ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR FISCAL YEAR 2008

WEDNESDAY, APRIL 18, 2007

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 2:35 p.m., in room SD–138, Dirksen Senate Office Building, Hon. Byron L. Dorgan (chairman) presiding.

Present: Senators Dorgan, Murray, Feinstein, Reed, Domenici, Craig, and Allard.

DEPARTMENT OF ENERGY

NATIONAL NUCLEAR SECURITY ADMINISTRATION

STATEMENT OF HON. THOMAS P. D'AGOSTINO, ACTING UNDER SECRETARY FOR NUCLEAR SECURITY AND ADMINISTRATOR, NATIONAL NUCLEAR SECURITY ADMINISTRATION

ACCOMPANIED BY:

WILLIAM H. TOBEY, DEPUTY ADMINISTRATOR FOR DEFENSE NUCLEAR NONPROLIFERATION, NATIONAL SECURITY ADMINISTRATION

ADMIRAL KIRK DONALD, DIRECTOR, NAVAL NUCLEAR PROPULSION, U.S. NAVY

STATEMENT OF SENATOR BYRON L. DORGAN

Senator DORGAN. This is a hearing of the Appropriations Subcommittee on Energy and Water Development. We will be joined shortly by ranking member, Senator Domenici. And, I welcome Senator Craig.

The hearing today will be for the purpose of reviewing the fiscal year 2008 budget request for the National Nuclear Security Administration (NNSA). The proposed budget for NNSA is nearly $9.4 billion. That's 39 percent of the Department of Energy's total budget for fiscal year 2008, an increase of $306 million above fiscal year 2007's operating plan, but only a $71 million increase over the administration's fiscal year 2007 budget request. The weapons activities request is $6.5 billion. The nuclear nonproliferation request is $1.67 billion. This represents about 18 percent of the NNSA total budget. The remainder of the NNSA's budget is made up of $808 million for naval reactors and $394 million for the Office of the Administrator.

NNSA's fiscal year 2008 budget request appears measured when weighed against fiscal year 2006 and 2007, but if you go back a few years, we see a very substantial increase in funding has taken place in these accounts. In 2001, NNSA's budget was $6.7 billion. That has grown by about $2.7 billion in the past eight fiscal years.

I'm trying to, as a new chairman of this subcommittee, understand as much as I can about what this budget means, what these

activities are. This is, obviously, an interesting, complicated area of the Federal budget and it's an interesting and complicated set of policy issues.

Mr. D'Agostino, you represent an organization that is involved in very important and very complicated matters. And, we appreciate your being here today to testify. You are involved in our nuclear weapons programs in this part of our Department of Energy. There's not much that we do that is more important than those issues, including the issue of nonproliferation. Mr. Tobey, you are involved in that issue.

I'll be asking some questions later about the issue of the construct of nuclear weapons, the RRW program, the issue of the nonproliferation efforts that are underway. This is a, just a critically important function of our Government. We need to try to make sure we get this right. It's about national security. It's about stopping the spread of nuclear weapons around the world, stopping the spread of nuclear technology.

We face, at this time, very significant issues with countries like Iran and North Korea over the issue of enrichment capabilities and nuclear weapons production. The list of nuclear weapon countries, both rogue and nonrogue, could very well grow in future years. If that's the case, that will, in my judgment, increase the threat to our country.

And so, all of these things are very, very important. I can't have answers, don't have answers to all of the questions that are posed by these issues that we'll talk about today. But, I think we need to continue to explore and ask questions about them all and try to understand where we're headed.

Let me call on Senator Craig. If you have any opening comments, Senator Craig.

STATEMENT OF SENATOR LARRY CRAIG

Senator CRAIG. Well, Mr. Chairman, there is a portion of this budget that I know a good a deal about, so let me tell you about it. And, I say that because few understand and oftentimes are quite surprised when I say out in the middle of the high deserts of Idaho rests a nuclear submarine or at least the ingredients of it as it relates to nuclear propulsion. And, I say that because I'm talking about the construct, or the construction of, in 1953, a Nautilus prototype reactor, which really started our nuclear Navy and I suspect—Admiral, did you train in Idaho?

Admiral DONALD. I did not, sir.

Senator CRAIG. You did not.

Mr. D'AGOSTINO. I did. Yes, sir, I did.

Senator CRAIG. There, Mr. D'Agostino did. And, quite often when you talk to those of the nuclear Navy, they will have spent time in Idaho. Now, having said that, that is really, as we all know, one of the great success stories of the nuclear side of us, as a country. Not only what we've done with the nuclear Navy, the successes, the changes in the type of reactors, the fuel cycle.

I say this publicly, loudly, as often as I can, had we been as dedicated to the commercial side of nuclear electrical generation as we were to nuclear propulsion and the refinement of reactor and fuel cycle, we would without question be leading the world today in

highly efficient reactors of a kind that we are attempting to imagine. But, we're not there because we stopped. We did not do that with the nuclear Navy.

Also, I will say that in 1967, the advanced test reactor at the INL, our national lab, began to tackle the nuclear fuels reliability and materials testing issue. It was commissioned in 1967 to support the Navy's nuclear propulsion program. And, all I can say is that all of us can be extremely pleased with those successes. There is none finer in the world today than what we have accomplished with our nuclear Navy.

And, as a result of that, I am, you know, pretty open, pretty direct, and extremely proud that so much of that was accomplished at the national laboratory in southeastern Idaho. So, obviously I look at the broader issues involved in this portion of the budget, but I focus very closely on a portion of it that deals with the Idaho facility and the ongoing work that we do and the science. The Office of Energy, Nuclear Energy and Science and transitioning the ATR to a national users facility that industry and the academic community can access for all that we're attempting to do today, Mr. Chairman, as it relates to the dynamics of the nuclear industry and the fuels that will ultimately be part of that growing industry as we now see it.

Senator DORGAN. Senator Craig——

Senator CRAIG. Again, gentlemen, thank you.

Thank you, Mr. Chairman.

Senator DORGAN. Thank you very much.

Senator Reed.

Senator REED. Mr. Chairman, I have no opening statement. Thank you though.

Senator DORGAN. Let me make one additional comment, because I think it's important to say that the issues we will talk about today, RRW, nonproliferation, and so on, are not issues that we deal with in isolation. These issues are part of a larger national and international discussion about nuclear weapons policies, about stock, our stockpile, reliability, about nonproliferation, about test ban treaties, and so on. There's a, so my point is, these are big issues. You know, we work everyday in areas here in Congress that have some big issues and some small issues. These are very big issues that have national and international consequences.

And, Mr. D'Agostino, thank you for being here. It's been a pleasure to meet you and begin to work with you in these months. And, I would include your entire statement as a part of the permanent record and ask you to summarize and introduce as well, Admiral Donald and Mr. Tobey.

STATEMENT OF HON. THOMAS P. D'AGOSTINO

Mr. D'AGOSTINO. Thank you, Mr. Chairman and members of the subcommittee. I'm Tom D'Agostino, the Deputy Administrator for Defense Programs and I'm accompanied today by Will Tobey, on my left, who is the Deputy Administrator for Defense Nuclear Nonproliferation. And, Admiral Kirk Donald, on my right, the Deputy Administrator for Naval Reactors.

As you mentioned earlier, the President's fiscal year 2008 budget request for the NNSA is $9.4 billion. It supports three basic na-

tional security missions. The first is to assure the safety, security, and the reliability of the U.S. nuclear stockpile, while at the same time transforming that stockpile, making it smaller essentially, and the associated infrastructure. The second major mission is to reduce the threat posed by nuclear proliferation. The third is to provide a reliable and safe nuclear reactor propulsion system for the United States Navy.

In order to accomplish this mission, we developed a vision, which we call Complex 2030. And simply put, this vision has four main portions to it. The first is to transform the nuclear weapons stockpile by making it smaller, by making it safer, and by making it more secure. The second element is to reduce the size of the nuclear weapons infrastructure, decreasing the footprint in the United States of that infrastructure and the impact on the environment. The third is to change the way we do business, drive more efficient business processes. And, the fourth is to sustain and improve the science and technology base that's gotten us to this point and allows us to have such a strong national security.

I'm pleased to report today that stockpile stewardship is working. This program has successfully sustained the safety, security, and reliability of the U.S. nuclear arsenal without the need to conduct an underground nuclear test. Many actions to transform the size and operations of the complex, transform the stockpile, and drive the science and technology base are well underway.

We are reducing the number of sites with large quantities of special nuclear materials and consolidating these materials within the remaining sites. We're maintaining an accelerated rate of dismantlement of retired warheads. We want to take these weapon systems apart. We are reconstituting the nuclear weapons production capability and we have revived our ability to extract tritium for use in the stockpile at our new tritium extraction facility in South Carolina.

I'd like to emphasize that our recent Reliable Replacement Warhead announcement addressed the selection of a baseline for further study. It was not an announcement to actually, or a decision to actually, build a replacement warhead.

Over the next 9 to 12 months, our plans are simply to develop a detailed cost, scope, and schedule baseline for a Reliable Replacement Warhead for the Trident submarine launched ballistic missile. With this baseline, we'll be able to develop the details and the plans necessary for us to evaluate whether we need to make a decision on further reducing the number of life extensions that we have planned and reducing the overall size of the stockpile itself. We will work very closely with the Congress as we move forward, to ensure that we proceed in a step-wise measured and well understood manner in this respect.

One of the major benefits of a Reliable Replacement Warhead approach is that it reinforces our nonproliferation commitments and objectives. This strategy will allow us to increase our warhead dismantlement rate, sending a strong message to the world that we're taking meaningful steps toward further stockpile reductions. Additionally, increased long-term confidence and the credibility of the U.S. nuclear deterrent will assure allies and obviate any need for them to develop and field their own nuclear forces.

Finally, the improved security features of a Reliable Replacement Warhead concept will prevent unauthorized use, should this warhead ever fall in the hands of terrorists. In the area of nuclear nonproliferation, the NNSA has worked with over 100 international partners to detect, prevent, and reverse proliferation of weapons of mass destruction. We're securing and reducing the quantity of nuclear and radiological materials, bolstering border security overseas, strengthening international nonproliferation and export control regimes, and conducting cutting-edge research and development of nuclear detection technologies. All of these are key mission areas for the nonproliferation program.

Meeting our commitment under the Bratislava Agreement, to conclude security upgrade activities at the Russian nuclear sites by the end of 2008, is our highest priority. As a result of our efforts to accelerate this work, we are well positioned to successfully reach this milestone on schedule. In addition to our work with Russia, some of the highlights in the 2008 budget include completing installation of radiation detection monitors at ports in Belgium, Oman, and the Dominican Republic and continuing the MOX fuel fabrication facility project to eventually dispose of surplus U.S. plutonium and support in the U.S. role in international nonproliferation efforts.

