DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 2014 AND THE FUTURE YEARS DEFENSE PROGRAM

WEDNESDAY, MAY 8, 2013

U.S. SENATE,
SUBCOMMITTEE ON STRATEGIC FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

STRATEGIC FORCES PROGRAMS OF THE NATIONAL NUCLEAR SECURITY ADMINISTRATION AND THE DEPARTMENT OF ENERGY'S OFFICE OF ENVIRONMENTAL MANAGEMENT

The subcommittee met, pursuant to notice, at 2:45 p.m. in room SR–232A, Russell Senate Office Building, Senator Mark Udall (chairman of the subcommittee) presiding.

Committee members present: Senators Udall, Donnelly, and King.

Majority staff member present: Jonathan S. Epstein, counsel.

Minority staff member present: Robert M. Soofer, professional staff member.

Staff assistants present: Lauren M. Gillis.

Committee members' assistants present: Casey Howard, assistant to Senator Udall; Marta McLellan Ross, assistant to Senator Donnelly; and Lenwood Landrum, assistant to Senator Sessions.

OPENING STATEMENT OF SENATOR MARK UDALL, CHAIRMAN

Senator UDALL. Good afternoon. The Subcommittee on Strategic Forces will come to order.

This afternoon we will receive testimony from the National Nuclear Security Administration (NNSA) regarding their fiscal year 2014 budget request. We will also hear from the Department of Energy's (DOE) Office of Environmental Management (OEM) and the Government Accountability Office (GAO).

As I just did earlier, I want to thank all of the witnesses for taking time out of your busy schedules to appear today. I hope this hearing will be informative not only for the Senators in attendance today but to you all in understanding our views on different aspects of your programs.

I mentioned to all of our witnesses that it is a busy day on the Hill. I anticipate a Senator to drop by, but that is no indication of the importance that we all hold in the work that you do.

We have two panels today. The first panel will feature the Acting Administrator of the NNSA, Ms. Neile L. Miller. For the second panel, we will have Dr. Don L. Cook, the Deputy Administrator for Defense Programs at DOE; Admiral John M. Richardson, USN, the Deputy Administrator for Naval Reactors at DOE; Mr. David G. Huizenga, the Senior Advisor for Environmental Management (EM) at DOE; and Mr. David C. Trimble, Director for Natural Resources and Environment at the GAO.

In terms of logistics, I thought we could give Ms. Miller a half hour to about 3:15 p.m. Now, let us see. We are going to adjust that, but about a half hour. Then the second panel will have 45 minutes to an hour. This should have us finishing up 3:45 p.m. to 4 p.m. We want to make sure people have time to really explore the topics today.

With that, let me make a few opening remarks.

For the fiscal year 2014, the budget request for the NNSA is $7.868 billion, which is an increase of 4.1 percent relative to fiscal year 2012. Accounting for shifts in budget categories, the request is about 2.7 percent below the section 1251 report number of $8.4 billion. While reductions are notable, they are less than other programs are facing in our current budget climate, especially with sequestration being in effect.

For the Naval Reactors program, the fiscal year 2014 budget is $1.246 billion, which is an increase of 15.1 percent. That increase is mainly for refueling a test and training reactor and construction of a spent fuel handling facility, both of which are important to the Department of Defense (DOD) fleet operations.

The OEM request is $5.62 billion, down 1.2 percent from fiscal year 2012. Not accounted for at the present time is how fiscal year 2013 reductions due to sequestration will affect these programs in fiscal year 2014 and beyond. I understand the NNSA will lose about $600 million. The EM program will lose about $420 million, and assuming a similar cut of 8 percent, that would yield a reduction for naval reactors of about $87 million.

There are several issues I would like to explore in this hearing.

First, I would like to know from both panels what effects sequestration will have on programs already underway, whether in terms of delays in achieving milestones or in the ability to affect out-year schedules. It seems clear that the effects of sequestration will compound themselves in the out-years in ways that will increase time and cost.

Second, I would like to know from Administrator Miller what steps she is taking to control the costs of the B61 program and other life extension programs (LEP). I understand that Director Miller is working with the DOD Cost Analysis and Program Evaluation (CAPE) Office, but if we are living with two estimates, one by NNSA and one by CAPE, we will need to know which one Congress should rely on.

Third, I would like to understand from Mr. Huizenga what is being done to keep a bad situation from getting worse with the Waste Treatment Plant, especially regarding the ability to empty leaking tanks and begin treating at a minimum low-level waste from those tanks. We have a special commitment to all the commu-

nities where the DOE is cleaning up former defense sites and we need to keep it.

Fourth, as always, I would like to hear from GAO on their observations about what could be improved with existing projects at NNSA and the OEM. The NNSA has shelved two major construction projects. The Chemistry and Metallurgy Research Replacement (CMRR) project was stopped when it was 70 percent complete. $450 million had already been spent. The Pit Disassembly and Conversion project was also stopped after spending $400 million. Combined, that is close to $1 billion.

Obviously, the Waste Treatment Plant is another category, but I suspect there are common problems underlying all three projects that the GAO can give recommendations on. My hope is that those recommendations will provide lessons learned before embarking on some of the LEPs over the next 5 years.

Again, let me thank everybody for coming. I see we have been joined by my colleague from the wonderful State of Indiana, the Hoosier State, Senator Donnelly. Senator Donnelly, if you have any opening remarks you would like to make, the floor is yours.

Senator DONNELLY. No, thank you, Mr. Chairman. I am looking forward to the testimony.

Senator UDALL. Great. Thank you for being here.

Administrator Miller, the floor is yours. We look forward to your comments.

STATEMENT OF MS. NEILE L. MILLER, ACTING ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION, DEPARTMENT OF ENERGY

Ms. MILLER. Thank you, Chairman Udall and distinguished members of the subcommittee. Thank you for having me here today to discuss the President's fiscal year 2014 budget request for the DOE's NNSA.

Your ongoing support for the women and men of NNSA and the work that they do and your bipartisan leadership on some of the most challenging national security issues of our time has helped keep the American people safe, helped protect our allies, and enhanced global security.

The President's $11.7 billion fiscal year 2014 budget for NNSA allows us to continue to implement his nuclear security agenda. We are also deeply engaged in efforts to realize President Obama's vision for a world without nuclear weapons, free from the threat of nuclear terrorism and united in our approach towards shared nuclear security goals.

Most recently in his 2013 State of the Union Address, the President continued to highlight the importance of his nuclear strategy and pledged to "engage Russia to seek further reductions in our nuclear arsenals, and continue leading the global effort to secure nuclear materials that could fall into the wrong hands because our ability to influence others depends on our willingness to lead and meet our obligations."

His budget for fiscal year 2014 reaffirms the President's strong support for our nuclear security missions and provides us with the resources we need to further this work.

I want to assure you that the NNSA is being thoughtful, pragmatic, and efficient in how we achieve the Nation's nuclear security objectives and shape the future of nuclear security. As someone with many years of Federal Government experience at the nexus of programs and budget, I can tell you that while we are challenged to be successful in a time of fiscal austerity and budget uncertainty, we are also dedicating ourselves to driving efficiencies into our programs so that we can make the best use of taxpayers' dollars with which we are entrusted. We are holding everyone from our contractors to our Federal employees accountable. Above all, we are challenging ourselves to reject ways of doing business that are holding us back from this but which have survived long into the post-Cold War era simply because they are "the way we have always done it."

The need to strategically modernize our facilities, infrastructure, and weapons systems is urgent, but so is the need to modernize how we do what we do. We must and we are evaluating our programs and challenging the assumptions for all of our programs and projects to rethink their underlying premises and ensure that we are charting a path to the future that is well-reasoned, responsible, and reflects the best way of doing business today.

As the President has committed, the NNSA is working to make sure that we have the infrastructure, weapons systems, and the supporting science to certify the Nation's nuclear weapons stockpile that it needs through strategic modernization investments. We are working to implement the most ambitious nuclear nonproliferation agenda in the world.

Whether or not we were facing this moment's budget uncertainties and fiscal constraints, we have a responsibility to prioritize what we do and to do it in a way that makes sense not only to us but to you, to our partners at DOD, our international partners, and above all, to the American taxpayers.

To that end, we are working very hard to guarantee our ability to deliver the mission, something my colleagues throughout the nuclear security enterprise have consistently done for the Nation over the past 60-plus years. But we know that we have to be smarter, more unified, and more diverse both within NNSA but also more broadly within the larger deterrence and nuclear security community. If we all want to see the nuclear security agenda move forward—and it is my responsibility to ensure that it does—then we need to make certain that we are able to maintain essential enabling capabilities, including for plutonium and uranium, infrastructure to support the nuclear Navy, and strong national laboratories that are the backbone of the national security enterprise. We must continue to chart the path of nuclear security together.

I have personally witnessed the evolution of these programs for many years from my positions both within the NNSA, as well as from other perspectives within the U.S. Government. The enduring partnerships between NNSA and DOD, between Congress and the administration, and between our own sites and headquarters are vital to getting the mission accomplished and maintaining the security of the Nation. NNSA cannot survive without them, and the United States nuclear deterrent depends on them.

Regardless of what organizational chart or where NNSA is aligned within the U.S. Government, we cannot do anything without the right people and the right processes in place. We are continuously seeking new solutions to improve the way we conduct business. To that end, I want to tell you about a few changes in the way we are doing what we do.

First, we reinforced our project management organization and performance through the establishment of an independent acquisition and project management group so that we could better drive performance and accountability in our construction projects. We were fortunate to be able to hire Mr. Bob Raines to head this new group. Bob, who has 25 years of experience at DOD's naval facilities organization and several years reviewing DOE projects, has brought a new clarity and accountability to the way we approach acquisition across NNSA.

We have aggressively sought physical security improvements through the reform of how we promulgate security policy and assess performance at our sites. Mr. Steve Asher has come on board to act as our new Chief of Defense Nuclear Security. He is a retired Air Force colonel with 33 years of on-the-ground nuclear security experience with the U.S. Air Force.

We have also worked to improve how we plan and analyze our budget resources to ensure that we have what we need. I believe strongly that resource decisions should be transparent and analytically sound, driven by data as well as preference. By hiring Dr. Steven Ho and standing up our new Office of Program Review and Analysis, based on the approach taken by DOD to prioritize needs, the Administrator will have an independent broker helping manage the budget process and independent analysis for NNSA programs on cross-cutting issues. Steve comes to us from the DOD CAPE where for the past year he led the cost study of the B61 LEP.

Perhaps most significantly, we have realigned the Federal oversight of roles, responsibilities, and reporting of all of our sites and unified them in partnership in a line NNSA organization reporting to the Associate Administrator for Infrastructure and Operations, who is also my Deputy, Mr. Michael Lempke. We are ensuring that we have the right people using the right processes in the right ways across the NNSA. Mission and mission-support teams are equal, supporting each other's needs on everything from regulatory issues to contracting. You saw it with our Future Shaping Nuclear Production Office, which covers Pantex and Y–12 without regard for geography. You can see it in our strong, unprecedented response to security lapses, and you can see it in our plutonium strategy where creative thinking across our enterprise has given us a path forward in a time of tight budgets. We are doing the work the American people need us to do, and the President's budget will allow us to continue to do that work. We at NNSA are working hard to align ourselves for the future, and your continuing support has been a vital part of that.

I again thank you for having me here today. I look forward to answering your questions.

[The prepared statement of Ms. Miller follows:]

PREPARED STATEMENT BY MS. NEILE L. MILLER

INTRODUCTION

Chairman Udall, Ranking Member Sessions, and distinguished members of the subcommittee, thank you for having me here to discuss the President's fiscal year 2014 budget request for the Department of Energy's National Nuclear Security Administration (NNSA). Your ongoing support for the men and women of NNSA and the work they do, and your bipartisan leadership on some of the most challenging national security issues of our time, has helped keep the American people safe, helped protect our allies, and enhanced global security.

The NNSA supports the President's nuclear security strategy, including those identified in the President's new global military strategy released in January 2012, the New Strategic Arms Reduction Treaty (New START) signed in 2010, and the Nuclear Posture Review (NPR). In April 2009 in Prague, President Obama shared his vision for a world without nuclear weapons, free from the threat of nuclear terrorism, and united in our approach toward shared nuclear security goals.

Most recently, in his 2013 State of the Union address, the President continued to highlight the importance of his nuclear strategy and pledged to "engage Russia to seek further reductions in our nuclear arsenals, and continue leading the global effort to secure nuclear materials that could fall into the wrong hands—because our ability to influence others depends on our willingness to lead and meet our obligations."

The President's fiscal year 2014 request for NNSA is $11.65 billion, an increase of $186 million, or 1.6 percent, over the fiscal year 2013 Continuing Resolution level and $650 million, or 5.9 percent, over the fiscal year 2012 appropriation at a time of sequestration and spending reductions across the government. The request reaffirms the commitment of the President to his nuclear security vision, applying world-class science that addresses our Nation's greatest nuclear security challenges and building NNSA's 21st century nuclear security enterprise through key investments in our people, programs, and infrastructure.

I want to assure you that NNSA is being thoughtful, pragmatic, and efficient in how we achieve the Nation's nuclear security objectives and shape the future of nuclear security. We are looking forward to what NNSA will become 5, 10, 20 years into the future and what we are doing now to get there.

Our missions are clear: to enhance global security through nuclear deterrence, to reduce global danger from nuclear weapons, nonproliferation, naval nuclear propulsion, and national leadership in science, technology, and engineering. Based on these critical mission and capabilities, the demand on the enterprise is growing. We are challenging ourselves to reject old ideas that represent the way things have been done in the past. We are moving beyond the Cold War, strategically modernizing facilities and weapons systems, ensuring that the United States has the critical capabilities it needs without wasteful spending. Given our budget constraints and ongoing uncertainty, we have a responsibility to prioritize how we get things done, and we have developed clear strategies to guarantee our ability to do so. We must evaluate our programs and challenge the assumptions for all of our programs and projects to rethink the underlying premise and ensure that we are charting a path to the future that is well-reasoned and responsible. We are at a particular point in time, unique for a lot of reasons, and the context matters. It was with this in mind that we made sure this year's budget request was also the result of an unprecedented level of planning and cooperation between the NNSA and the Department of Defense (DOD).

The NNSA has also made a number of organizational changes to help us make better, smarter, and more efficient decisions on how we conduct our operations and identify the resources needed to meet our nuclear strategy.

One of the major actions NNSA took in fiscal year 2013 was standing up the Office of Infrastructure and Operations (NA–00) to serve as the fulcrum of the NNSA. The office encompasses our field operations, which are now directly reporting to the Administrator through the Associate Administrator for Infrastructure and Operations, who is dual-hatted as the NNSA Associate Principal Deputy Administrator. The consolidated office serves to oversee and direct the NNSA's Operations and Infrastructure, which spans eight sites—from nuclear weapons laboratories to production plants—across seven States. The new office will make management of the nuclear security enterprise more efficient and effective.

In addition, the recently established Office of Acquisition and Project Management (NA–APM) continues to integrate our acquisition and project management staffs in order to improve the way we manage and execute major construction projects once the design is sufficiently mature to baseline and begin construction,

post phase Critical Decision-2 (CD–2). NA–APM combines its knowledge of contracting and project management to ensure identified and agreed upon needs of the NNSA are met in an effective and efficient manner. Federal Project Directors (FPD) responsible for project delivery have been re-assigned to NA–APM, and we are establishing Project Management Offices staffed with people possessing appropriate construction project management skills that will report directly to the FPDs. Lastly, the NNSA is better aligning contract incentives for Capital Asset Projects to structure contracts to provide an equitable balance of risks; ensuring each party bears responsibility for its own actions, rewarding contractors for generating savings while protecting the taxpayers from paying for contractor negligence. We expect these changes to fundamentally affect the way the NNSA reviews its projects and interacts with its contractors to continue to drive efficiencies while delivering on our mission under current fiscal constraints.

In the last year, NA–APM's efforts resulted in $20 million in reimbursements from contractors as we moved to more fully utilize our contracts to hold them accountable for unsatisfactory performance. We issued an unambiguous design policy for our complex nuclear projects ensuring that sufficient design work (90 percent) is completed prior to approving project baselines at CD–2. Of non-major projects completed since 2007 with the construction budget baseline established in 2006 or later, 83 percent (10 out of 12) were delivered on time and at or under budget. These 12 non-major projects with a combined budget of $311 million were delivered more than $32 million under budget. We are confident that the lessons learned in delivering this work are applicable and scalable to the major systems projects we have had problems with in the past.

A third management change is to put more focus on cost planning relative to budgeting and execution, particularly in today's fiscal climate. Key decisions about priorities and resource allocations must be made centrally within the NNSA, rather than left solely to individual sites. The NNSA Act is clear that planning, programming, budgeting and financial activities comport with sound financial and fiscal management principles. Over a year ago, the NNSA embarked on a multi-year, iterative process with DOD's Office of Cost Assessment and Program Evaluation (CAPE) to conduct a rigorous analysis to try to determine how to best meet the President's nuclear strategy and the resources it will take to both accomplish the current program of work as well as to recapitalize our infrastructure. This ongoing effort will continue to inform our planning and programming decisions and will be the foundation upon which we build successive out-year budgets.

In order to further improve transparency with Congress and to further drive efficiencies into our program planning and execution, the NNSA's fiscal year 2014 budget request makes some significant changes to our budget structure.

In the fiscal year 2014 budget, the Infrastructure and Operations (NA–00) organization gains budget authority which will move the NNSA towards a tenant-landlord site model in which NA–00 is the landlord and the program offices are now tenants. As a result of this reorganization, the NNSA is proposing to eliminate the Readiness in Technical Base and Facilities (RTBF) GPRA unit in our budget and split these activities between the existing Site Stewardship unit and "Nuclear Programs" within Defense Programs. The activities managed by NA–00 would be added to Site Stewardship under a new subprogram titled "Enterprise Infrastructure" which would encompass Site Operations, Site Support, Sustainment, Facilities Disposition, and site infrastructure-related construction. Nuclear Programs will provide for capability investments and capital construction projects that uniquely support the mission of Defense Programs.

