral Donald. The Spent Fuel Handling Recapitalization (SFHP) Project funding in FY 2010, FY 2011, and FY 2012 supports the conceptual design for the major infrastructure recapitalization and spent fuel handling equipment. These conceptual designs are necessary to support Critical Decision 1 and will ensure that the project is sufficiently defined prior to the start of construction design in FY 2013.

The FY 2012 Spent Fuel Handling Recapitalization Project funds are required to complete the project definition phase. The work planned for FY 2012 is in accordance with the project Work Breakdown Structure (WBS).

Subcommittee. What other project documentation can you provide that will give us a greater understanding of the work that you wish to perform prior to completing your EIS and requesting capital line item funding for this project?

Admiral Donald. Attached is the Notice of Intent to prepare an Environmental Impact Statement (EIS) for the Recapitalization of Naval Spent Nuclear Fuel Handling and Examination Facilities at the Idaho National Laboratory. This EIS will be completed in 2013. In addition, attached is the Critical Decision-0 package submitted to the Department of Energy. Both documents provide greater insight into the critical need for the facility.

The major work elements that will be active in FY 2012 to complete the project definition phase are summarized below:

- <u>WBS 1 – Project Administration</u>
  - WBS 1.1 Project Management ($3.6M)
    - Develop and issue Preliminary Project Execution Plan
    - Develop the Performance Baseline
    - Develop the SFHP Integrated Master Schedule
    - Develop and issue the Acquisition Strategy
    - Prepare and conduct independent cost estimates
    - Prepare and conduct independent reviews
    - Develop and issue monthly and quarterly required reports and conduct quarterly Program Reviews
  - WBS 1.2 Support Services ($1.4M)
    - Recruit, hire, and train project personnel

        - Develop and manage the SFHP training program
    - WBS 1.3 Critical Decision Packages ($1.0M)
        - Develop and issue the Critical Decision 1 package
        - Begin development of the Critical Decision 2 package

- WBS 2 -- Site, Technology, and Process Selection: Completed FY10

- WBS 3 – Spent Fuel Processing Systems
    - WBS 3.1 Container Receipt and Unloading System ($6.1M)
        - Update the Container Receipt and Unloading System Reactor Servicing System Requirements as equipment concepts develop
        - Update the Container Receipt and Unloading System Reactor Servicing Safety Assessment as equipment concepts develop
        - Develop and issue Functional Requirements and Objectives documents for major Container Receipt and Unloading System equipment
        - Continue conceptual designs for major Container Receipt and Unloading System equipment, including:
            - M-140 Fuel Discharge Stand
            - M-140 Unloading Stand
            - M-140 Shielded Transfer Container Load Test Stand
            - M-140 Unloading Interface Adapter Plate
            - M-290 Fuel Discharge Stand
            - M-290 Shielded Transfer Container
            - M-290 Core Independent Unloading Equipment
            - M-290 Core Dependent Unloading Equipment
    - WBS 3.2 Fuel Module Storage System ($4M)
        - Update the Fuel Module Storage System Reactor Servicing System Requirements Document as equipment concepts develop
        - Update the Fuel Module Storage System Reactor Servicing Safety Assessment as equipment concepts develop
        - Develop and issue Functional Requirements and Objectives Documents for major Fuel Module Storage System equipment
        - Continue conceptual designs for major Fuel Module Storage System equipment, including;
            - M-140 Unprocessed Fuel Storage Rack
            - M-140 Processed Fuel Storage Rack
            - M-140 Unprocessed Fuel Module Grapples
            - M-140 Processed Fuel Module Grapples
            - M-290 Unprocessed Fuel Storage Rack
            - M-290 Processed Fuel Storage Rack
            - M-290 Unprocessed Fuel Module Grapples
            - M-290 Processed Fuel Module Grapples
    - WBS 3.3 Resizing and Poisoning System ($4.4M)
        - Update the Resizing and Poisoning System Reactor Servicing System Requirements Document as equipment concepts develop

        - Update the Resizing and Poisoning System preliminary Reactor Servicing Safety Assessment as equipment concepts develop
        - Continue conceptual designs for major Resizing and Poisoning System equipment, including;
            - M-140 Processing Station
            - M-290 Processing Station
            - Waste Resizing Station
    - WBS 3.4 Basket and Spent Fuel Canister Operations System ($4.8M)
        - Update the Basket and Spent Fuel Canister System Reactor Servicing System Requirements Document as equipment concepts develop
        - Update the Basket and Spent Fuel Canister System preliminary Reactor Servicing Safety Assessment as equipment concepts develop
        - Develop and issue Functional Requirements and Objectives Documents for remaining major Basket and Spent Fuel Canister System equipment
        - Continue conceptual designs for major Basket and Spent Fuel Canister System equipment, including;
            - Spent Fuel Canister Port Equipment
            - Lift Cap and Tool Column Assemblies
            - Loaded Basket Grapples
            - Basket Withdrawal Station and Transition Shielding
    - WBS 3.5 Waste System ($3.9M)
        - Update the Waste Handling System Reactor Servicing System Requirements Document as equipment concepts develop
        - Update the Waste Handling System preliminary Reactor Servicing Safety Assessment as equipment concepts develop
        - Develop and issue Functional Requirements and Objectives Documents for major Waste Handling System equipment
        - Continue conceptual designs for major Waste Handling System equipment
            - Waste Cask
            - Waste Cask Control Console
            - Waste Cask Unloading Stand
            - Waste Cask Trailer
            - Waste Cask Loading Adapters
            - Water Pool Equipment Decontamination Station
- <u>WBS 4 - Facility and Site Systems</u>
    - WBS 4.0 Facility and Site Systems ($0.2M)
        - Manage the contract for the Engineering, Procurement, and Construction Management subcontractor
        - Update Quality Assurance Program documentation for the project
        - Update Safeguards and Security Plan for the project
        - Update high performance and sustainable building design document for the project
    - WBS 4.1 Facility ($11.4M)
        - Develop and issue Technical and Functional Requirements for design of the facility

        - Provide oversight and detailed reviews of the EPCM facility design efforts for delivery of a conceptual design report
        - Update the Safety Design Strategy for the project
        - Develop and issue the Conceptual Safety Design Report
        - Develop preliminary Safety Design Report
        - Provide modeling and simulation analysis to support key decisions.
    - WBS 4.2 Facility Systems ($6.0M)
        - Develop and issue Technical and Functional Requirements for design of the facility systems
        - Provide oversight and detailed reviews of the EPCM facility systems design efforts for delivery of a conceptual design report
    - WBS 4.3 Site Systems ($0.7M)
        - Develop and issue Technical and Functional Requirements for design of the facility tie ins to site systems
        - Provide oversight and detailed reviews of the EPCM facility site systems design efforts for delivery of a conceptual design report
- WBS 5 – Start-Up
    - WBS 5.3 Commissioning Plan ($0.2M)
        - Begin development of and integrate work with the EPCM for a Commissioning Plan
- WBS 6 – Safety and Environment
    - WBS 6.1 National Environmental Policy Act ($2.9M)
        - Develop, publish, conduct public meetings, and incorporate comments into the Draft Environmental Impact Statement (EIS)
    - WBS 6.2 Safety Reports ($2.0)
        - Develop and issue the initial assessment of Safety and Health Requirements for the project
        - Develop and issue the preliminary Security Vulnerability Assessment Report for the project
        - Develop and issue the preliminary Radiological Sabotage Analysis for the project
        - Develop final Reactor Servicing Safety Assessment
- WBS 7 – Decontamination and Demolition (D&D)
    - WBS 7.1 D&D Documentation ($0.1M)
        - Develop and issue a Decontamination and Demolition Plan for any D&D work necessary for construction of the new SFHP facility
    - WBS 7.2 One-for-One Replacement Documentation ($0.1M)
        - Develop and issue a One-for-One Replacement Report
- WBS 8 – Examinations and Testing ($1M)
        - Finalize the Draft Mission Need Statement for the Examination Recapitalization Project (needed for integration with SFHP)
        - Finalize the timing of the Examination Recapitalization Project
        - Finalize the Business Case Analysis for the Examination Recapitalization Project

Hearing Date/Question Number: March 2, 2011 / Question 16

REQUIREMENTS FOR COMPLETION IN 2020

Subcommittee. Admiral, your request states you wish to complete the new facility by 2020. You further explain that if the Spent Fuel Recapitalization project is not complete by 2020, it will require the procurement of additional M-290 shipping containers.

Is the cost of additional M-290 containers borne by Naval Reactors?

Admiral Donald. If required to be procured, Naval Reactors would bear the cost of the nine additional shipping containers, each costing $22M including all required hardware and supporting equipment, that would be required for each NIMITZ Class refueling. This funding would be provided to Naval Reactors by the Navy (OPN).

Subcommittee. If not, what then would be the effects on the Naval Reactors budget and programmatic implications for Naval Reactors of not completing the facility in 2020?

Admiral Donald. The current Expended Core Facility (ECF) in Idaho does not have the capability to unload spent nuclear fuel from M-290 shipping containers. The M-290 is a newly designed shipping container that is large enough to hold the aircraft carrier spent nuclear fuel without the fuel undergoing expensive and time consuming processing at the shipyard. The M-290 containers carrying aircraft carrier spent nuclear fuel will be shipped from the shipyard to the Naval Reactors Facility (NRF) on the Idaho National Laboratory. Once at NRF, the shipping containers will be unloaded and the spent nuclear fuel will be transferred, prepared, and packaged for disposal. These same shipping containers will then be sent back to the shipyard to support the next aircraft carrier refueling / defueling. Therefore, if we do not start unloading by 2020, we would either have to delay the next NIMITZ Class refueling or procure additional M-290s (using Navy OPN funding).

Subcommittee. If yes, how many additional containers would be required, and at what cost? Is there a limit as to how many M-290 containers can be stored at Naval Reactors Facility in Idaho with the current infrastructure and agreement with the state?

Admiral Donald. Based on current estimates, the initial processing and turnaround rate of M-290s at NRF will be four per year. This includes transfer of the container from the railcar, container preparations, fuel transfer from the container, installation of NIMITZ Class specific internal components, container closure and leak tests, and return of the container to the railcar. Therefore, for every year of project delay, four additional M-290s, at a cost of up to $88M, would be required. Missing the 2020 deadline by more than a year will require the Program to procure up to an entire NIMITZ class ship's set of M-290 shipping containers. This cost of approximately $200M would be funded by the Navy. If funding for additional shipping containers cannot be secured, aircraft refuelings and defuelings will be delayed, reducing the availability of these national assets.

The Spent Fuel Handling Recapitalization Project scope includes the infrastructure to support the in-plan M-290s based on completion by 2020. Each additional M-290 would require further

infrastructure development. This would include rail car storage space, rail spurs for the additional rail cars and security measures to ensure the fuel is properly safeguarded.

Subcommittee. If the containers must stay there longer than 2035, would that have any impact on the agreement with the state of Idaho?

Admiral Donald. As required by the Idaho Agreement, spent fuel arriving in Idaho before January 1, 2026 must be unloaded, processed, prepared for dry storage, and shipped out of Idaho by January 1, 2035. Additionally, the total quantity of naval fuel in 2035 and beyond must not exceed nine metric tons of heavy metal. Delaying the Spent Fuel Handling Recapitalization Project will create a backlog of unprocessed fuel that will place the Program's ability to meet the State of Idaho agreement in jeopardy. If these agreements are not met, the Program will not be allowed to continue to ship fuel to Idaho causing significant disruption to the shipyard reactor servicing and fleet operations and will incur a fine of $60,000 each day past the 2035 deadline.

Hearing Date/Question Number: March 2, 2011 / Question 17

EXAMINATION OF SPENT NUCLEAR FUEL

Subcommittee. The Environmental Impact Statement currently underway for the Spent Fuel Handling Recapitalization Project includes a related facility, the Examination Recapitalization Project. However, there is no mention of this related project in the Naval Reactors justification.

Is this second facility included in the $2 billion project you are requesting?

Admiral Donald. No. The Spent Fuel Handling Recapitalization Project's budget estimate is $1,249M (then-year dollars) and does not include funding for the Examination Recapitalization Project because the Mission Need Statement (CD-0) has not been completed. The Environmental Impact Statement will consider both the Spent Fuel Handling and the Examination Recapitalization Projects. The best way to assess adequately the combined impacts of these similar actions is to include them in a single impact statement.