The Naval Reactors Program includes development work necessary to ensure nuclear propulsion technology provides options for maintaining and upgrading current capabilities, as well as meeting future threats to U.S. security.

A majority of funding supports the top priority of ensuring the safety and reliability of the 103 operating naval nuclear propulsion plants. This work involves continual testing, analysis, and monitoring of plant and core performance, which becomes more important as the reactor plants age.

The nature of this business demands a careful and measured approach to developing and verifying nuclear technology. Designing needed component systems and processes and implementing them in existing and future plant designs.

Long-term program goals have been to increase core energy, to achieve life-of-the-ship cores and to eliminate the need to refuel nuclear powered ships. Efforts associated with this objective have resulted in plant core lives that are sufficient for a 30-plus year submarine and an extended core life planned for the next generation aircraft carrier.

In summary, there is an effective synergy between the NNSA's weapons activities and nonproliferation activities. For example, we have dismantled more than 13,000 weapons since 1988. Plans are operationally deployed, United States, Russian, and strategic nuclear warheads will not exceed 1,700 to 2,200 by December 2012. In 2003, the Department of Energy completed dismantlement of most nonstrategic nuclear warhead, nuclear weapons, limiting our stockpile of these systems to less than one-tenth of cold war levels.

In 2004, President Bush approved a plan that will cut the U.S. stockpile by almost one-half from the 2001 level. And, by the end of 2012, the Department's efforts will have reduced the stockpile to its smallest level in several decades. In addition to weapons dismantlement, the Department is making tremendous progress to re-

duce and eliminate fissile material made surplus to defense requirements.

PREPARED STATEMENT

I'm confident the NNSA is heading in the right direction in the coming fiscal year. This concludes my statement and I look forward to your questions.

Thank you, Mr. Chairman.

[The statement follows:]

PREPARED STATEMENT OF HON. THOMAS P. D'AGOSTINO

Thank you for the opportunity to discuss the President's fiscal year 2008 budget request for the National Nuclear Security Administration (NNSA). This is my first appearance before this committee as the Acting Under Secretary for Nuclear Security and NNSA Administrator, and I want to thank all of the members for their strong support for our vital national security missions.

In the 7th year of this administration, with the strong support of Congress, NNSA has achieved a level of stability that is required for accomplishing our long-term missions. Our fundamental national security responsibilities for the United States include:

—assuring the safety, security and reliability of the U.S. nuclear weapons stockpile while at the same time transforming the stockpile and the infrastructure that supports it;
—reducing the threat posed by nuclear proliferation; and
—providing reliable and safe nuclear reactor propulsion systems for the U.S. Navy.

The fiscal year 2008 budget request for $9.4 billion, an increase of $306 million from the fiscal year 2007 operating plan, supports the crucial missions to ensure the Nation's nuclear security.

WEAPONS ACTIVITIES

Stockpile Stewardship is working—the nuclear weapons stockpile remains safe, secure and reliable. Throughout the past decade, the Stockpile Stewardship Program (SSP) has proven its ability to successfully sustain the safety, security and reliability of the nuclear arsenal without resorting to underground nuclear testing. The SSP also enables the United States to provide a credible strategic deterrent capability with a stockpile that is significantly smaller. To assure our ability to maintain essential military capabilities over the long-term, however, and to enable significant reductions in reserve warheads, we must make progress towards a truly responsive nuclear weapons infrastructure as called for in the Nuclear Posture Review (NPR). The NPR called for a transition from a threat-based nuclear deterrent, with large numbers of deployed and reserve weapons, to a deterrent that is based on capabilities, with a smaller nuclear weapons stockpile and greater reliance on the capability and responsiveness of the Department of Defense (DOD) and NNSA infrastructure to adapt to emerging threats.

To meet these objectives, we developed a transformation vision and strategy, the cornerstones of which are Complex 2030 and the Reliable Replacement Warhead (RRW). We are boldly moving forward to implement this strategy now, bringing us closer to achieving an even smaller stockpile, one that is safer and more secure, one that offers a reduced likelihood that we will ever again need to conduct an underground nuclear test, and ultimately, one that enables a much more responsive nuclear weapons infrastructure.

Over the next several years, our performance will not only be measured by the success of our continuing efforts to maintain the nuclear stockpile, but also, by the success of our efforts to plan and achieve a truly responsive nuclear weapons infrastructure for the long-term strategic needs of the Nation. What do we mean by "responsive nuclear weapons infrastructure?" By "responsive" we refer to the resilience of the nuclear enterprise to unanticipated events or emerging threats, and the ability to anticipate innovations by an adversary and to counter them before our deterrent is degraded. Unanticipated events could include complete failure of a deployed warhead type or the need to respond to new and emerging geopolitical threats.

The elements of a responsive infrastructure include the people, the science and technology base, the facilities and equipment to support a right-sized nuclear weapons enterprise as well as practical and streamlined business practices that will en-

able us to respond rapidly and flexibly to emerging needs. More specifically, a responsive infrastructure must provide proven and demonstrable capabilities, on appropriate timescales, and in support of national security requirements.

We are focused on four implementing strategies to achieve our transformational objectives: (1) transform to a modernized, more cost-effective safe and secure complex; (2) transform the nuclear stockpile in partnership with the DOD; (3) create a fully integrated and interdependent complex; and, (4) drive the science and technology base essential for long-term national security.

We are taking many concrete steps today to make this transformation vision a reality. The completion of a Supplemental Programmatic Environmental Impact Statement (PEIS) for Complex 2030 in accordance with the National Environmental Policy Act (NEPA) will mark the most significant of these steps. Although the original notice of intent for the PEIS did not include a Consolidated Nuclear Production Center (CNPC), we have determined that it is important to include this concept as an alternative to be evaluated in the draft PEIS. The scoping period concluded in January 2007, and a Record of Decision for the future configuration of the Complex is anticipated in 2008. While we await the results of the NEPA process, many actions to transform the stockpile, transform the operation of the Complex, and drive the science and technology base are already well underway. Specifically, we are:

—Reducing the number of sites with Category I/II special nuclear material (SNM) and consolidating such material within the remaining sites. This process has begun with the initial shipment in 2006 of plutonium from Lawrence Livermore National Laboratory (LLNL) and the removal of Category I/II material from Los Alamos National Laboratory (LANL) Technical Area 18. Within the next 5 years, we expect to eliminate the need for Category I/II SNM security at Sandia National Laboratory (SNL).

—Dramatically accelerating the dismantlement of retired weapons. The Pantex Throughput Improvement Program has resulted in a significant improvement in throughput and we expect our dismantlement rate for fiscal year 2007 to exceed that of fiscal year 2006 by nearly 50 percent. Additional activities are also underway to increase the rate at which weapons can be dismantled and dispositioned at Y–12.

—Reconstituting the Nation's nuclear weapon production capability by implementing our plans to ramp up to 30–50 pits per year at LANL by 2012.

—Reviving our ability to extract tritium for use in the stockpile at the new Tritium Extraction Facility at the Savannah River Site (SRS).

—Developing a weapons program Science and Technology roadmap to define the full set of capabilities needed to sustain the future stockpile.

—Streamlining and improving business practices by adding multi-site incentives to current contracts, enhancing line management structures to strengthen accountability, consolidating facility organizations and establishing a systems integration structure.

To foster confidence in the transformation process and to ensure that the Complex remains focused on meeting our current commitments, we established a "Getting the Job Done" list for the nuclear weapons complex in April 2006. By January 2007, the following commitments were complete: (1) delivering B61–7 and B61–11 Alt 357 Life Extension Program (LEP) first production units; (2) delivering the full capability of the Advanced Simulation and Computing Purple Machine; (3) updating pit lifetime estimates; (4) supporting the Nuclear Weapons Council (NWC) decision in November 2006 to proceed with the RRW strategy; and (5) extracting tritium for use in the stockpile at the new Tritium Extraction Facility.

The weapons complex is also on track to fulfill the remaining fiscal year 2007 commitments of: (1) continuing to deliver our products (e.g., limited life components) to DOD; (2) eliminating the backlog of surveillance units consistent with an enhanced evaluation strategy (except the W84 and W88); (3) accelerating the dismantlement of retired weapons in fiscal year 2007 by 50 percent; (4) delivering the W76–1 LEP first production unit; and (5) certifying the W88 with a new pit and manufacturing 10 W88 pits in fiscal year 2007. Delivery on these and future near-term commitments during transformation of the weapons complex is essential to the continued safety, security and reliability of the stockpile.

Another area where we are making tremendous progress to transform the Complex is in our efforts to secure nuclear weapons, weapons-usable materials, information, and infrastructure from theft, compromise or harm. We established and staffed within the Office of Defense Nuclear Security, a Program Evaluation Office to ensure the effectiveness of both our implemented security programs and security line management oversight. Additionally, we have met the requirements of the 2003 Design Basis Threat and are firmly on track to meet the requirements of the 2005 DBT at all sites by fiscal year 2011. We are also rapidly improving our cyber secu-

rity standards and practices. As the committee is aware, we recently experienced a major cyber security incident at LANL. While this incident has highlighted some additional areas for improvement, NNSA has been vigorously implementing measures over the last 2 years to strengthen the cyber security posture across the Complex. We are strongly committed to and are actively addressing the issues identified by the LANL incident and applying the lessons learned complex-wide. Sustaining and improving the security of the nuclear weapons complex is an integral component of NNSA's core mission, and thus represents one of our highest priorities.

As we continue to draw down the stockpile, we have become concerned that our current path—successive refurbishments of existing warheads developed during the cold war and to stringent cold war specifications—may pose an unacceptable risk to maintaining high confidence in system performance over the long-term. Specifically, the directors of our nuclear weapons laboratories have raised concerns about their ability to assure the reliability of the legacy stockpile over the very long-term absent nuclear testing. Our DOD partners share these concerns. The evolution away from tested designs through a LEP approach, resulting from inevitable accumulations of small changes over the extended lifetimes of these highly optimized systems, is what gives rise to these concerns.

Our decision to embark on the path to an RRW does not result from a failure of the stockpile stewardship program, as some have suggested, but is a reflection of its success. The SSP has revealed the need to pursue this new RRW path. Moreover, aggressive pursuit of the new scientific tools currently in use and being developed under the SSP is essential, not only to sustain existing warheads as long as they are needed, but to our efforts to design, develop and produce replacement warheads that are safer, more reliable, and cost-effective over the long term without nuclear testing.

We are pursuing the RRW strategy to ensure the long-term sustainment of the military capabilities provided by warheads in the existing stockpile, not to develop warheads for new or different military missions. Another major driver for the RRW approach was the realization after 9/11 that the security threat to our nuclear stockpile had fundamentally changed. The security features in today's stockpile are commensurate with technologies that were available during the cold war and with the threats facing the United States at that time. Major enhancements in security are not readily available through system retrofits via the LEP approach.