The Defense Nuclear Nonproliferation appropriation account of the fiscal year 2014 budget request has been restructured to include the Nuclear Counterterrorism Incident Response (NCTIR/NA–40) and Counterterrorism and Counterproliferation Programs (CTCP/NA–80) programs, both of which include activities transferred out of the Weapons Activities appropriation. By drawing together these NNSA programs in the Defense Nuclear Nonproliferation appropriation, we strengthen existing synergies and cooperation among these functions. In doing so, we provide priority and emphasis to the NNSA programs that are responsible for implementing the President's nuclear security priorities for reducing global nuclear dangers and the 2010 Nuclear Posture Review (NPR) which "outlines the administration's approach to promoting the President's agenda for reducing nuclear dangers and pursuing the goal of a world without nuclear weapons, while simultaneously advancing broader U.S. security interests." This change in budget structure will present with greater clarity the total funding and level of activity undertaken by the NNSA in this area, which the NPR identifies as the highest priority nuclear threat facing the Nation. At the same time, this realignment ensures that the Weapons Activities appropria-

tion is now more focused on stockpile and related activities, such as physical and cyber security.

WEAPONS ACTIVITIES

Defense Programs Overview

After adjusting for the infrastructure-related budget realignments described previously, the fiscal year 2014 Defense Programs portion of the Weapons Activities account is $5.1 billion or $410.2 million above the fiscal year 2013 continuing resolution level, constituting a 9 percent increase. As the President has committed, the NNSA is strategically modernizing our nuclear weapons infrastructure, weapons systems, and the supporting science to ensure a safe, secure and effective deterrent and to certify the stockpile without underground nuclear testing. Within today's constrained fiscal environment, we have closely scrutinized our strategies, plans, processes, and organization to ensure we make the most of our resources. The results of the NNSA and DOD budget-driven requirements analysis has forged a stronger link between DOD's requirements and the NNSA's resulting resource needs across the nuclear security enterprise. Some highlights include a new strategy for the conduct of Life Extension Programs (LEPs); an updated and more complete plutonium strategy; a refocusing of our science and infrastructure investments on the capabilities most urgently needed; a reorganization of the operations of facilities accounts and major infrastructure project responsibilities within NNSA's Defense Programs; and a significant effort to identify and implement management efficiencies. Each of these critical areas was determined following enormous effort to make smart business decisions on resourcing the highest priority mission work.

Life Extension Programs Strategy and Execution

The DOD's "3+2" strategy calls for the transition of four warheads that make up the ballistic missile portion of our stockpile to be transitioned, over the next 25 years, to three life-extended, interoperable warheads that DOD could flexibly deploy across different missile platforms. Further, we will transition the three bomb/cruise missile warheads in the stockpile to two warhead types as part of their life extension.

In January 2013, the Nuclear Weapons Council (NWC) changed the schedule and cumulative production quantity for the W76–1 program. This change reduced the total LEP production quantity and realigned the end of the production period for all operational units from fiscal year 2021 to fiscal year 2019. Specifically, the scope and schedule parameters for the program in fiscal year 2013 and fiscal year 2014 remain unchanged as the program will be executing steady-state rate production, and the annual production rates are the same for both fiscal years.

Regarding the B61 LEP, the NWC selected the option (3B) which satisfies the minimum DOD threshold requirements at reduced life cycle costs. Option 3B maximizes the reuse of nuclear and non-nuclear components while still meeting military requirements for service life extension and consolidation of multiple versions of the B61 into the B61–12.

Following the W76 and B61 LEPs, the first of the LEPs to which the 3+2 strategy applies is the W78/88–1. A joint DOD/NNSA Enterprise Planning Working Group developed schedules reflected in the forthcoming fiscal year 2014 Stockpile Stewardship and Management Plan (SSMP) which considers alignment of warhead development and production schedules with DOD system platform upgrades and balancing the workload across the nuclear security enterprise. Once developed as part of the Phase 6.2A activities, the DOD Cost Assessment and Program Evaluation (CAPE) team will review and the NWC will approve cost estimates for the W78/88 and future LEPs.

Engineering development for an alteration to the W88, the W88 Alt 370, is also under way. This Alt will address certain lifetime requirements by modernizing the Arming, Fuzing & Firing system and improving surety by incorporating a lightning arrestor connector. It will also provide additional logistical spares for the life of the system. The NNSA will complete the W88 Alt 370, the neutron generator replacement, and gas reservoir replacement will be completed at the same time with a planned first production unit for December 2018.

Plutonium Strategy

NNSA is committed to ensuring continuity of required plutonium support capabilities and mission functions to include analytical chemistry, material characterization, manufacturing, and storage functions. The strategy for doing so is encompassed by the Defense Programs Plutonium Strategy that expands our capability over the next decade to achieve a 30 pits-per-year capability by 2021 to support the W78/88–1 LEP activities. Achievement of this capability requires additional invest-

ment in the Plutonium Sustainment program along with efforts to free up space within the PF4 facility at LANL by cleaning out the existing vault space and installing additional equipment in existing facilities.

This strategy is critical for today's stockpile and is independent of the deferral period for the Chemistry and Metallurgy Research Replacement-Nuclear Facility (CMRR–NF). We are on track to move operations out of the existing Chemistry and Metallurgy Research facility at Los Alamos National Laboratory in 2019. Execution requires a $120 million reprogramming approval for fiscal year 2012 funds. This reprogramming is urgent for our workforce. NNSA and CAPE are developing a business case analysis of the plutonium strategy by August 2013. CMRR–NF deferral provides NNSA the opportunity to balance funding and requirements, and to evaluate an integrated, long-term plutonium capability solution.

Research Development Test & Evaluation (RDT&E)

Last year, we commemorated the 20th anniversary of the end of underground nuclear weapons testing in the United States. Shortly after that decision in 1992, the Stockpile Stewardship Program was established to provide the science, tools, and critical skills necessary to certify that the stockpile is safe, secure, and effective without the need for nuclear testing. Since that time, we have been filling our toolbox with the cutting-edge science needed to accomplish this formidable challenge. Maintaining a stockpile under these conditions requires the best science and technology in the world. Breakthroughs have occurred that have enabled us to achieve this goal for today's stockpile. But as we look into the future, we see the need for the enhanced use of our science tools to gain better assurance that as our stockpile ages it will continue to be safe, secure and effective. The modern tools of Stockpile Stewardship not only serve as our insurance policy against a return to nuclear testing, but they also are increasingly revealing the "first principles" physics and materials' properties of our weapon systems.

Priorities of the Stockpile Stewardship Program include the development of capabilities to design and certify LEP options; preservation of specialized skills needed for maintenance of the nuclear stockpile by a generation of scientists who will not have worked with those experienced in nuclear testing; development of capabilities enabling timely resolution of issues from significant finding investigations resulting from surveillance observations; enabling annual assessment of the stockpile and associated operational decisions; and reducing nuclear dangers through the extension of capabilities used for assessments of foreign state weapons activities.

In the fiscal year 2014 budget request, the Science Campaigns seek funding to provide the science underpinnings of our Plutonium Strategy and re-use options for the future stockpile, as well as advanced certification of nuclear explosive package options with improved surety to support LEP decisions and advanced diagnostics and experimental platforms (particularly optical imaging and radiography) for future subcritical experiments that augment and guide our plutonium science research. Through the National Boost Initiative (NBI), the Science Campaign is improving physics models for primary fission "boost." This understanding is essential as we reduce the stockpile, especially since we will be re-using many nuclear components.

The fiscal year 2014 budget request for the Inertial Confinement Fusion and High Yield Campaign features an increased emphasis on non-ignition high energy density (HED) experiments, diagnostics, and experimental platforms development to support reuse and stockpile modernization. Such platforms and diagnostics will help validate secondary performance and surety technologies for the future stockpile, as well as help provide radiation effects testing of non-nuclear components. In addition, the budget request supports progress on achieving ignition, or thermonuclear burn in the laboratory, in accordance with the Path Forward report supplied to Congress in December 2012. This report described our plan for resolving discrepancies between experimental results at the National Ignition Facility (NIF) and the prediction of our codes, as well as the development of alternate ignition approaches (polar drive, direct drive, and magnetic drive). An Independent Advisory Board on ignition will be a subpanel of new Federal Advisory Committee being formed to provide advice on NNSA stockpile stewardship challenges. Finally, the budget seeks support for the continued safe and efficient operation of NNSA's three major High Energy Density facilities: NIF, OMEGA, and the Z machine.

The budget in fiscal year 2014 for our Advanced Simulation and Computing (ASC) program seeks to implement the "3+2 Strategy" agreed to by the NWC described earlier. To implement that strategy, an understanding of plutonium reuse and performance, which ASC simulation helps provide, is critical. Further, the ASC budget seeks support for improved and more responsive full system modeling and simulation capabilities for annual assessments, LEPs and significant finding investigations

that provide enhanced fidelity in the stockpile. ASC is uniquely challenged by supercomputing technology advances that are forcing an evolution in computer architectures that are inconsistent with current methods used in our national computational tools for stockpile assessment. In response, ASC is coordinating high performance computing technology, research and development with the DOE Office of Science's Advanced Scientific Computing Research (ASCR) office, and attempting to maintain adequate essential skills and capabilities to support current and future requirements under flat budget restrictions. Foreign nuclear weapons assessments will continue to rely on our Nation's nuclear weapons code base.

Strategic Management

Building on the strength of our experience working with DOD this past year, we are enhancing our partnership this year in areas where both of us will benefit. Specifically this year, studies are being conducted with DOD to find efficiencies and to identify workforce priorities. The "3+2 strategy" and the aggressive LEP schedule associated with that strategy are being implemented. Modernization of critical mission support infrastructure is focusing on the Uranium Processing Facility (UPF) with acceleration out of Building 9212, and moving forward with the plutonium Strategy.

Our enhanced partnership with DOD will be evident not only this year but also over the Future Years Nuclear Security Program (FYNSP) period (fiscal year 2014–2018), and beyond, throughout the next 25 years as the 3+2 Strategy, the LEPs, and modernization are all at various stages of planning and execution. The 25-year Strategic Plan will be described in detail in the forthcoming fiscal year 2014 SSMP.

NNSA is taking the initiative to improve the effectiveness and reduce the cost of its operations and business practices. We understand that every dollar counts in these fiscal times and NNSA will build upon a number of successful efforts in the past to improve our contractors operations and efficiencies. We have already saved considerable money through our supply-chain management initiative, planned consolidation of the Y–12 and Pantex contracts, and pressing our contractors to change their benefit plans for employees, particularly pension plans. The funding requested in fiscal year 2014 reflects anticipated "Workforce Prioritization" and "Management Efficiencies" savings as part of the NNSA/DOD joint study.

Defense Nuclear Security Overview

The NNSA recently reorganized our security organization to establish clear lines of authority for responsibility and institutionalize a formal performance assessment capability. The Office of Defense Nuclear Security's primary missions are policy development, strategic planning, and performance assessments of NNSA site activities. We also realigned security management for operational direction, resource execution authority, and field assistance activities to the Office of Infrastructure and Operations (NA–00) which is consistent with its existing line management authority over all NNSA sites. NNSA is changing our culture of how we assess security so that we do not rely on reports provided by others but instead assess operational readiness of security at the sites by dispatching experts from the Office of the Chief of Defense Nuclear Security.

We are also committed to hiring the right caliber of security professionals; those with operational nuclear security field experience, to reshape and continue to improve the culture of nuclear security at NNSA. This initiative is focusing our leadership on instilling a culture that embraces security as an essential element of the NNSA mission, which is to provide the utmost protection for national security resources.

DNS is also hiring 15 additional Federal security experts in fiscal year 2013 to conduct performance-based assessments at each of the NNSA sites. These security professionals will visit each site, to perform assessments of security readiness by directly observing security operations, and program implementation.

In the period following the Y–12 security event on July 28, 2012, we have learned a lot about our organization, the assumptions we had made, and how we communicate. The incident at Y–12 was a completely unacceptable breach of security. The security of our Nation's nuclear material is our most important responsibility, and we have no tolerance for such unacceptable performance. We have taken strong and decisive action to fix the issues that led to the incident at Y–12.

We immediately shared lessons learned with all the NNSA Field sites and directed each to perform self-assessments related to those concerns found at Y–12. We directed the sites to assess: (1) security culture, (2) formality of operations, (3) rules of engagement procedures, and (4) security system maintenance and compensatory measures. We initiated efforts to establish a robust assessment model, which has included the new Acting Chief of Defense Nuclear Security leading teams of security

professionals to conduct assessments of all NNSA sites to determine security readiness and review of Field Office and contractor security performance.

We are executing a deliberate process to restore the DOE directives as the baseline safeguards and security policy for NNSA.

Using NNSA's Corporate Performance Evaluation Process, our assessment of the Y–12 management and operating contractor's performance resulted in lost award fee totaling $12.2 million, which included 100 percent of their possible security-related fee and a negative overall management fee adjustment of $10 million.

Cyber Security

The fiscal year 2014 budget reflects the consolidation of the activities managed by the NNSA Office of the Chief Information Officer under NNSA CIO (NCIO) Activities. The consolidation under a single account will allow more effective and integrated management of the program. Cyber Initiatives are supported by IT Investments and this change will provide better alignment of resources to focus on the emerging threat and to deliver capabilities that allow our employees to work anywhere, anytime, on any device. The fiscal year 2014 budget includes $148 million for the NCIO activities which includes support for Federal IT as well as all programmatic funding for cyber security (covering Federal employees and our Managing and Operating Contractors).

Providing an effective enterprise IT/Cyber strategy is critical to enablement of the OneNNSA strategy, the achievement of cost savings, and the deployment of shared services for the nuclear security enterprise. The NCIO leads Federal efforts to deploy innovative IT solutions, research and develop cyber defense technologies, and to deploy effective cyber security tools such as continuous monitoring, data loss prevention, and strengthened access controls. The NCIO focus for the next 5 years is to continue execution of our integrated strategy of IT Transformation (the NNSA Network Vision (2NV)), improved security monitoring of our environment (Joint Cyber Coordination Center (JC3)), and deploying next generation cyber defense capabilities that alter the economics of the cyber battlefield (Cyber Sciences Laboratory (CSL)).

The NCIO made significant progress towards the OneNNSA vision in fiscal year 2013. The organization deployed a new, secure wide-area network (OneNNSA Network), a first of its kind federated Identity Management solution (a critical path step to full HSPD–12 implementation), a unified communications solution and agency wide social network allowing for the collaboration of over 45,000 employees (ONEvoice), and a state-of-the-art cloud services broker (YOURcloud) that will provide a foundation for cloud computing adoption and was recently recognized by Excellence.gov as the most innovative project in government.

Fiscal year 2014 will build on these achievements and progress all three elements of our integrated strategy forward. For 2NV, NCIO will consolidate data centers using YOURcloud, modernize our applications to reduce legacy IT costs and enable a mobile workforce, and consolidate our intranets, websites, and file servers to common platforms to reduce costs. NCIO will improve our classified network monitoring capabilities, provide monitoring for 2NV investments, and strengthen the partnership with DOE for unclassified JC3 capabilities. For CSL, NNSA will execute a robust cyber defense R&D portfolio center around three signature programs: (1) Mission Resilience and Assurance, (2) Big Data and Behavioral Cyber Analytics, and (3) Scalable Testing of System Cyber Dynamics.

DEFENSE NUCLEAR NONPROLIFERATION

As I mentioned earlier, we decided to align all the global nuclear security activities under the Defense Nuclear Nonproliferation account. This will strengthen our focus on countering nuclear terrorism and proliferation, while encouraging cooperation among our programs in this area. The Request includes $2.1 billion for the DNN appropriation which includes the NNSA Defense Nuclear Nonproliferation (DNN/NA–20), Nuclear Counterterrorism Incident Response (NCTIR/NA–40), and Counterterrorism/Counterproliferation (CTCP/NA–80) programs.

Office of Defense Nuclear Nonproliferation

As we look to the future, we see challenges and opportunities across the globe. Over the past 4 years we have seen increased focus, determination and expansion of activities with our international partners. This has been due largely to the momentum created by the Nuclear Security Summit process to meet shared nuclear security goals. Russia, for example, has announced its intention to be a full partner with us, and remains a critical partner in the efforts to secure the most vulnerable nuclear materials and keep them out of the hands of proliferators and terrorists. The Russians are not alone, and dozens of countries have stood alongside President

Obama and the United States at two Nuclear Security Summits to show their commitment to our shared cause.

One of our most important accomplishments has been to support the administration's commitment to secure the most vulnerable nuclear material across the globe in 4 years. Since 2009, our efforts to secure plutonium and highly enriched uranium (HEU) around the world have accelerated to make it significantly more difficult to acquire and traffic the materials to make an improvised nuclear device. I am proud to say that we are very close to meeting our goals to remove or dispose of 4,353 kilograms of highly enriched uranium and plutonium in foreign countries by the end of 2013, and equip 229 buildings containing weapons-usable material with state-of-the-art security upgrades, though some challenges remain.

On April 5, 2013, we completed the removal of all HEU from the Czech Republic, making it the 10th country to be completely cleaned out of HEU in the last 4 years. The NNSA will complete prioritized removal of vulnerable nuclear material from three more countries this year.

The 4-year effort allowed us to accelerate some of our most important work, but it has been accurately described as "a sprint in the middle of a marathon." After our 4-year sprint, there will be much left to complete in the areas of the elimination, consolidation and securing of nuclear and radiological materials worldwide. Nuclear and radiological terrorism continues to be a grave threat, nuclear and radiological WMD technology and expertise remain at risk, and materials of concern, such as plutonium, still are being produced. While the challenges are substantial, they are not insurmountable.

NNSA, working with its international partners and with strong support from the White House, will continue to eliminate, consolidate and secure high risk materials to ensure that terrorists can never acquire a weapon of mass destruction. The fiscal year 2014 request for ODNN provides $1.8 billion to: continue efforts both domestically and internationally to convert research reactors and isotope production facilities from HEU to LEU, consolidate nuclear material in fewer locations, and permanently eliminate it where possible, improve and sustain safeguards and the security of nuclear materials at those locations, support the adoption of security best practices, prioritize efforts to secure or remove high-risk radiological sources, prevent illicit trafficking of nuclear and radiological material through the provision of fixed and mobile detection equipment and export control training, and work in collaboration with international partners to build global capability in these areas.

We will continue to pursue a multi-layered approach to protect and account for material at its source, remove, downblend or eliminate material when possible, detect, deter, and reduce the risk of additional states acquiring nuclear weapons, and support the development of new technologies to detect nuclear trafficking and proliferation, as well as verify arms control treaties.

We owe it to the American people to continually reevaluate our work and make strategic decisions for the future. The fiscal year 2014 budget request takes a thoughtful look at the Mixed Oxide (MOX) Fuel Fabrication Facility project and our plutonium disposition options. The United States remains committed to disposing of excess plutonium, and we believe this review will ensure that we are able to follow-through on our mission in the decades to come. The U.S. plan to dispose of surplus weapons-grade plutonium by irradiating it as MOX fuel has proven more costly to construct and operate than anticipated. Considering these unanticipated cost increases and the current budget environment, the administration has begun assessing alternative plutonium disposition strategies and identifying options for fiscal year 2014 and the out-years. During the assessment period, the Department will slow down its MOX project. We are committed to disposing of excess plutonium, we recognize the importance of the U.S.-Russia Plutonium Management and Disposition Agreement, and the United States will continue to engage key program partners and stakeholders as the assessment of alternative plutonium disposition strategies is developed.