Subcommittee. If it is additional, how much is it likely to be? What further alternatives are you considering besides a new Examination Recapitalization Project at INL? When will you make a decision?

Admiral Donald. The Program is evaluating a wide array of options to determine the most cost effective way to continue this core Program mission while maintaining Naval Nuclear Propulsion Program's (NNPP) high standards for protecting the environment. In addition to the no action alternative, NNPP is evaluating locating the Examination Recapitalization Project at the Naval Reactors Facility (NRF), the Advanced Test Reactor (ATR) Complex, or at the Materials and Fuels Complex (MFC) at the INL. The evaluation of the no action alternative will analyze overhaul of the current examination facilities. NNPP is working closely with the Department of Energy to ensure that existing Idaho National Laboratory facilities, infrastructure, and assets are thoroughly considered in this evaluation. The cost of the Examination Recapitalization Project is still being determined. An estimated cost range will be documented as part of Critical Decision-0. Critical Decision-0, which will determine mission need, is scheduled for November 2011.

Hearing Date/Question Number: March 2, 2011 / Question 18

SPENT FUEL INFRASTRUCTURE PROJECT: PERFORMANCE AND CONTROLS

Subcommittee. It has been a significant amount of time since NR undertook a major infrastructure recapitalization effort. Nearly all of NR's projects in the past few years have been relatively small dollar value and therefore do not trigger project management oversight of the Department. However, the Spent Fuel Infrastructure Recapitalization project is a $2.1 billion facility.

How do you intend to show us there is a proper level of oversight being performed as this project goes forward?

Admiral Donald. The cost estimate for the Spent Fuel Handling Recapitalization Project is $1,249M.

Naval Reactors has extensive project management experience. The Program routinely manages significant projects, such as the design and construction of the VIRGINIA Class submarine and the FORD Class aircraft carrier reactor plants. Naval Reactors also routinely manages large ship projects, including nuclear powered aircraft carrier and submarine refueling overhauls. These efforts include the planning and scheduling of the refueling; design and development of specialized equipment; planning and technical approval of shipyard facilities and equipment; transportation and handling of spent fuel and reviewing and approving detailed procedures for conduct of refueling operations. Additionally, Naval Reactors has managed the development, operation, and maintenance of over 25 classes of nuclear powered submarines and three classes of nuclear powered aircraft carriers; as well as the design, construction, operation, and maintenance of eight land-based prototypes. The Naval Reactors professionals that are assigned to the Spent Fuel Handling Recapitalization Project have many years of Naval Reactors project management and oversight experience.

The Spent Fuel Handling Recapitalization Project is progressing down two major development paths: the design and procurement of the spent fuel handling equipment and the design and construction of the major infrastructure recapitalization. Over 30% of the Spent Fuel Handling Recapitalization Project budget (approximately $400M) involves the design and procurement of spent fuel handling equipment. Naval Reactors has significant experience in the design, fabrication, procurement, operation, and maintenance of spent fuel handling equipment, having refueled or defueled 423 reactor cores and transported 804 loaded spent fuel shipping containers. Naval Reactors has also packaged over 40 spent fuel canisters for dry storage. For the major infrastructure recapitalization, Naval Reactors has contracted with an experienced Engineering, Procurement, and Construction Management contractor and has leveraged experience through our prime contractor, Bechtel National Inc.

Subcommittee. What steps are you taking to demonstrate your ability to execute large scale infrastructure recapitalization project on time and within budget? The latest execution reports from the Department of Energy shows a significant proportion of the funding requested for line item projects remains unspent, which could be an indication of project delays.

Admiral Donald. As noted above, Naval Reactors has consistently demonstrated our ability to execute large scale projects effectively. From design and construction of the VIRGINIA Class submarine and FORD Class aircraft carrier reactor plants to scheduling and planning refueling and complex overhauls, the Program regularly accomplishes our mission on time and within budget. The diligent management and oversight practiced to execute those projects efficiently will translate to similar success in our large scale infrastructure projects.

The Spent Fuel Handling Recapitalization Project is being managed in accordance with DOE Order 413.3 (Program and Project Management for the Acquisition of Capital Assets) as implemented by Naval Reactors. The Program is also capitalizing on established Naval Reactors requirements and lessons learned from management of our Navy projects, including the use of formalized nuclear safety, refueling equipment, and refueling system design processes. These combined processes, along with the rigorous budgeting and accountability processes routinely employed by Naval Reactors, ensures that Naval Reactors is in a position to execute a project of this size.

Naval Reactors' execution of funds shows a percentage as unexpended. Execution of funds for line-item construction projects varies for several reasons. Uncertainty and delays in the availability of funding due to the Continuing Resolution, the Department's new full funding for construction projects, the current stage of construction projects that span multiple years, the design maturity of current projects, and requirements to fund long lead material procurements have all contributed to low expenditures to date. However, even with these uncertainties and new policies, all Naval Reactors line item projects remain on schedule.

Subcommittee. How many naval Reactors projects in the last ten years have been completed on time and within budget?

Admiral Donald. Over the past ten years, Naval Reactors has requested and completed four major construction projects. All four projects were completed within their budgets. One project finished early, while two finished after their planned delivery but in time to meet the Programs' needs. The final project was discontinued in conjunction with the termination of the direct energy conversion program, but the facility was put to good use as part of the Materials Research Technology Complex. There are seven additional projects which have been requested and will be completed in the coming years. Of those, all are on budget, and only one will be delivered late due to the contractor's negative performance with respect to OSHA and contractual compliance. This project will be delivered next quarter, but still on budget.

Additionally, Naval Reactors' funding execution has exceeded the Department of Energy's goal for General Plant Projects every year with the exception of 2002, when a large amount of emergent projects were initiated in response to the 9/11 terrorist attacks.

The following line-item projects have been requested and beneficial use taken within the last ten years:

- The Major Office Replacement Building was completed within the project budget of $12.4M and beneficial use was reached in FY 2003.

- The Materials Development Facility Building was completed within the project budget of $17.7M and beneficial use was reached in FY 2009.

- The Central Office Building 2 was completed within the project budget of $7M and beneficial use was reached in FY 2009.

- The Cleanroom Technology Facility Project was discontinued in conjunction with the termination of the direct energy conversion program, but the facility was put to good use as part of the Materials Research Technology Complex.

Hearing Date/Question Number: March 2, 2011 / Question 19

PROJECT MANAGEMENT CONTROLS

Subcommittee. What are the project management controls you have in place for execution of your capital projects?

Admiral Donald. Naval Reactors (NR) requires a disciplined approach for all construction projects, whether minor or major. Naval Reactors implements the critical decision acquisition process consistent with DOE Order 413.3. However, NR uses the critical decision process for construction projects greater than $5M, while DOE Order 413.3B is required only for projects greater than $50M.

The Program's processes and controls require mission need documents, scoping documents, and independent estimates and independent reviews using recognized industry best practices. More significant projects actively maintain robust risk analysis plans that assess risk probabilities and impacts along with risk mitigation and management strategies. Execution data related to cost and schedule are carefully monitored using earned value management reporting tools which, coupled with regular progress reports, enable early identification of areas of concern. Lessons learned are compiled and communicated throughout the NR facilities enterprise during all phases of the project rather than waiting for project closeout.

Hearing Date/Question Number: March 2, 2011 / Question 20

SAFETY OVERSIGHT OF NAVAL REACTORS

Subcommittee. Do you interact with the Defense Nuclear Facilities Safety Board for safety oversight in recapitalization or operations of your nuclear facilities?

Admiral Donald. The Defense Nuclear Facility Safety Board (DNFSB) does not provide safety oversight of Naval Reactors. The Board was established by Congress in 1988 in response to health and safety concerns in the nuclear weapons complex; however the NNPP was specifically exempted from its oversight since the concerns which prompted the creation of the DNFSB were not observed in the activities of the NNPP. As a matter of professional courtesy, the Program keeps the Board informed of its major activities. See Attached Letter.

Subcommittee. Can you please explain the regulations which apply to Naval Reactors?

Admiral Donald. Executive Order 12344 set forth in Public Law 98-525 and 106-65 assign Naval Reactors the responsibility for prescribing and enforcing standards and regulations for the control of radiation and radioactivity associated with naval nuclear propulsion activities as they affect the environment and the safety and health of workers, operators, and the general public. Naval Reactors also prescribes and enforces standards for non-radiological occupational safety and health consistent with the authority exercised by the Department of Energy (DOE) for all activities conducted pursuant to the authority provided by the Atomic Energy Act. Generally applicable Federal and state environmental regulations promulgated pursuant to the Clean Air Act, the Federal Water Pollution Control Act, the Resource Conservation and Recovery Act, and similar statutes apply to Naval Reactors activities in the same manner and extent as any other activity of the National Nuclear Security Administration (NNSA) or DOE.

Hearing Date/Question Number: March 2, 2011 / Question 21

PROJECT MANAGEMENT OVERSIGHT

Subcommittee. How does Naval Reactors work with the Department of Energy's Office of Engineering and Construction Management (OECM) to ensure there is proper oversight and reporting of project performance for Naval Reactor projects?

Admiral Donald. The Office of Engineering and Construction Management (OECM) does not participate in the oversight of Naval Reactors projects. However, Naval Reactors stays abreast of OECM project management guidance and incorporates those practices as appropriate.

Subcommittee. Do you follow DOE 413.3 – the Department's instruction for management of capital projects? If not, can you provide a copy of any formal project management instructions or controls you adhere to?

Admiral Donald. Naval Reactors has implemented DOE Order 413.3 via Naval Reactors Implementation Bulletin NRIB 413.3-109. The committee is welcome to a copy of this Implementation Bulletin. However, the Program is developing new implementation guidance for DOE's recent revision to the instruction, DOE Order 413.3B. The Naval Reactors Program will continue the same rigorous project management and critical decision processes for projects $5 million and above, whereas the rest of DOE is required to use DOE 413.3B only for projects greater than $50 million.

Subcommittee. Admiral, you likely are aware that NNSA is in the middle of evaluating a new way of managing major construction projects. One possible path forward is to consolidate the management of construction projects across site. How does Naval Reactors fit in that scenario? Would you have your own construction manager for your sites, work with the Navy, or have your own entirely?

Admiral Donald. Naval Reactors is structured differently than other DOE programs. Our policies, procedures, and unique structure closely integrate all technical, project and support organizations. This tight coupling of all aspects of the Program is vital to the cost effective and technically rigorous execution of Program activities. Therefore, Naval Reactors plans to continue to directly oversee its construction projects.

Hearing Date/Question Number: March 2, 2011 / Question 22

COMPLIANCE AGREEMENT WITH THE STATE OF IDAHO

Subcommittee. What is the status of the agreement with the state of Idaho, now that the Administration is persisting in its unfortunate position eliminating Yucca Mountain as the disposition path for Naval Reactors spent fuel?

Is the requirement to remove all fuel from the state of Idaho by 2035 still in effect, or has a new agreement already been negotiated?

If not, what is your plan to negotiate a new agreement? What are the main concerns of the State in renegotiating this agreement?

Admiral Donald. In 1995, the Departments of Energy and Navy entered into an agreement with the State of Idaho regarding the management of spent fuel and high-level waste. This agreement included a commitment to put spent fuel into dry storage by the end of 2023 and remove it from the state by 2035. The Navy has been in compliance with all of the terms of the agreement since it was entered in 1995.

Recognizing the desire by the Navy and the State of Idaho for the Navy to continue operating in Idaho after 2035, an addendum to the agreement was executed in 2008 modifying some of the Navy out-year commitments. At the time the addendum was negotiated, the Yucca Mountain repository was still planned to be opened. The addendum addressed how Navy spent fuel would be managed and included limits on how much spent fuel could be in Idaho after 2035 as well as time limits for how long spent fuel could be in the water pool prior to being processed into dry storage for shipment out of the state.

In conjunction with terminating the Yucca Mountain project, the Administration established the Blue Ribbon Commission (BRC) on America's Nuclear Future to examine alternatives for managing spent fuel and high-level waste including Navy spent fuel. Given the uncertainty with the legal proceeding surrounding the Yucca Mountain license application, as well as the findings and recommendations expected from the BRC, it is premature to attempt to negotiate a new agreement with Idaho. When a new plan is put forward, Naval Reactors will judge what actions will be required, if any.