We believe that features of the RRW concept will serve as the key "enabler" for achieving a smaller, more efficient and responsive infrastructure and opportunities for a smaller stockpile. The RRW will relax cold war design constraints that maximized yield to weight ratios and thereby allows us to design replacement components that are easier to manufacture, are safer and more secure, eliminate environmentally dangerous materials, and increase design margins, thus ensuring long-term confidence in reliability. Moving forward with the RRW program will further allow us to take advantage of the scientists and engineers who are retiring soon and who possess the unique skills and experience of designing, developing, and producing nuclear weapons.

Moreover, the benefits of the RRW approach reinforce our nonproliferation commitments and objectives. Because these warheads would be designed with more favorable performance margins, and be less sensitive to incremental aging effects, they would reduce the possibility that the United States would ever be faced with a need to conduct a nuclear test to diagnose or remedy a stockpile reliability problem. This will bolster efforts to dissuade other countries from testing. Moreover, once a transformed production complex demonstrates that it can produce replacement warheads on a timescale in which geopolitical threats could emerge, or respond in a timely way to technical problems in the stockpile, then we can eliminate many spare warheads, reducing further the nuclear stockpile. The RRW strategy will allow us to increase our warhead dismantlement rate, sending a strong message to the world that we are taking meaningful steps towards further stockpile reductions. Additionally, increased confidence in the U.S. nuclear deterrent will assure allies and obviate any need for them to develop and field their own nuclear forces. Finally, the improved security features of RRW will prevent unauthorized use should a warhead ever fall into the hands of terrorists.

On November 30, 2006, the NWC established the feasibility of the RRW program as a long-term strategy for maintaining a safe, secure and credible nuclear deterrent. On March 2, 2007, the Nuclear Weapons Council (NWC) approved a design for a joint NNSA and U.S. Navy program to provide a replacement warhead for a portion of the Nation's sea-based nuclear weapons. We have begun the process for the RRW design definition and cost study, the results of which will inform the decisionmaking process within the administration and Congress as to whether to proceed to the next phase, engineering development.

NUCLEAR NONPROLIFERATION

Acquisition of nuclear weapons, weapons of mass destruction (WMD) capabilities, technologies, and expertise by rogue states or terrorists stands as one of the most potent threats to the United States and international security. The continued pursuit of nuclear weapons by terrorists and states of concern underscores the urgency of NNSA's efforts to secure vulnerable nuclear weapons and weapons-usable nuclear materials, to improve capabilities to detect and interdict nuclear weapons or materials, to halt the production of fissile material, and ultimately, to dispose of surplus weapons-usable materials. The fiscal year 2008 budget request will enable NNSA to continue the activities that support these crucial threat reduction initiatives.

Preventing access to nuclear weapons and material has many dimensions. Our number one highest priority is to keep these dangerous materials out of the hands of the world's most dangerous actors. Absent access to sufficient quantities of key fissile materials, there can be no nuclear weapon. Much of our emphasis has focused on Russia because that is where most of the poorly secured material was located. We have made remarkable progress cooperating with Russia to strengthen protection, control, and accounting of its nuclear weapons and materials. Meeting our commitment under the Bratislava Joint Statement to conclude security upgrade activities at Russian nuclear sites by the end of 2008 will be our chief priority in fiscal year 2008. As a result of our efforts to accelerate this work in the wake of 9/11 and the momentum created by the Bratislava process, we are well-positioned to reach this significant milestone on schedule. Although our direct upgrade efforts are drawing to a close after over a decade of work, we will continue to work cooperatively with Russia to ensure the long-term sustainability of the systems and procedures we have implemented.

Not all nuclear material of concern is located in Russia. We are working with other partners to secure weapons-usable nuclear materials worldwide and to strengthen security at civil nuclear facilities. One area of concern is research reactors, which often use a highly enriched uranium (HEU) fuel suitable for bombs. Our Global Threat Reduction Initiative (GTRI) seeks to convert research reactors worldwide from HEU to low enriched uranium (LEU) fuel and further to repatriate U.S. and Russian-supplied HEU from these facilities to its country of origin. A major accomplishment was the return of 268 kilograms of Soviet-origin HEU from Germany to Russia, where it will be down blended to LEU fuel. This repatriation operation represents the largest shipment of Soviet-origin HEU conducted to date under the GTRI.

We are taking aggressive steps to interdict weapons-usable nuclear materials and to prevent dissemination of nuclear related technology via strengthened export controls and improved international cooperation. As a complement to improving physical security, the Second Line of Defense Program works to enhance our foreign partners' ability to interdict illicit trafficking in nuclear materials. Under this program, we deploy radiation detection systems at high-risk land-border crossings, airports and seaports, increasing the likelihood of interdiction of diverted nuclear materials entering or leaving the country.

The Megaports Initiative, established in 2003, responds to concerns that terrorists could use the global maritime shipping network to smuggle fissile materials or warheads. By installing radiation detection systems at major ports throughout the world, this initiative strengthens the detection and interdiction capabilities of our partner countries.

To prevent the diffusion of critical technologies, we are training front line customs officers around the world. We are working to implement U.N. Security Council Resolution 1540, which establishes a requirement to criminalize proliferation involving non-state actors and encourages states to strengthen export control laws and improve enforcement. Because keeping terrorists from acquiring materials will be easier if we limit enrichment of uranium or reprocessing of spent fuel, the President proposed in 2004 a new initiative, the Global Nuclear Energy Partnership (GNEP), which would provide nations which refrain from developing or deploying enrichment and reprocessing technology assured access to the benefits of nuclear power.

These are critical steps but they alone cannot address the problem. Indeed, there is enough fissile material in the world today for tens of thousands of weapons. An integral part of our strategy, therefore, has been to induce other states to stop producing materials for nuclear weapons, as the United States did many years ago. We recently tabled a draft treaty at the Conference on Disarmament in Geneva to do just that. We also supplement international diplomatic efforts with bilateral programs. For example, Russia still produces weapons-grade plutonium, not because it needs it for weapons, but because the reactors that produce it also supply heat and light to local communities. We are replacing these reactors with fossil fuel plants.

By 2008, two of the existing three plutonium-producing reactors in Russia will shut down permanently, with the third shut down by 2010.

As previously indicated, there are a number of effective synergies between NNSA's weapons activities and our nuclear nonproliferation objectives. For example, we are disposing of the substantial quantities of surplus weapons grade material that resulted from the thousands of warheads that we have dismantled by downblending it to lower enrichment levels suitable for use in commercial reactors. We are also working with Russia to eliminate Russian HEU. Under the HEU Purchase Agreement, nearly 300 metric tons of uranium from Russia's dismantled nuclear weapons—enough material for more than 11,000 nuclear weapons—has been downblended for use in commercial reactors in the United States. Nuclear power generates 20 percent of American electricity and half of that is generated by fuel derived from Russian HEU. As a result, one-tenth of the U.S. electrical energy need is powered by material removed from former Soviet nuclear weapons. In addition to the efforts on HEU, the United States and Russia have each committed to dispose of 34 metric tons of surplus weapon-grade plutonium.

If we are to encourage responsible international actions, the United States must set the example. We have dramatically improved physical security of U.S. nuclear weapons and weapons usable materials in the years since the attacks of 9/11. We recently withdrew over 200 metric tons of HEU from any further use as fissile material in nuclear weapons, a portion of which will be devoted to powering our nuclear navy for the next 50 years, obviating the need over that period for high-enrichment of uranium for any military purpose. Seventeen tons will be blended down and set aside as an assured fuel supply as part of global efforts to limit the spread of enrichment and reprocessing technology.

The risk of nuclear terrorism is not limited to the United States and the success of our efforts to deny access to nuclear weapons and material is very much dependent on whether our foreign partners share a common recognition of the threat and a willingness to combat it. Last July, just before the G–8 summit, Presidents Bush and Putin announced the Global Initiative to Combat Nuclear Terrorism to strengthen cooperation worldwide on nuclear materials security and to prevent terrorist acts involving nuclear or radioactive substances. Paired with U.N. Security Council Resolution 1540, we now have both the legal mandate and the practical means necessary for concrete actions to secure nuclear material against the threat of diversion.

NAVAL REACTORS

Also contributing to the Department's national security mission is the Naval Reactors Program, whose mission is to provide the U.S. Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe, reliable and long-lived operation. Nuclear propulsion enhances our warship capabilities by providing the ability to sprint where needed and arrive on station, ready to conduct sustained combat operations when America's interests are threatened. Nuclear propulsion plays a vital role in ensuring the Navy's forward presence and its ability to project power anywhere in the world.

The Naval Reactors Program has a broad mandate, maintaining responsibility for nuclear propulsion from cradle to grave. Over 40 percent of the Navy's major combatants are nuclear-powered, including aircraft carriers, attack submarines, and strategic submarines, which provide the Nation's most survivable deterrent.

FISCAL YEAR 2008 BUDGET REQUEST BY PROGRAM

The President's fiscal year 2008 budget request for NNSA totals $9.4 billion, an increase of $306 million or 3.4 percent over the fiscal year 2007 operating plan. We are managing our program activities within a disciplined 5-year budget and planning envelope, and are successfully balancing the administration's high priority initiatives to reduce global nuclear danger as well as future planning for the Nation's nuclear weapons complex within an overall modest growth rate.

The NNSA budget justification contains information for 5 years as required by sec. 3253 of Public Law 106–065. This section, entitled Future Years Nuclear Security Program, requires the Administrator to submit to Congress each year the estimated expenditures necessary to support the programs, projects and activities of the NNSA for a 5-year fiscal period, in a level of detail comparable to that contained in the budget.

The fiscal year 2008–2012 Future Years Nuclear Security Program—FYNSP—projects $50 billion for NNSA programs though 2012. This is an increase of about $1.5 billion over last year's projections in line with the administration's strong commitment to the Nation's defense and homeland security. The fiscal year 2008 re-

quest is slightly smaller than last year's projection; however, the outyears are increased starting in 2009. Within these amounts, there is significant growth projected for the Defense Nuclear Nonproliferation programs to support homeland security, including new initiatives and acceleration of threat reduction programs and increased inspection of seagoing cargoes destined for ports in the United States.

WEAPONS PROGRAM ACTIVITIES

The fiscal year 2008 budget request for the programs funded within the Weapons Activities Appropriation is $6.51 billion, an approximately 3.8 percent increase over the fiscal year 2007 operating plan. It is allocated to adequately provide for the safety, security, and reliability of the nuclear weapons stockpile and supporting facilities and capabilities.

This request supports the requirements of the SSP consistent with the administration's NPR and subsequent amendments, and the revised stockpile plan submitted to the Congress in June 2004. Our request places a high priority on accomplishing the near-term workload and supporting technologies for the stockpile along with the long-term science and technology investments to ensure the design and production capability and capacity to support ongoing missions. This request also supports the facilities and infrastructure that must be modernized to be responsive to new or emerging threats.