Our continued focus on nonproliferation and nuclear security efforts is vital. The threat of nuclear terrorism and WMD proliferation remains. Detonation of a nuclear device anywhere in the world could lead to significant loss of life, and extraordinary economic, political, and psychological consequences. We must remain committed to reducing the risk of nuclear terrorism and WMD proliferation.

Nuclear Counterterrorism Incident Response

This year, the request for NCTIR will support a strategy focused on reducing nuclear dangers through integration of its subprograms; Emergency Management, Emergency Response, Forensics and International activities supported by training and operations.

In fiscal year 2014, the program will invest in leverage at a distance capability for the Nuclear Emergency Support Team, maintain training of the Consequence Management Home Team, sustain stabilization cities, complete improvements to U12P-tunnel, address and sustain emergency management requirements, maintain the Emergency Communications Network, and continue supporting international partners. The NCTIR program will continue to maintain essential components of the Nation's capability to respond to and manage the consequences of nuclear incidents domestically and internationally, and continue to conduct programs to train and equip response organizations on the technical aspects of nuclear counterterrorism.

Counterterrorism and Counterproliferation Programs

The aforementioned budget realignment includes the Counterterrorism and Counterproliferation, or CTCP, program office, which we stood up last year. The funding request for CTCP includes the transfer of the discontinued National Security Applications funding into a consolidated and substantially revised budget line to support the highest priority counterterrorism and counterproliferation technical work, including the study of Improvised Nuclear Devices and other non-stockpile nuclear device threats. This increased funding will support unique nuclear device-related technical contributions derived from NNSA's core nuclear science and technology expertise. This activity supports interagency policy execution, DOD and Intelligence Community customers, and DOE's own emergency response operations.

NAVAL REACTORS (NR)

Naval Reactors' request for fiscal year 2014 is $1.246 billion, an increase of 15 percent over the fiscal year 2012 request, to continue safe and reliable naval nuclear propulsion. The program directly supports all aspects of the U.S. Navy's nuclear fleet, which encompasses the Navy's submarines and aircraft carriers, over 40 percent of the U.S. Navy's major combatants. Currently, the nuclear fleet is comprised of 54 attack submarines, 14 ballistic missile submarines, 4 guided missile submarines, and 10 aircraft carriers. Over 8,300 nuclear-trained Navy sailors safely operate the propulsion plants on these ships all over the world, and their consistent forward presence protects our national interests.

Continued safe and reliable naval nuclear propulsion requires that NR maintain the capability to anticipate and immediately respond to small problems before they become larger issues. Our technical base and laboratory design, test, and analysis infrastructure is required for us to thoroughly and quickly evaluate technical issues that arise from design, manufacture, operations, and maintenance, ensuring crew and public safety without impeding the mission of our nuclear-powered fleet. Uncompromising and timely support for safe operation of the nuclear fleet continues to be the highest priority for Naval Reactors.

Beyond fleet support, Naval Reactors continues efforts on its three important new projects: the design of the *Ohio* Replacement reactor plant; the refueling overhaul for the S8G Land-based Prototype reactor; and recapitalization of our naval spent nuclear fuel infrastructure. Each of the projects is critical to fulfillment of the Navy's longer-term needs.

The current *Ohio*-class ballistic missile submarines are reaching the end of their operational lives and will begin to retire in 2027. Naval Reactors is designing and developing a life-of-ship core for the *Ohio* Replacement that will increase SSBN operational availability and reduce strategic deterrence submarine procurements from 14 to 12. The fiscal year 2014 request is $125.6 million and supports the Navy's schedule and progresses on reactor plant design needed for procurement of reactor plant components beginning in 2019. This request is essential to component design, procurement and ship construction.

The Land-based Prototype provides a cost-effective testing platform for new technologies and components before they are introduced to the fleet, and is essential for the testing of new materials and technology for the *Ohio* Replacement life-of-ship core. To preserve this vital research, development, and training asset for the long-term and to achieve life-of-ship core for the *Ohio* Replacement, core development and preparations for the refueling overhaul must continue in fiscal year 2014. The fiscal year 2014 request for the S8G Land-based Prototype Refueling Overhaul is $143.8 million.

Finally, the Spent Fuel Handling Recapitalization Project (SFHP) supports the Navy's refueling and defueling schedule for nuclear-powered aircraft carriers and submarines by providing the capability to unload and return spent fuel shipping containers to the shipyard. The fiscal year 2014 budget includes $70 million to continue conceptual design for a new facility. Significant portions of the existing Expended Core Facility are more than 50 years old, and were not designed for its current mission of processing and packaging spent naval nuclear fuel for permanent

dry storage. The existing facility is not capable of handling full-length aircraft carrier fuel from M–290 shipping/storage containers. The need to prioritize operational fleet support following enactment of the Budget Control Act resulted in a year and a half delay to the project; the fiscal year 2014 request supports this revised schedule. Further delay to the SFHP would create a need for additional M–290 containers, at approximately $100 million per year of delay, for temporary storage.

Like our Weapons program, over the last year, DOE, NNSA, and the DOD CAPE conducted a comprehensive analysis of Naval Reactors' program and validated that our requirements are consistent with the President's overall strategy.

OFFICE OF THE ADMINISTRATOR

The NNSA's Office of the Administrator (OA) appropriation provides the Federal salaries and other expenses of the NNSA mission and mission support staff, including the Federal personnel for Defense Programs, Defense Nuclear Nonproliferation, Emergency Operations, Defense Nuclear Security, Acquisition and Project Management, the Office of the Chief Information Officer, Safety and Health, the Administrator's direct staff, and Federal employees at the Albuquerque Complex and site offices. The OA account is an essential enabler of the Federal roles and missions that are the heart of our Enterprise.

The OA account continues to streamline operations and provide staffing for efficient and effective oversight to our programs. We have taken aggressive measures to significantly downsize the account, including cutting travel and support services by about one-third and offering voluntary separation incentive payments and early retirement to help right-size our workforce.

IMPACT OF SEQUESTRTION

The sequestration cuts now in effect will hamper NNSA's ability to carry out the full range of national security activities planned in our fiscal year 2013 budget. These cuts are coming 5 months into the current fiscal year, forcing the NNSA to absorb the spending reduction in a 7-month period rather than an entire year. Under the current law, the NNSA fiscal year 2013 budgetary resources have been cut by roughly 7.8 percent, which equates to an effective reduction of over 13 percent when measured over the balance of the fiscal year. Under sequestration, the reduction for the entire NNSA is approximately $900 million. This results in the Weapons Activities appropriation is approximately $600 million below the fiscal year 2013 request levels, and more than $250 million below the fiscal year 2012 levels.

Prior to sequestration taking effect, NNSA informed Congress through hearings on two separate occasions that thousands of contractor jobs at our labs and plants could be affected either through work-hour reductions or other personnel actions with Directed Stockpile Work and the Life Extension Programs being impacted the greatest. While we continue to believe that sequestration will cause significant impacts, these preliminary impact statements, which were formulated in a period of uncertainty regarding the precise provisions of the final Continuing Resolution (CR), need to be revised.

Now that we know the actual terms and conditions of the CR, NNSA is working closely with our partners in the labs and plants to develop mitigation strategies that will protect our highest priority workload to the best of our ability given the current resources. Our highest priority will remain the safety and security of our nuclear security enterprise. Once this review is completed, the Department plans to use a combination of the Operating Plan required by the CR, as well as a reprogramming to address the most critical funding needs and implement mitigation strategies to give program managers the flexibility they need to best handle the reductions across the enterprise.

Due to the indiscriminate nature of these cuts and view that it remains poor policy, the President's fiscal year 2014 budget request does not reflect sequestration's impacts; either in fiscal year 2014 or across the FYNSP.

CONCLUSION

The fiscal year 2014 budget reaffirms the national commitment to the President's nuclear security vision, applying world-class science that addresses our Nation's greatest nuclear security challenges and building NNSA's 21st century nuclear security enterprise through key investments in our people, programs and infrastructure. We are looking toward the future and building an organization that will ensure success. I look forward to working with each of you to help us do that. Thank you.

Senator UDALL. Thank you, Ms. Miller.

The subcommittee, as I mentioned, is proud to have Senator Donnelly here. Would you like to start with the first round of questions? I know your time is valuable.

Senator DONNELLY. Thank you, Mr. Chairman.

What are the implications for NNSA of having a lot of scientists who have never worked with the underground testing? How is that going to affect your operations?

Ms. MILLER. Thank you, Senator. That is actually a very good, interesting question.

Of course, we have now been without underground testing since 1992. So we have years of this. But as I think a number of us in the room know, none of us are getting any younger, and that means——

Senator DONNELLY. That would be true for me as well. [Laughter.]

Ms. MILLER. So I think that it is clearly something that is at the front and center for those of us concerned with the future of the stockpile as we look to make sure that, first of all, there is knowledge transfer, first and foremost, and there has been quite a lot of that. But also, the stockpile stewardship program that began in the 1990s really was based on the idea that we would hopefully not to go back to underground testing and we needed to find a way to make sure we could do what we have to do with the stockpile without it.

So I think that there has been a terrific effort, and we have seen actually, I think, the kinds of results that people maybe did not anticipate how good they would be from the modeling and simulation work that has gone on over the last number of years, and we continue to develop that. It is something that we know is absolutely critical to not only the stockpile of today but to the extended life of the stockpile, all of the science base for that.

Senator DONNELLY. In regards to the stockpile, what is your confidence level given the continued use that we have had of LEPs?

Ms. MILLER. First of all, it is the job of the head of U.S. Strategic Command, as well as the laboratory directors, to write a letter to the President every year to discuss the state of the stockpile in their opinion, which is certainly going to be more to the point than mine with their training.

But I would say that we, based upon what we, together with our laboratory directors, know are very confident in the ability of that stockpile to deliver as it has been promised to deliver. But we also, with regard to LEPs, know that we are getting into a large cycle right now where we are going to have to master the LEPs in order to be able to continue to assure that stockpile.

Senator DONNELLY. In regards to physical security of the NNSA facilities, since the Y–12 event, what have we done to try to make the facilities more secure?

Ms. MILLER. In the aftermath of the Y–12 event, of course, there were a number of reviews that were conducted both on behalf of the Secretary of Energy and the Inspector General. There were a number of reviews done. But I think the one that had the most direct effect so far on the NNSA and how we do this was the review conducted at the request of the former Administrator and myself

by General Sandra Finan, who at that time was in the NNSA on loan from the Air Force—conducted a review of how we do what we do in the area of security. As she very clearly stated, both in her report and in subsequent testimony, how we were doing security really was not serving anybody very well because it was so disconnected from what was actually—the parts of security, which is to say the physical security at the site on the ground, was disconnected from a headquarters group whose job was to promulgate policy. It is why I chose to mention it specifically in the testimony.

What we have done to change this—I would point to two main things. First of all, it was the creation of that infrastructure and operations group to bring the field offices into the line of NNSA so that we can have a mechanism now to drive consistency in the application of policies across the sites, and you do not have sites that, for whatever reason might be for that site, has decided to take the policy and do it a different way. So that is one piece of it.

The other piece of it within the NNSA is to establish that strong security policy group which also has a strong assessment capability so that they can deliver the policy instructions and come back in and see how is it actually happening.

At the same time, on the contractor side—I mentioned in the testimony driving accountability with the contractor—this is absolutely critical, will be critical in the success because, after all, the protective force is contractor-based. So our deep involvement with our contractor partners on our expectations and also our assessment of their performance will be critical to this.

Senator DONNELLY. Thank you.

Mr. Chairman, thank you.

Senator UDALL. Thank you, Senator Donnelly. It is great to have you here.

Let me pick up on that particular theme, Administrator. Following the Y–12 break-in by the 82-year-old nun and her colleagues, a principal finding was that there was lack of oversight by the NNSA and, in particular, the contractor assurance system whereby the contractor writes self-evaluations of their performance and then gives it to NNSA to help determine their award fee. Do you want to expound on what you are doing to ensure more rigorous oversight of this process?

Ms. MILLER. Yes. Thank you, Senator.

Senator UDALL. I know you would want to talk to this.

Ms. MILLER. I do. Thank you.

Again, I would start by saying that the incident at Y–12—and this is probably true of whatever challenges the organization faces—is first and foremost a management issue and a management failure. When you look to how to address this for the future, if you do not start from that premise, you may find yourself with many little fixes that do not, in fact, address the problem at its root.

To manage an organization in disconnect between the people in Washington and the people across the country I would say is a system that was appropriate and worked well for many years throughout the Cold War and certainly in a period where communications were what they were. But for us to drive accountability from the

Administrator on through the organization, we have to be organized and working together in a very different way.

The contractor assurance system, in and of itself, we believe is not—and we have had this reviewed by many people from the outside—conceptually is the right way to go. Certainly our laboratory partners are vocal about the need for them to be able to do their work without burdensome oversight. Of course, the devil is in the details: what is burdensome to whom.

I would say on our side what we believe is we need to be able to better train our staff, communicate what we mean by all of this, and make sure that the accountability is all up and down the NNSA, as well as in the contractors, so that that contractor assurance system does not equal a rubber stamp. I think we found ourselves in a place where we had many measures of effectiveness of the contractor, which did not necessarily tell you what was happening. That certainly was the case with security. Then we had people who, because communicating in such a large organization across so many places had been challenging to people for years, had not really driven an understanding of what it meant to operate under a contractor assurance system.

So all of those components are what we are working very hard to address, both organizationally driving the accountability and setting it up in a way that we can see it all and people are connected, but also that communications and training that the Federal staff need to be able to perform their oversight duties appropriately.

Senator UDALL. I very much appreciate your willingness to acknowledge this starts with management. What I think I hear you saying is that the contractor assurance system provides a valuable look from one point of view, but there have to be other checks and balances as a part of that system starting with management.

Ms. MILLER. That is exactly right, Senator.

Senator UDALL. I was the CEO of the Outward Bound School for years. Our focus was on safety, and whenever we had an incident, we did an internal review, as we called it. Then we had an external review to double check our assumptions, our facts, and our conclusions. I think what I hear you saying is that approach has to be a part of what is put into place given what happened.

Ms. MILLER. There absolutely has to be a healthy look at it from both sides ongoing in all of these areas, security, safety, performance of the mission, and all of them.

Senator UDALL. In some cases, we would even have a third review in my situation.

Ms. MILLER. I agree, and one wants to get that done before a problem not afterwards.

Senator UDALL. Thank you for that.

Let me move to the CAPE office. I know you mentioned you are standing up that operation. Can you talk a little bit about how that will be implemented?

Ms. MILLER. I can.

I would say that in the NNSA, while we have, since creation and as it was directed in the enabling statute, presented Congress with a 5-year budget, which is atypical in DOE where it is presented a year at a time, the actual exercise within the organization has really focused on the budgeting and execution portion. The program-

ming and planning has been not as strong as it needed to be. What I found in the organization—and it was certainly not just me, but I have a budget background, so I noticed it particularly—is that decisions tended to be made very low level, which have a strong impact ultimately on resource decisions that the senior folks are left to deal with, in the end very little room to address issues. To make decisions without good analysis, independent analysis, and hard data seems to me to not be in the best interest of the organization long-term, and in the end is less defensible certainly to Congress or anybody else.

So I felt very strongly that in addition to a very strong budget office, which the NNSA absolutely does have, this facility to have independent analysis was absolutely critical to the success of the organization both because we have large construction projects but also because we have large, ongoing projects such as the LEPs and so many other demands on us throughout the nonproliferation programs and all the other work the NNSA does, it is in the best interest of everybody if those resource decisions are made, again, based on good analysis. So it was very much a strong interest of mine to get this going inside.

Now, with respect to how this relates to DOD's CAPE, I had the opportunity, when I was still working at the Office of Management and Budget (OMB) in the mid-2000s working on the NNSA portfolio, to get involved with the CAPE and the NNSA together to begin to look at potential costs of modernizing the infrastructure. So I had a connection with the CAPE for quite some time and the way they do their business.

One thing I came to the conclusion in NNSA and that is with respect to cost analysis itself, the "CA" part of CAPE, I would argue that this capability, to the level that it is done in DOD is almost unique to DOD. Those people know how to do it. They have been doing it. They tend to stay put, and to create that out of nothing is difficult, very difficult.

So instead, I had a very good relationship especially over the last year with the Director of the CAPE, Ms. Christine Fox, with whom I conducted a long, in-depth analysis of our resource needs. We were able to come to a good arrangement wherein we in the NNSA can continue to use the DOD CAPE's cost assessment capability and eventually grow our own by training people over there. But for the "PE" part, the program evaluation and analysis, that part we could stand up on our own over at NNSA, and that was the shop that I just mentioned. I think the two together give us what we need.

Senator UDALL. That is helpful, and I look forward to hearing more as that develops. Clearly, your background led you to see this and to create a hybrid, if you will, approach.

Let us turn to the 's' word—it is not a four-letter word, but it feels like one some days—"sequestration." What effect will it have on your major programs in terms of schedule delays? In particular, I am primarily focusing on the B61, the W76, and the uranium processing facility.

Ms. MILLER. I feel compelled, when I talk about sequestration, to talk about budget uncertainty overall. I would not be true to my budgeter background if I did not.

Budget uncertainty in my eyes starts, first and foremost, with the Continuing Resolutions (CR) that people live off of. So now I will layer sequestration on what we know as a fact of life.

Clearly, there is an effect on projects, especially the kinds of projects we run, whether they are construction projects, LEPs, frankly projects that we have going in other countries to secure borders, to secure material. Anything that plans out over several years that has a path to a cost and now cannot meet the plan, first and foremost, despite the mirage of a cash flow benefit, in fact will lead to higher costs for all of these projects by definition.

Senator UDALL. You are talking about CRs and sequestration.

Ms. MILLER. I would say for both, but sequestration on top of the planning challenges absolutely comes in and knocks us off our feet. I know you heard testimony yesterday from the Director of Sandia speaking very strongly about his concerns with respect to the B61 and the effect of sequestration. I spoke this morning for an hour with people from one of our communities that is absolutely reeling from being hit by sequestration and heard some really stunning stories of how individuals are not just on furloughs but people in businesses and how they are planning with their lives. Those are communities that we work closely with and we rely on to be strong for us in the work we need to get done. So I think the effect is profound and I am surprised that people do not get that.