While the Navy waits to see what the path will be for getting spent fuel out of Idaho, Naval Reactors is maintaining it in a safe configuration, that is, removing it from water pools and placing it in dry storage in shielded canisters that are also disposal-ready to avoid any contamination of the aquifers. Naval Reactors is continuing plans to build a shipping facility adjacent to the dry storage facility that will be used to take spent fuel canisters and load them into a railcar-based shipping cask for shipment out of the state when a repository or other storage site becomes available.

Hearing Date/Question Number: March 2, 2011 / Question 23

DEFENSE NUCLEAR NONPROLIFERATION REDUCTIONS

Subcommittee. The Nuclear Posture Review listed the President's Prague Initiative to secure fissile material globally first among the key elements in the Administration's nonproliferation agenda. As a sign of this support, the fiscal year 2011 request increased by more than 25%. This year however, those same programs decrease by $138 million, or 5.1%. Another $71 million of program funds are redirected to pay for legacy weapons contractor pensions.

Given the statements on the importance of nonproliferation programs in meeting nuclear security goals, why does funding go down for DNN?

Mr. D'Agostino. The funding level request for FY 2012 is a decrease of 5 percent or $138 million from the FY 2011 request, which was 'front loaded' to accelerate the international effort to secure the most vulnerable nuclear materials within the four year timeframe, and was an increase of 19 percent or $413 million over the FY 2010 enacted appropriation. As the single largest nonproliferation account in the government, NNSA's FY 2012 budget request was developed with the international effort in mind and in the context of a well defined scope of work within the President's timeframe for the four-year plan.

The NNSA's budget request remains consistent with our overall strategy to ensure that programs supporting the President's commitment to lead an international effort to secure all vulnerable nuclear materials around the world in four years are fully funded in the request. The Global Threat Reduction Initiative efforts related to radiological material, as well as the International Nuclear Material Protection and Cooperation program's activities to enhance the ability of our foreign partners to detect nuclear smuggling at border crossings and in Megaports have been prioritized to accommodate accelerated nuclear material lockdown efforts. The decrease in the request for Fissile Materials Disposition reflects the completion of long-lead procurements for the MOX and Waste Solidification projects, as well as the decision to wait to request additional funds associated with the $400 million U.S. pledge for the Russian program until agreement is reached on milestones for the program.

Subcommittee. Is the President's goal to secure fissile materials overseas achievable at this budget request level? What is the status of this effort?

Mr. D'Agostino. We believe this budget request seeks the resources we need to implement the President's ambitious goal of securing the most vulnerable nuclear material within four years. However, NNSA's Defense Nuclear Nonproliferation programs have now been operating for half of fiscal year 2011 at reduced levels. We have adjusted the implementation schedules for some of our programs in order to keep the four-year effort on schedule, but if the FY 2011 budget eventually passed by Congress is lower than the President's request, DOE will need to reevaluate its planned activities and necessary funding to support the effort.

NNSA has a detailed four-year work scope to address its role to help meet the President's goal of securing the most vulnerable nuclear material within four years and is actively implementing that

plan. Since President Obama's April 2009 speech in Prague, NNSA's Global Threat Reduction Initiative, working closely with Russia and other partners, has removed 963 kilograms of nuclear weapons-usable highly enriched uranium (HEU) fuel and plutonium - enough for more than 38 nuclear weapons - from 19 countries and has eliminated all remaining weapons-usable HEU from 6 countries - Romania, Libya, Turkey, Taiwan, Chile, and Serbia.

In addition, NNSA's Office of Nonproliferation and International Security is required to ensure that adequate physical protection is provided to all U.S.-obligated nuclear material provided to other countries for peaceful purposes. To ensure that NNSA meets this mandate established by the Atomic Energy Act of 1954 and the Nuclear Non-Proliferation Act of 1978, NNSA is requesting additional funding in the FY 2012 budget request to ensure that it has sufficient staff and resources to support bilateral physical protection assessments. NNSA also plans to work with states between such assessments through training and engagement. Through these efforts, including legally mandated physical protection training, NNSA will work to ensure states are aware of what actions must be taken to provide adequate physical protection for U.S.-obligated materials. The need for increased funds for training is time-sensitive. The IAEA recently concluded the fifth revision of its *Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities*, INFCIRC/225, and the United States must work with other states to implement the new recommendations in a timely manner. Such efforts are critical to the President's four year effort to secure the most vulnerable nuclear material around the world, as the impetus for the INFCIRC/225 revision was ensuring that states are better prepared to respond to challenges in the changing threat environment, including the nuclear terrorist threat. As the Subcommittee may recall, the completion of INFCIRC/225/Rev.5 was one of the first goals of the 2010 Nuclear Security Summit that was achieved.

Subcommittee. What are the biggest challenges you see in accomplishing the four year effort?

Mr. D'Agostino. The uncertainty of the funding level for FY 2011 and reduced funding levels for the DNN account that have been included in the multiple Continuing Resolutions (CRs) for FY 2011 could undermine the progress the United States has made in making our nation safer and put at risk meeting the goal of securing the most vulnerable nuclear materials by the end of 2013, better securing facilities that will continue to have nuclear materials, and reducing terrorist access to nuclear materials, technology and expertise. For instance, at the reduced funding level under a year-long CR based on FY 2010 levels, we would be able to remove all HEU from Ukraine and Mexico by April 2012. However, we would not be able to remove all HEU from Belarus by April 2012. There is more than 280 kilograms of HEU in Belarus -- enough material to make 11 nuclear weapons. Furthermore, at the reduced funding level, other shipments of nuclear material from countries such as Poland, Vietnam, Uzbekistan, and Hungary will be delayed, significantly increasing the risk that these shipments will not be successfully completed by the December 2013 goal. Currently, we have political agreements in place for the removal of this material, yet under the current CR, it is not possible to make the necessary medium and long lead procurements to build a reliable removal schedule. Continued postponements and insufficient funding could jeopardize the political support for our agreements.

Subcommittee. Please provide for the record a classified update of the current status, by site and quantity, of the President's plan to secure fissile materials overseas.

Mr. D'Agostino. In coordination with the Department of Defense, we are producing a classified report on the status, as requested by House Report 111-491 to accompany H.R. 5136, the National Defense Authorization Act for Fiscal Year 2011. This report will provide an update on any changes to existing interagency strategy and work plans, including updates to metrics for measuring progress, funds required to carry out activities and contributions from partner nations. We will provide you with a copy of this report as soon as it is available.

Hearing Date/Question Number: March 2, 2011 / Question 24

PULLING AWAY FROM PRAGUE

Subcommittee. The President also made the goal for a world without nuclear weapons a key point in his nonproliferation agenda detailed in Prague in April 2009. And this year, the Defense Nuclear Nonproliferation appropriation shrinks while funding to maintain the U.S. nuclear weapons stockpile has grown substantially.

Does this signal a retreat from the Prague agenda in light of fiscal challenges?

Mr. D'Agostino. As you know, while President Obama urged the international community to work toward eventual elimination of all nuclear weapons, , he indicated that we will maintain a safe, secure, and effective nuclear weapons stockpile as long as nuclear weapons exist. While funding to maintain the nuclear stockpile has grown, this largely is the result of efforts to modernize the Nuclear Security Enterprise, providing the foundation for sustaining the Nation's stockpile of nuclear weapons for as long as these weapons exist. However, those same capabilities enable our essential nonproliferation and counterterrorism activities, and provide the confidence and tools necessary to consider further nuclear weapon reduction initiatives as we continue taking steps toward a world without nuclear weapons.

Subcommittee. There are reports that NNSA's nuclear nonproliferation programs in Russia face an uncertain future because of questionable high-level Russian political commitment to continue cooperation with the United States on nuclear security.

Have any of these developments negatively affected your relationships with any countries so far in negotiating cooperative agreements for safeguards, improving security and removing nuclear materials?

Mr. D'Agostino. There is a political commitment from Russia to continue nuclear security cooperation with the United States, as evidenced by the April 1, 2009 Obama-Medvedev Joint Statement that included measures to combat nuclear terrorism and to secure nuclear weapons and weapons-usable materials. Russia was also an active participant in the April 2010 Nuclear Security Summit and continues to be a leader of the Global Initiative to Combat Nuclear Terrorism. Recent breakthroughs such as the New START Treaty and the ratification of the 123 Agreement have improved the cooperative environment with our Russian counterparts. In addition, the Deputy Secretary of Energy and the Director of Rosatom co-chair a bilateral group on civil nuclear power and nuclear security, which has been an excellent venue to address issues, develop milestones, and to develop high-level engagement on nuclear nonproliferation.

Further, the Russian government remains committed to working with NNSA to remove Russian-origin nuclear materials worldwide and has been a participant in negotiations to finalize agreements for all remaining Russian-origin nuclear fuel removals. We also recently extended our nuclear security cooperation with Rosteknadzor for an additional seven years, completed consultations on the next round of activities under the nuclear energy and security working group, and look forward to meetings between the national laboratory leaders of both countries in

spring 2011 to explore new areas of cooperation in nuclear energy, nonproliferation, and basic science.

Subcommittee. In which countries do you see the biggest challenges remaining in accomplishing our nonproliferation goals?

Mr. D'Agostino. Some of the biggest challenges will be working cooperatively with countries such as Ukraine, Belarus, and Mexico to ensure that we meet commitments to complete fuel removals before the next Nuclear Security Summit in April 2012.

There are significant nonproliferation challenges remaining in other countries of concern, which can be discussed more fully in a classified setting.

However, we have overcome many challenges in the past to complete fuel removals from countries such as Belarus, Libya, and Serbia and are confident that we can accomplish our nonproliferation goals despite the tight schedules and diplomatic challenges.

Hearing Date/Question Number: March 2, 2011 / Question 25

FUNDING THE FOUR-YEAR GOAL

Subcommittee. In December, the Government Accountability Office found that the interagency strategy for the President's 4-year global nuclear material security initiative lacks specific details concerning how the initiative will be implemented, including the identity of vulnerable foreign nuclear material sites and facilities to be addressed, agencies and programs responsible for addressing each site, planned activities at each location, potential challenges and strategies for overcoming those obstacles, anticipated timelines, and cost estimates.

As a result, key details associated with the initiative are unclear, including its overall estimated cost, time frame, and scope of planned work. What is the NNSA doing for its part in addressing these findings? How has the request for the FY 2012 budget been influenced by this initiative and these findings?

Mr. D'Agostino. The National Security Staff is addressing the overall recommendation and currently leads a strong interagency team that meets on a regular basis to prioritize activities and to assess risk by material type and by country, which in turn drives how we conduct our programs. The Government Accountability Office report you refer to noted that NNSA was the only agency to have developed a formal written work scope with specific details regarding how it intends to contribute to the four-year goal and NNSA has been actively implementing that plan since 2009.

Additionally, the NNSA has been conducting "bridge" meetings with counterparts from the Defense Threat Reduction Agency (DTRA) at the Department of Defense (DOD) to coordinate our respective programs and to accelerate activities wherever possible. As the single largest nonproliferation account in the government, NNSA's FY 2012 budget request was developed with the international effort in mind and in the context of a well-defined scope of work within the President's timeframe for the four-year plan. We are constantly looking for opportunities to enhance our nonproliferation efforts, and we feel that the NNSA and DTRA are working together effectively toward our common nuclear security goals.

Hearing Date/Question Number: March 2, 2011 / Question 26

MATERIAL CONTROL IN RUSSIA

Subcommittee. Mr. Administrator, many challenges remain in carrying out our nonproliferation activities in Russia, and there have been many issues raised by Russian officials as we conduct our cooperative activities there. It has been particularly challenging in getting agreement on which materials pose a proliferation risk and should therefore be removed or secured. It is clear that more time will be needed to fully secure materials there.

What are the biggest challenges we are facing in advancing our nonproliferation goals in Russia? What are you doing to improve relations and ensure Russian cooperation for carrying out these efforts?