The Department has made significant strides over the past year to transform the nuclear weapons complex. The "Complex 2030" planning scenario was introduced in 2006 and has already resulted in a number of accomplishments. We have not created a separate budget line for our transformational activities in the fiscal year 2008 President's Request. Implementation actions to bring about transformation are incorporated into existing program elements: Directed Stockpile Work (DSW), Campaigns, Readiness in Technical Base and Facilities (RTBF), and Secure Transportation Asset. The approach to transformation relies extensively on existing line program organizations taking responsibility for individual actions required to change both the stockpile and its supporting infrastructure. While the administration continues to assess the plans and funding projections for certain elements of NNSA's complex transformation strategy, this budget contains resources to support a number of transformational initiatives underway within our base program activities.

In fiscal year 2008, we are requesting $1.45 billion for DSW, an increase of $21.5 million over the fiscal year 2007 operating plan. We will continue an aggressive dismantlement plan for retired warheads and consolidation of special nuclear material across the nuclear weapons complex. Both of these efforts will contribute to increasing the overall security at NNSA sites. In fiscal year 2007, funding was increased to cover upfront costs associated with tooling procurement, procedure development, Safety Authorization Basis work, hiring of production technicians, and equipment purchases, which will support future-year dismantlement rates. The fiscal year 2008 request reflects the required funding to support the planned dismantlement rates reported to Congress. Funding at higher levels was unnecessary once the dismantlement process was improved with fiscal year 2005 and fiscal year 2006 funding. In May 2006, the NWC directed that the W80 LEP be deferred to support NNSA efforts to transform the nuclear weapons complex and continue work on a RRW. At the same time, the B61 and W76 LEP workloads are increasing, since they both will have entered the production phase by fiscal year 2008. DSW also supports routine maintenance and repair of the stockpile and supports managing the strategy, driving the change, and performing the crosscutting initiatives required to achieve responsiveness objectives envisioned in the NPR. Our focus remains on the stockpile, to ensure that the nuclear warheads and bombs in the U.S. nuclear weapons stockpile are safe, secure, and reliable.

Progress in other elements of the SSP continues. The fiscal year 2008 request for the six Campaigns is $1.87 billion, a $113 million decrease from the fiscal year 2007 operating plan. The decrease in program funding is required to balance overall weapon activity priorities, specifically the transition of the W76 LEP from R&D to production, the consolidation of computing facilities, and a large decrease in Readiness Campaign activities associated in part to the transition of Tritium Extraction Facility to full operations. The Campaigns focus on scientific and technical efforts and capabilities essential for assessment, certification, maintenance, and life extension of the stockpile and have allowed NNSA to continue "science-based" stockpile stewardship. These Campaigns are evidence of NNSA's excellence and innovation in science, engineering and computing that, though focused on the nuclear weapons mission, have broader application and value. The use of DOE Office of Science facilities in supporting Stockpile Stewardship science and engineering will increase mod-

estly at the same time that access to NNSA's science facilities is extended to a broader community of users.

Specifically, $425.8 million for the Science and Engineering Campaigns provides the basic scientific understanding and the technologies required to support DSW and the completion of new scientific and experimental facilities in the absence of nuclear testing.

The Readiness Campaign, with a request of $161.2 million, develops and delivers design-to-manufacture capabilities to meet the evolving and urgent needs of the stockpile and supports the transformation of the nuclear weapons complex into an agile and more responsive enterprise. In February 2007, startup of the Tritium Extraction Facility at the Savannah River Site was completed, making possible the use of new tritium in the U.S. stockpile for the first time in 18 years.

The Advanced Simulation and Computing (ASC) Campaign is a key example of NNSA excellence and innovation in science and engineering, establishing world leadership in computational simulation sciences with broad application to national security. The request of $585.7 million for the ASC Campaign supports the development of computational tools and technologies necessary to support the continued assessment and certification of the refurbished weapons, aging weapons components, and the RRW program without underground nuclear testing. As we enhance and validate the predictive science capabilities embodied in these tools, using the historical test base of more than 1,000 cold war era nuclear tests to computer simulations, we can continue to assess the stockpile to ensure that it is safe, secure, and reliable.

The $412.3 million request for the Inertial Confinement Fusion Ignition and High Yield Campaign is focused on the execution of the first ignition experiment at the National Ignition Facility (NIF) in 2010, and provides facilities and capabilities for high-energy-density physics experiments in support of the SSP. To achieve the ignition milestone, $147 million will support construction of NIF and the NIF Demonstration Program and $232.2 million will support the National Ignition Campaign. The ability of NIF to assess the thermonuclear burn regime in nuclear weapons via ignition experiments is of particular importance. NIF will be the only facility capable of probing in the laboratory the extreme conditions of density and temperature found in exploding nuclear weapons.

NIF will join the Z pulsed-power machine at Sandia National Laboratories and the Omega Laser at University of the Rochester's Laboratory for Laser Energetics as world leading facilities in providing quantitative measurements that close important gaps in understanding nuclear weapons performance. NIF, Omega, and Z are complementary in their capabilities, allowing scientists from both inside and outside the nuclear weapons complex to contribute to a better understanding of the high energy density physics of nuclear warheads. NIF will provide the only access in the world to thermonuclear ignition conditions and the Omega laser with its symmetric illumination and very high repetition rate provides a large amount of quantitative information. The Z facility is especially suited for accurate measurement of materials properties that are crucial to weapons performance. These facilities will be operated as national user facilities in order to obtain the best return on investment and maximum contribution to the Stockpile Stewardship mission.

The Pit Manufacturing and Certification Campaign request of $281 million builds on the success of manufacturing and certifying a new W88 pit in 2007 and addresses issues associated with manufacturing future pit types including the RRW and increasing pit production capacity at LANL. There are plans to increase pit production capacity at LANL to meet national security needs. LANL is not only an interim capability for pit manufacturing at the present time, but it serves as the United States' sole capability. We continue to be the only nuclear weapon state without a true manufacturing capability.

READINESS IN TECHNICAL BASE AND FACILITIES (RTBF) AND FACILITIES AND INFRASTRUCTURE RECAPITALIZATION PROGRAM (FIRP)

In fiscal year 2008, we are requesting $1.96 billion for the maintenance and operation of existing facilities, remediation and disposition of excess facilities, and construction of new facilities. Of this amount, $1.66 billion is requested for RTBF, an increase of $49 million from the fiscal year 2007 operating plan, with $1.36 billion reserved for Operations and Maintenance and $307 million for RTBF Construction. Some new facility construction (e.g., NIF, MESA, TEF, and DARHT) is budgeted in applicable Campaigns.

This request also includes $293.7 million for the Facilities and Infrastructure Recapitalization Program (FIRP), a separate and distinct program that is complementary to the ongoing RTBF efforts. The FIRP mission is to restore, rebuild and revitalize the physical infrastructure of the nuclear weapons complex, in partnership

with RTBF. This program assures that facilities and infrastructure are restored to an appropriate condition to support the mission, and to institutionalize responsible and accountable facility management practices. In response to NNSA's request, Congress extended the FIRP end date from 2011 to 2013 to enable successful completion of the FIRP mission. The Integrated Prioritized Project List (IPPL) is the vehicle that the FIRP program will rely on to prioritize and fund outyear projects to reduce legacy deferred maintenance. These projects significantly reduce the deferred maintenance backlog to acceptable levels and support the SSP mission and transformation of the complex.

These activities are critical for the development of a more responsive infrastructure and will be guided by decisions resulting from the Complex 2030 Supplemental Programmatic Environmental Impact Statement and the National Environmental Policy Act (NEPA) process. Since a significant fraction of our production capability resides in World War II era facilities, infrastructure modernization, consolidation, and sizing consistent with future needs is essential for an economically sustainable Complex. Facilities designed according to modern manufacturing, safety, and security principles will be more cost-effective and responsive to a changing future. For example, a facility could be designed to support a low baseline capacity and preserve the option, with a limited amount of contingent space, to augment capacity if authorized and needed to respond to future risks.

Having a reliable plutonium capability is a major objective of NNSA planning. Options for plutonium research, surveillance, and pit production are being evaluated as part of the Complex 2030 NEPA process with a Record of Decision anticipated in 2008. The baseline Complex 2030 planning scenario relies on Los Alamos National Laboratory facilities at Technical Area 55 to provide interim plutonium capabilities until a consolidated, long-term capability can be established. This interim strategy relies on the proposed Chemistry and Metallurgy Research Replacement-Nuclear Facility (CMRR–NF) to achieve all the objectives of (1) closing the existing Chemistry and Metallurgy Research (CMR) facility, (2) replacing essential plutonium capabilities currently at Lawrence Livermore National Laboratory, and (3) achieving a net manufacturing capacity of 50 pits per year. However, the increasing cost of the CMRR–NF and the need to ensure that near- and long-term planning for plutonium facilities are integrated requires that we complete our Complex 2030 decision process before committing to construction of the CMRR–NF. Since the CMRR Radiological Laboratory, Utility, and Office Building (CMRR–RLUOB) is required under all scenarios, this project will proceed as planned.

The Highly Enriched Uranium Materials Facility (HEUMF) and the proposed Uranium Processing Facility (UPF) will allow a reduction of the high security area at the Y–12 National Security Complex from 150 acres to 15 acres. This reduction will combine with the engineered security features of the two structures to meet the DBT at significantly reduced costs, to lower non-security costs, and to provide a responsive highly enriched uranium manufacturing capability. UPF planning is consistent with the timing of decisions from the Complex 2030 PEIS process.

SECURE TRANSPORTATION ASSET

In fiscal year 2008, the budget request includes $215.6 million for Secure Transportation Asset (STA) Program, an increase of $6 million from the fiscal year 2007 operating plan, for meeting the Department's transportation requirements for nuclear weapons, components, and special nuclear materials shipments. The workload requirements for this program will escalate significantly in the future to support the dismantlement and maintenance schedule for the nuclear weapons stockpile and the Secretarial Initiative to consolidate the storage of nuclear material. The challenge to increase secure transport capacity is coupled with and impacted by increasingly complex national security concerns. To support the escalating workload while maintaining the safety and security of shipments, STA is increasing the number of Safe-Guards Transporters (SGT) in operation by 2 per year, with a target total of 51 in fiscal year 2014. Due to resource constraints, SGT production has been slowed from three to 2 per year, extending the original 2011 endpoint target date.

ENVIRONMENTAL PROJECTS AND OPERATIONS

The Environmental Projects and Operations/Long-Term Stewardship Program is requested at $17.5 million in fiscal year 2008. This program serves to reduce the risks to human health and the environment at NNSA sites and adjacent areas by: operating and maintaining environmental clean-up systems; performing long-term environmental monitoring activities; and, integrating a responsible environmental stewardship program with the NNSA mission activities.