Senator UDALL. Yes. I am tempted to try and categorize CRs and sequestration, which is worse, but I think they are both bad.

Ms. MILLER. I would rather not have either.

Senator UDALL. Yes. That is a job and responsibility we have yet to shoulder. We need to.

I am going to turn to a GAO recommendation that NNSA reevaluate the award for the combined contract at Y–12 and Pantex. Their principal finding is that the NNSA did not meaningfully assess—that is a quote, "meaningfully assess"—the estimated cost savings of some $3.4 billion in the winning proposal especially since NNSA's own internal estimate assumed a savings from the combined contract of about $840 million. Would you comment on the GAO finding?

Ms. MILLER. Senator, thank you. I will comment. I need to, of course, be careful about how I comment since this is still in open procurement. I will comment enough to say that we are announcing and have announced today that we will carry our a corrective action with respect to the GAO finding as they recommended. We, of course, were very pleased that GAO found, out of the 17 issues in front of them, 16 of them were not with merit. But on the one that they did find, we are going to carry out a corrective action on that. The various affected parties have been informed today and we will proceed with the process on that directly.

Senator UDALL. I look forward to seeing that. That is a nice batting average, 16 out of 17, but I know you want to hit 100.

Ms. MILLER. I am from Boston. [Laughter.]

Senator UDALL. I am staying away from that. The Rockies are my team except when you all come to town. [Laughter.]

You mentioned in your testimony we heard from the lab directors yesterday, and they are quite a talented trio. Dr. McMillan specifically indicated that you are all looking at a less costly strategy for

the CMRR involving a series of modular buildings instead of a large one. Can you comment on your thoughts on this approach and whether it holds promise for providing flexibility and lower costs? I know you mentioned, I think, a plutonium strategy. Again, please share your thoughts on all of this.

Ms. MILLER. Sure. Thank you.

First of all, I noted in your comments to open with, you mentioned what had been spent on the design of CMRR thus far, as well as the pit disassembly and conversion facility, again what had been spent on design. In both those cases, we did not proceed with construction.

So dealing specifically with the chemistry and metallurgy replacement building, I think like a lot of situations, budget crises drive you to work harder and sometimes better, and in this case I think better. We had a plan on the books for many years. It had not, frankly, been reassessed in light of a lot of things, and we found ourselves with a rather large bill just at the time when the money became particularly tight. That did cause us, together with our lab directors, to go back and review.

The approach that you heard about, the modular approach, is absolutely of great interest to us, but I will tell you that we are undertaking, with the CAPE, a business case analysis of that approach and a few others because we need this time to make sure that we have really looked at the options and did not just get behind the next thing that appeared and decided that that was the option.

Senator UDALL. We are going to move to the next panel, but I have two questions that I will put in the record. I know you will be willing to answer them for the record.

In particular, I want to just note your focus on the long-term vision I am learning at the helm of this committee and will draw some conclusions over time. But I think the President's goal of nonproliferation as a start and then ultimately a world that does not face the threat of nuclear weapons are worthy and important—I know there is broad bipartisan support for that approach. I think we should hold that as a goal. It is a long, winding road to reach it. It may take many generations, but I think it is crucial that we keep that. I know that is at the core of your philosophy and you reflect the President's philosophy.

Ms. MILLER. Absolutely.

Senator UDALL. Thank you for appearing today. We look forward to working with you further.

Ms. MILLER. Thank you.

Senator UDALL. You are free to do whatever else you have on your busy schedule, you may either go or you are welcome to stay. Thank you for being here.

Ms. MILLER. Thank you very much.

Senator UDALL. As the Administrator leaves, we will ask the second panel to come forward. We will begin as soon as you all are ready. [Paugse.]

Welcome, gentlemen. Thank you again for taking time out of your busy schedules to join the Strategic Forces Subcommittee. I think in the interest of time, we will move from my left to right, and if each of you would be willing to share 1 or 2 minutes of your

thoughts and then we will go right to questions. I want to make sure everybody has a chance to be heard, particularly in the question and answer period. Of course, if we do not get to everything that you would like us to know, the record will remain open for a number of days, not too many days, but will remain open for a number of days so you can submit additional comments.

So, Dr. Cook, we will open with you.

STATEMENT OF HON. DON L. COOK, DEPUTY ADMINISTRATOR FOR DEFENSE PROGRAMS, NATIONAL NUCLEAR SECURITY ADMINISTRATION, DEPARTMENT OF ENERGY

Dr. COOK. Chairman Udall and members of the subcommittee, I thank you for the opportunity to be here and testify. I will abbreviate my remarks as I go in the interest of time.

I especially want to make the point that the NNSA has committed to strategically modernizing our nuclear weapons infrastructure, the nuclear weapons systems themselves, and the supporting science, all of which are required to ensure a safe, secure, and effective nuclear deterrent, and to continue to certify the stockpile without underground testing, as we have now done for 20 years in a row.

Within today's constrained fiscal environment, we have also closely scrutinized our strategies, plans, processes, and organization to ensure we make the most of our resources. Over the past year, we have worked very closely between NNSA and DOD, often through the Nuclear Weapons Council and the subordinate bodies. We have been engaged in a budget-driven requirements analysis, and this process of rigorous analysis has forged a stronger link between the two agencies, as well as improved the thought process and the ideas that we are bringing forward for execution.

As a result, some of the highlights are we have achieved a comprehensive strategy for the conduct of LEPs across the stockpile. This has not existed before. We call this a 3+2 strategy. I will elaborate on that in just a few moments quickly.

We have updated and have now a more complete plutonium strategy, as Administrator Miller just went through.

We have a refocusing of our science, technology, engineering, and infrastructure activities underway right now and are continuing to make sure that we align those activities with the needs of the LEP for the capabilities that are most urgently needed.

We have done a reorganization of the way in which we operate our facilities accounts. The operations of facility accounts now are separated into site infrastructure, which is broad, and nuclear programs, which is specific to nuclear programs.

We as well have a sizeable challenge on our hands, the significant effort to identify and implement management efficiencies, specifically $320 million in amount in fiscal year 2014, building to $2 billion over the future years 2014 to 2018 Nuclear Security Program (NSP). Each of these critical areas was determined after a considerable and deep effort, again, among the agencies with which we work.

So let me for a moment touch on a few elements pertinent to this discussion and questions you might have.

The 3+2 strategy is a strategy that will provide, in the course of time, three interoperable ballistic missile systems to replace the four not interoperable ballistic systems we have today and two legs of the deterrent. In addition, we will have two interoperable systems covering the air-delivered leg. That will include at least a bomb system and a cruise missile system.

With regard to the LEPs, a very quick status is the W76 LEP has achieved the full build rate of production. We are in steady state, or phase 6, and that effort will complete with all deliveries required for the Navy now by the end of 2019.

The W88 Alt 370 is a substantial update on the arming, fuzing, and firing (AF&F) needed for the W88 weapons system. It is also in engineering development at phase 6–3, and it is slated for a first production unit also in fiscal year 2019.

The B61–12 is now also in engineering development, continuing very well. We are pursuing option 3B. That was a decision made by the Nuclear Weapons Council. That has, again, a first production unit of fiscal year 2019 and an initial baseline remaining at about $7.9 billion.

Very quickly, what I would like to address is there has been significant discussion of other options which were duly considered by the Nuclear Weapons Council and one that is attractive because of its lower cost. Triple Alt is an alteration of three specific components. While that would carry the B61 family forward for a few years and maybe as long as a decade, it would then need to be followed by a comprehensive LEP under greater urgency. That would not lead to a consolidation of the four different mods we have in this weapons system, and most importantly, it would not address some of the things like electronics degradation and the environment of the weapon, which the laboratories and laboratory directors are now seeing and are concerned about.

The last item I would like to mention is the first interoperable system. We denote it as the W78/88–1. That is in phase 6–2. It is in design definition and the cost study phase, which is going through right now assessment of really the ability for us to have an interoperable system in two legs of the deterrent.

Although I have other remarks, I think I will stop at this point and open the way for my colleagues for a time and questions later.

Senator UDALL. Thank you, Dr. Cook.

Admiral Richardson, welcome.

STATEMENT OF ADM JOHN M. RICHARDSON, USN, DEPUTY ADMINISTRATOR FOR NAVAL REACTORS, NATIONAL NUCLEAR SECURITY ADMINISTRATION, DEPARTMENT OF ENERGY

Admiral RICHARDSON. Chairman Udall, members of the subcommittee, thank you for the opportunity to testify before you today on the Naval Reactors fiscal year 2014 budget request. It is a privilege to be here representing the men and women of the Naval Nuclear Propulsion Program. This is the first of, hopefully, many times testifying as the Director. I am eager to share our progress, opportunities, and challenges.

Your Naval Nuclear Propulsion Program provides for research, development, design, procurement, certification, operation, and eventual disposal of 97 naval nuclear reactors that power the 10

aircraft carriers, 14 *Ohio*-class ballistic missile submarines, 4 guided missile submarines, and 54 attack submarines, more than 40 percent of the U.S. Navy's major combatants. These ships are available whenever called to go anywhere in the world and remain continuously on station in defense of our Nation's interests.

Mr. Chairman, my budget request for fiscal year 2014 is $1.26 billion and includes funds for my base program, as well as for three new projects, the replacement of the *Ohio*-class submarine, a refueling overhaul for our land-based prototype, and the recapitalization of our spent fuel handling facility in Idaho. The requested funding in fiscal year 2014 and the out-years has been vetted by OMB, DOE, and NNSA. In addition, the Office of the Secretary of Defense (OSD) CAPE recently completed a comprehensive analysis of the program and validated our requirements.

With your permission, sir, I would like to quickly share a few details about the activities funded by our request.

First, the *Ohio*-class strategic deterrent submarines will begin to reach the end of their service life in the late 2020s. The fiscal year 2014 request includes $126 million for the development of the reactor plant for the submarine that will replace the *Ohio*-class. This new reactor plant includes a core that will last the entire life of the submarine, 42 years, without needing to be refueled. The life-of-the-ship core, coupled with other maintenance innovations, enables this new ballistic missile submarine (SSBN) force to eliminate the mid-life refueling, turning shipyard time into at-sea time, and by virtue of the increased operational availability made possible by this core, the new SSBN class is able to meet its strategic commitments with 12 ships, 2 less than the current force of 14. The Navy estimates this will save $40 billion over the life of the program. The procurement of the first *Ohio* replacement submarine is scheduled in 2021 with nuclear component procurement beginning in 2019.

The second project in our request is the refueling and overhaul of the land-based prototype reactor, which begins in 2018. To support this requirement, the fiscal year 2014 budget request includes $144 million. This program is essential to delivering the life-of-the-ship core for the new strategic submarine. When we refuel this reactor, the core we will use will include advanced features that we intend to use for the submarine reactor. Fielding a prototype with this advanced core will allow us to validate the manufacturing techniques and better understand the behavior of this core for the *Ohio* replacement. This understanding will translate into reduced technical costs and schedule risk to this new submarine.

We also use this reactor to train our fleet operators, about 800 a year. So in addition to the technology linked to the new submarine, this refueling will allow us to continue that critical training for an additional 20 years.

The final project in our budget supports the Navy's refueling scheduled for the *Nimitz*-class aircraft carriers. The fiscal year 2014 budget includes $70 million to complete conceptual design and begin project engineering and design for the new facility to handle that spent fuel from those carriers. This new spent fuel handling project will come on line in 2022 to replace the existing facility, which is more than 50 years old and is quickly becoming

obsolete. The new facility will also enable me to meet my commitments to the State of Idaho which require that naval spent nuclear fuel be moved to dry storage and ultimately to permanent disposal.

Finally, Mr. Chairman, everything I do, including these three projects I have just described, are made possible only by the efforts of the talented and dedicated people in my two labs and my headquarters personnel. These people form the base of my program. These scientists and engineers provide the technical foundation that is essential for me to execute my day-to-day regulatory and fleet support responsibilities for the 97 reactors currently in service, the shipyards that maintain the nuclear powered fleet, and the vendors that supply that fleet. This core talent base also does the design analysis and oversight work for these new projects and manages our spent fuel to ensure we meet our responsibilities to the American people and the environment.

I am grateful for the support this committee has given the Naval Nuclear Propulsion Program. I look forward to working together to advance the three critical projects discussed today and support the safe operation of the nuclear powered fleet. Thank you again. I am ready to answer any questions, sir.

Senator UDALL. Thank you, Admiral.

Mr. Huizenga?

STATEMENT OF MR. DAVID G. HUIZENGA, SENIOR ADVISOR FOR ENVIRONMENTAL MANAGEMENT, OFFICE OF ENVIRONMENTAL MANAGEMENT, DEPARTMENT OF ENERGY

Mr. HUIZENGA. Good afternoon, Chairman Udall and members of the subcommittee. I am honored to be here today to discuss the many positive things the OEM is doing for the Nation and to address your questions on our fiscal year 2014 budget request.

Finally, I will just offer my appreciation for so quickly approving a reprogramming request that recently came up. I appreciate that.

Our request of $5.3 billion for defense-funded activities will enable our office to continue the safe cleanup of the environmental legacy brought about from 5 decades of nuclear weapons development and Government-sponsored nuclear energy research. Our cleanup priorities are based on risk and our continued effort to meet our regulatory compliance commitments. Completing cleanup enables other crucial DOE missions to continue and ensures the reduction of one of the U.S. Government's largest liabilities.

The OEM has made significant progress in accelerating cleanup across the United States. For example, in 2009, the total footprint of EM's cleanup sites was 931 square miles. As of January of this year, that figure has been reduced by 74 percent. In 2012 at the Savannah River Site (SRS) in South Carolina, EM achieved a key milestone with closure of two high-level waste tanks. Also to date, EM has sent more than 11,000 shipments of transuranic (TRU) waste to the Waste Isolation Pilot Plant (WIPP) in New Mexico for safe disposal.

These accomplishments have been possible due to our competent Federal and contractor workforce. The safety of these workers is a core value that is incorporated into every aspect of our program. We maintain a strong safety record and continuously strive for an accident- and incident-free workplace by aggressively sharing les-

sons learned across our sites. We are training senior management and working to achieve an even stronger safety culture within our program, thereby ensuring safe construction and operation of our facilities.

In recognition of EM's improvements in contract and project management, earlier this year my colleague, Mr. Trimble, to my left, and his colleagues removed EM capital asset projects with values less than $750 million from its high-risk designation. We are deeply committed to excellence in contract management and project management, and as much as I enjoy working with Dave, we intend to keep these projects off the GAO high-risk list.

In fiscal year 2014, we are positioned to continue making progress toward our cleanup goals. For example, at the Office of River Protection, we are continuing construction of the low activity waste facility, complete construction of the analytical laboratory, and continue to see tank farm retrievals. At the SRS, we will close another two tanks, tanks 5 and 6, high-level waste tanks. At Idaho, we are going to continue progress on the treatment of the remaining 900,000 gallons of liquid waste and process and ship 4,500 cubic meters of transuranic (TRU) waste to WIPP. At Los Alamos, we are going to continue to focus on processing and removing 3,700 cubic meters of above-ground TRU waste. Finally, we are going to continue disposition of the U–233 inventory from Oak Ridge National Laboratory and pursue technology development for cost-effective treatment of mercury contaminated building debris at Y–12.

In closing, we will continue to apply innovative cleanup strategies so that we can complete our work safely on schedule and within cost, demonstrating a solid value to the American taxpayers. The OEM has made steady progress, and with your help, we will continue to do so.

Thank you and I, as the others, will take questions.

[The prepared statement of Mr. Huizenga follows:]

PREPARED STATEMENT BY MR. DAVID HUIZENGA

Good afternoon, Mr. Chairman, Ranking Member Sessions, and members of the subcommittee. I am pleased to be here today to represent the Department of Energy's (DOE) Office of Environmental Management (EM). I would like to provide the Members with an overview of the EM program, key accomplishments during the past year, 2013 planned accomplishments and progress to date, the projected impacts of sequestration, and planned accomplishments under the fiscal year 2014 request.

OVERVIEW OF THE EM MISSION

EM's mission is to complete the safe cleanup of the environmental legacy resulting from five decades of nuclear weapons development and government-sponsored nuclear energy research. This environmental legacy includes 88 million gallons of some of the world's most dangerous radioactive wastes, thousands of tons of spent nuclear fuel (SNF), over 10,000 containers of excess plutonium and uranium, over 5,000 contaminated facilities, millions of cubic meters of contaminated soil and billions of gallons of contaminated groundwater. As the largest environmental cleanup program in the world, EM was charged with the responsibility of cleaning up 107 sites across the country; an area equal to Rhode Island and Delaware combined. EM has made significant progress in this cleanup mission, completing the cleanup work at 90 of the 107 sites through the end of 2012.

EM CLEANUP OBJECTIVES

EM continues to pursue its cleanup objectives safely within a framework of nuclear safety orders, environmental regulatory compliance commitments and best

business practices. The rationale for cleanup prioritization is based on achieving the highest risk reduction benefit per radioactive content (activities focused on materials and wastes that contain the highest concentrations of radionuclides and sites with the highest radionuclide contamination). Taking many variables into account, EM has generally prioritized its cleanup activities across the EM complex as follows:

- Safety, security, and quality
- Environmental Compliance
- Radioactive tank waste stabilization, treatment, and disposal
- Spent (used) nuclear fuel storage, receipt, and disposition
- Special nuclear material consolidation, stabilization, and disposition
- High-risk soil and groundwater remediation
- Transuranic and mixed/low-level waste disposition
- Soil and groundwater remediation
- Excess facilities deactivation and decommissioning.

In addition to these priorities, EM is committed to sound technology development and deployment as a way to reduce costs and fulfill its critical mission. EM develops and implements first-of-a-kind technologies to further enhance its ability and efficiency in cleaning up radioactive waste. Through these innovations, EM and the companies that perform its cleanup work have remained world leaders in this arena. EM's work enables other crucial DOE missions to continue across the United States. For example, EM supports the non-proliferation mission of the Department by providing and managing receipts of foreign and domestic research reactor fuels from around the world. EM supports both Science and National Nuclear Security Administration national laboratories by managing and dispositioning wastes and remediating and removing old facilities, enabling the Department to develop new capabilities. Finally, EM has consolidated nuclear materials from around the complex, reducing security requirements at a number of labs and former weapons production sites. By reducing EM's cleanup footprint, EM is lowering the cost of security, surveillance, infrastructure, and overhead costs that would otherwise continue for years to come.