Mr. D'Agostino. There is a political commitment from Russia to continue nuclear security cooperation with the United States, as evidenced by April 1, 2009 Obama-Medvedev Joint Statement that included measures to combat nuclear terrorism and to secure nuclear weapons and weapons-usable materials. Russia was also an active participant in the April 2010 Nuclear Security Summit and continues to be a leader of the Global Initiative to Combat Nuclear Terrorism. Recent breakthroughs such as the new START Treaty and the ratification of the 123 Agreement have improved the cooperative environment with our Russian counterparts. In addition, the Deputy Secretary of Energy and the Director of Rosatom co-chair a bilateral group on civil nuclear power and nuclear security, which has been an excellent venue to address issues, develop milestones, and to develop high-level engagement on nuclear nonproliferation.

While the majority of major security upgrades in Russia were completed by the end of 2008, as agreed to in the 2005 Bratislava Nuclear Security Initiative, several important areas and buildings have been added to the scope of our activities and are reflected in our revised Joint Action Plan, which lays out the scope of security work to be undertaken by the United States and Russia by site. These areas contain large quantities of weapons usable nuclear materials. One of our biggest challenges has been completing this new work-scope by the previous statutory deadline of 2013. The recent extension of the statutory deadline to January 1, 2018 provides much needed relief and will permit the Material Protection Control and Accounting (MPC&A) program to continue to work closely with the Russian Federation to ensure the successes of the past 15 years of cooperation continue until all cooperative upgrade projects are completed.

Subcommittee. The Cooperative Threat Reduction umbrella agreement with Russia is set to expire in 2013. Has NNSA already successfully secured the most high risk materials in Russia, or are there any notable risks remaining? If the agreement is not extended, can you discuss the remaining proliferation risks? What activities being conducted in Russia by NNSA would be impacted?

Mr. D'Agostino. With respect to the Cooperative Threat Reduction (CTR) umbrella agreement, a lack of an extension will remove the government-to-government legal framework for our cooperation. While it may be possible to negotiate a replacement agreement, if that does not occur, cooperative activities would have to be pursued under another channel. For example, activities could be pursued through informal lab-to-lab cooperation, which would not provide the

NNSA with the taxation and liability protection provisions that exist under the current CTR umbrella agreement. Another consequence of the failure to extend the CTR agreement would most likely lead to the premature cessation of nuclear security cooperation conducted through MPC&A, Nonproliferation and International Security, and the Global Threat Reduction Initiative. Numerous activities, including additional security upgrades and sustainability assistance at facilities with insufficient finances, would not be provided.

Hearing Date/Question Number: March 2, 2011 / Question 27

TRANSPARENCY OF SECURITY SPENDING IN RUSSIA

Subcommittee. Having information on Russia's nuclear security spending is vital to programmatic planning for securing nuclear materials. Resources become obligated for cooperative efforts that face significant challenges before they can be carried out. These funds are then tied up, while they could be used elsewhere to make better progress on advancing our nonproliferation agenda. Transparency would provide a more accurate picture of Russia's willingness and ability to support and sustain MPC&A and other nuclear security investments the United States has made in Russia.

What is your strategy to strengthen cooperation with the Russian government on the transparency of its current and future spending plans on nuclear security programs and activities?

Mr. D'Agostino. NNSA has and will continue to raise the need for increased transparency regarding Russia nuclear security budgets. At MPC&A best practices exchanges, NNSA has explained the DOE budget development process in detail, and demonstrated the degree of transparency the USG permits with regard to security budgets. Russian law currently restricts the disclosure of these budgets, and so changes will require new legislation drafted by the Prime Minister's office and passage by the Duma and Federation Council. NNSA believes the Soviet legacy of extensive secrecy over operations in the nuclear weapons complex drives the Russian Federation perspective today.

Hearing Date/Question Number: March 2, 2011 / Question 28

PROGRESS IN CONVERTING RUSSIAN RESEARCH REACTORS

Subcommittee. The Global Threat Reduction program plans to complete the conversion or verified shutdown of 71 Russian HEU-fueled research reactors and related facilities. The Government Accountability Office (GAO) reported in December that NNSA has verified the shutdown of only 3 of these reactors so far. They also reported delays for six Russian research reactor conversion feasibility studies. These studies do not even constitute an agreement to actually convert those facilities, and it is therefore not encouraging that they would eventually agree to a conversion.

Considering the limited progress made so far, what is your assessment that Russia is even close to agreeing to these efforts?

Mr. D'Agostino. The NNSA's GTRI Reactor conversion program has made significant progress, having converted or verified the shutdown of 73 reactors worldwide, including 3 Russian research reactors in the past 5 years. We have also facilitated the removal to Russia of the HEU from countries such as Belarus, Libya, and Ukraine. We are making progress in Russia through the recent ratification of the U.S.-Russia 123 Agreement and signing of the Implementing Agreement to conduct Russian reactor conversion feasibility studies by DOE Deputy Secretary Poneman and Rosatom Director General Kiriyenko. We believe it is likely that Russia will agree to begin converting its domestic research reactors upon the completion the current feasibility studies of the first 6 Russian reactors. The teams conducting this work began the study process in early 2011.

Subcommittee. Will a formal, higher level cooperative agreement need to be negotiated? If so, what is the rationale of continuing to invest funding in agreements in the meantime?

Mr. D'Agostino. Russia has previously stated that it would only convert domestic reactors under the legal framework of the 123 Agreement, so the entry into force of this Agreement is a key step forward towards converting Russian reactors. In the meantime, NNSA and Rosatom are actively cooperating on the feasibility studies, which are underway and anticipated to be completed on schedule in early 2012.

Subcommittee. How much funding is being held up pending Russian cooperation for the HEU conversions?

Mr. D'Agostino. No funding is being held up while the studies are underway because most of the Russian reactor conversions have always been planned for FY 2013 and beyond.

Hearing Date/Question Number: March 2, 2011 / Question 29

PROGRESS IN REMOVING MATERIALS SINCE PRAGUE

Subcommittee. Almost two years has passed since the President's Prague speech where he presented an ambitious strategy to address the international nuclear threat. Several NNSA programs have been identified as contributing to this strategy, and the Subcommittee is interested in the progress that has been made in advancing that strategy.

How much nuclear material has NNSA assisted other countries in removing since the Nuclear Security Summit in April 2009?

Mr. D'Agostino. Since the April 2009 speech, NNSA has removed 963 kilograms of nuclear weapons-usable highly enriched uranium (HEU) fuel and plutonium, which is enough for more than 38 nuclear weapons. This material was removed from 19 countries, including Libya, Ukraine, and Belarus. NNSA has eliminated all remaining weapons-usable HEU from 6 countries – Romania, Libya, Turkey, Taiwan, Chile, and Serbia – since April 2009, which brings the cumulative total to 19 countries that have eliminated all of their HEU. U.S.-origin materials have been returned to the United States and Russia has taken back its materials.

Subcommittee. How many reactors powered by highly enriched uranium has it assisted other countries in converting to use low-enriched uranium?

Mr. D'Agostino. A total of 10 reactors have been converted to LEU or shutdown since April 2009.

Subcommittee. How many storage sites with nuclear material has NNSA assisted other countries in protecting?

Mr. D'Agostino. Since the April 2009 speech, NNSA has cooperated with Russia to complete comprehensive Material Protection Control and Accounting (MPC&A) upgrades to 33 buildings containing weapons-usable nuclear material at 7 material sites and has completed additional security upgrades at 7 Russian Strategic Rocket Forces nuclear storage and handling sites.

Hearing Date/Question Number: March 2, 2011 / Question 30

SECURING DOMESTIC RADIOLOGICAL MATERIALS

Subcommittee. Mr. Administrator, the bulk of the funding to secure radiologic materials supports our international efforts. However, there are significant funds in your request to remove or secure domestic radiological materials. These materials owned by private industry are regulated by the Nuclear Regulatory Commission.

Why should Federal funding be directed to subsidize securing these materials within the United States when this is a responsibility of private industry and should be adequately regulated?

Mr. D'Agostino. The possibility of radiological material being acquired by terrorists is a national security concern. Large radioactive sources used at civilian sites like hospitals and universities could cause extensive radioactive contamination that would require relocation and prohibit use of that area pending clean up, potentially resulting in economic impacts in the billions of dollars.

While the ultimate responsibility for securing nuclear and radioactive materials in the United States rests with the licensee who possesses these materials, a coordinated federal government effort has been undertaken in partnership with private industry to further enhance security to prevent terrorists from acquiring the radiological materials that can be used in a radiological dispersal devise (RDD). NNSA works in coordination with the Nuclear Regulatory Commission (NRC), the Department of Homeland Security (DHS), Federal Bureau of Investigation (FBI), state regulators, and private sector partners is to build on existing regulatory requirements by providing voluntary security enhancements.

NNSA's voluntary security enhancements are sound, cost-effective and proven best practices. These security enhancements complement and do not replace NRC and Agreement State requirements. NNSA efforts on the security of domestic radiological sources are focused on assisting Local Law Enforcement Agencies (LLEA), as LLEAs are not regulated by the NRC. Because most sites with high activity radioactive sources do not have on-site armed guards, LLE would be the armed responders at these sites if there were to be a terrorist event. NNSA funded security enhancements include: ensuring key alarms are sent directly to LLE responders, increasing the delay (the time needed to steal the radioactive material) so LLE has time to respond, and training LLE so they can protect themselves and their community when responding to a possible high radioactive environment.

Regarding the removal of domestic radiological sources, there are currently no commercially available disposal sites for most high activity radioactive sources that could pose a terrorist dirty bomb threat. Therefore, NNSA safely and securely removes and disposes of these at DOE facilities. However, there is a future solution for these high activity sources: once the DOE Office of Environmental Management completes the construction of the Greater Than Class C (GTCC) facility, disused radioactive sources will no longer need to be recovered by NNSA.

Subcommittee. What is your plan for the future of this program? Are there a finite number of materials you are targeting?

Mr. D'Agostino. There is a relatively finite scope in that there are a limited number of buildings in the United States that contain large enough quantities of specific materials to pose a concern of national significance. Within the FY 2012 budget profile NNSA plans to complete security enhancements at the estimated 2,700 domestic buildings by 2025.

Hearing Date/Question Number: March 2, 2011 / Question 31

ONGOING COSTS TO SECURE VULNERABLE NUCLEAR MATERIALS

Subcommittee. Notwithstanding whether the goal will be accomplished in four years or take slightly longer, what will be the future costs of the nonproliferation program after meeting the goal to the secure vulnerable nuclear materials worldwide?

Mr. D'Agostino. The DNN programs have several diverse missions that are difficult to predict for the future, especially as we address emerging threats. However, we do have lifecycle projections for most of the major pieces of the DNN mission.

By program, a rough estimate of future funding needs follows:

- Research & Development: $479M-$519M, annually (including UC pension liability)
- Nonproliferation and International Security: $163M-$175M, annually
- International Nuclear Material Protection and Control: $519M-$656M, annually for the next 5 years; after 5+ years, decreasing as host country sustainability increases unless new priority sites are identified
- Fissile Materials Disposition: $1.0B range for the completion of construction of MOX, WSB, and PDC; then reduced to $400M-$500M for operation.
- Global Threat Reduction Initiative: $497M-$740M for the next 5 years; after 5+ years, decreasing as work is completed and sustainability increases.

Subcommittee. Should we expect funding needs to decrease long term as a result?

Mr. D'Agostino. Yes, for these programs. For instance, GTRI funding requests will decrease in the out years after a peak in FY 2016 as convert and remove programs are permanent threat reduction with no lasting costs. Protection upgrades require us to ensure that the sites and countries can sustain the security into the future. Therefore, we will have minimal out year costs to protect the US investment.

Subcommittee. Where do you see requirements which would drive future costs?

Mr. D'Agostino. As outlined above, NNSA's nonproliferation programs will not be over at the end of the four-year effort. The construction and operation of the plutonium disposition facilities will continue for a number of years and will be a significant portion of DNN's future costs. Further, reactor conversions and the installation of border monitoring equipment to deter illicit trafficking of nuclear and radiological material will continue to be priorities. Furthermore, we expect to rely on the nonproliferation research and development program to continue to be a mainstay across the enterprise, especially as the next generation of nuclear experts are trained and brought into the workforce. Finally, funding for sustainability of security enhancements and training will continue into the future. This funding will be critical to ensure that our initial investment will be sustained in the long run. As DNN works with our foreign government partners to strengthen regulatory and inspection regimes which will provide a more permanent level of sustainability, funding will be needed for annual assurance visits, training, and warranties to ensure that our initial voluntary security enhancement investments are maintained.