NUCLEAR WEAPONS INCIDENT RESPONSE

The Nuclear Weapons Incident Response (NWIR) Program responds to and mitigates nuclear and radiological incidents worldwide as the United States Government's primary capability for radiological and nuclear emergency response. The fiscal year 2008 request for these activities is $161.7 million, of which $28 million is reserved for the implementation of two new initiatives that will strengthen the Nation's emergency response capabilities—the National Technical Nuclear Forensics (NTNF) and the Stabilization Implementation programs.

The National Technical Nuclear Forensics Program will establish a DOE capability to support post-detonation activities and enhance DOE Technical Nuclear Forensics capabilities. The development of this capability will facilitate the thorough analysis and characterization of pre- and post-detonation radiological and nuclear materials and devices as well as prompt signals from a nuclear detonation. Developing forensic capabilities of this nature is crucial to the overall objective of nuclear material or device attribution.

Stabilization is a new concept and a new capability aimed at using advanced technologies to enhance the U.S. Government's ability to interdict, delay and/or prevent operation of a terrorist's radiological or nuclear device until national assets arrive on the scene to conduct traditional "render safe" procedures. NNSA has actively sponsored new research in this area and, additionally, is leveraging emerging technologies that have been demonstrated successfully by the DOD in support of the global war on terrorism. In the implementation phase, NNSA will transfer these matured projects into operational testing, potentially followed by their transition into the collection of tools available to Federal response teams.

SAFEGUARDS AND SECURITY

The fiscal year 2008 request for Defense Nuclear Security is $744.8 million, an increase of $121 million above the fiscal year 2007 operating plan. This increase will accommodate the increased cost of sustaining the implementation of the 2003 DBT and the phased implementation of the 2005 DBT in 2008 and the outyears. Full implementation of the 2005 DBT will occur at: the Pantex Plant in fiscal year 2008; Lawrence Livermore National Laboratory in fiscal year 2008; the Nevada Test Site in fiscal year 2009; the Y–12 National Security Complex in fiscal year 2011; and, LANL in fiscal year 2011. During fiscal year 2008, the program's efforts will largely be focused on eliminating or mitigating identified vulnerabilities across the nuclear weapons complex by bolstering protective force training, acquiring updated weapons and support equipment, improving physical barrier systems and standoff distances, and reducing the number of locations with "targets of interest." Physical security systems will be upgraded and deployed to enhance detection and assessment, add delay and denial capabilities, and to improve perimeter defenses at several key sites.

The fiscal year 2008 request for Cyber Security of $102.2 million is focused on sustaining the NNSA infrastructure and upgrading elements designed to counter cyber threats and vulnerabilities from external and internal attacks. This funding level will support cyber security revitalization, identify emerging issues, including research needs related to computer security, privacy, and cryptography. Additionally, the funding will provide for enhancement, certification, and accreditation of unclassified and classified systems to ensure proper documentation of risks and justification of associated operations for systems at all sites. The funding within this request will also be applied to foster greater cyber security awareness among Federal and contractor personnel. NNSA will sponsor a wide range of educational initiatives to ensure that our workforce possess the ever-expanding cyber security skills critical to safeguarding our national security information. Funding provided to NNSA sites will be conditioned upon their implementation of a risk-based approach to cyber security.

DEFENSE NUCLEAR NONPROLIFERATION

The Defense Nuclear Nonproliferation Program mission is to detect, prevent, and reverse the proliferation of weapons of mass destruction (WMD). Our nonproliferation programs address the danger that hostile nations or terrorist groups may acquire weapons-usable material, dual-use production or technology, or WMD capabilities. The fiscal year 2008 request for these programs totals $1.673 billion, a slight decrease from the fiscal year 2007 operating level. This reduction is the result of NNSA achieving and approaching important milestones in our nuclear security work in Russia, including the completion of major security upgrades at several sites under the Material Protection, Control, and Accounting (MPC&A) Program and the

anticipated end of construction of a fossil fuel plant in Seversk by the end of calendar year 2008 under the Elimination of Weapons Grade Plutonium Production (EWGPP) Program.

GLOBAL THREAT REDUCTION INITIATIVE

The administration's fiscal year 2008 request of $119 million for the Global Threat Reduction Initiative (GTRI) is an increase of $4 million over the fiscal year 2007 operating plan. The GTRI reduces the risk of terrorists acquiring nuclear and radiological materials for an improvised nuclear or radiological dispersal device by working at civilian sites worldwide to: (1) convert reactors from the use of WMD-usable HEU to LEU; (2) remove or dispose of excess WMD-usable nuclear and radiological materials; and (3) protect at-risk WMD-usable nuclear and radiological materials from theft and sabotage until a more permanent threat reduction solution can be implemented. Specific increases in the GTRI budget reflect, for example, the serial production and delivery of 27 100-ton casks for transportation and long-term storage of 10,000 kg of HEU and 3,000 kg of plutonium removed from the BN–350 reactor site in Kazakhstan.

INTERNATIONAL MATERIAL PROTECTION AND COOPERATION

NNSA's International Material Protection and Cooperation fiscal year 2008 budget request of $372 million is a decrease of $101 million from the fiscal year 2007 operating plan. This decrease reflects the successful completion of nuclear security upgrade work at Russian Strategic Rocket Forces and Russian Navy sites. International material protection work continues in other areas, including the continuation of security upgrades at a significant number of sites within the Russian nuclear complex, including those operated by the Federal Atomic Energy Agency (Rosatom), and the 12th Main Directorate of the Ministry of Defense. Security upgrades for Russian Rosatom facilities will be completed by the end of 2008—2 years ahead of the original schedule, consistent with the Bratislava Initiative.

The MPC&A Program is also focused on reducing proliferation risks by converting Russian HEU to LEU and by consolidating weapons-usable nuclear material into fewer, more secure locations. In fiscal year 2008, we will eliminate an additional 1.2 metric tons of HEU for a cumulative total of 10.7 metric tons.

Our Second Line of Defense (SLD) Program, a natural complement to our efforts to lock down vulnerable nuclear material and weapons, installs radiation detection equipment at key transit and border crossings, airports and major ports to deter, detect and interdict illicit trafficking in nuclear and radioactive materials. During fiscal year 2008, the SLD Program plans to install detection equipment at an additional 51 strategic overseas transit and border sites. Under the Megaports Initiative, we have deployed radiation detection and cargo scanning equipment at six ports to date in Greece, the Netherlands, Bahamas, Sri Lanka, Singapore and Spain. During fiscal year 2008, we plan to install detection equipment at three additional large ports: the port of Antwerp in Belgium, the port of Caucedo in the Dominican Republic, and the port of Salalah in Oman.

Additionally, we are joining elements of the Megaports Initiative and the Container Security Initiative (CSI) under a new maritime security initiative, the Secure Freight Initiative (SFI) Phase I. This new initiative is a partnership between host governments, commercial container shipping entities and the U.S. Government that serves to increase the number of containers physically scanned for nuclear and radiological materials and to create a detailed record of each U.S.-bound container. Data from radiation detection equipment provided by NNSA and from non-intrusive imaging equipment provided by the Department of Homeland Security (DHS) will enhance the identification of high-risk containers and facilitate the prompt resolution of potential nuclear or radiological threats.

NONPROLIFERATION AND INTERNATIONAL SECURITY

While the thrust of GTRI and MPC&A is to secure nuclear sites, convert reactors, and repatriate fuel from reactors worldwide, NNSA's Office of Nonproliferation and International Security (ONIS) provides technical and policy expertise in support of U.S. efforts to strengthen international nonproliferation arrangements (e.g., the Nuclear Suppliers Group, United Nations Security Council Resolution 1540 and the Global Initiative to Combat Nuclear Terrorism). The ONIS staff also fosters implementation of global nonproliferation requirements through engagement with foreign partners and the redirection of WMD expertise, and helps develop and implement mechanisms for transparent and verifiable nuclear reductions. The fiscal year 2008 budget request for the Office of Nonproliferation and International Security is $124 million. This request includes funds for providing technical support to strengthen

the International Atomic Energy Agency safeguards system and supports programs to improve foreign governments' export control systems. This request will augment U.S. nonproliferation cooperation with China and India, and enhance transparency and scientist redirection activities with Russia, Ukraine, Kazakhstan, Libya and Iraq.

The budget request also supports activities to build up the nonproliferation component of the Global Nuclear Energy Partnership (GNEP) initiative. While GNEP is a long-term vision for the future of expanded use of nuclear power, NNSA plays an important role by providing leadership and technical expertise in the areas of safeguards technology, safeguards cooperation, and fuel supply arrangements to mitigate the proliferation risks that otherwise might accompany the expansion of nuclear power around the world envisioned by GNEP.

ELIMINATION OF WEAPONS GRADE PLUTONIUM PRODUCTION

Turning to programs that focus on halting the production of nuclear materials, the Elimination of Weapons Grade Plutonium Production (EWGPP) Program staff are working toward completing the permanent shutdown of two of the three remaining weapons-grade plutonium production reactors in Seversk and Zheleznogorsk, Russia. The fiscal year 2008 budget request of $182 million is a decrease of $44 million from the fiscal year 2007 operating plan, reflecting the planned completion of the fossil fuel heat and electricity facility at Seversk. The budget request provides the funding required to shut down these reactors permanently and to replace the heat and electricity these reactors supply to local communities with energy generated by fossil fuel plants by December 2008 in Seversk and by December 2010 in Zheleznogorsk. The reactors will be shut down immediately once the fossil-fuel plants are completed, eliminating the annual production of more than one metric ton of weapons-grade plutonium.

FISSILE MATERIALS DISPOSITION

In addition to curbing the production of dangerous nuclear materials, NNSA is working to reduce the existing stockpiles of nuclear materials in both Russia and the United States. To that end, the fiscal year 2008 Fissile Materials Disposition budget request of $609 million will contribute to the elimination of surplus U.S. and Russian weapon-grade plutonium and surplus U.S. highly-enriched uranium. Of this amount, $522.5 million will be allocated toward disposing of surplus U.S. plutonium, including $333.8 million for the Mixed Oxide (MOX) Fuel Fabrication Facility and $60 million for the Pit Disassembly and Conversion Facility (PDCF) and the Waste Solidification Building. Of the remaining amount, $66.8 million will be devoted to the disposition of surplus U.S. HEU and $20.2 million will be focused on supporting activities common to both programs.

This budget request also provides funding for ongoing efforts to dispose of surplus U.S. HEU, including down blending 17.4MT of HEU in support of establishing the Reliable Fuel Supply Program, available to countries with good nonproliferation credentials that face a disruption in supply that cannot be corrected through normal commercial means. This initiative marks the first step towards a key GNEP policy aim of creating a reliable nuclear fuel mechanism, providing countries a strong incentive to refrain from acquiring enrichment and reprocessing capabilities.