Additional strategies are integrated into cleanup activities that are important to the achievement of EM cleanup progress as well as the stakeholders and states where cleanup sites are located. These strategies include development of technologies that can improve the efficiency and effectiveness of the cleanup activity, better use of contract types, options and alternatives for specific cleanup activities, and integration/optimization of shipping to disposal facilities to reduce costs. Most importantly, EM will continue to discharge its responsibilities by conducting cleanup within a "Safe Performance of Work" culture that integrates environmental, safety, health, and quality requirements and controls into all work activities. This ensures protection to the workers, public, and the environment.

KEY ACCOMPLISHMENTS IN THE PAST YEAR

I would like to take this opportunity to highlight a number of the Office of Environmental Management's most recent accomplishments.

Continuous Improvement in Integrated Safety Management

One of my highest areas of emphasis has been in leading improvements to the organizational, safety, and security culture of EM. An organization's culture directly impacts how the organization performs. For industrial organizations, and particularly for nuclear organizations, having a strong safety and security culture is imperative for ensuring the safe and secure performance of high-quality work. It must be a fundamental value shared by all members of the organization at all levels.

In 2011, DOE accepted the Defense Nuclear Facilities Safety Board recommendation to strengthen the safety culture at the Waste Treatment and Immobilization Plant in Hanford. Recognizing the importance of this initiative we have expanded our scope to improve safety culture at all of our EM sites. Efforts in this area are ongoing, and we have trained over 1,000 senior Federal and contractor managers on Leadership for a Safety Conscious Work Environment. Early indications are that we are seeing a clear recognition by managers of the need to improve the communication of expectations that flow throughout our sites and headquarters. We have also continued to improve our safety and security culture through other ongoing initiatives such as evaluating field site safety management, sharing safety lessons learned and best practices, and working to improve our security and quality assurance programs across all of EM.

Part of maintaining a strong organizational culture is embracing the concepts of continuous improvement and fostering a learning and questioning organization. While EM is focusing on efforts to improve our culture and is seeing success through

our interactions with our leadership and employees at our sites, there is more work to be done, and this will continue to be a key area of focus for EM.

Project and Contract Management

A second area of emphasis has been the improvement of project and contract management. EM's project and contract management has long been designated a governmental "high risk area" by the Government Accountability Office (GAO). Key EM reforms in this area include implementing policies requiring more front-end planning; ensuring Federal project directors and contracting officers have access to relevant training to help enhance their project and contract management knowledge; improving cost estimating; conducting more frequent project reviews by peers and experts in project management to ensure issues are identified early and lessons learned are being applied in real-time; selecting proper contract types; tying fee strategies to final outcomes; and restructuring our portfolio into smaller, better defined capital asset projects and non-capital operations activities.

These reforms are already bearing fruit. On February 14, 2013, GAO issued its biennial update to the high risk list. In recognition of EM's improvements in contract and project management, GAO narrowed the scope of its high risk designation, focusing on EM capital asset projects with costs greater than $750 million. In the report, GAO recognized EM management for demonstrating "strong commitment and top leadership support for improving contract and project management." EM will continue the specific project and contract management reforms above.

The Office of Environmental Management is continuing to make progress on constructing EM's two largest projects—the Waste Treatment and Immobilization Plant (WTP) in Richland, WA, and the Salt Waste Processing Facility in Aiken, SC.

The WTP will treat and immobilize in glass the bulk of approximately 56 million gallons of radioactive waste stored in 177 underground storage tanks at the Hanford site. We have encountered several technical and management issues at the Pretreatment Facility and the High-Level Waste Facility and are working expeditiously to address them. Full construction continues on the Low-Activity Waste Facility, Analytical Laboratory and the Balance of Facilities (support facilities). The Department has determined to ramp-up construction activities in the High-Level Waste Facility in areas not impacted by technical issues.

Over the last several months, the former Energy Secretary and a number of top scientists and engineers reviewed many aspects of the WTP. Approaches are being evaluated to resolve the issues associated with criticality, hydrogen generation, erosion/corrosion, and tank mixing issues. Technical teams developed as a result of this review draw upon expertise from academia, industry, and the Department's national laboratories.

EM's second largest construction project, the Salt Waste Processing Facility (SWPF), will treat the salt portion of the liquid radioactive waste inventory at the Savannah River Site. This project and is 69 percent complete. A pilot version of the treatment plant has been operating successfully since 2008, providing high confidence in the technical capabilities of SWPF. To date, the pilot plant has processed over 3 million gallons of tank waste. Due to delays in the delivery of key facility components meeting acceptable quality levels for nuclear facilities, including mixing vessels, SWPF is experiencing cost over-runs and schedule delays. Since the delivery of the mixing vessels last year, we are working closely with our contractor to identify the most economical and timely path for completion.

Finally, I would like to provide an update on a third important EM construction project. The Integrated Waste Treatment Unit (more commonly known as the Sodium Bearing Waste project) will treat 900,000 gallons of radioactive liquid waste stored in underground tanks at the Idaho National Laboratory. Following the completion of construction, the facility began startup testing. However, startup testing was suspended in June 2012 to allow detailed evaluation of a system pressure event that occurred during cold commissioning. EM is planning to resume facility startup operations in early 2014.

Each of these three construction projects involve the processing, treatment and immobilizing high level radioactive/hazardous waste into glass or solid carbonate. These projects have been especially challenging considering these are first-of-a-kind and one-of-a-kind facilities.

Cleanup Progress

Thanks in part to the improvements in integrated safety management, contract management, and project management, EM has achieved major cleanup successes:

- Footprint Reduction. In 2009, the total footprint of EM's cleanup sites was 931 square miles. Through January 2013, we have reduced that figure

by 74 percent, primarily through the use of Recovery Act funding to complete the cleanup of large areas of the Hanford and Savannah River sites.
• High Level Radioactive Waste. We have also made significant progress in the treatment of high-level radioactive waste, which represents the most hazardous and costly component of EM's cleanup mission. At the Savannah River Site, in fiscal year 2012 we achieved closure of two high-level waste tanks—the first tanks closed at the site since 1997—and packaged a record high of 275 canisters of high level waste in a single year at the Defense Waste Processing Facility.
• Transuranic Waste. Finally, we continue to achieve major successes with our Nation-wide program for the transportation and disposition of transuranic waste. To date, we have sent more than 11,000 shipments of this waste to the Waste Isolation Pilot Plant in Carlsbad, NM, for disposal.

EM has achieved significant progress. However, I would also like to provide you an update on an issue that has emerged this year. In 2005, DOE completed a tank stabilization effort designed to remove much of the liquid waste from Hanford's single shell tanks. In February, DOE found that one tank continues to leak and five other tanks are showing declining liquid level trends that may indicate leaking. Video examination of the interior of the tanks is planned in the coming months. Both the Department of Energy and the Washington State Department of Ecology agree that the leaks pose no immediate health threat. Safe storage of tank waste until it is treated for permanent disposal is a top priority, and EM is working to further investigate the issue and evaluate appropriate corrective actions.

HIGHLIGHTS OF THE FISCAL YEAR 2014 BUDGET REQUEST

The fiscal year 2014 EM budget request totals $5.621 billion, which is $88.7 million less than the fiscal year 2012 current enacted amount. The request includes a $463 million net neutral transfer from Defense Environmental Cleanup to the Uranium Enrichment Decontamination and Decommissioning Fund for the Budget proposal to reauthorize the Fund. The request funds Defense Environmental Cleanup activities at $5.317 billion for fiscal year 2014. Examples of planned activities and milestones for fiscal year 2014 by site-specific categories are:

IDAHO NATIONAL LABORATORY, ID

[In thousands of dollars]

Fiscal Year 2012	Fiscal Year 2014 Request
$384,669	$365,010

Key Accomplishments Planned for Fiscal Year 2014

• Process and ship approximately 4,500 cubic meters of contact-handled TRU Waste to the Waste Isolation Pilot Plant.
• Continue sodium-bearing waste treatment operations.
• Maintain tank farm and systems for delivery of sodium bearing waste until treatment is complete.

LOS ALAMOS NATIONAL LABORATORY, NM

[In thousands of dollars]

Fiscal Year 2012	Fiscal Year 2014 Request
$188,161	$219,789

Key Accomplishments Planned for Fiscal Year 2014

• Support process towards completion of processing and removal of 3,706 cubic meters of above-ground TRU waste (June 2014 milestone).
• Continue groundwater and remediation activities.
• Continue operation of new oversize modular box line and disposition of excess materials and TRU waste.
• Continue disposition of mixed low-level waste/low-level waste.
• Support decontamination, decommissioning and demolition activities for process-contaminated facilities at Technical Area-21.

OAK RIDGE RESERVATION, TN

[In thousands of dollars]
[Includes Safeguards & Security Funding]

Fiscal Year 2012	Fiscal Year 2014 Request
$218,902	$216,827

Key Accomplishments Planned for Fiscal Year 2014

- Continue shipments of Consolidated Edison Uranium Solidification Project material from the uranium-233 inventory in Building 3019A to Nevada for disposal.
- Complete planning and readiness activities for processing the remaining uranium-233 inventory in Building 2026.
- Conduct a screening characterization of the West End Mercury Area of Y–12 National Security Complex to refine estimates of the nature and extent of mercury contamination and to identify areas that will require full characterization and mitigation measures.
- Continue operations of liquid, gaseous and process waste systems at Oak Ridge National Laboratory.
- Continue Sludge Disposition Build-out Project Design at TRU Waste Processing Center for sludge stabilization.
- Continue transfers of transuranic waste to the Transuranic Waste Processing Center located at the Oak Ridge National Laboratory.
- Continue processing and disposal of contact-handled and remote-handled transuranic waste.

RICHLAND SITE, WA

[In thousands of dollars]
[Includes Safeguards & Security Funding]

Fiscal Year 2012	Fiscal Year 2014 Request
$1,019,121	$990,863

Key Accomplishments Planned for Fiscal Year 2014

- Continue remediation of the 618–10 burial ground and continue remediation of other waste sites along the Columbia River.
- Initiate deactivation, decontamination, decommissioning and demolition of the high-risk Building 324 and the remediation of soil underneath.
- Continue deactivation and decommissioning of facilities in the Plutonium Finishing Plant complex, including deactivating and preparing for dismantlement of the above grade portions of 234–5Z, 243–Z, and other facilities.
- Treat and dispose of liquid waste from site generators and dispose treated liquid effluents from the 200 Area Liquid Effluent Facility.

OFFICE OF RIVER PROTECTION, WA

[In thousands of dollars]

Fiscal Year 2012	Fiscal Year 2014 Request
$1,182,010	$1,210,216

Key Accomplishments Planned for Fiscal Year 2014

- Continue construction of Low Activity Waste, Laboratory, and Balance of Facilities and complete construction of Analytical Laboratory.
- Continue activities for the Design Completion Team to resolve WTP technical issues and align the preliminary documented safety analysis with the design to allow for resumption of HLW construction in all areas of the facility by the end of 2014.
- Continue single shell tank retrieval activities in order to complete all C Farm retrievals by the end of 2014.
- Continue AY/AZ Farm ventilation system upgrades and Feed Delivery System activities.

SAVANNAH RIVER SITE, SC

[In thousands of dollars]
[Includes Safeguards & Security Funding]

Fiscal Year 2012	Fiscal Year 2014 Request
$1,316,922	$1,209,457

Key Accomplishments Planned for Fiscal Year 2014

- Produce 100 canisters at the Defense Waste Processing Facility.
- Continue closure activities for Tanks 5 and 6.
- Process 3 million gallons of salt tank waste and dispose over 5 million gallons of low-activity waste onsite in the Saltstone Disposal Units.
- Continue construction of the Salt Waste Processing Facility.
- Continue receipt of Foreign/Domestic Research Reactor Used Nuclear Fuel and implement Augmented Monitoring and Condition Assessment Program of Used Nuclear Fuel in wet storage.
- Store and ship non-Moxable plutonium to the Waste Isolation Pilot Plant.
- Continue processing of low-level and mixed low-level radioactive waste and disposal operations in E Area.
- Continue Building 235–F Risk Reduction scope to meet Implementation Plan for Defense Nuclear Facilities Safety Board's Recommendation 2012–1.

WASTE ISOLATION PILOT PLANT, NM

[In thousands of dollars]
[Includes Safeguards & Security Funding]

Fiscal Year 2012	Fiscal Year 2014 Request
$218,179	$208,367

Key Accomplishments Planned for Fiscal Year 2014

- Support transport and disposal of remote-handled and contact-handled TRU waste at the Waste Isolation Pilot Plant. . Continue Central Characterization Project for TRU waste at Los Alamos National Laboratory, Idaho National Laboratory and Oak Ridge National Laboratory. . Maintain capability for receipt and disposal for up to 21 shipments per week of contact-handled and remote-handled TRU for 41 weeks.

CONCLUSION

Mr. Chairman, Ranking Member Sessions, and members of the subcommittee, I am honored to be here today representing the Office of Environmental Management. EM is committed to achieving its mission and will continue to apply innovative environmental cleanup strategies to complete work safely, on schedule, and within cost thereby demonstrating value to the American taxpayers. I am pleased to answer any questions you may have.

Senator UDALL. Thank you, Mr. Huizenga. I think you put your finger on it. I think at some level the GAO's mission is to put themselves out of business. So anything you can do to make that a possibility, I am sure they would appreciate it.

Mr. Trimble?

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

Mr. TRIMBLE. Thank you. Chairman Udall and members of the subcommittee, my testimony today will focus on our recent and ongoing work on cost estimating practices and budgetary information at NNSA and EM for projects and programs.

While DOE has taken a number of steps to improve its management of projects, all of the ongoing major projects continue to experience significant cost increases and schedule delays. Uranium Processing Facility costs have increased seven-fold up to $6.5 billion for a project with reduced scope and 11 years added to the schedule. CMRR costs have increased nearly six-fold up to $5.8 billion with a total delay, counting the deferral announced last year, of up to 12 years. The Waste Treatment and Immobilization Plant has tripled in cost over $12 billion with a decade added to its schedule.

Regarding cost estimating, our preliminary observations from ongoing work we are doing for this committee include the following. DOE has not established a cost estimating policy for capital projects. DOE's project management order does not meet cost estimating best practices. NNSA and DOE cost estimating guidance does not fully meet GAO's best practices criteria for cost estimating.

While capital asset projects are highly visible, about 90 percent of NNSA's budget is devoted to operating programs. Our preliminary findings examining cost estimating practices for programs indicate that DOE and NNSA may lack specific cost estimating requirements or guidance for programs. For example, NNSA officials responsible for the Plutonium Disposition Program told us that they have constructed a life cycle cost estimate of about $24 billion for the program. They noted, however, that there is no DOE or NNSA requirement prescribing how such an estimate should be developed, nor is there a requirement that it be independently reviewed.

In regard to budgetary information, in June 2010, we examined NNSA's program to operate and maintain weapons facilities and infrastructure and found that NNSA could not accurately identify the total cost for this congressionally directed program. NNSA's budget justification understated these costs by over $500 million.

In July 2012, we found deficiencies in NNSA's validation of budget requests for its programs and concluded that these weaknesses impacted the credibility and reliability of those budget estimates. According to NNSA officials, the agency's experience and trust in these contractors minimized the need for such review.

In closing, let me note that without accurate cost and budget information, DOE is not in a position to effectively manage the critical projects and programs carried out by its contractors. With over $180 billion planned to be spent at NNSA alone over the next 18 years, Congress also needs accurate and reliable information on these costs as it confronts difficult budgetary decisions. Without improvements in this information and DOE's capabilities to use and effectively apply this information, DOE will continue to be surprised by cost and schedule problems and will continue to be forced to manage these problems through reactive and stop gap measures such as suspending programs, reducing the scope of critical projects, or robbing Peter to pay Paul.

Thank you. I am happy to answer any questions.

[The prepared statement of Mr. Trimble follows:]

PREPARED STATEMENT BY MR. DAVID TRIMBLE

Chairman Udall, Ranking Member Sessions, and members of the subcommittee: Thank you for the opportunity to discuss our work on project and program cost estimating and related budget information in the National Nuclear Security Administration (NNSA), a separately organized agency within the Department of Energy (DOE), and DOE's Office of Environmental Management (EM). In fiscal year 2012, NNSA and EM received appropriations of over $16 billion to ensure the safety, security, and reliability of the U.S. nuclear weapons stockpile and to address the environmental cleanup of Cold War sites. Together, NNSA and EM have outlined plans that could commit American taxpayers to $450 billion in programs and projects over decades to address their missions. Specifically, in 2011, NNSA put forward plans to modernize the U.S. nuclear security enterprise at a cost of $88 billion over the next decade and a total cost of over $180 billion to do so through 2031.[1] In 2012, DOE estimated that its total liability for environmental cleanup, the largest component of which is managed by EM, is almost $270 billion and includes responsibilities that could continue beyond the year 2087.[2] In a time of fiscal constraint, Congress needs high-quality cost and budget information upon which to make decisions about NNSA's and EM's projects and programs. Our recent and ongoing work on cost estimating, budget validation, and program expenditures highlight some of the challenges Congress faces in getting reliable and accurate cost information from NNSA and EM that it can use to make cost-informed decisions and effectively conduct oversight.[3]

NNSA and EM oversee contracts for the execution of both projects, including capital asset acquisitions, and programs central to the achievement of their missions. DOE defines a capital asset acquisition project as having a defined start and end point with a cost that includes both purchase price and all other costs incurred to bring it to a form and location suitable for its intended use. Capital asset project costs exclude operating expenses that are part of routine operations and maintenance functions. Examples of ongoing DOE capital asset projects include NNSA's Uranium Processing Facility at the Y–12 National Security Complex in Tennessee—currently estimated to cost up to $6.5 billion—and EM's Waste Treatment and Immobilization Plant in Washington, currently estimated to cost $13.4 billion. While capital asset projects are a visible part of DOE's budget, these projects comprise a relatively small portion of the total budget. In fiscal year 2012, capital asset projects comprised just under 10 percent of NNSA's budget, and approximately 90 percent of that budget was for operating programs. DOE defines a program as an organized set of activities directed toward a common purpose or goal and characterized by a strategy for accomplishing one or more definite objectives. A program includes routine operations and maintenance costs and can include projects in its scope. An example of an ongoing program is NNSA's Tritium Readiness Program—a program to produce a steady supply of tritium, a key isotope used in nuclear weapons—that has had an annual funding requirement of about $70 million.

For NNSA, work activities on both projects and programs are largely carried out by management and operating (M&O) contractors at NNSA's eight government-owned, contractor-operated sites.[4] For EM, with a remaining environmental cleanup mission covering 17 sites in 11 States, cleanup work activities are carried out by

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[1] U.S. Department of Energy, Fiscal Year 2012 Stockpile Stewardship and Management Plan (Washington, DC: Apr. 15, 2011).