In addition, future budget requests may reflect new opportunities and challenges. For example, if we are allowed back into North Korea for denuclearization, our Defense Nuclear Nonproliferation programs will be expected to take the lead, as they have in the past.

Hearing Date/Question Number: March 2, 2011 / Question 32

NUCLEAR SAFEGUARDS

Subcommittee. Mr. Administrator, given its involvement in both the civilian and military sides of nuclear power, the Department of Energy is in a unique position to address proliferation concerns linked to the international expansion of nuclear energy. The United States has a specific interest in ensuring that countries that invest in nuclear energy will implement strong and transparent safeguards of their nuclear materials.

Given the rapid growth in developing countries investing in nuclear energy, why isn't funding for safeguards increasing proportionately to the growth in nuclear power internationally?

Mr. D'Agostino. The budget allocated for safeguards cooperation with developing countries interested in nuclear power is projected to grow over the next five years. Given that most reasonable projections of the growth of nuclear power show that new reactors will not be operational for at least ten years, the budget allocated for these activities is adequate to cover the associated risks.

Subcommittee. Are you ramping up your engagements with other countries interested in nuclear energy? Is it more effective to concentrate safeguard efforts through strengthening international organizations like the International Atomic Energy Agency (IAEA), or to engage directly with nations?

Mr. D'Agostino. NNSA collaborates with over a dozen countries throughout the Middle East, North Africa, and Southeast Asia to strengthen the implementation of safeguards. Each year, NNSA sponsors a number of regional safeguards training courses, often times in coordination with the IAEA, to reach many other countries with which we do not have bilateral relationships. Bilateral cooperation complements IAEA training. NNSA coordinates its safeguards training and outreach closely with the IAEA and other countries that provide similar types of assistance to ensure that there is no duplication of effort. International organizations, like the IAEA, are effective at providing training on general IAEA safeguards requirements. Direct bilateral engagement is more useful when NNSA's international partners need technical guidance to fulfill IAEA safeguards obligations

Hearing Date/Question Number: March 2, 2011 / Question 33

RUSSIAN PLUTONIUM DISPOSITION

Subcommittee. In your fiscal year 2011 request, you requested $100 million as the first installation of a $400 million pledge to dispose of surplus Russian weapons-grade plutonium in Russia. The last time we pursued this program, Congress provided over $200 million for plutonium disposition that was never spent for this purpose when the Russians did not follow through. Mid-way through fiscal year 2011 and following a new request for funding, there is still no agreement. What is the status of this program? Has any progress been made?

Mr. D'Agostino. In April 2010, Secretary Clinton and Russian Foreign Minister Lavrov signed a Protocol amending a 2000 Plutonium Management and Disposition Agreement (PMDA) to reflect political and financial realities in both countries. This Protocol contained a restructured Russian program that relies on fast reactors, operating under certain nonproliferation conditions, to dispose of Russia's weapon-grade plutonium through the irradiation of mixed oxide (MOX) fuel. Because this restructured program is consistent with Russia's national energy strategy, the United States capped its pledge to Russian plutonium disposition at $400 million (subject to appropriated funds) while Russia has announced plans to spend approximately $2.5 billion needed to complete its effort. In addition, U.S., Russian and International Atomic Energy Agency (IAEA) experts have been actively engaged in developing a verification agreement whereby the IAEA would provide international transparency that both sides are disposing of their surplus plutonium consistent with the amended PMDA. We aim to have an approved agreement in 2011. Russia continues to dedicate considerable funding to construction of the BN-800 fast reactor (start-up is estimated for 2013) and has also irradiated prototypic weapon-grade plutonium as MOX fuel in its BN-600 with positive results. The Russian government has submitted the amended PMDA to the Russian Duma for ratification.

Subcommittee. What are the barriers you are encountering to getting this program up and running?

Mr. D'Agostino. Consistent with the amended PMDA, NNSA and Rosatom must agree on a set of milestones for allocation of the U.S. $400 million pledge. While Russia has continued to move forward with the construction of its BN-800 fast reactor, the Russian government has yet to announce certain key decisions about its plutonium disposition program (e.g., the location of its MOX fuel fabrication facility). Due to these uncertainties, NNSA has not yet received input on its proposed milestones, and as a result, we have not requested funding. We will request funding when we feel confident that the Russians and the United States have agreed on a reliable set of milestones.

Subcommittee. When do you anticipate funding will actually be needed?

Mr. D'Agostino. We expect to receive input on the proposed milestones in 2011, and hope to be able to begin committing limited funds to Russian activities by 2012.

Hearing Date/Question Number: March 2, 2011 / Question 34

CONTINUING JUSTIFICATION FOR U.S. PLUTONIUM DISPOSITION

Subcommittee. The primary argument for constructing MOX has been that it was the only way Russia would also get rid of its plutonium, but it is unclear now whether they will get to work on their piece of the plutonium disposition agreement. Given the challenges in getting the Russians to begin work, is the NNSA considering reviving the immobilization alternative, which the National Academy of Sciences estimated would be cheaper? Why are we still tied to the old arrangement?

Mr. D'Agostino. Thus far, the challenge has not been getting the Russians to begin work; the challenge has been getting the Russians to establish the milestones and infrastructure necessary to administer the planned $400 million U.S. contribution. As a result, we are not requesting funds. We will request funding when we feel confident that Russia and the United States have agreed on a reliable set of milestones. With regard to progress, the Russians have already built a BN-600 reactor and are continuing to construct the BN-800 fast reactor that will be operated under certain nonproliferation conditions to dispose of surplus Russian plutonium. In addition, they have co-signed a letter to the IAEA seeking that agency's involvement in a verification regime in each country, attended several meetings in Vienna to negotiate the details of the verification regime, fabricated MOX test fuel containing surplus weapon-grade plutonium and irradiated it in the BN-600 reactor, and the Prime Minister's office has formally sent the amended U.S.-Russia Plutonium Management and Disposition Agreement to the Duma for formal ratification.

With regard to immobilization, MOX was selected because the technology was proven, having been used in Europe for more than three decades, whereas immobilization of weapon-grade plutonium had never been done before and the long-term impact of this waste form in a geologic repository required much additional analysis. In addition, MOX was the only way that Russia would agree to dispose of its surplus plutonium. Russia argued that immobilization is another form of storage and the plutonium in an immobilized waste form could be retrieved and reused for weapons purposes given that the isotopics remained unchanged. MOX serves the nonproliferation goals of the U.S. and Russia better than immobilization as it is a permanent disposal pathway that prevents the plutonium from being used in weapons in the future.

Subcommittee. Now that we have significantly progressed in the construction of MOX, can you now provide a rough estimate for the total costs of the U.S. plutonium disposition program? What will the annual operating costs be to carry out the ongoing program once all construction is complete?

Mr. D'Agostino. The total project cost for MOX is $4.86 billion, and the Waste Solidification Building (WSB) is $345 million. The total cost of U.S. plutonium disposition is not yet known because a baseline for Pit Disassembly and Conversion (PDC) Project has not been approved. The MOX Fuel Fabrication Facility has a projected annual operating cost of $356 million (in FY 2010 dollars). The WSB has a projected annual operating cost of $51 million. The annual operating cost for the PDC project is unknown at this time since baseline approval is pending.

Hearing Date/Question Number: March 2, 2011 / Question 35

SECURITY FOR THE TRANSPORT OF MOX FUEL

Subcommittee. The Nuclear Regulatory Commission (NRC) is seeking to change United States regulations to weaken security requirements for transport and storage of MOX fuel. This would seem to make it easier for nuclear material to be stolen or diverted.

How would such changes be justified? Does NNSA support weakening security requirements for the transport of this weapons-grade material?

Mr. D'Agostino. With respect to the storage of MOX fuel at the MOX Fuel Fabrication Facility on the Savannah River Site, a change in NRC security regulations will not change the protection strategy for that material as it is also subject to NNSA security requirements which either meet or exceed NRC security requirements and will not change.

The NNSA Office of Secure Transportation (OST) will transport the finished MOX fuel assemblies to the receiving NRC-licensed commercial power reactors in a manner consistent with Department of Energy/NNSA security requirements. OST is not licensed by the NRC and, as such, is not subject to NRC security requirements. So any change in NRC security requirements will not change the protection strategy for that material during transportation.

Hearing Date/Question Number: March 2, 2011 / Question 36

FINDING A CUSTOMER FOR MOX

Subcommittee. One of the major hurdles of justifying the investments in constructing MOX to carry out our plutonium disposition agreement with Russia has been that few, if any, commercial nuclear operators have expressed an interest in converting their reactors to use the MOX fuel. NNSA is presently relying solely on the Tennessee Valley Authority to use this fuel in a few of its reactors.

What is the status of finding a customer for the MOX fuel? Does that NNSA have an outreach plan for other utilities as potential customers?

Mr. D'Agostino. The ideal situation would be to have five or six reactors using MOX fuel (assuming 33-40 percent MOX core fractions), optimally operated by as few utilities as possible. The more utilities involved, the more likely it would be that more than two reactors would need refueling in the same spring or fall refueling season.

At present, two utilities, Tennessee Valley Authority and Energy Northwest, are actively assessing the potential use of MOX fuel in a total of six reactors. TVA's consideration of using MOX fuel in up to five reactors is more advanced. As a Federal agency, TVA, like NNSA, must complete National Environmental Policy Act review of major actions prior to decisions to take those actions. TVA is currently a cooperating agency with NNSA in preparing a Supplemental Environmental Impact Statement (SEIS) that analyzes, among other issues, use of MOX fuel in up to five TVA reactors. The SEIS is expected to be completed and Records of Decision issued by both agencies in early to mid 2012. TVA plans to make its decision on future MOX use by late 2012, after which a preliminary fuel supply agreement would be executed if TVA's decision is positive.

Energy Northwest is just beginning its evaluation of using MOX fuel in its Columbia Generating Station in cooperation with Global Nuclear Fuel Americas and Pacific Northwest National Laboratory. The Washington State utility is exploring using MOX fuel designed by Global Nuclear Fuel that would be fabricated at NNSA's MOX Fuel Fabrication Facility.

As the global nuclear fuel vendor with by far the most experience producing and selling MOX fuel, AREVA has been a key participant in the U.S. weapons-origin MOX program since its inception. At the same time, NNSA and its prime contractor Shaw AREVA MOX Services, LLC are also exploring the use of MOX fuel designed by the other two nuclear fuel vendors operating in the U.S., Global Nuclear Fuel (GNF) and Westinghouse. The Energy Northwest program described above and involving GNF-designed MOX fuel is the first example of this expanded approach. MOX Services and NNSA are currently reviewing a proposal from Westinghouse to produce the analyses that would lead to NRC approval of a MOX fuel designed by that company, which could be marketed to its customers.

Finally, NNSA is seeking approval to make modest changes to the MOX facility design so it will be able to produce fuel for virtually any U.S. reactors using any vendors' designs.

Subcommittee. Do you think that the Federal government will need to provide a subsidy to get more interest in using MOX? If so, how much do you think this will cost?

Mr. D'Agostino. The objective of the surplus plutonium disposition program has always been to make the plutonium non-weapons-usable, not to compete with commercial fuel suppliers. It is assumed that utilities will participate if the cost is the same or perhaps lower than the price they pay for uranium oxide fuel. Because this is a nonproliferation program, a variety of factors need to be taken into consideration, including the savings realized by consolidating U.S. plutonium from multiple sites to Savannah River.

Hearing Date/Question Number: March 2, 2011 / Question 37

SECOND LINE OF DEFENSE AND MEGAPORTS, PROGRAM EVALUATION

Subcommittee. Mr. Administrator, one key strategic measure for making technology investment decisions is whether those technologies are performing as intended. Now that a significant number of sites are using detection technologies, we should be able to assess how effective these technologies actually are used in the field and whether they are carrying out the role that was intended.

Have you done performance assessments on the success of the Second Line of Defense technologies to see if countries are using them correctly, and whether they are effective at detecting nuclear smuggling? Are there any indications they are failing to be used as intended (such as countries turning off detectors because of false alarms)?

Mr. D'Agostino. Yes. The Second Line of Defense (SLD) program conducts performance assessments on installed systems in collaboration with our partner countries by carrying out periodic assurance visits, by responding to help desk requests and analyzing help desk data, and by analyzing the daily files received from the radiation portal monitors.