NONPROLIFERATION AND VERIFICATION RESEARCH AND DEVELOPMENT

The fiscal year 2008 budget requests $265 million for Nonproliferation and Verification Research and Development. This effort includes a number of programs that make unique contributions to national security by researching the technological advancements necessary to detect and prevent the illicit diversion of nuclear materials. Within the Proliferation Detection Program, fundamental research is conducted in fields such as radiation detection, which supports national and homeland security agencies. It also advances basic and applied technologies for the nonproliferation community with dual-use benefit to national counter-proliferation and counter-terrorism missions. Specifically, this program develops the tools, technologies, techniques, and expertise for the identification, location, and analysis of the facilities, materials, and processes of undeclared and proliferant WMD programs. As the sole provider for the science base to the U.S. national nuclear test monitoring system, the Nuclear Explosion Monitoring Program produces the nation's operational sensors that monitor from space the entire planet to detect and report surface, atmospheric, or space nuclear detonations. This program also produces and updates the regional geophysical datasets enabling operation of the Nation's ground-based seismic monitoring networks to detect and report underground detonations.

NAVAL REACTORS

The Naval Reactors fiscal year 2008 budget request of $808 million is an increase of $26 million from the fiscal year 2007 operating plan. Naval Reactor's development work ensures that nuclear propulsion technology provides options for maintaining and upgrading current capabilities, as well as for meeting future threats to U.S. security.

The majority of funding supports Naval Reactor's number-one priority of ensuring the safety and reliability of the 103 operating naval nuclear propulsion plants. This work involves continual testing, analysis, and monitoring of plant and core performance, which becomes more critical as the reactor plants age. The nature of this business demands a careful, measured approach to developing and verifying nuclear technology, designing needed components, systems, and processes, and implementing them in existing and future plant designs. Most of this work is accomplished at Naval Reactors' DOE laboratories. These laboratories have made significant advancements in extending core lifetime, developing robust materials and components, and creating an array of predictive capabilities.

Long-term program goals have been to increase core energy, to achieve life-of-the-ship cores, and to eliminate the need to refuel nuclear-powered ships. Efforts associated with this objective have resulted in planned core lives that are sufficient for the 30-plus year submarine (based on past usage rates) and an extended core life planned for CVN 21 (the next generation aircraft carrier). The need for nuclear propulsion will only increase over time as the uncertainty of fossil fuel cost and availability grows.

Naval Reactors' Operations and Maintenance budget request is categorized into six areas: Reactor Technology and Analysis; Plant Technology; Materials Development and Verification; Evaluation and Servicing; Advanced Test Reactor (ATR) Operations and Test Support; and Facility Operations.

The $218 million requested for Reactor Technology and Analysis will support work that ensures the operational safety and reliability of reactor plants in U.S. warships and extends the operational life of Navy nuclear propulsion plants. This work includes continued development of the Reactor System Protection Analysis for the next generation aircraft carrier, CVN 21. These efforts also support continued work on core design concepts for submarines.

The increasing average age of our Navy's existing reactor plants, along with future extended service lives, a higher pace of operation and reduced maintenance periods, place a greater emphasis on our work in thermal-hydraulics, structural mechanics, fluid mechanics, and vibration analysis. These factors, along with longer-life cores, mean that for years to come, these reactors will be operating beyond our previously-proven experience base.

The $115 million requested for Plant Technology provides funding to develop, test, and analyze components and systems that transfer, convert, control, and measure reactor power in a ship's power plant. Naval Reactors is developing components to address known limitations and to improve reliability of instrumentation and power distribution equipment to replace aging, technologically obsolete equipment. Development and application of new analytical methods, predictive tests, and design tools are required to identify potential concerns before they become actual problems. This enables preemptive actions to ensure the continued safe operation of reactor plants and the minimization of maintenance costs over the life of the ship. Additional technology development in the areas of chemistry, energy conversion, instrumentation and control, plant arrangement, and component design will continue to support the Navy's operational requirements.

The $110 million requested for Materials Development and Verification supports material analyses and testing to provide the high-performance materials necessary to ensure that naval nuclear propulsion plants meet Navy goals for extended warship operation and greater power capability. These funds support the test assemblies for use in ATR, post irradiation examination of the materials tested at ATR, and destructive and non-destructive examinations of spent navy nuclear fuel and reactor component materials.

The $204 million requested for Evaluation and Servicing sustains the operation, maintenance, and servicing of Naval Reactors' operating prototype reactor plants. Reactor core and reactor plant materials, components, and systems in these plants provide important research and development data and experience under actual operating conditions. These data aid in predicting and subsequently preventing problems that could develop in fleet reactors. With proper maintenance, upgrades, and servicing, the two prototype plants will continue to meet testing needs for at least the next decade.

Evaluation and Servicing funds also support the implementation of the dry spent fuel storage production lines that will put naval spent fuel currently stored in water pools at the Idaho Nuclear Technology and Engineering Center (INTEC) on the Idaho National Laboratory (INL) and at the Expended Core Facility (ECF) on the Naval Reactors facility in Idaho into dry storage. Additionally, these funds support ongoing decontamination and decommissioning of inactive nuclear facilities at all Naval Reactors sites to address their "cradle to grave" stewardship responsibility for these legacies and minimize the potential for any environmental releases.

The $58.8 million requested for Advanced Test Reactor Operations and Test Support sustains the ongoing activities of the INL ATR facility, owned and operated by the Office of Nuclear Energy (NE), Science and Technology.

In addition to the budget request for the important technical work discussed above, facilities funding is required for continued support of Naval Reactor's operations and infrastructure. The $60 million requested for facilities operations will maintain and modernize the program's facilities, including the Bettis and Knolls laboratories as well as ECF and Kesselring Site Operations (KSO), through capital equipment purchases and general plant projects.

The $10 million requested for construction funds will be used to support the project engineering and design of a materials research technology complex and ECF M290 receiving and discharge station and to support the design and construction of a shipping and receiving and warehouse complex.

OFFICE OF THE ADMINISTRATOR

This account provides for all Federal NNSA staff in Headquarters and field locations except those supporting Naval Reactors and the Secure Transportation Asset couriers. The fiscal year 2008 budget request is $394.7 million, an increase of $54 million over the fiscal year 2007 operating level.

This budget request is consistent with the funding trajectory needed for personnel support in an account that is comprised of over 70 percent salaries and benefits. NNSA needs to attain a steady-state staffing level of about 1,950 FTEs in fiscal year 2008 to support current mission needs and to implement workforce planning for succession. Information Technology (IT) for the Federal staff is also included in this account, and the fiscal year 2008 IT Request reflects efficiencies planned for A–76 efforts initiated in fiscal year 2006. The outyear budget addresses significant challenges due to the impacts of escalation on payroll and needed support to the NNSA Federal staff.

The budget request includes funding for activities that were previously funded by the former Offices of Environment, Safety, and Health and Security and Safety Performance Assurance that transferred to the NNSA. Pursuant to section 3117 of the John Warner National Defense Authorization Act for fiscal year 2007 (Public Law 109–364), beginning in fiscal year 2008, the functions, personnel, funds, assets, and other resources of the Office of Defense Nuclear Counterintelligence of the NNSA are transferred to the Secretary of Energy, to be administered by the Director of the Office of Counterintelligence of the Department of Energy.

HISTORICALLY BLACK COLLEGES AND UNIVERSITIES (HBCU) SUPPORT

A research and education partnership program with the HBCUs and the Massie Chairs of Excellence was initiated by Congress through earmarks in the Office of the Administrator Appropriation in fiscal year 2005, fiscal year 2006 and fiscal year 2007. The NNSA has implemented an effective program to target national security research opportunities for these institutions to increase their participation in national security-related research and to train and recruit HBCU graduates for employment within the NNSA. The NNSA goal is a stable $10 million annual effort. In fiscal year 2008, the Office of the Administrator appropriation will provide continued funding of $1 million to support certain HBCU activities. The programs funded in the Weapons Activities Appropriation will provide approximately $4 to $6 million of support to HBCU programs. In addition, the Defense Nuclear Nonproliferation Appropriation will provide approximately $2 to $3 million to this program. Lastly, the Naval Reactors Program will fund approximately $1 million of HBCU programs in fiscal year 2008.

CONCLUSION

I am confident that NNSA is headed in the right direction in the coming fiscal year. The budget request will support continuing our progress in protecting and certifying our Nation's strategic deterrent, transforming our nuclear weapons stockpile and infrastructure, reducing the global danger from proliferation and weapons of mass destruction, and enhancing the force projection capabilities of the U.S. nuclear

Navy. It will enable us to continue to maintain the safety and security of our people, information, materials, and infrastructure. Taken together, each aspect of this budget request will allow us to meet our national security responsibilities during the upcoming fiscal year and well into the future.

A statistical appendix follows that contains the budget figures supporting our Request. I look forward to answering any questions on the justification for the requested budget.

FISCAL YEAR 2008 BUDGET TABLES

NATIONAL NUCLEAR SECURITY ADMINISTRATION—APPROPRIATION AND PROGRAM SUMMARY

[In millions of dollars]

	Fiscal Year 2006 Current Appropriations	Fiscal Year 2007 Operating Plan	Fiscal Year 2008 Request
National Nuclear Security Administration (NNSA):			
Office of the Administrator	354.2	340.3	394.7
Weapons Activities (after S&S WFO offset)	6,355.3	6,275.6	6,511.3
Defense Nuclear Nonproliferation	1,619.2	1,683.3	1,672.6
Naval Reactors	781.6	781.8	808.2
Total, NNSA	9,110.3	9,081	9,386.8

NOTE: The fiscal year 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, Public Law 109–148.

The NNSA budget justification contains information for 5 years as required by sec. 3253 of Public Law 106–065. This section, entitled Future Years Nuclear Security Program (FYNSP), requires the Administrator to submit to Congress each year the estimated expenditures necessary to support the programs, projects and activities of the NNSA for a 5-year fiscal period, in a level of detail comparable to that contained in the budget.