[2] U.S. Department of Energy, Fiscal Year 2012 Agency Financial Report, DOE/CF–0081 (Washington, DC: Nov. 14, 2012).

[3] See, for example, GAO, Department of Energy: Actions Needed to Develop High-Quality Cost Estimates for Construction and Environmental Cleanup Projects, GAO–10–199 (Washington, DC: Jan. 14, 2010); GAO, Nuclear Weapons: Actions Needed to Identify Total Costs of Weapons Complex Infrastructure and Research and Production Capabilities,GAO–10–582 (Washington, DC: June 21, 2010); and GAO, Modernizing the Nuclear Security Enterprise: NNSA's Reviews of Budget Estimates and Decisions on Resource Trade-offs Need Strengthening, GAO–12–806 (Washington, DC: July 31, 2012).

[4] M&O contracts are agreements under which the Federal Government contracts for the operation, maintenance, or support, on its behalf, of a government-owned or -controlled research, development, special production, or testing establishment wholly or principally devoted to one or more of the major programs of the contracting Federal agency. Federal Acquisition Regulation, 48 C.F.R. § 17.601. Specifically, NNSA manages three national nuclear weapons design laboratories—Lawrence Livermore National Laboratory in California, Los Alamos National Laboratory in New Mexico, and Sandia National Laboratories in New Mexico and California. It also manages four nuclear weapons production plants—the Pantex Plant in Texas, the Y–12 National Security Complex in Tennessee, the Kansas City Plant in Missouri, and the Tritium Extraction Facility at DOE's Savannah River Site in South Carolina. NNSA also manages the Nevada National Security Site, formerly known as the Nevada Test Site.

contractors as projects, such as by Washington River Protection Solutions for the operation of nuclear waste tanks at the Hanford Site in Washington.

For decades, we have reported on the status of DOE's major projects (i.e., those costing $750 million or more) and programs and have repeatedly identified project cost overruns and schedule delays, as well as missed programmatic milestones. For example, in November 1996, we reported that, as of June 1996, most of DOE's completed major projects and at least half of its 34 ongoing projects were experiencing cost overruns and/or schedule delays.[5] Thirteen years later in March 2009, we testified that DOE had added nearly $14 billion and 45 years to its initial cost and schedule estimates of then ongoing construction projects, and it added an additional $25 billion to $42 billion and an additional 68 to 111 years to initial cost and schedule estimates of ongoing environmental cleanup projects.[6] Further, in our March 2009 report, we found that NNSA was able to meet its refurbishment schedule for a life extension program only by changing the objectives of the program and, among other things, reducing the number of refurbishments needed for program completion.[7] In February of this year, NNSA and EM were again included on GAO's High-Risk List in recognition of the potential for vulnerabilities to fraud, waste, abuse, and mismanagement in contract administration and management of major projects.[8]

In 2008, DOE completed an effort to document its contract and project management challenges, which involved identifying issues that significantly impeded the department's ability to complete projects within budget and on schedule. DOE undertook this exercise—known as a root-cause analysis—as part of its effort to be removed from our list of agencies at high risk for fraud, waste, abuse, and mismanagement. The top contract and project management issue identified in that root-cause analysis was that DOE often does not complete front-end planning to an appropriate level before establishing a project's performance baseline—a project's cost, schedule, and scope—including for cost estimates and budget planning. According to cost estimating best practices compiled in our March 2009 Cost Estimating and Assessment Guide,[9] the most rigorous method reviewers have in validating a project's cost estimate is the independent cost estimate. Generated by an entity that has no stake in the approval of a project, an independent cost estimate provides an independent validation of expected project costs, according to our cost-estimating guide. An independent cost estimate is usually developed based on the same technical parameters as the project team's estimate, so the estimates are comparable. Conducting an independent cost estimate is especially important at major milestones because it provides senior decisionmakers with a more objective assessment of the likely cost of a project. In mid-2008, DOE adopted a corrective action plan designed to mitigate the issues identified in the root-cause analysis. The corrective action plan included a set of actions designed to establish and implement a "Federal independent government cost estimating capability" to address the issues it identified related to cost estimating.

Since that time, DOE has taken steps to improve the cost-estimating aspects of contract and project management in NNSA and EM, but weaknesses persist. In a time of fiscal constraint, Congress needs high-quality cost information upon which to make decisions about NNSA's and EM's projects and programs. A realistic cost estimate provides a basis for accurate budgeting and effective resource allocation, which increases the probability of a project's or program's success in meeting its goals. My testimony today is based primarily on reports we issued from January 2010 to February 2013. Specifically, I will focus my testimony on: (1) our prior find-

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[5] GAO, Department of Energy: Opportunity to Improve Management of Major System Acquisitions. GAO/RCED–97–17 (Washington, DC: Nov. 26, 1996).

[6] GAO, Department of Energy: Contract and Project Management Concerns at the National Nuclear Security Administration and Office of Environmental Management, GAO–09–406T (Washington, DC: Mar. 4, 2009).

[7] The end of the Cold War caused a dramatic shift in how the Nation maintains nuclear weapons. Instead of designing, testing, and producing new nuclear weapons, the strategy shifted to maintaining the existing nuclear weapons stockpile indefinitely. Life extension programs extend, through refurbishment, the operational lives of weapons in the nuclear stockpile by 20 to 30 years and certify these weapons' military performance requirements without underground nuclear testing. NNSA is currently conducting life extension programs for multiple weapon types in the U.S. stockpile, including the Air Force's B61 gravity bomb. GAO, Nuclear Weapons: NNSA and DOD Need to More Effectively Manage the Stockpile Life Extension Program, GAO–09–385 (Washington, DC: Mar. 2, 2009).

[8] GAO, High-Risk Series: An Update,GAO–13–283 (Washington, DC: February 2013). In our 2013 High-Risk Update, we narrowed the focus of NNSA's and EM's high-risk designation to focus on major projects, those with individual values of $750 million or greater.

[9] The guide is a compilation of cost-estimating best practices drawn from across industry and government. GAO, GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs, GAO–09–3SP (Washington, DC: March 2009).

ings on cost-estimating practices for NNSA's and EM's capital asset projects, as well as preliminary observations from our ongoing work for this subcommittee on NNSA cost-estimating practices for such projects; and (2) our prior findings on cost estimating and related budget information for NNSA's programs, as well as preliminary observations from our ongoing work for this subcommittee on NNSA's cost-estimating practices for such programs. Detailed information on our scope and methodology for our prior work can be found in these reports.

To develop our preliminary observations, we reviewed DOE and NNSA policies, orders, and guidance related to preparing and reviewing cost estimates, as well as past GAO reports. We interviewed DOE, NNSA, and contractor officials to discuss the requirements and guidance used to prepare and review these estimates. We are conducting our ongoing work in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We obtained DOE's and NNSA's views on the new information in our testimony concerning our ongoing work on DOE's and NNSA's cost-estimating practices.

BACKGROUND

NNSA relies primarily on the requirements in DOE Order 413.3B for planning and executing projects, from identification of need through project completion.[10] This project management order requires, among other things, that cost estimates be established for these projects, and an independent review of these estimates be conducted for larger projects. For example, for projects with a total cost of greater than $100 million, DOE's Office of Acquisition and Project Management is required to validate the accuracy and completeness of a project's performance baseline, including its estimated cost, at certain important milestones. DOE's project management order establishes five major milestones—or "critical decision points"—that span the life of a project as follows:

- Milestone 0: Approve mission need.
- Milestone 1: Approve alternative selection and cost range. At this milestone, DOE completes the conceptual design, selects its preferred approach, and approves the project's preliminary cost range.
- Milestone 2: Approve the performance baseline—defined as a project's cost, schedule, and scope (the activities needed to achieve project goals). At this milestone, DOE completes its preliminary design and develops a definitive cost estimate, which is no longer a range. This cost estimate is to be used for establishing the project's funding profile throughout construction, and it informs annual budget requests.
- Milestone 3: Approve the start of construction.
- Milestone 4: Approve the start of operations or project completion.

DOE's project management order specifies the requirements that must be met for a project, along with the documentation necessary, to move past each project milestone; the order also requires that DOE senior management review the supporting documentation and approve the project at each milestone. DOE also provides suggested approaches for meeting the requirements contained in its project management order through additional guidance that is not mandatory. NNSA has supplemental requirements and guidance for establishing and reviewing project cost estimates, including requirements for conducting independent cost estimates, and a cost-estimating guide that provides additional suggestions on preparing and reviewing cost estimates.

With respect to operating programs, DOE Order 130.1 on program budget formulation—approved in 1995 and listed as current on DOE's website for Directives, Delegations, and Requirements—outlines the requirements for the department's annual budget formulation process, including that budget requests for operating programs "shall be based on cost estimates that have been fully reviewed and deemed reasonable" by the cognizant program organization. To this end, DOE's budget formulation order recognizes that operating programs' cost estimates bear a direct relationship to the future budget estimates for these programs. Further, consistent with Federal Accounting Standards Advisory Board guidance, NNSA is required to provide reliable and timely information on the full cost of its programs because this information is crucial for effective management of government operations and for budget over-

[10] DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets, was issued in November 2010. It supersedes earlier DOE Orders 413.3A and 413.3.

sight.[11] To develop budget estimates for operating programs, NNSA is required under section 3252 of the National Defense Authorization Act for Fiscal Year 2000—the NNSA Act—to develop a planning, programming, and budgeting process that operates under sound financial and fiscal management principles.[12] Beginning in 2002, NNSA issued policies that identify the responsibilities of NNSA management, program and site offices, and contractors throughout the agency's budget cycle, including for validating programs' budget requests by reviewing aspects of cost estimating.[13] According to NNSA's policy, the cycle is composed of four phases—planning, programming, budgeting, and evaluation (PPBE)—and their associated activities, which together provide a framework for the agency to plan, prioritize, fund, and evaluate its program activities. While these phases appear to be sequential, the process is continuous and concurrent because of the amount of time required to develop priorities and review resource requirements.

- Planning. NNSA is to identify the goals it needs to achieve over the next 5 years and the program activities needed to meet those goals.
- Programming. NNSA is to determine which program activities and funding levels it will include in its next budget proposal to DOE. This determination is based on analysis of the activities' estimated costs, as well as the need to meet the NNSA goals defined in the planning process. To determine these activities, NNSA program offices are to work with their contractors to obtain estimates for the cost of the program activities identified in the planning phase.
- Budgeting. NNSA is to integrate its planning and programming priorities into DOE's departmental budget process by: (1) submitting its proposed budget to DOE and participating in a strategic review process; (2) validating its budget request by, in part, reviewing the cost-estimating practices used by the NNSA contractors and program offices; and (3) executing the budget and controlling funds to achieve the priorities established in the programming phase and maintain fiscal limits.
- Evaluation. NNSA is to employ an ongoing cycle of evaluations to review program performance.

Accurately identifying the activities necessary to conduct a program is a key aspect of PPBE's programming phase. NNSA documents the activities associated with a program, as well as the sites responsible for conducting these activities, in work breakdown structures—management tools used to identify the work activities that completely define a program. We published best practices for establishing work breakdown structures in our March 2009 cost-estimating guide.[14] Among other things, these best practices discuss establishing work breakdown structures that allow a program to track cost by defined deliverables, promote accountability by identifying work products that are independent of one another, and provide a basis for identifying resources and tasks for developing a program cost estimate. The ability to generate reliable cost estimates is a critical function, and a program's cost estimate is often used to establish its budgets.

OBSERVATIONS ON COST ESTIMATING PRACTICES FOR NNSA AND EM PROJECTS

For more than a decade, we have reported on the challenges NNSA and EM have faced in meeting their projects' cost performance targets as developed in cost estimates and for ensuring that the cost estimates developed are based on sound assumptions. In our most recent High-Risk Update, we reported that, as of August 2012, NNSA was managing three major projects with estimated costs totaling as much as $17.2 billion and that EM was managing seven major projects with estimated costs totaling as much as $48.5 billion.[15] We examined these 10 projects, but we were only able to analyze changes in cost estimates for 7 of them because of limitations in the data. For these seven projects, we determined that DOE has added as much as $16.5 billion to original cost estimates with further cost increases antici-

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[11] Federal Accounting Standards Advisory Board, Statement of Federal Financial Accounting Standards No., 4, Managerial Cost Accounting Standards and Concepts (Washington, DC: July 31, 1995).

[12] NNSA was created by the National Defense Authorization Act for Fiscal Year 2000 (Pub. L. No. 106–65, § 3201 et seq. [1999]).

[13] See GAO, National Nuclear Security Administration: Additional Actions Needed to Improve Management of the Nation's Nuclear Programs, GAO–07–36 (Washington, DC: Jan. 19, 2007). In 2008, NNSA revised many of these policies and issued others in response to our findings in 2007 of deficiencies in how the agency ensures the validity of its budget estimates and how it decides to allocate its resources.

[14] GAO–09–3SP.

[15] GAO–13–283.

pated. While each of these projects has faced significant technical execution challenges, the extent of their cost growth as compared with project estimates calls into question the quality of those original estimates. For example:

- We reported in February 2011 that NNSA's project to design and construct a new Uranium Processing Facility at the Y–12 National Security Complex in Tennessee had experienced nearly sevenfold cost growth from its 2004 estimate to the current estimate of from $4.2 to $6.5 billion.[16] Since our February 2011 report, the facility is to be redesigned and enlarged to correct issues concerning processing equipment at an additional cost of $540 million, and the initial scope of the project has been significantly reduced. According to NNSA officials, the initial cost estimate for the Uranium Processing Facility, as well as subsequent revisions were based on an estimate to construct a less complex facility and assumed a funding profile where annual appropriations were not subject to budgetary constraints.
- We reported in March 2012 that NNSA's project to design and construct a new plutonium facility at Los Alamos National Laboratory in New Mexico had experienced a nearly sixfold increase from $3.7 billion to $5.8 billion before being deferred for at least 5 years.[17] We found that the facility's original design may not have met all of the mission needs identified.
- In December 2012, we reported that the estimated cost to construct EM's Waste Treatment and Immobilization Plant at the Hanford Site in Washington has tripled to $13.4 billion since its inception in 2000.[18] Significant technical challenges remain unresolved, contributing to uncertainty as to whether the project will operate safely and effectively.

DOE's approach to managing the work its contractors perform, including developing project cost estimates, has been a challenge for 30 years. In 1982, we reported that DOE did not have sufficient guidance to provide to its contractors for developing cost estimates.[19] DOE subsequently implemented a cost-estimating policy that increased oversight by, among other things, placing a headquarters-based office in charge of cost estimating and requiring it to conduct independent cost estimates. The policy also directed DOE to establish guidance that outlined procedures to be used by contractors when generating estimates and by DOE officials reviewing them. In the mid-1990s, however, as part of a governmentwide management reform movement, DOE rescinded its cost-estimating policy and replaced it with a less prescriptive one that did not contain specifics on cost estimating but rather focused on managing the life cycles of the department's physical assets.

In January 2010, we reported on DOE's project cost-estimating practices.[20] We found that DOE continued to lack a cost-estimating policy and that the cost-estimating guide it developed in the 1990s remained in effect.[21] We also found that the guide was out of date and did not contain important components. For example the guide assigned responsibilities to offices that no longer existed and was based on policies that had been canceled. In addition, we found that the guide did not contain sufficient information to help ensure that a cost estimator following the guide would successfully create a high-quality cost estimate. However, we also found that DOE was taking steps to improve its cost-estimating practices. For example, DOE established the Office of Cost Analysis (OCA) in 2008 to improve cost-estimating capabilities and better ensure that project cost estimates are reliable by providing a new independent cost-estimating capability.

Further, EM acted to place cost estimators at its large sites and establish an internal cost-estimating office capable of providing cost-estimating assistance primarily to its smaller sites. In addition, NNSA adopted a policy that, among other things, specified when independent cost estimates should be conducted. Our report recommended, among other things, that DOE issue a revised cost-estimating policy and updated guidance as soon as possible, requiring that an independent cost estimate be conducted for major projects at Milestones 1, 2, and 3. DOE generally concurred with the recommendations we made in this report but did not concur with conducting an independent cost estimate at all three of these milestones. Rather,

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[16] GAO, High-Risk Series: An Update. GAO–11–278 (Washington, DC: February 2011).

[17] GAO, Modernizing the Nuclear Security Enterprise: New Plutonium Facility at Los Alamos May Not Meet All Mission Needs,GAO–12–337 (Washington, DC: Mar. 26, 2012).

[18] GAO, Hanford Waste Treatment Plant: DOE Needs to Take Action to Resolve Technical and Management Challenges,GAO–13–38 (Washington, DC: Dec. 19, 2012).

[19] GAO, Further Improvements Needed in the Department of Energy for Estimating and Reporting Project Costs. GAO/MASAD–82–37 (Washington, DC: May 26, 1982).

[20] GAO–10–199.

[21] U.S. Department of Energy, Cost Estimating Guide, DOE G 430.1–1 (Washington, DC: Mar. 29, 1997).

at this time DOE explained that its new policy would require an independent cost estimate for Milestones 1 and 2, but not for Milestone 3 unless warranted by risk and performance indicators or required by senior officials.