SLD typically provides partner countries with three to five years of sustainability transition support after a site becomes operational depending on the specific country. During this transition period, SLD teams remain engaged with the partner country and conduct periodic performance assessments in the form of "assurance visits" to ensure that the equipment is performing well and that operators are using the equipment correctly. These assurance visits are conducted in conjunction with our partner countries and also serve as a means to determine if there are any ways to improve performance, and to mentor partner countries on how to do their own performance assessments. The results of each assurance visit are documented in SLD's Help Desk, and any issues are tracked through the completion of corrective actions. The effectiveness of these corrective actions is evaluated with the partner country before and during the next assurance visit. Further, analysis on the raw data files of monitor occupancies (i.e. daily files from the portal monitors), received in many cases from partner countries, augments and informs the assurance visits by providing us with detailed data on radiation portal monitor performance.

We have generally found that our partner countries take their radiation detection programs very seriously and are using the equipment effectively. Additionally, the typical, statistical false alarm rate that we would expect to see for SLD deployed monitors is one in ten thousand. We have no evidence that a false alarm rate this low has impacted a partner's willingness to operate the equipment. Although some sites may have a large number of alarms from naturally occurring radioactive material (normal) due to the cargo that moves through the site, we are able to work with the countries to help them more efficiently handle these alarms.

With regard to the effectiveness of these systems, we have seen multiple detections of nuclear and radiological materials including undeclared or mis-declared nuclear and radiological materials, small radiological sources, and at least one reported detection by a monitor maintained

by SLD of special nuclear material in Georgia. We also believe they have a strong deterrence value.

Subcommittee. What are the plans for having the host countries absorb the ongoing costs for these systems, which protect them as much as us? How much of this cost is provided by the United States?

Mr. D'Agostino. SLD is a capacity building program that strengthens the capability of our partner countries to detect illicit trafficking. Thus, the long-term operation and indigenous support of SLD-provided systems is critical to success. Each SLD partner country receives multi-faceted support in the form of maintenance contracts with local providers, replacement of spare parts, Help Desk reach-back support, and refresher training, along with the data analysis, and performance assessment /mentoring described above. Throughout the transition period (typically 3 years but depending on the country it may be longer), SLD and the partner country will work together to gradually transition to full responsibility for the systems by the partner country. SLD also works with countries to help them plan for future budgeting of maintenance and sustainability costs. Examples of countries that have assumed part or all of the burden of training, maintenance and sustainability include Russia, Ukraine, Georgia, Greece, Mexico, Belgium and Spain. SLD sustainability investments to transition SLD systems to full partner country responsibility are approximately 12 percent of the annual budget.

Subcommittee. Are any countries particularly difficult to cooperate with?

Mr. D'Agostino. We find that, on the whole, countries that sign an SLD agreement strongly believe that preventing nuclear and radiological smuggling is an important goal, and are committed to implementing the project in their country. That being said, each project has its own unique challenges. For example, we have seen obstacles and sometimes project delays resulting from natural disasters like hurricanes and cyclones, from protests, other civil unrest, or foreign invasions, and from turnover among key stakeholders in the middle of a project. We also have challenges in many SLD locations due to remoteness of sites/ports from commercial hubs/city centers, as well as overall security concerns in countries such as Lebanon, which limit the amount of time project teams can stay in-country. In general, we find that the willingness and shared sense of purpose is present in the relationships with our partner countries, and our project teams have learned to be flexible and adaptive in addressing and overcoming the inevitable challenges that arise during project implementation.

Hearing Date/Question Number: March 2, 2011 / Question 38

SECOND LINE OF DEFENSE AND MEGAPORTS, FUTURE FUNDING

Subcommittee. Mr. Administrator, your budget request indicates that your requests for Second Line of Defense and Megaports will increase substantially in the future. It seems to me that the Administration often transferred funding from these activities whenever it was needed in other parts of the nonproliferation budget. What is the rationale of continuing to plan for significant resources in this area at the expense of other nonproliferation activities?

Mr. D'Agostino. Second Line of Defense (SLD) is a critical part of the International Nuclear Materials Protection and Cooperation (INMP&C) program strategy to secure nuclear material sites, prevent the loss or diversion of weapons-usable material, and to deter, detect, interdict their illegal trafficking. Funding for SLD is allocated based on a "target out approach," which places highest priority on detection projects that are closest to large stockpiles of nuclear material. Close physical proximity to source materials increases the probability of detecting their theft or smuggling. This approach results in securing special nuclear material at its source as the primary priority. However, no system is perfect and we know that some material has moved out of sites and out of regulatory control, redundancy is crucial to ensure that nuclear material does not make it into the hands of adversaries through the deployment of a secondary system to detect nuclear materials in transit.

Even with the hypothetical situation of unlimited resources, it is not possible to completely eliminate all proliferation risk and not all threats are equally probable or consequential. Therefore, the NNSA attempts to minimize variable risks by addressing the most credible and most serious threats before attempting to mitigate lesser threats. To implement this approach, NNSA prioritizes activities considered part of the first line of defense against nuclear terrorism and proliferation, including: funding for efforts to secure special nuclear materials at their site of origin, as it becomes progressively more difficult to detect and secure such material once it has been moved; and for material disposition to reduce the total amount of material that requires security. NNSA then focuses down the risk continuum on second line of defense activities to detect materials in transit, especially across international borders and other transit sites. These efforts complement each other and are significant components of the NNSA risk mitigation strategy, rather than competing priorities for funding. This out-year funding profile is the estimated baseline requirement to achieve the projected scope of international crossing points, including ports, airports, and land borders, that SLD has identified for radiation detection systems.

In addition, as a capacity building program, SLD is instrumental in ensuring that priority countries worldwide have the equipment and training to detect and deter illicit trafficking and thus engage as full partners in this effort. Many of these countries become regional leaders in this effort. As the US cannot carry the full burden, SLD helps to ensure that the prevention of illicit trafficking becomes a global effort.

Hearing Date/Question Number: March 2, 2011 / Question 39

DISPOSITION OF MATERIALS REMOVED FROM OTHER COUNTRIES

Subcommittee. Mr. Administrator, nuclear material brought back to the United States by the nonproliferation program needs a disposition pathway. One of the places that this material goes when it is removed is to the Savannah River Site, which H-Canyon has played a key role in processing that fuel before eventual geological disposal. Yet the Department of Energy is planning on placing H-Canyon in standby.

Would H-Canyon's closure affect NNSA's nonproliferation programs ability to carry out its work?

Mr. D'Agostino. Two of NNSA's nonproliferation programs, the Global Threat Reduction Initiative (GTRI) and the Fissile Materials Disposition's U.S. Highly Enriched Uranium (HEU) Disposition program, utilize H-Canyon. For GTRI, suspending campaigns in H-Canyon would not affect NNSA's ability to bring additional fuel from other countries to the United States. NNSA has been working closely with DOE's Office of Environmental Management (EM), which is responsible for the storage and ultimate disposition of this material, to redesign and modify the storage capabilities at the Savannah River Site's L-Basin facility to accommodate all the fuel that NNSA plans to bring to the United States through the end of the program. NNSA also works closely with the Office of Nuclear Energy since it is responsible for Idaho National Laboratory, another storage facility that contains fuel NNSA has returned from other countries.

To help position H-Canyon for possible future new missions, the Department is planning to transition H-Canyon and HB-Line facilities into modified operations in fiscal year 2012. The Secretary of Energy has determined that no processing of aluminum-clad used nuclear fuel (UNF) will occur until the recommendations of the President's Blue Ribbon Commission (BRC) on America's Nuclear Future are issued and evaluated by the Department. The proposed use of H-Canyon will still allow the flexibility to process aluminum-clad UNF or any other appropriate nuclear materials, in the future, should that decision be made.

For the U.S. HEU Disposition program, the inclusion of HEU used nuclear fuel in the Department's surplus HEU Disposition Program has always been contingent on that material being recovered/purified through solvent extraction in H-Canyon for other reasons, such as to convert the material to a form suitable for disposal.

Subcommittee. If so, have you already identified alternatives to using Savannah River facilities? Will this increase the costs of carrying out these activities within the Defense Nuclear Nonproliferation appropriation?

Mr. D'Agostino. If it is decided not to recover that material in H-Canyon, it will not become part of the U.S. HEU Disposition Program, but will remain in EM's used nuclear fuel disposition program. If H-Canyon operation is discontinued, the HEU Blend Down program with the Tennessee Valley Authority will not be expanded beyond current commitments.

Subcommittee. Can you provide information on interrelationships between the Defense Nuclear Nonproliferation activities and other non-NNSA Department of Energy resources?

Mr. D'Agostino. The Office of Defense Nuclear Nonproliferation (DNN) coordinates with other equities in NNSA and programs throughout the Department, particularly with the NNSA Office of Defense Programs and the DOE Offices of Nuclear Energy and Environmental Management. DNN also utilizes NNSA and DOE laboratories in order to capitalize on the expertise throughout the complex. Just as our nuclear stockpile deters countries from attacking the United States and our allies, our nonproliferation programs send a clear message that we are committed to preventing countries and terrorists from obtaining the materials, technologies and expertise that might cause us harm. Working together across the nuclear security enterprise and with our U.S. interagency colleagues in the Departments of State, Defense, Homeland Security, the Nuclear Regulatory Commission, FBI, intelligence community, as well as with international organizations and partners in over 100 countries, we carry out these efforts globally on a daily basis.

Hearing Date/Question Number: March 2, 2011 / Question 40

HELIUM – 3

Subcommittee. Mr. Administrator, the last few years, there were tremendous investments in radiation detection equipment across the Federal government only to find out that the helium-3, which is required to operate those detectors, was in critical supply.
What is the status of the efforts to address the shortage?

Mr. D'Agostino. It became evident earlier this year that available supplies of ^{3}He would not meet projected demand, and the National Security Staff established an interagency task force to address the problem. The task force chartered a survey of projected government and private sector requirements for ^{3}He, reviewed options for increasing supply, and provided broad policy guidance for the allocation of available stocks.

Together with other U.S. government agencies, NNSA is evaluating alternative neutron detection technologies that could be deployed to replace ^{3}He tubes. Several alternatives are expected to become available commercially for use in the field within the next two to three years. These options include several lithium and boron based detection methods that will directly replace ^{3}He panels in portal monitors. Several technologies have achieved equivalent or better sensitivity and gamma rejection relative to helium-3 and are undergoing reliability and environmental testing at this time.

The response to the technical challenge is an excellent example of how our Nonproliferation Research and Development Office supports the development of new technology to prevent critical detection gaps.

Subcommittee. What specifically is the continuing impact to NNSA's nonproliferation activities?

Mr. D'Agostino. The Second Line of Defense (SLD) program is able to continue to deploy portal monitors as part of its Core and Megaports Programs as past allotments, including 2000 liters recently authorized by the NSC, provide sufficient ^{3}He to support SLD activities well into FY 2013.

SLD has already begun a procurement for a new radiation portal monitor that uses an alternate (i.e., not ^{3}He-based) technology to detect neutrons; the new portals are expected to be available before the current supply of monitors with ^{3}He is exhausted. Consequently, SLD does not expect any impact to its mission as a result of the shortage of ^{3}He.

Hearing Date/Question Number: March 2, 2011 / Question 41

ELIMINATION OF WEAPONS GRADE PLUTONIUM PRODUCTION PROGRAM (EWGPP)

Subcommittee. Is there any remaining work to be accomplished?

Mr. D'Agostino. The last of the plutonium production reactors were permanently shut down in April 2010. The only remaining work is to complete construction of the fossil-fuel power plant near Zheleznogorsk, which is nearing completion and is about 97 percent complete. About $12.9 million of work scope to be completed currently under contract is related to the start up of the power plant. Completion of the power plant is scheduled for the latter half of 2011.

Subcommittee. How much are the remaining balances within this program that could be used for other activities? Has a plan been formulated to use these balances?

Mr. D'Agostino. The Elimination of Weapons Grade Plutonium Production Program carried forward into FY 2011 a total of $75 million in unobligated balances. Of that amount, $30 million has been identified in the FY 2012 budget request to be used to offset other Department priorities; however, P.L. 112-10 rescinds prior year balances of $45 million. The remaining $29 million is project contingency for the Zheleznogorsk Plutonium Production Elimination Project (ZPPEP). To date, $7 million of the $29 million remaining for project contingency has been obligated to cover contract extension costs and increases associated with General and Administrative rates. It is unknown if additional contingency funds for the project will be necessary for closeout of the Program; however, we do not anticipate any significant amount of funding to remain at the end of the project.