OUT-YEAR APPROPRIATION SUMMARY—NNSA FUTURE YEARS NUCLEAR SECURITY PROGRAM (FYNSP)

[In millions of dollars]

	Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012
NNSA:					
Office of the Administrator	395	405	415	425	436
Weapons Activities (after S&S offset)	6,511	6,705	6,904	7,111	7,324
Defense Nuclear Nonproliferation	1,673	1,798	1,845	1,893	1,942
Naval Reactors	808	828	849	870	892
Total, NNSA	9,387	9,736	10,013	10,299	10,594

WEAPONS ACTIVITIES—FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2006 Current Appropriation	Fiscal Year 2007 Operating Plan	Fiscal Year 2008 Request
Weapons Activities:			
Directed Stockpile Work	1,372,327	1,425,722	1,447,236
Science Campaign	276,670	270,458	273,075
Engineering Campaign	247,907	162,786	152,749
Inertial Confinement Fusion Ignition and High Yield Campaign	543,582	489,706	412,259
Advanced Simulation and Computing Campaign	599,772	611,973	585,738
Pit Manufacturing and Certification Campaign	238,663	242,392	281,230
Readiness Campaign	216,567	201,713	161,169
Readiness in Technical Base and Facilities	1,654,840	1,613,241	1,662,144
Secure Transportation Asset	209,979	209,537	215,646
Nuclear Weapons Incident Response	117,608	133,514	161,748
Facilities and Infrastructure Recapitalization Program	149,365	169,383	293,743

WEAPONS ACTIVITIES—FUNDING PROFILE BY SUBPROGRAM—Continued

[In thousands of dollars]

	Fiscal Year 2006 Current Appropriation	Fiscal Year 2007 Operating Plan	Fiscal Year 2008 Request
Environmental Projects and Operations	.....	.....	17,518
Safeguards and Security	797,751	761,158	881,057
Other	.....	17,000	.....
Subtotal, Weapons Activities	6,425,031	6,308,583	6,545,312
Use of Prior Year Balances:			
Security Charge for Reimbursable Work	−32,000	−33,000	−34,000
Use of Prior Year Balances	−37,734	.....	.....
Total, Weapons Activities	6,355,297	6,275,583	6,511,312

Public Law Authorization: John Warner National Defense Authorization Act for fiscal year 2007 (Public Law 109–364).

OUT-YEAR FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012
Weapons Activities:				
Directed Stockpile Work	1,483,417	1,520,502	1,558,515	1,597,478
Science Campaign	282,741	275,622	270,390	275,626
Engineering Campaign	147,090	144,448	142,614	145,417
Inertial Confinement Fusion Ignition and High Yield Campaign	406,098	413,186	411,851	407,487
Advanced Simulation and Computing Campaign	598,241	583,643	570,873	582,243
Pit Manufacturing and Certification Campaign	291,945	339,462	357,622	347,269
Readiness Campaign	190,477	184,703	180,357	183,946
Readiness in Technical Base and Facilities	1,698,403	1,765,458	1,862,729	1,952,633
Secure Transportation Asset	228,300	237,749	253,037	262,118
Nuclear Weapons Incident Response	169,835	178,327	187,243	196,605
Facilities and Infrastructure Recapitalization Program	286,572	297,096	304,330	312,000
Environmental Projects and Operations	32,471	29,923	30,864	31,574
Safeguards and Security	924,410	969,881	1,017,575	1,067,604
Subtotal, Weapons Activities	6,740,000	6,940,000	7,148,000	7,362,000
Security Charge for Reimbursable Work	−35,000	−36,000	−37,000	−38,000
Total, Weapons Activities	6,705,000	6,904,000	7,111,000	7,324,000

DEFENSE NUCLEAR NONPROLIFERATION—FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2006 Current Appropriation	Fiscal Year 2007 Operating Plan	Fiscal Year 2008 Request
Defense Nuclear Nonproliferation:			
Nonproliferation and Verification Research and Development	312,658	270,387	265,252
Nonproliferation and International Security	74,250	128,911	124,870
International Nuclear Materials Protection and Cooperation	422,730	472,730	371,771
Global Initiatives for Proliferation Prevention	39,600	.....	.....
HEU Transparency Implementation	19,288	.....	.....
Elimination of Weapons-Grade Plutonium Production	187,100	225,754	181,593
Fissile Materials Disposition	468,773	470,062	609,534
Global Threat Reduction Initiative	96,995	115,495	119,626
Subtotal, Defense Nuclear Nonproliferation	1,621,394	1,683,339	1,672,646
Use of Prior Year Balances	−92,215	.....	.....

DEFENSE NUCLEAR NONPROLIFERATION—FUNDING PROFILE BY SUBPROGRAM—Continued

[In thousands of dollars]

	Fiscal Year 2006 Current Appropriation	Fiscal Year 2007 Operating Plan	Fiscal Year 2008 Request
Total, Defense Nuclear Nonproliferation	1,619,179	1,683,339	1,672,646

NOTE: The fiscal year 2006 Current Appropriation column includes additions for international contributions to the Elimination of Weapons-Grade Plutonium Production Program in the amount of $12,677,000, and the use of prior year balances in the amount of $2,215,000 for an approved appropriation transfer action to the Office of the Administrator.

Public Law Authorization: John Warner National Defense Authorization Act of 2007, (Public Law 109–364).

OUT-YEAR FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012
Defense Nuclear Nonproliferation:				
Nonproliferation and Verification Research and Development	305,105	335,564	353,047	364,528
Nonproliferation and International Security	133,041	158,693	166,479	174,276
International Nuclear Materials Protection and Cooperation	408,209	402,458	407,161	414,009
Elimination of Weapons Grade Plutonium Production	138,929	24,507	.....	.....
Fissile Materials Disposition	660,796	771,190	802,786	813,378
Global Threat Reduction Initiative	151,920	152,588	163,527	175,809
Total, Defense Nuclear Nonproliferation	1,798,000	1,845,000	1,893,000	1,942,000

NAVAL REACTORS—FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2006 Current Appropriation	Fiscal Year 2007 Operating Plan	Fiscal Year 2008 Request
Naval Reactors Development:			
Operations and Maintenance (O&M)	734,877	747,648	765,519
Program Direction	29,997	31,380	32,700
Construction	16,731	2,772	10,000
Total, Naval Reactors Development	781,605	781,800	808,219

Public Law Authorizations: Public Law 83–703, ''Atomic Energy Act of 1954'' ''Executive Order 12344 (42 U.S.C. 7158), ''Naval Nuclear Propulsion Program'' Public Law 107–107, ''National Defense Authorizations Act of 2002'', title 32, ''National Nuclear Security Administration'' John Warner National Defense Authorization Act for Fiscal Year 2007, (Public Law 109–364).

OUT-YEAR FUNDING PROFILE BY SUBPROGRAM

[In thousands of dollars]

	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012
Naval Reactors Development:				
Operations and Maintenance	771,700	795,700	822,500	836,800
Program Direction	33,900	35,100	36,400	37,700
Construction	22,400	18,200	11,100	17,500
Total, Naval Reactors Development	828,000	849,000	870,000	892,000

Senator DORGAN. Mr. D'Agostino, thank you very much for your testimony.

I'd like to ask a few questions, then I will call on my colleagues and then I will finish with the remainder of my questions so that my colleagues have ample time as well.

RELIABLE REPLACEMENT WARHEAD

Let me ask first about the RRW program. I want to have you tell us how that came to be. What was, what created the existence of RRW? Some colleagues here in the Congress say that is an outgrowth of the program that was rejected, the Earth Penetrater Bunker Buster program and it morphed into an RRW program. Can you tell me, what is the origin of the RRW program?

Mr. D'AGOSTINO. Certainly, Mr. Chairman. But, I'd like to dispel the notion that it is an outgrowth of any, so-called bunker buster. The RRW program is a natural piece or element in the stockpile stewardship strategy. As you're aware, in the early 1990s the country decided to forego underground testing and a few years after that we endorsed a strategy of stockpile stewardship. This is the idea of spending resources into upgrading our science facilities to understand what happens as weapons age and to embark, essentially, on what we are in right now, a life extension program strategy.

Life extension program means taking the existing warheads that we have and investing money to build those warheads exactly like they were built 10, 20, 30, 40, 50 years ago to make sure that they would perform as in the past because we aren't going to do a test anymore, underground test.

RRW came out as a result of confluence of two things. One, our science tools expanded greatly. Our computing capability, the models and codes that we use to simulate the aging warheads, as well as this life extension program, made us realize that we're dealing with warheads that were designed quite differently. They were designed to maximize the yield of a warhead to the weight of the warhead itself. We wanted the most tightly designed warhead on the top of that missile because the Department of Defense, at the time, was interested in lots of weapons and being able to launch them long distances. And, it was also at a time when we were constantly designing new warheads every 10, 20 years we were exercising our capability. We never worried about the aging of weapons.

And so, as we looked at what happens in the future, can a weapon that was designed to be replaced every 20 to 25 years last 30, 40, 50, 60 years? And, especially what does that do to our margins and more importantly, what does that do to our confidence? We don't want to be in a situation where we have to conduct an underground test.

So, we decided to embark on an RRW approach because our concern was that we wanted to be able to add more design margin into the warhead. We wanted to put security features into the warhead which addressed the future threats, not the threats that we had in the past. And, we're also concerned about not wanting to replicate cold war processes and cold war techniques because these are very expensive.

Senator DORGAN. Mr. D'Agostino, I want to be able to ask you a second question.

Mr. D'AGOSTINO. Oh,——

Senator DORGAN. Thank you.

Mr. D'AGOSTINO. [continuing]. Certainly.

Senator DORGAN. I want to ask a couple questions about RRW. I do have some questions for Mr. Tobey. But, several weeks ago, you and General Cartwright were in front of the Senate Armed Services Committee. Senator Reed asked you a question and I reviewed that because part of RRW relates to the question of whether there needs to be testing. And, let me read you the transcript because I want to try to understand what this means.

Quoting Senator Reed, "If it becomes clear at some point that it is not possible to certify without testing, would you support terminating the effort?" General Cartwright, "I would come back to this subcommittee and tell you why we've got to that position and what the criteria or what the detail was behind that and then we would have that discussion." Then Senator Nelson said, "If it becomes clear at some point that it wouldn't be possible to certify the RRW without nuclear testing, would you support terminating the effort?" Mr. D'Agostino, you indicated, I'm quoting you, "I would say that because it's one of the most significant criteria that we've had to proceed down this path, we would have to examine that. I mean, we'd have to say, 'Why would we go forward and continue with the effort.'"

Today's testimony, you talk about offering a reduced likelihood that we will ever again need to conduct an underground nuclear test. The question is, is there any reason for someone to read some subtle shift here? It seemed to me there might be a subtle shift. I think most of us proceed under the assumption that the, the understanding is, that RRW will not require testing. Is that still your position?

Mr. D'AGOSTINO. My position is certification of an RRW design will not require underground testing. There's a broader question: As weapons age there's no guarantee, in fact no one can guarantee today's stockpile might not require an underground test. We don't know all of the details on how materials age. And so, to certify the RRW, in my view, based on the information I've reviewed and the proposal submitted by Los Alamos and Lawrence Livermore, would not require underground testing to certify it.

I'd like to add, because the design margins on the RRW are based solidly on tested history that already existed. The country's invested a lot of money in developing a nuclear test database. Taking advantage of that I'm confident that what we have in an RRW design, at this point, again, it's only on paper and that's where it will stay until we decide to move forward, but that we are further away and have a reduced likelihood compared to a cold war stockpile. I'm concerned that if we stay with a cold war stockpile, as it currently exists, that our chances are testing are much greater than if we shifted to an RRW strategy.

Senator DORGAN. The, my understanding is that the State Department has not done any studies. And, I wonder if the Department of Energy has with respect to whether the activities of an RRW will have any impact on our objectives with respect to nonproliferation. I mean, this will be a larger international debate. Has there been an analysis of that, the consequences of that by the Department of Energy? I believe it has not been done by the Department of State.