We are conducting an ongoing review of the department's and NNSA's cost-estimating practices for this subcommittee. In particular, we are reviewing the extent to which NNSA's current cost estimating requirements and guidance for projects and programs align with cost-estimating best practices. Preliminary observations from our ongoing work indicate that departmental and NNSA cost-estimating practices for projects and programs need revision to align with cost-estimating best practices in our 2009 guide.[22] Our ongoing review, in many ways, picks up where our January 2010 report left off. After initially concurring with most of the recommendations we made in that report to improve the department's cost-estimating practices, DOE followed through on some of our recommendations, such as requiring an independent cost estimate for Milestone 2 for projects with a projected cost of $100 million or more; however, other actions appear to fall short of what is needed to ensure that DOE's cost-estimating practices fully adhere to best practices. Our ongoing work is focused on several aspects of DOE and NNSA's cost-estimating requirements and guidance, including the following:

- The department may have a continuing need for a cost-estimating policy. DOE has not established a cost-estimating policy. DOE's 2008 Root-Cause Analysis identified an insufficient independent cost-estimating capability as one of the top five reasons that DOE was unable to complete projects on cost and schedule. The analysis found that not having a cost-estimating policy was one of the root causes contributing to problems with cost estimating. DOE tasked OCA with, among other things, implementing actions to improve cost estimating within DOE, including reestablishing a cost-estimating policy and updating associated guidance. As we previously reported, having a cost-estimating policy would establish roles and responsibilities for those preparing, reviewing, and updating all types of cost estimates.[23] Such a policy would also identify when different cost estimates would be conducted, while also serving as a mechanism for providing standardized cost-estimating procedures to agency officials and contractors. DOE subsequently disbanded OCA and, instead of issuing a specific cost-estimating policy, chose instead to revise its project management order and supplemental guidance that sets requirements and provides suggestions on how to manage capital asset acquisition projects. While the revisions to the order and guide included some provisions to improve project cost-estimating practices, the project management order and supplemental guide only apply to activities involving capital asset acquisition projects and do not apply to the broader range of departmental activities involving cost estimating.[24] As part of our ongoing work, we will examine whether establishing a departmental cost-estimating policy that would apply to all departmental activities—including operating programs and noncapital asset projects, rather than just capital asset projects—could contribute to improvements in departmental cost estimating.[25] For example, information on the costs of program activities can be used as a basis to estimate future costs in preparing and reviewing budgets.
- The department's revised project management order appears not to meet cost-estimating best practices. Our preliminary observations indicate that as we found in 2010, DOE's project management order continues not to meet cost-estimating best practices.[26] We noted in our 2010 report that this order did not specify: (1) how cost estimates should be developed, (2) which phases of a project should be included in the estimate, (3) how the estimate should be maintained throughout the life of a project, and (4) when an independent cost estimate should be prepared. DOE revised its order in November 2010 to, among other things, include a requirement that an independent cost estimate be prepared prior to the approval of Milestone 2 for

[22] To evaluate whether NNSA is meeting generally accepted practices, we relied on our cost-estimating guide, GAO–09–3SP.

[23] GAO–10–199.

[24] According to DOE's capital asset acquisition order, capital asset acquisition projects typically include planning and execution of construction, assembly, renovation, modification, environmental renovation, decontamination and decommissioning, large capital equipment, and technology development activities.

[25] Noncapital asset projects may be managed as operating projects. Examples of such projects include stabilization, packaging, storage, transportation, and disposition of waste and nuclear materials and facility shutdown and deactivation activities.

[26] GAO–10–199.

projects with total project costs equal to or greater than $100 million. This revision partially addresses the issue involving independent cost estimates but does not fully align with best practices that propose independent cost estimates should also be prepared for Milestones 1 and 3.[27] Beyond this revision, DOE's revised order does not address any of the other shortcomings we reported on in 2010 as noted above. Our ongoing work will include a more detailed assessment of how this order could better align with cost-estimating best practices.

- NNSA and DOE cost-estimating guidance may not fully align with cost-estimating best practices. NNSA and DOE issued cost-estimating guides in 2010 and 2011, respectively, as part of efforts to improve cost-estimating practices. Our preliminary observations on these guides show that each generally aligns with cost-estimating best practices but also falls short in a few areas. For example, our preliminary observations on NNSA's 2010 guide shows that it meets or substantially meets 8 of the 12 criteria in our 2009 cost-estimating guide[28] and that it partially or minimally meets, four other criteria—these other criteria are in the areas of determining the structure of the estimate, conducting risk and uncertainty analysis, conducting sensitivity analyses, and presenting the estimate to management for approval. Our ongoing review will include a more detailed assessment of the 2010 NNSA and 2011 DOE guides and the extent to which they align with cost-estimating best practices.
- Other NNSA actions to improve cost-estimating practices may not align with cost-estimating best practices. NNSA has taken actions in recent years to improve its cost-estimating capabilities, but these actions may not fully reflect cost-estimating best practices. These actions have included: (1) issuing a policy in 2009 that defines requirements for conducting independent cost estimates; and (2) issuing separate guidance in 2012 to require that preliminary design for high-hazard nuclear facilities be at least 90 percent complete prior to the establishment of a project performance baseline.[29] With respect to NNSA's policy for conducting independent cost estimates, we found that the policy provides NNSA the discretion to conduct independent cost estimates for projects with estimated total costs below $100 million at Milestone 2. NNSA officials explained that a proposed revision to this policy would make these reviews mandatory for Milestone 2. While the revised policy may align with best practices for conducting independent cost estimates at Milestone 2, it may not reflect best practices that also propose conducting these reviews at Milestones 1 and 3. NNSA's guidance for completing 90 percent of the design for high-hazard nuclear facilities before establishing a performance baseline states its objective is to ensure that a highly credible cost estimate is developed prior to establishing a performance baseline. Our preliminary observations show that other projects may benefit from the completion of 90 percent of their preliminary designs, regardless of the extent to which the project is considered high-hazard. In addition, we have observed that NNSA's guidance to implement this requirement is articulated in an NNSA memo that has not yet been translated into official NNSA policy. According to NNSA officials, the 90 percent design requirement will be incorporated into the revision to the independent cost estimating policy. Our ongoing work will further examine these policies and the extent to which they align with cost estimating best practices.

OBSERVATIONS ON COST ESTIMATING AND INFORMATION FOR NNSA PROGRAMS

In June 2010, we reported on NNSA's program to operate and maintain weapons facilities and infrastructure and found that the agency's budget justification for this program significantly understated its costs.[30] Building on these findings, in July 2012, we reported on NNSA's implementation of its PPBE process, particularly in

[27] Section 310 of the Consolidated Appropriations Act, 2012 requires a separate independent cost estimate to be developed prior to milestones 2 and 3 for projects under DOE's project management order where the total project cost exceeds $100 million. (Pub. L. No. 112–74, 125 Stat 878 (2011)).

[28] GAO–09–3SP.

[29] DOE regulations define three categories of high-hazard nuclear facilities according to their potential to produce significant radiological consequences from an event that could either: (1) extend beyond the boundaries of a DOE site, (2) remain within the boundaries of a site, or (3) remain within the immediate vicinity.

[30] GAO–10–582.

the area of validating programs' budget requests, and we found deficiencies that we concluded effect the credibility and reliability of those estimates.[31] Preliminary observations from our ongoing work on cost estimating for this subcommittee show that DOE and NNSA may not have any specific cost-estimating requirements or guidance for programs.

In our June 2010 report, which focused on NNSA's fiscal year 2009 budget and expenditures, we reported on the extent to which NNSA's budget justification accurately reflected a program's cost. Specifically, we examined NNSA's program that operates and maintains weapons facilities and infrastructure and found that NNSA's budget justification significantly understated that program's cost.[32] We found that, because of allowable differences in contractors' cost accounting practices, NNSA could not accurately identify the total costs to operate and maintain weapons facilities and infrastructure. This condition is inconsistent with the Federal Accounting Standards Advisory Board standard on Managerial Cost Accounting, which states a general standard for Federal agencies to provide reliable and timely information on the full cost of Federal programs to allow an organization to assess the reasonableness of program costs and to establish a baseline for comparison. When we asked NNSA's site contractors to provide us with information on their fiscal year 2009 costs for each of the activities described by this program's work breakdown structure, six of eight sites fully responded. The costs for these sites' activities totaled over $500 million more—approximately $1.1 billion—than the $558.6 million NNSA included in its budget request to fund the program at these sites. We determined that one reason NNSA's budget estimate for this program was so different from the costs to execute its work scope was because NNSA's site contractors were not consistent in how they identified the activities they paid for with program funds. We concluded that, without the ability to consistently identify program costs, NNSA did not have the ability to adequately justify future presidential budget requests and risked being unable to identify both the return on investment of planned budget increases and opportunities for cost savings. Further, we recommended that M&O contractors report to NNSA annually on the total costs to operate and maintain weapons facilities and infrastructure to allow Congress to better oversee management of the nuclear security enterprise. NNSA agreed with our report and its recommendations.

Building on these findings, in July 2012, we reported on NNSA's overall budget formulation process, including its implementation of PPBE. We found that, according to senior NNSA officials, NNSA does not comply with DOE's order on budget formulation because the agency believes the order expired in 2003 and, therefore, no longer applies to NNSA budget activities.[33] DOE's order on budget formulation outlines the requirements for the department's annual budget formulation process including that budget requests "shall fully justify and describe intended program outputs and outcomes" and that budget requests "shall be based on cost estimates that have been thoroughly reviewed and deemed reasonable" by the cognizant program organization. Rather, we found that NNSA is guided by its own policy for the PPBE process, which includes how costs are estimated and validated for operating programs. Our 2012 review found significant deficiencies in NNSA's implementation of its PPBE process, leading us to conclude that the credibility of NNSA's budget proposals for operating programs is reduced, which effectively reduces the ability of Congress to decide on resource trade-offs. For example, we found the following:

- NNSA did not have a thorough, documented process for assessing the validity of its budget estimates prior to their inclusion in the President's budget submission to Congress. Instead, we found that officials conducted informal, undocumented reviews of budget estimates that contractors submitted, and that the level of review varied across site and headquarters program offices. According to NNSA officials, the agency's trust in its contractors minimized the need for formal review of budget estimates provided.
- NNSA's annual budget validation review process occurred too late in the budget cycle to inform agency or congressional budget development or appropriations decisions. We found that, while NNSA policy states that the timing of NNSA's budget validation review process should inform budgeting development and decisions, budget validation reviews were actually completed after the completion of budget formulation process.
- NNSA's budget validation review process was not sufficiently thorough to ensure the credibility and reliability of NNSA's budget because it was limited to assessing the processes contractors and programs used to develop

[31] GAO–12–806.
[32] GAO–10–582.
[33] GAO–12–806.

budget estimates rather than assessing the accuracy of the resulting budget estimates. In addition, NNSA guidance stipulates that to help ensure the validity of budget estimates NNSA conduct its validation process for 20 percent of the agency's programs request annually. However, we found that in fiscal year 2012 NNSA completed validation reviews for only 1.5 percent of its budget request.

In our July 2012 report, we recommended that, to enhance NNSA's ability to better ensure the validity of its budget submissions, and to decide on resource trade-offs, DOE should evaluate its budget formulation order and update it as necessary. Further, we recommended, among other things, that NNSA: (1) amend its budget validation review process, to ensure that all budget estimates are thoroughly reviewed by site and headquarters program offices, and that these reviews are timed to inform NNSA, DOE, OMB, and congressional budget decisions; and (2) reinstitute an independent cost analysis capability, as it had with OCA, to provide senior decisionmakers with independent reviews, including an analysis of different options for deciding on resource trade-offs, and facilitate NNSA making the best decisions about what activities to fund and whether they are affordable. NNSA, responding on behalf of DOE, stated that it generally agreed with six of the seven recommendations we made in this report, but NNSA disagreed with our report's characterization that the agency's budget estimate review process is not thorough.

In both our June 2010 and July 2012 reports, we discuss a data system NNSA was developing to provide a consistent framework for managing the PPBE process within NNSA's Office of Defense Programs.[34] In 2010, we found that to support development of this tool, NNSA was revising its work breakdown structure for its program to operate and maintain weapons facilities and infrastructure to ensure: (1) that activities associated with the program were identified; and (2) that the costs of these activities could be identified.[35] In 2012, we concluded that this type of tool could help NNSA obtain the basic data it needs to make informed management decisions, determine return on investment, and identify opportunities for cost saving.[36] For example, the tool included a mechanism to identify when decisions on resource trade-offs must be made if contractor-developed budget estimates for program requirements exceed the budget targets NNSA provided for those programs. Further, NNSA officials stated that they eventually plan to use this tool to compare budget estimates of program activities with the amounts the programs ultimately expended.[37] We learned in March of this year, as part of our work to follow up on recommendations made in our June 2010 report, that the tool is still in development and that NNSA has a pilot project under way to enhance the tool to provide full PPBE reporting for the B61 life extension program.

While development of this tool is positive, our ongoing work for this subcommittee on cost estimating has identified that at least one NNSA M&O contractor has acknowledged that weaknesses in NNSA's planning and budgeting have led to diminished credibility with the Department of Defense (DOD) and Congress that need to be addressed in the near-term. As such, DOD, in collaboration with NNSA, established an effort in January 2012 to balance the resources and requirements for the U.S. nuclear security enterprise with its budget needs for fiscal years 2014 to 2018, particularly where DOD has allocated funds to NNSA to augment the agency's budget in support of DOD requirements.[38] This effort to examine NNSA's resources and requirements is being conducted by DOD's Office of Cost Assessment and Program Evaluation (CAPE), which is tasked, among other things, with ensuring that the costs of DOD programs are presented accurately and completely. Among the CAPE's early findings has been to question NNSA's cost estimate for its life extension program for the B61 bomb. According to NNSA officials, the CAPE's $10.1 billion July 2012 independent cost assessment for this program was $2.2 billion higher

[34] The Office of Defense Programs accounted for 54 percent of the President's fiscal year 2013 budget request for NNSA.

[35] GAO–10–582.

[36] GAO, National Nuclear Security Administration: Observations on NNSA's Management and Oversight of the Nuclear Security Enterprise, GAO–12–473T (Washington, DC: Feb. 16, 2012).

[37] GAO–12–806.

[38] In 2010, the Secretaries of Defense and Energy signed a memorandum of agreement outlining budget commitments between the two agencies to modernize the nuclear weapons infrastructure of the United States and strengthen aspects of stockpile management. The agreement established that DOD would work to transfer to DOE $5.7 billion of budget authority in fiscal years 2011 through 2015 to support specific NNSA programs—such as the life extension program for the W76 warhead—and projects, such as the Uranium Processing Facility discussed above. The recently released President's budget for fiscal year 2014 provides annual estimates from fiscal year 2015 through 2023 for the amount by which DOD's budget authority will decrease and NNSA's will increase, totaling $14.8 billion.

than the cost estimate NNSA included in its Weapon Design and Cost Report. The CAPE identified several differences in assumptions that account for the difference between the two estimates. Additionally, the CAPE cited process issues related to NNSA's cost estimate, including a lack of historical data on the costs of previous life extension programs and a lack of a detailed program definition. These are the same types of issues we identified in our June 2010 and July 2012 reports.

Preliminary observations from our ongoing work for this subcommittee on DOE cost estimating show that DOE and NNSA may lack specific cost-estimating requirements or guidance for programs. We have conducted initial meetings with the managers of several large NNSA programs to determine what requirements and guidance are used to generate cost estimates for the work in their programs. These programs include the Plutonium Disposition Program in NNSA's Office of Defense Nuclear Nonproliferation as well as the B61 Life Extension Program and the Science Campaigns in NNSA's Office of Defense Programs. NNSA officials responsible for the Plutonium Disposition Program told us they have constructed a life cycle cost estimate for the overall program, but that there is no (1) DOE or NNSA requirement that would prescribe how such an estimate should be developed or (2) requirement for an independent review of this estimate. An independent review of such an estimate is important given the magnitude of some of DOE's and NNSA's larger programs—for example, the current life cycle cost estimate for the Plutonium Disposition Program is more than $23 billion. Similarly, NNSA officials responsible for the B61 Life Extension Program told us that in constructing a cost estimate for the program they consulted guidance, including DOE's project management order, but DOE and NNSA do not specify detailed cost estimating methodologies. Unlike the Plutonium Disposition Program, however, the estimate for this program has undergone several reviews, including by the CAPE. NNSA officials in the Science Campaigns told us that their activities are ongoing in nature rather than a more traditional project or program that has a definitive start and end date and, as a result, its cost estimates are prepared by way of the annual budget formulation process and prepared consistently with departmental budget formulation guidance and supplemental NNSA guidance. Our ongoing work will continue to assess these issues to determine how cost estimates are generated for NNSA programs and the extent to which any requirements and guidance for these activities align with cost estimating best practices.

We plan to report on this ongoing work later this year.

Chairman Udall, Ranking Member Sessions, and members of the subcommittee, this completes my prepared statement. I would be pleased to respond to any questions you may have at this time.

GAO CONTACT AND STAFF ACKNOWLEDGMENTS

If you or your staff members have any questions about this testimony, please contact me at (202) 512–3841 or trimbled@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. GAO staff who made key contributions to this testimony are Allison B. Bawden and Daniel J. Feehan, Assistant Directors, and Michael Meleady, Timothy Persons, Cheryl Peterson, Karen Richey, Peter Ruedel, Rebecca Shea, Joseph Thompson, and Jack Warner.

Senator UDALL. Thank you, Mr. Trimble.

Let me recognize Senator Donnelly. I think we will do 5-minute rounds. I am going to step out for a minute. If I am not back after 5 minutes, I know Senator Donnelly will then recognize Senator King who has joined us from the great State of Maine.

Senator Donnelly?

Senator DONNELLY. Thank you, Mr. Chairman.

Thank you to all of you for your hard work.

Admiral Richardson, as we look at the reactors that will be used and as we move forward, this is an area that strikes me as, as we move forward, you could almost have quantum leaps in technology. So when our core will be good for 42 years, how do we continue to improve that during that time?

Admiral RICHARDSON. Senator, first, that is a big leap to develop a 42-year core.

Senator DONNELLY. Well, no. Do not worry. I know what an amazing accomplishment that is. What I am saying is that technology, to be able to do that, a 42-year core, is a tremendous accomplishment.

Admiral RICHARDSON. Yes, sir.

Senator DONNELLY. Now, during that life of that core, do we continue to do the research to make it stronger, better, quicker, faster, less waste?

Admiral RICHARDSON. Yes, sir, we do. That is the work that is constantly being done by the folks at my headquarters and in those labs. They are constantly at work looking for those next opportunities to reduce cost, reduce waste, do all of those things that will allow us to execute the Navy's mission at a lower cost and a more responsible pace. So that is that base funding that is an effort that is ongoing in conjunction with our vendor base.

Senator DONNELLY. On the vendor base, obviously, being from Indiana, we take great pride in our participation in this.

But what is the outlook for continued reduction of the waste to a point where—will there be a point where there is no waste? Will there be—I will just leave it at that.

Admiral RICHARDSON. I think that as long as you are—what our aim is, is to reduce that waste. As long as you are burning fuel and burning cores, there will be some waste at the end.

There are two ways that we are constantly taking a look at reducing that waste stream. One is by virtue of building a core that lasts 42 years, that is just that much less material that you have to do. Our first cores, for instance, lasted 2 years, and at the end of that 2-year period, you would have to refuel. That is a lot of spent fuel that we had to do that. So over the decades, we have reduced that by a factor of 20 by virtue of building a 42-year core.

The other thing is we are constantly on the lookout for those technologies that allow us, when the conditions permit, to perhaps approach a recycling type of a technology where the fuel can be recycled.

So it is the combination of those two efforts primarily right now through the longer cores, the reduction of the material that allow us to minimize the waste that we produce.

Senator DONNELLY. How will that new core work in regards to performance inside? Obviously, on the nuclear part, but performance inside of the boat itself. How does it make the sub itself so much more effective in terms of speed, technology, and other areas?