Hearing Date/Question Number: March 2, 2011 / Question 42

GAO HIGH RISK AND SAFETY OVERSIGHT

Subcommittee. The Government Accountability Office found in their March 2010 review that although the Department incorporated some aspects of nuclear safety oversight in its management reviews of the MOX Fuel Fabrication Facility and the Waste Solidification Building (WSB) projects, internal oversight has been limited. The GAO's conclusion was that internal groups' exclusion from the WSB project reviews, as well as the limited involvement in the WSB project reviews, creates a gap in oversight of the WSB and similar facilities.

Given that the MOX facility has a history of problems with construction and the NNSA's continued standing on the GAO High Risk for waste fraud and abuse, what is the NNSA specifically doing to improve oversight and execution of this particular group of projects?

Mr. D'Agostino. NNSA maintains a rigorous, structured, comprehensive oversight program for its projects and facilities. This effort includes reviews by our dedicated project teams, internal oversight organizations, and external reviews. In this instance, both the WSB and MOX Fuel Fabrication Facility (MFFF) projects maintain an Annual Assessment Plan that defines specific assessments that are to be conducted throughout the year. Areas of review include but are not limited to: construction; industrial safety; quality assurance; startup, testing, and operations; nuclear safety; project management/controls; environmental compliance; and engineering design. In addition, areas that are identified as problematic throughout the year are made the subject of directed assessments. NNSA also conducts assessments of vendor activities throughout the United States and Europe including design, procurement, and fabrication of gloveboxes and process equipment. These assessments focus on quality, technical requirements and cost/schedule performance.

To complement the assessments conducted by our project teams, the following groups that are external to the project teams performed thorough, detailed project reviews recently:

- The NNSA's Office of Fissile Materials Disposition performed reviews of the federal project team's assessment program.
- The NNSA's Office of Enterprise Project Management performed annual Independent Project Reviews.
- The NNSA's Office of Fissile Materials Disposition performed quality assurance audits of the prime contractors and construction subcontractors.
- The NNSA's Chief of Defense Nuclear Safety, whose responsibilities include oversight in the area of integrating safety into the design of nuclear facilities, has provided oversight of the WSB project. The organization reviewed the most recent nuclear safety basis change and has issued additional nuclear safety guidance and expectations for use by the WSB project team.

Additionally, the U.S. Nuclear Regulatory Commission, which is responsible for licensing of the MFFF, provides ongoing oversight of the MFFF construction both through their Resident Inspectors and visiting regional teams that focus on specific topical areas (e.g., civil/structural, process equipment, piping, and electrical/mechanical systems). The latest NRC annual report

stated that construction of the MFFF was proceeding in an acceptable manner and there were no areas that needed improvement.

In fiscal year (FY) 2011, numerous external assessments of both the WSB project and the MFFF project are planned including independent peer reviews, quality assurance audits, project design reviews and external independent project reviews. The NRC will conduct numerous technical assessments of the MFFF throughout the year.

I am confident that our internal and external assessment and oversight programs are comprehensive and inclusive such that I have reliable information on the safety and performance of these projects and facilities.

Subcommittee. What have you done to control the costs of construction for these facilities, so that additional funds are not required to be redirected from more active nonproliferation activities?

Mr. D'Agostino. The WSB and MFFF projects control the costs for construction through the use of comprehensive reporting and project control tools, active day-to-day oversight of construction activities in the field, inclusion of challenging incentive fee structures in their contracts, and sharing of lessons learned with other DOE active construction projects.

The WSB and MFFF Federal Project Directors have instituted disciplined reporting, risk management, and trend programs to monitor performance and technical risks. Both project baselines were established through comprehensive, bottoms-up estimates using sound cost estimating principals. Additionally, detailed risk analyses were performed that identified specific areas of risk the projects may experience. The risk analyses formed the basis for establishment of project contingency included in the project baselines to address these issues when they are experienced. The Federal Project Directors must approve the utilization of any contingency on these projects and monitor the use of the contingency and contractor management reserve to assure that the utilization rate is appropriate for the phase of the project to support successful completion.

Significantly, the MFFF and WSB projects both have multi-faceted fee structures in their respective contracts to motivate the contractors to perform within cost and schedule; incentivize other areas such as safety, quality, and business systems; and assure functionality of the facility once completed. There are opportunities for the contractors to share cost savings with NNSA once the projects are complete or to share in cost overruns should they occur. There is significant profit that may be earned by the contractors directly tied to their execution of these projects.

Despite our best efforts to monitor the cost and schedule performance of our contractors and redirect them where necessary, we continue to observe unanticipated challenges to both cost and schedule performance. Examples include: competition from the commercial nuclear industry for highly specialized engineers and trained construction workers, a lack of qualified suppliers resulting in limited competition for subcontracts and services, and the need to embed engineers and quality inspectors with our vendors to ensure the job is being performed correctly.

Hearing Date/Question Number: March 2, 2011 / Question 43

COSTS FOR THE PIT DISASSEMBLY AND CONVERSION PROJECT

Subcommittee. Mr. Administrator, you report that you have completed an independent cost estimate as part of your project management improvements to support the latest milestone for the Pit Disassembly and Conversion (PDC) project. But you still have not awarded the milestone and you still are not reporting an updated cost range in your budget request. How much do you expect the PDC to cost?

Mr. D'Agostino. As required by DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets, we are following a rigorous process to define, establish and validate a cost range for the project. The estimate is currently being reviewed and refined based on programmatic goals and commitments. We will keep you informed as soon as we finalize the cost range.

Subcommittee. The Government Accountability Office found in March 2010 that NNSA has not sufficiently planned for the maturation of critical technologies to be used in pit disassembly and conversion operations. Do you agree with this assessment? If so, what are you doing to address the issue? Will those maturation 'unknowns' be adequately captured in your latest cost ranges, or should the Committee expect continued growth as more design is completed?

Mr. D'Agostino. The GAO assessment was based on the Pit Disassembly & Conversion Facility (PDCF) project moving towards a Critical Decision 2 (CD-2) and was accurate for that point in time. However, in November 2009, the project was authorized to pursue an alternative to combine Environmental Management's Plutonium Preparation Project and NNSA's PDCF in K-Area at the Savannah River Site. The combined project is in the conceptual design phase and pursuing CD-1 in lieu of CD-2, which does not require a maturation level as high as identified in the GAO report. The Technology Readiness Levels for the PDC project processes are sufficiently mature to support a CD-1 approval as defined in the DOE Guide 413.3-4.

Hearing Date/Question Number: March 2, 2011 / Question 44

LARGE INCREASES FOR THE PIT DISASSEMBLY AND CONVERSION PROJECT

Subcommittee. Even though no alternative selection was reported in your budget request, you nevertheless request $176 million to fund the Pit Disassembly and Conversion (PDC) project. How do you expect to execute this level of funding if a decision on how to proceed with the project have not yet been made?

Why is such a high level of new funding needed when there are already considerable balances remaining from prior year appropriations due to the repeated delays? Can you provide some details on your specific plan to execute these funds and advance the project?

Mr. D'Agostino. The beginning uncosted obligations carried into FY 2011 for PDC Total Estimated Cost (TEC) was $22.7 million of which $20.2 million is costed or committed as of February 2011. The uncommitted balances carried forward have been extremely beneficial during the continuing resolution since we have only obligated $1.5 million of new FY 2011 funds to continue the planned work-scope for PDC without impact. The $176 million for PDC TEC is necessary to support mobilization of the project design team that would enable a FY 2013 early construction start. This early construction is necessary to support project completion and the start of pit processing as soon as reasonably possible. The funds support:

- Complete mobilization of the project's design office from Denver, CO to SRS;
- Complete procurement work packages for mobilization and execution of early construction activities (specifically, demolition and removal work in K-Area), long lead procurements, and security/utility support infrastructure;
- Complete design for Operation/Engineering Center;
- Continue design activities in preparation for Critical Decision 2

If the decision on the PDC Project is delayed or changes the execution strategy from what NNSA has proposed, a revised execution plan would be developed governing the projected FY 2012 expenditures. At the same time, decisions on maintaining the current project design workforce would have to be made until a revised execution plan was approved.

Hearing Date/Question Number: March 2, 2011 / Question 45

FEEDSTOCK FOR MOX FUEL FABRICATION FACILITY

Subcommittee. Mr. Administrator, when we asked NNSA last year what are the key milestones to show that enough feedstock will be available when the MOX plant begins production, you responded that there were two: The conversion of 50 kilograms of plutonium metal to oxide at Los Alamos by the end of 2010, and the completion of the PDCF CD-1 (i.e., selecting an option and developing the cost and schedule range) by December 2010.

We have already noted that the CD-1 milestone for PDCF was not attained. Has LANL completed its goal for conversion of plutonium metal to oxide? Since there are indicators that milestones are not being met, do you anticipate a problem in supplying feedstock to MOX? Why or why not?

Mr. D'Agostino. LANL completed conversion of the 50 kg of plutonium metal to oxide in November 2010. As of March 17, 2011, LANL has converted 165 kg, and is on schedule to meet its goal of producing a cumulative 225 kg by the end of FY 2011.

Subcommittee. Are you doing any work to consider alternatives, such as increasing the throughput of the ARIES production line at LANL?

Mr. D'Agostino. Yes. NNSA has requested that LANL issue a report later this year that will present options for increasing the ARIES reliability and throughput.

Subcommittee. If there is no feedstock problem now, at what point in time and under what circumstances would you consider there to be a real problem in the program?

Mr. D'Agostino. NNSA continues to closely monitor the situation. The MOX Facility is scheduled to begin operations with existing feed material consisting of a combination of plutonium oxides already in inventory at the Savannah River Site and material currently being produced at the LANL. With the availability of existing feed material, various options to increase the supply combined with a slower ramp up rate for completed MOX fuel assemblies than originally planned, DOE does not anticipate a feed supply shortage for the MOX Facility prior to PDC beginning full-scale operations, provided the PDC budget request is supported.

Hearing Date/Question Number: March 2, 2011 / Question 46

PENSION PAYMENTS

Subcommittee. Mr. Administrator, the nonproliferation budget request includes $71 million to pay pensions for legacy employees who once worked at University of California operated sites. An additional $168 million is requested under the "Weapons Activities" account.

- Why is the payment of pensions for contractor employees a responsibility of the Nonproliferation program? Further, why specifically is it a cost of the Nonproliferation and Verification R&D program, whose purpose is to develop technologies for detection and verification?

- Why is this being funded in two places? Did these workers do both Weapons and Nonproliferation work?

- What are the long-term costs associated with these direct payments?

- Why are they showing up for the first time in this budget request as specific amounts?

Mr. D'Agostino. During the time that the University of California (UC) operated Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) the employees at the laboratories were UC employees and they participated in the University of California Retirement Plan (UCRP). Around the time that DOE's contracts with the laboratories ended, the Department provided assets to the UCRP for the liabilities associated with UC retirees at both laboratories. At that time, the Department also agreed to provide additional funding, subject to the availability of appropriations, as may become necessary to adequately fund the laboratory retirees' pension benefits.

In accordance with the contract with the University of California for the legacy pension benefits NNSA will reimburse $224 million in pension plan contributions in FY 2012. Because the costs associated with payments to the UCRP are legacy costs, NNSA is unable to recover the costs associated with the liability to the UCRP through indirect cost pools as NNSA does for pension costs associated with pension plans sponsored by current NNSA contractors. In FY 2011, NNSA addressed this legacy liability during the year of execution, by taxing all NNSA programs doing business at these sites. However, this liability is projected to grow significantly starting in FY 2012, and over the Future-Years Nuclear Security Program period, and, therefore, continuing the FY 2011 funding methodology does not appear viable. Accordingly, NNSA included a specific request for this legacy pension cost in both the Weapons Activities, and Defense Nuclear Nonproliferation (DNN) Appropriations based on the proportional share of work that each appropriation has at the two laboratories, as these contractor retirees performed work supported by both appropriations. For DNN, the funding is requested in the Nonproliferation and Verification R&D program as this program does more work at these two laboratories than any of the other NN programs. The long-term projected cost associated for this NNSA liability is as follows: FY 2013-$291 million, FY 2014-$381 million, FY 2015-$433 million, and FY 2016-$422 million.