Admiral RICHARDSON. The core itself will allow the submarine to execute its mission for that 42-year life, but then there is the reactor plant around that core and the propulsion plant that that core is connected to. Those are the sorts of things that get after the mission effectiveness of the submarine itself in terms of stealth primarily, and then those core attributes of speed and other things that allow the submarine to be an effective deterrent as far out as we can see the threat.

Senator DONNELLY. I just want to finish up by saying we not only saw off the shores in North Korea, but in so many other places, that the presence of not only carriers and other ships, but the presence of the unknown to other people the submarines has acted as an incredible deterrent. We want to thank everybody in-

volved in the program for what you have done. So thank you very much.

I will pass it on to Senator King.

Senator KING. Thank you.

Gentlemen, thank you for your testimony.

DOD's 3+2 strategy, where we are going to have interoperable warheads, it seems to me requires a great deal of coordination between DOD and NNSA and, should there be waste involved, EM. Could you update me on the progress of that strategy and whether you believe we can implement it in a safe and cost-effective way? Are the departments working together? Are they talking to each other? Where do we stand on that development?

Dr. COOK. I will update you, Senator.

We work together and we talk together every week, sometimes every day between NNSA and DOD.

With regard to the strategy, we now have a comprehensive plan that covers the entirety of the stockpile. That is why you will continue to hear 3+2, meaning three interoperable systems for the ballistic leg, two legs, and two systems interoperable for the air-delivered leg.

The actual status of implementation was called for in the nuclear posture review of 2010. We now have an implementation strategy, and we are turning that into resource plans.

The first part of that is to continue and complete the W76 LEP. We have achieved the full build. The rate is steady. We are through the early birthing defects and we will complete that program by 2019.

To think of the second wave, the second wave consists of the B61 LEP. That will improve the air-delivered leg and the W88 Alt. So this updates the AF&F system for the W88. That will also be the basis for the first interoperable warhead, AF&F. Those will be entering the first production unit in 2019. They are already in full-scale engineering design, and the build of those will be completed around the end of 2024 or 2025.

Then the third wave will come on, and that is the first interoperable system, the W78 and 88 LEP. There will be beyond that a second and third interoperable, but that is the strategy that is being conducted. The most important thing to the strategy is, first, having an overall plan—we have that—second, having a good partnership between DOE and DOD. We have that. Clarity of execution and then a real keen eye given to the cost and the schedule maintenance is what we are working on most strongly now.

Senator KING. So it is too early to really talk about cost. You are still in the planning and design stage.

Dr. COOK. I would differ. It is not too early to talk about cost. We are managing the W76 program according to the cost requirements. B61–12, we have a weapon design and cost report. We will be submitting a very initial baseline soon. We know that there is considerable risk associated with that, but in this future years NSP, in the President's request for 2014 through 2018, we will have 5 of the 6 years of the B61 program up to the first production unit. So we have a very strong attention given to cost. We are developing integrated master schedules for each of the LEPs, a completed risk register, and we will be moving to a point of having re-

source-loaded schedules in industry standard tools as well as these proceed.

Senator KING. Do existing warheads have a life expectancy? Do they degrade in some way over time?

Dr. COOK. They do degrade and they do have a life expectancy, although we have been able to stretch that. These weapons were put into service in the 1970s and 1980s nominally with a 20-year life and a 25-year life of program buy, which means we had enough components to extend another 5 years. They are now well beyond that time. The B61 is the oldest system in the stockpile, and we have the greatest needs to do its life extension. But the elements of that system have been around 40 years and key parts of it still have in the radar system vacuum tubes.

Senator KING. You can send most of them to the Smithsonian. [Laughter.]

Dr. COOK. In fact, we probably will. [Laughter.]

In terms of cost forward, Sandia is developing a radar system that will be pertinent not only to the B61 but also to the W88 and the W87 life extensions as well. So a strong attention to cost, but a real need to improve the systems.

Senator KING. Other comments from any of you?

Mr. HUIZENGA. I will just point out, Senator, relative to our relationship with NNSA, we obviously work closely with our partners there with the TRU waste that we are removing from the mesa at the Los Alamos National Laboratory which is indeed important to the overall benefit for the laboratory. We do not want to have another wildfire approach that waste, so we are trying to move that as quickly as possible in support of our colleagues.

Senator KING. Do we do any recycling of nuclear waste, or is it all stored somehow? Do we have any reprocessing?

Mr. HUIZENGA. In general, we are disposing of the waste. There are broader issues associated with nuclear fuel and power plant fuel that can be wrestled with.

Senator KING. But in the defense area, we basically are disposing of the waste. There is no reprocessing process.

Mr. HUIZENGA. Currently, yes.

Senator KING. Along that line, as I understand it, as we have been decommissioning these reactors and cores, we have created something like 75 million gallons of liquid nuclear waste. Are you confident that the facilities that we have, Idaho, South Carolina, and Washington, are adequate into the indefinite future? Is there going to be need for a new siting? Would you prefer a different storage for this liquid waste? I understand it is basically in large tanks. Is there another solution that might be a preferable balance between safety and cost?

Mr. HUIZENGA. I think the path we are on right now for this liquid high-level waste is the appropriate one. We are making glass logs and solidifying waste at the SRS plant and doing well at our defense waste processing facility. We have already solidified all of the liquid waste at the West Valley site. Indeed, we have this 900,000 gallons left at Idaho, and we are in the process of starting up that facility to stabilize that material. So the large amount of material, the complicated waste stream that we have with the Waste Treatment Facility at Hanford is, indeed, our biggest chal-

lenge. But we think we have our sights set on being able to address that and solidify that material as well.

Senator KING. Is Hanford principally managed by your agency?

Mr. HUIZENGA. Yes, it is.

Senator KING. That is your challenge?

Mr. HUIZENGA. That is my challenge.

Senator KING. I understand.

Admiral Richardson, Portsmouth Naval Shipyard does maintenance on attack submarines, and as I understand it, we had a hearing this morning about shipbuilding plans and projections for the force. Under the 306-ship plan, the Navy's projection is to go to 42 attack submarines in 2029, down from 55 today, and that is a pretty significant decrease. What do you see the role of the maintenance yards? Given that decrease, how do we maintain the industrial base? What will the impact of that be on the facilities like Portsmouth and others?

Admiral RICHARDSON. Yes, sir. We, obviously, take a close look at that, and as far out as we have plans right now for Portsmouth, that shipyard is busy with those refuelings and decommissionings. Beyond that, working closely with my colleague, Vice Admiral McCoy, there is really an enterprise-wide approach using all the shipyards in the country to best level the load for nuclear ship maintenance. As we look forward to planning beyond the current horizon, we will continue that enterprise approach to make sure that we are best postured to support that fleet.

Then, sir, that is the low point perhaps in the shipbuilding plan, but we will be building back up from that point as well. So not only the 48 or so attack submarines, but then the follow-on to the *Ohio*-class as well.

Senator KING. Thank you.

Senator UDALL. Thank you, Senator King. It is an important part of Maine's economy and the great role that Maine plays in our country.

Dr. Cook, let me turn back to the posture review from 2010. It requires you to put in place a large number of programs. I do not have to tell you that. You are required to overhaul the B61. You finish up the W76 warhead for the Navy by 2019. You are going to conduct the joint fuze program on the W88 warhead with common components for the intercontinental ballistic missile (ICBM) W87 warhead and eventually the ICBM W78 warhead.

Are you concerned about the overlap or the subelements in the B61 program between Sandia, the Kansas City plant, and even Y–12 where the components are produced?

Dr. COOK. It is a good question. Let me give several aspects to the answer.

First, what is generally called concurrency is a real concern. So dealing with concurrency is something we must do. We cannot avoid it because we have the oldest stockpile we have ever had. The average age of the warheads is now 26 years and counting, and frankly, they range from about 20 years to getting close to 40 years now. So in dealing with that concurrency, the most important thing is to have a strategic plan, vector one toward a stable base workload that uses the entirety of the complex in the wisest way because that will be the most cost-effective way, and then schedule

the activities so there is not multiple overlap that is too high a stressor in what would otherwise be a bottleneck. So a strategic plan is very important.

Then another way to reduce the impacts of concurrency is through leveraging the nonrecurrent engineering and getting multiple use out of it. In other words, I mentioned—and I understand with the lab directors, Director Paul Hommert showed the radar module for the B61. That is, in fact, the same one for the W88 Alt and for the MK21 fuze. So one set of engineering applied three times really leverages. Now, if there were not some concurrent work, that leveraging would not be possible. So some aspect of concurrency is really important.

But there is a down side. If there is too much and if schedule slips, if they get stretched out, if the funding is not made available for the LEPs, then not only do schedules slip, they begin to overlap and the consequence is we have costs and then we have real bottlenecks.

Senator UDALL. Let me ask you about Sandia. Are you concerned about too many programs carried out at Sandia all requiring component manufacturing at the Kansas City plant while it is moving into the new facility?

Dr. COOK. Again, it is a good question. I would say I have a concern, but I am not overly concerned because we have mitigation steps in place. What we are going to do is track them very carefully. Specifically, the Kansas City plant move—the new plant at Box Road is completely done now. The move is happening in fiscal year 2014 and by the end of 2014, all of that move will occur.

When we looked at all of the risks and considered them, we felt they were all manageable except one and that was the assembly of the AF&F system. That is where it all comes together, and that had been a sticking point with getting to the W76 build rate. So, in fact, we created some duplicate capabilities, one in the existing plant, one in the new plant so that that risk would be addressed. Both are going to be used while we make the transition.

Senator UDALL. Let me go to bombers. With the B61 life extension, we need both the weapons and the bombers.

Dr. COOK. Sure.

Senator UDALL. NNSA projects the B61 life extension to cost, I think, something like $8 billion, and the DOD CAPE projection is $10 billion. Can you talk about that difference? How did it come about?

Dr. COOK. First, knowing what the difference is is quite important. NNSA and CAPE have been working, I think as Administrator Miller said and I agree, very closely together. It is a different set of assumptions that leads to the different costs. The scope is the same. The elements are the same.

In our plan and what we provided to Congress now, weapon design and cost report, that is a cost at the end of conceptual design. There is considerable risk in the program, and something CAPE, I would say, increased our awareness to is the overlapping elements of different phases or turns of the prototype hardware. Things move along pretty quickly. So from the time we began to work with CAPE, a full year has gone by. Sandia is already into the first turn of flight hardware, and that was why you could see

things that are relatively finished products yesterday. We will continue to monitor that.

The CAPE assumption on the down side, I would say, is if we do not succeed in achieving the first production unit in 2019, which requires budget stability, it requires careful management, it requires risk management—if we do not achieve that and the program begins to slip for whatever reason, failure to manage the risk or failure to get the budget authorized and appropriated, then things will begin to pile up and we will lose year by year. CAPE's assumption was if we lost 3 years, we extend the program 3 years, and it costs $2 billion more. I actually agree with that. If that consequence occurs, that will be the cost.

Senator UDALL. I appreciate that clarification. We are going to need to, I think, harmonize those two different numbers although, as you point out, there are different assumptions behind them. The important thing is we move to the markup.

Let me turn to Admiral Richardson. Admiral, I know you have received a 15 percent increase in your 2014 budget. Can you describe what the increase was for and why it was so large?

Admiral RICHARDSON. Yes, sir. The increase really is a result of a couple of different dynamics. First, the primary increase is to support those three major projects that I described in my statement: the replacement for the *Ohio*-class submarine, that reactor plant; the refueling of the land-based prototype; and also the recapitalization of our spent fuel facility in Idaho.

As the Budget Control Act took place, the ramps that were associated with those new projects got leveled off at constant year funding levels. As we have been involved in the effort with OSD CAPE and the rest of NNSA, those projects were assessed as part of that effort over the past year, the costs associated with those, the validation of the mission, so that that increase really is a restoration of those projects.

There is a slight increase above that associated with—amounting to roughly a 2-year slip in the spent fuel handling project and also the *Ohio* submarine reactor plant. So there is some escalation associated with that and some efficiency that we lost by virtue of those slips.

But those three projects with that slight increase due to the slip account for our increase, all linked very directly to supporting the fleet on a timeline that makes sense for them.

Senator UDALL. I know we are approaching 4 p.m. I want to see if Senator King had any additional questions, and then I will conclude with one or two questions. Senator King?

Senator KING. It would not be a hearing in the U.S. Senate in the spring of 2013 if somebody did not ask about sequestion. How is it affecting your operations, if at all? If not, that is important to know. If it is, I would like to know that too and what the severity is and what the impact would be if it continues beyond 2013. Admiral?

Admiral RICHARDSON. Thank you, Senator.

With respect to the impact of sequestration, it is really being felt across the Navy and Naval Reactors is not immune from that. The combined CR and sequestration cuts for our program are approximately $95 million in fiscal year 2013. That really affects most di-

rectly our ability to progress the refueling of that land-based prototype which, as many of these effects have, is a snowball effect forward to retiring risk for the life of ship core for the propulsion plant for the next submarine. So that inability to place about $30 million worth of contracts to help us get at understanding the material science associated with that life-of-the-ship core, the sequestration—these funding levels will also necessitate that we again delay the spent fuel handling project. That will, again, result in increased costs for that project when it eventually does get built. In the interim, because the carrier fleet is coming in for refueling and that fuel is coming off those reactors, we will have to spend money, about $100 million a year, to build temporary storage facilities for those cores just to hold them until that handling facility gets built.

The other part, which is particularly of concern, goes to your original question, sir, about the industrial base, both in the private sector, our vendors, and also the shipyards. As the sequester and the CR manifests itself through the combined effects of hiring freezes, layoffs of temporary workers, potential furloughs, we are seeing reductions in the shipyards of over 30 percent in terms of the capacity. That again is a snowballing effect which will directly translate to delays in the shipyard, which will translate again to reduced time at sea for those critical naval assets and less operational availability as they work to try and get out and do the Nation's business. We will see some of that effect in 2013. That effect will build in 2014 and will build again in 2015 unless we can turn this around.

Similarly, in the private sector, particularly as you move through our tier-one vendors and into the second- and third-tier vendors, small businesses that do a big portion and maybe all of their business with us to supply components for these plants—those businesses are at particular risk as well.

Senator KING. I would assume—I do not want to put words in your mouth, but I would assume that one of the issues is the uncertainty surrounding the budget situation. It almost does not matter what the solution is. We just need a solution. Would you concur?

Admiral RICHARDSON. Sir, I think Administrator Miller spoke very eloquently about that, that the combined uncertainty sends a shock wave through the system. It is that certainty and confidence too that also—particularly in our business where we do a lot of work with unique vendors, very advanced technology, that certainty and confidence that the business will be there at predictable funding levels allows it to do the sorts of investments to reduce that cost and get after this capability at the minimum cost. Not only is there a people manifestation of that uncertainty as people look for where they want to spend their lives working, but also it almost guarantees that this equipment will come in at higher cost because we have to do it year-by-year rather than doing it over a period of time that allows us to take advantage of fluctuations in the market.

Senator KING. Thank you.

The sequester is going to end up costing us money, Mr. Chairman.

Senator UDALL. The Senator from Maine is exactly right. We are operating under the illusion it is going to save money. But Administrator Miller shared with us earlier that the CRs have the same effect. We can feel good that we are cutting Government spending, but, in fact, we are not. We are adding additional costs.

Thank you for that observation. Thank you for being here today.

Mr. Huizenga, I am not going to direct a question to you, although we are going to keep the record open, but I did want to acknowledge the work you do. I think you are well aware of a little plant we had in Colorado, Rocky Flats. I worked for many a year as a Member of the House to see that project completed. Senator King, this is a wonderful story of what we can do if we focus in the EM area. We have cleaned up that facility for the most part. There is a core area that will have to be monitored for hundreds of years, but the surrounding 4,500 acres are now a wildlife refuge and there are herds of elk, songbirds, and red-tailed hawks. The Fish and Wildlife Service now is managing it. It is an example of what we can do. We saved a lot of money but we have to invest on the front end in cutting-edge technology.

Mr. HUIZENGA. We learned a lot of lessons at Rocky Flats, and we are trying to use those across the complex.

Senator UDALL. We certainly did. Just because we have gotten ours in Colorado does not mean I am moving on to other missions. I have made a commitment to Hanford and to Savannah and Pantex and Fernold and Oak Ridge and all the other sites. So as the chairman of this subcommittee, I am going to work with you to see that we keep faith with the people in those communities and do the work we said we were going to do.

Mr. Trimble, the last question I want to direct your way is the following, and it ties to a common indirect cost structure. Can you give some recommendations for implementing a common indirect cost structure at the labs so that we can compare how efficient they are in executing their programs?

Mr. TRIMBLE. This can be a very technical area. So I will try to make it pretty simple, which is the level I operate at most times.

I think to go forward in this area, the first thing I would recommend is, one, I think engaging the CAPE given their vast experience would be very useful.

I think in terms of the elements that would be needed, first you would need a standard work breakdown structure across NNSA that deals with both direct and indirect. I do not think you can parse it out to just the indirect. You have to tackle both at once, otherwise you can play a shell game where stuff can be moved around. So you have to tackle it for both direct and indirect. It has to be consistent across the complex, and then it has to be consistently applied.

To put meat on this, for example, if you have a line item for a program, say, for infrastructure and you say, okay, I am going to give $100 for infrastructure, the lab can take money from that account for infrastructure and that is what you think they are doing. But if they can also take it from another program to pay for infrastructure and they can take it from transportation to pay for infrastructure, if you can take it from multiple funds, all of a sudden you have lost the ability to have an insight into what your program

costs. So the idea of a common work breakdown structure and a disciplined one is to have transparency and consistency in how those costs are allocated so that you are then in a position to manage your program from both a program effectiveness standpoint, as well as from a budget standpoint. So it is very important and it is very dry, but it is absolutely critical to move the ball forward in this area.

Senator UDALL. I agree, and I see Senator King listening very carefully. He was Governor of Maine. He knew that every dollar of taxpayers' funds had to be spent well and with transparency.

I look forward to working with you on this. I am not on a mission to expose the NNSA or DOE or DOD. It is just we need and have the responsibility to continue to work to provide better Government services, more efficient government services, in this really crucial area.

Again, I want to thank Senator King for attending. I want to thank you all for your time.

We will keep the record open for 2 days, through the end of the business day on Friday. We are working overtime to prepare the authorization bill for the committee, which we will take up next month. So that is why the short timeframe to keep the record open. But I know you will all be available to answer any questions.

With that, the Subcommittee on Strategic Forces is adjourned.

[Whereupon, at 4:10 p.m., the subcommittee adjourned.]