Hearing Date/Question Number: March 2, 2011/Question 47

MANAGEMENT CORRECTIVE ACTIONS

Subcommittee. In the past, many overseas programs in Defense Nuclear Nonproliferation have carried large balances of carryover from year to year.

What corrective actions have you taken to reduce these balances?

Mr. D'Agostino. Over the past five years, the Defense Nuclear Nonproliferation (DNN) program has put considerable effort into reducing its uncommitted carryover balances from 15.5% to 10.1%. The programs current burn rate is nearly $200 million per month. The 10.1% number represents 60 to 90 days of normal operation; therefore, reducing much lower begins to present an operational challenge to the program under a Continuing Appropriations Resolution of any duration. During the development of the five-year Future Years Nuclear Security Program estimates, DNN has considered carryover balances by program as one factor in deciding budget requests for follow-on years. In addition, DNN has developed milestone based contracts that allow the program to pay for work completed in a faster manner.

Subcommittee. Does NNSA have unobligated balances from prior fiscal years that could be used to support the Defense Nuclear Nonproliferation account?

Mr. D'Agostino. A total of $30 million in unobligated balances from the Elimination of Weapons Grade Plutonium Production (EWGPP) Program was proposed for use as an offset to the Department's FY 2012 Budget Request.

Total DNN unobligated balances at year-end were approximately $83.7 million, including $75 million for the EWGPP Program. Of that amount, $30 million has been identified in the FY 2012 budget request to be used to offset other Department priorities; however, P.L.110-12 rescinds prior year balances of $45 million. The program is estimating approximately $29 million will be required to complete and closeout the Zheleznogorsk Plutonium Production Elimination Project.

Of the remaining $8.7 million, $5.9 million was tied to the Nonproliferation Research and Development program, and largely resulted from Congressionally-directed university funding for the Nuclear Science and Security Consortium that had not been awarded by year end. This contract was awarded in FY 2011.

Subcommittee. Please provide to the Committee the latest cost and commitments report.

Mr. D'Agostino. The formal semi-annual report on cost and commitments will be provided by mid-May. Below is the cost and commitments as of the end of February.

Table 1 -- Obligation Status

Expense Type	Program	Construction Project Title	A Obligation * Authority	B YTD Obligations	C B / A Obligated as a % of Obligation Authority	D Expired Funds	E A - B - D YTD Unobligated	F E / A Unobligated as a % of Obligation Authority
			Data					
Operating								
	Nonproliferation and Verification Research and Development		356,748,118	105,418,786	29 5%	0	251,329,332	70 5%
	Elimination of Weapons Grade Plutonium Production		29,870,418	500,901	1 7%	0	29,369,517	98 3%
	Nonproliferation and International Security **		155,982,428	40,930,607	26 2%	0	115,051,821	73 8%
	International Nuclear Materials Protection and Cooperation		590,151,154	147,815,681	25 0%	0	442,335,473	75 0%
	U S Surplus Fissile Materials Disposition		304,891,481	42,493,711	13 9%	0	262,397,770	86 1%
	Russian Surplus Fissile Materials Disposition		47,500,369	0	0 0%	0	47,500,369	100 0%
	Global Threat Reduction Initiative		558,990,881	165,682,346	29 6%	0	393,308,535	70 4%
	Congressionally Directed Projects - Defense Nuclear Nonproliferation		0	0	-	0	0	-
Operating Total			2,044,134,849	502,842,032	24 6%	0	1,541,292,817	75 4%
Construction								
	Nonproliferation and Verification Research and Development							
		09D192000, Nonproliferation And International Security Center (NISC), LANL	5,604	0	0 0%	0	5,604	100 0%
	U S Surplus Fissile Materials Disposition							
		99D141020, Waste Solidification Building, Savannah River, SC	57,000,000	25,000,000	43 9%	0	32,000,000	56 1%
		Pit Disassembly And Conversion Facility, Savannah River, SC	50,000,000	1,496,300	3 0%	0	48,503,700	97 0%
		99D143000, Mixed Oxide Fuel Fabrication Facility, Savannah River, SC	475,788,000	187,000,000	39 3%	0	288,788,000	60 7%
Construction Total			582,793,604	213,496,300	36 6%	0	369,297,304	63 4%
Grand Total			2,626,928,453	716,338,331	27 3%	0	1,910,590,122	72 7%

Tabel 2 -- Cost Status

Expense Type	Program	Construction Project Title	A Beginning Uncosted Obligations	B YTD Obligations (incl PY Deobs)	C A + B Costing Authority (Obligated Funds)	D YTD Cost	E D / C Costed as a % of Costing Authority	F C-D YTD Ending Uncosted Obligations	G F / C Uncosted as % of Costing Authority
			Data						
Operating									
	Nonproliferation and Verification Research and Development		112,576,667	105,418,786	217,995,454	124,737,057	57 2%	93,258,397	42 8%
	Elimination of Weapons Grade Plutonium Production		60,428,439	500,901	60,929,340	21,345,271	35 0%	39,584,069	65 0%
	Nonproliferation and International Security **		93,930,417	40,924,801	134,855,218	64,306,107	47 7%	70,549,111	52 3%
	International Nuclear Materials Protection and Cooperation		604,561,746	147,815,681	752,377,427	205,611,687	27 3%	546,765,740	72 7%
	U S Surplus Fissile Materials Disposition		125,324,976	42,493,711	167,818,688	47,057,712	28 0%	120,760,975	72 0%
	Russian Surplus Fissile Materials Disposition		39,900,772	0	39,900,772	2,277,849	5 7%	37,622,923	94 3%
	Global Threat Reduction Initiative		187,381,478	165,682,346	353,063,824	125,532,070	35 6%	227,531,754	64 4%
	Congressionally Directed Projects - Defense Nuclear Nonproliferation		2,019,670	0	2,019,670	1,014,003	50 2%	1,005,668	49 8%
Operating Total			1,226,124,230	502,836,226	1,728,960,456	591,881,757	34 2%	1,137,078,699	65 8%
Construction									
	Nonproliferation and Verification Research and Development								
		09D192000, Nonproliferation And International Security Center (NISC), LANL	0	0	0	0	-	0	-
	U S Surplus Fissile Materials Disposition								
		99D141020, Waste Solidification Building, Savannah River, SC	61,697,053	25,000,000	86,697,053	27,812,548	32 1%	58,884,505	67 9%
		Pit Disassembly And Conversion Facility, Savannah River, SC	13,064	1,496,300	1,509,364	0	0 0%	1,509,364	100 0%
		99D143000, Mixed Oxide Fuel Fabrication Facility, Savannah River, SC	517,560,712	187,000,000	704,560,712	207,046,193	29 4%	497,514,519	70 6%
Construction Total			579,270,829	213,496,300	792,767,129	234,858,741	29 6%	557,908,387	70 4%
Grand Total			1,805,395,059	716,332,526	2,521,727,584	826,740,498	32 8%	1,694,987,086	67 2%

* *Does not include $46 million in EWGPP funds in DOE Reserve A total of $30 million is proposed as an offset to the FY2012 Budget Request and $16 million is being considered as a source of funds to address emergent execution issues fo

* * Includes HEU Transparency Implementation and Global Initiatives for Proliferation Prevention

Table 3 -- Commitment Status

Expense Type	Program	Construction Project Title	A Data YTD Ending Uncosted Obligations	B Total Uncosted Committed Obligations	C B / A Commited as a % of Uncosted Obligations	D A - B Total Uncosted Uncommitted Obligations	E D / A Uncommitted as a % of Uncosted Obligations
Operating							
	Nonproliferation and Verification Research and Development		93,258,397	41,375,656	44 4%	51,882,741	55 6%
	Elimination of Weapons Grade Plutonium Production		39,584,069	38,940,919	98 4%	643,150	1 6%
	Nonproliferation and International Security **		70,549,111	32,383,760	45 9%	38,165,352	54 1%
	International Nuclear Materials Protection and Cooperation		546,765,740	409,967,573	75 0%	136,798,167	25 0%
	U S Surplus Fissile Materials Disposition		120,760,975	87,391,914	72 4%	33,369,061	27 6%
	Russian Surplus Fissile Materials Disposition		37,622,923	14,830,278	39 4%	22,792,645	60 6%
	Global Threat Reduction Initiative		227,531,754	139,053,449	61 1%	88,478,305	38.9%
	Congressionally Directed Projects - Defense Nuclear Nonproliferation		1,005,668	910,691	90 6%	94,977	9 4%
Operating Total			1,137,078,699	764,854,239	67 3%	372,224,460	32 7%
Construction							
	Nonproliferation and Verification Research and Development						
		09D192000, Nonproliferation And International Security Center (NISC), LANL	0	0	-	0	-
	U S Surplus Fissile Materials Disposition						
		99D141020, Waste Solidification Building, Savannah River, SC	58,884,505	36,930,947	62 7%	21,953,558	37 3%
		Pit Disassembly And Conversion Facility, Savannah River, SC	1,509,364	0	0 0%	1,509,364	100 0%
		99D143000, Mixed Oxide Fuel Fabrication Facility, Savannah River, SC	497,514,519	493,570,295	99 2%	3,944,224	0 8%
Construction Total			557,908,387	530,501,242	95 1%	27,407,146	4 9%
Grand Total			1,694,987,086	1,295,355,481	76 4%	399,631,605	23 6%

Table 4 -- Cost + Commitment Status

Expense Type	Program	Construction Project Title	A Data Costing Authority (Obligated Funds)	B YTD Cost	C Total Uncosted Committed Obligations	D B + C Current Costs + Commitments	E D / A Costed or Committed as a % of Costing Authority	F A - D Total Uncommited Obligations	G F / A Uncommitted as % of Costing Authority
Operating									
	Nonproliferation and Verification Research and Development		217,995,454	124,737,057	41,375,656	166,112,713	76 2%	51,882,741	23 8%
	Elimination of Weapons Grade Plutonium Production		60,929,340	21,345,271	38,940,919	60,286,190	98 9%	643,150	1 1%
	Nonproliferation and International Security **		134,855,218	64,306,107	32,383,760	96,689,866	71 7%	38,165,352	28 3%
	International Nuclear Materials Protection and Cooperation		752,377,427	205,611,687	409,967,573	615,579,260	81 8%	136,798,167	18 2%
	U S Surplus Fissile Materials Disposition		167,818,688	47,057,712	87,391,914	134,449,626	80 1%	33,369,061	19 9%
	Russian Surplus Fissile Materials Disposition		39,900,772	2,277,849	14,830,278	17,108,128	42 9%	22,792,645	57 1%
	Global Threat Reduction Initiative		353,063,824	125,532,070	139,053,449	264,585,519	74 9%	88,478,305	25 1%
	Congressionally Directed Projects - Defense Nuclear Nonproliferation		2,019,670	1,014,003	910,691	1,924,693	95 3%	94,977	4 7%
Operating Total			1,728,960,456	591,881,757	764,854,239	1,356,735,996	78 5%	372,224,460	21 5%
Construction									
	Nonproliferation and Verification Research and Development								
		09D192000, Nonproliferation And International Security Center (NISC), LANL	0	0	0	0	-	0	-
	U S Surplus Fissile Materials Disposition								
		99D141020, Waste Solidification Building, Savannah River, SC	86,697,053	27,812,548	36,930,947	64,743,495	74 7%	21,953,558	25 3%
		Pit Disassembly And Conversion Facility, Savannah River, SC	1,509,364	0	0	0	0 0%	1,509,364	100 0%
		99D143000, Mixed Oxide Fuel Fabrication Facility, Savannah River, SC	704,560,712	207,046,193	493,570,295	700,616,488	99 4%	3,944,224	0 6%
Construction Total			792,767,129	234,858,741	530,501,242	765,359,983	96 5%	27,407,146	3 5%
Grand Total			2,521,727,584	826,740,498	1,295,355,481	2,122,095,979	84 2%	399,631,605	15 8%

Data source is the Department of Energy's Standard Accounting and Reporting System (STARS)

WITNESSES

	Page
Cook, Dr. D. L	1
D'Agostino, Thomas	1, 127
Donald, Admiral K. H	127
Finan, Brig. Gen. S. E	1
Harrington, Anne	127