Mr. D'AGOSTINO. If I could answer that, I could ask Mr. Tobey to follow with me. When we, before we made an RRW decision and announcement, we did consult with our allies in NATO and we also talked to Russia and China about the strategy we're approaching. In almost all cases, we had, it was well understood why we were proceeding down this path. There was no study to my knowledge, per se, of directly taking, essentially a straw vote if you will, on exactly how things were done.

Mr. TOBEY. Mr. Chairman, we have given that matter some thought. And, I think, frankly, the questions that you're asking are exactly the right ones.

In analyzing nonproliferation or disarmament impacts of such a system, I think the right questions relate to whether or not such a system would reduce or increase the need for nuclear testing, whether it would reduce or increase pressures to, or would enable a reduction or an increase, pressure for an increase in the size of arsenals, and whether or not it would improve the safety and security in weapons. I think by most standards, and certainly the objectives of the RRW Program would be to lead to conditions that would actually improve nonproliferation and disarmament objectives. So therefore, it is entirely consistent with our nonproliferation policy.

Senator DORGAN. I have one additional question, then I will defer to my colleagues and then I will ask some questions at the end.

Back in 1974, then Secretary of State indicated that he felt it was urgent to create "global standards for nuclear security." And, it's been now roughly 30 years. We're still not quite there. We do have some standards, but without the kind of definition, I think, most people feel is necessary. Mr. Tobey, can you describe to me what efforts are underway, from your standpoint, with respect to those issues?

Mr. TOBEY. Certainly, and one of the most important nonproliferation efforts we have underway is meant to address exactly that. Last year, Presidents Bush and Putin, just before the G–8 Summit in St. Petersburg, announced the global initiative to combat nuclear terrorism. I think there are two ways to look at this program. One, it's an effort to apply the lessons we've learned and the standards we've developed and the practices we put into place in former Soviet states worldwide.

Another one is to allow for the practical means to implement the legal requirements of U.N. Security Council Resolution 1540. We've started with a small core of states, the G–8 plus four others, Kazakhstan, Australia, China, and Turkey. We were joined later by Morocco. We adopted, first, the statement of principles. We've since had a meeting to adopt a work program and we hope to greatly expand the organization in a meeting next month in June in Kazakhstan.

Senator DORGAN. Mr. Tobey, thank you very much.

We've been joined by the ranking member, Senator Domenici. I will call on Senator Domenici, then I will call on Senators in order of appearance.

Senator Domenici.

Senator DOMENICI. Mr. Chairman, I think that would be a bit unfair, so I would ask that we not do it. And, because I was late

and it was my own fault. I attest that to everyone. Please don't think it was more important than any old meeting. I just, it just got away from me. So, you can assume it was a very fun meeting or a lot of fun or something.

I just didn't get away from it. And, I looked up and I thought, "My God, D'Agostino is finished and I'm almost finished."

So, I would rather go about third and that will be fair for you and fair for me.

Senator DORGAN. All right. Well, as former chairman you certainly, we would certainly want to recognize your right to proceed next——

Senator DOMENICI. I'll go after——

Senator DORGAN [continuing]. As ranking member. All right.

Senator Craig.

Senator CRAIG. Thank you very much, Mr. Chairman.

GLOBAL NUCLEAR ENERGY PARTNERSHIP

The NNSA's 2008 budget includes $10 million for nonproliferation activities within Global Nuclear Energy Partnership (GNEP). Is this enough to provide the global security that is required for a program of this magnitude?

Mr. Tobey.

Mr. TOBEY. Senator, I think it's a good start. As you know, we're at the very early stages of the Global Nuclear Energy Partnership. I think it would be fair to regard GNEP as a nonproliferation program. I believe it is such for four reasons. First, it should diminish incentives on States to have indigenous enrichment programs. Second, it should allow us to reduce separated stock, stockpiles of separated plutonium. Third, we intend to use it to improve proliferation resistant reactor technology. And fourth, we aim to improve safeguards technology.

Senator CRAIG. So, you referenced it as a good start, therefore, I used the word is it enough, is it adequate based on where we are with this initiative, to fund it appropriately?

Mr. TOBEY. Yes sir, it is. I meant good start in the sense that the GNEP program will proceed. We will need to spend more money on nonproliferation efforts related to it in the future.

Senator CRAIG. Europeans have been recycling used nuclear fuel for over 30 years without an incident or hint of separated material theft. Are you looking at their programs and incorporating their experiences into GNEP?

Mr. TOBEY. We're certainly looking at their programs. Although I think what we're trying to do is to reach a situation in which we would not have, as I mentioned, separated stocks of plutonium, pure plutonium or nearly pure plutonium, which are a greater nonproliferation threat. If you look at incidents that have been made public about nuclear materials that have gotten loose I think it would tend to indicate that those are the cases in which we need to be concerned about. So, we hope to use advanced technology to avoid pure plutonium or nearly pure plutonium.

Senator CRAIG. I think my concern, as it relates to the program and the long-term character of getting it online, costs, and all of that, is that as much of the successes around the world that we can incorporate, we ought not be spending our time, therefore, rein-

venting when there are successes out there that are measurable and usable.

Mr. TOBEY. Well, we certainly would like to learn from the experience of others. I think we would also like to be technology leaders, in this regard. And hopefully improve the nonproliferation characteristics of the technology for recycling fuel.

Senator CRAIG. Thank you, Mr. Chairman.

Gentlemen, thank you.

Senator DORGAN. Senator Craig, thank you.

Senator Reed.

Senator REED. Thank you very much, Mr. Chairman.

And, thank you gentlemen for your testimony.

PIT PRODUCTION/RELIABLE REPLACEMENT WARHEAD

Mr. D'Agostino, do you know how many and what types of pits the complex would require to make in 2030 as part of your forward looking analysis?

Mr. D'AGOSTINO. I'm sorry Senator Reed. I missed the first part of the question.

Senator REED. Do you know how many and what type of pits the complex will be required to make in 2030, if you're doing your 2030 planning now?

Mr. D'AGOSTINO. Right now our plan is to build an interim capability of between 30 and 50 pits by the 2012 timeframe and to increase our capability, given our current requirements. The DOD, the Department of Defense, which sets the requirements for the Department of Energy, has currently projected, based on what I would say a pre-RRW type stockpile, of a need to go to about 125 pits per year. Which is the idea of being able to, over a 40-year period, replace the pits in the ongoing in steady state, nuclear stockpile. Every 30 or 40 years you'd be replacing a pit. The size, the number and type of pits, are clearly very dependant on the size of the stockpile itself and so there's that linkage there.

Senator REED. And, also dependant upon the progress on the RRW?

Mr. D'AGOSTINO. I think so for a couple of reasons. One, because of the RRW, we'll have an opportunity when we look at the RRW replacement strategy to look at pits that we already have built, essentially, in the past that can potentially be reused in future stockpiles.

As you're probably aware, we had tasked our laboratories to take a hard look at the design and to look at the lifetimes of plutonium metal and the pits itself. That analysis was completed last year and we had the JASONS take an independent look at that and they validated the fact that our plutonium pit life, metal life times are a bit longer than we had expected. Up to between 85 and 100 years in some cases. That's good news because it provides us the flexibility to look at pits that we've already built. And, I think, ultimately, will allow us to have the smallest plutonium capability that the country might need instead of getting in to building a pit capability of 125 and up. We might be looking at 125 and down from the size of plutonium capability.

Senator REED. The pit manufacturing and certification campaign also includes $24.9 million for the consolidated plutonium center.

Mr. D'AGOSTINO. Yes, sir.

Senator REED. Specifically indicate how you're going to spend that money.

Mr. D'AGOSTINO. That money would be used to do preliminary design. I don't like to look at it as a building right now because it's far from that. It's to do the studies that need to be done to determine the exact size that it needs to be to handle our future stockpile, and to take a look at the technologies that might need to be in this facility.

As I mentioned earlier in my opening, one of the answers that I gave earlier, we're interested in making a design that's manufacturing a simple and as environmentally safe and as worker safe as possible. In the past, that was not a consideration. It's not that people in the past didn't care about these topics, it's that 30–40 years later we know a lot more about impacts of these materials on human safety. So, those types of studies, technology development activities and siting studies to support the work that we're going to be doing because we're looking at a number of different sites. That's what the $24 million is for.

Senator REED. I think the chairman opened up some very important questions with respect to RRW and I want to follow up. Some of these are very specific.

First, the RRW schedule presently is in phase what?

Mr. D'AGOSTINO. Right now we are in what we call phase 2A, which is a design definition and cost study phase. That's what I would propose that we were going to be doing in fiscal year 2007. That's what we were authorized to do, and into fiscal year 2008. That phase is very important because it will provide, what I call the detailed cost, the detailed scope, and the detailed schedule. That is not just the Department of Energy's cost, scope, schedule, but includes our work with the United States Navy, because it's their interface with the Navy systems. That needs to be done in order for us to be in a situation where we can look at how that influences the size of the stockpile, our life extension strategy, and the number of different types of systems, which I think are so important for both the committee and as well as myself to understand.

Senator REED. Thank you very much.

I have additional questions, but I'll wait for another round, Mr. Chairman. Thank you.

Senator DORGAN. Senator Murray.

Senator MURRAY. Thank you very much, Mr. Chairman.

PACIFIC NORTHWEST NATIONAL LABORATORY

And, I just have a quick parochial issue I wanted to query you about. And, it's an issue of the Pacific Northwest National Laboratory that's in my home State of Washington and I think you're aware of the need to replace the unique facility that supports an important national security mission. It's going to be affected by the Hanford clean up schedule. And, I wanted to thank you for your active support in this project that involves partners from the Office of Science and Department of Homeland Security (DHS) as well. And, I noticed that the NNSA budget does not include funds in

2008 for this project, and I wanted to find out from you if you continue to support this project.

Mr. D'AGOSTINO. I'll answer the question. I'd like to ask my colleague to amplify if he could. I appreciate your comments. We do support this project. The type of relationship we have with the Department of Homeland Security and my sister organization within the Department, the Office of Science, lays out what I would say, a commitments page on how we are going to integrate funding requests. In fiscal year 2008, the NNSA element of that is zero dollars. There are more details and probably Will can take it from here and talk about how we've integrated the three organizations together.

Senator MURRAY. Mr. Tobey.

Mr. TOBEY. Certainly, Senator Murray. The zero dollars is really a reflection of the fact that the NNSA has been out ahead of the other two partners, well ahead of the other two partners in our spending rate on this. And frankly, I think it just made sense for us to be at approximately the same rate of spending as the other two partners. It doesn't reflect a lack of support for the program.

Senator MURRAY. And, I assume that you would not object if money's added to the budget for this project?

Mr. TOBEY. Well, of course I support the President's budget, Senator.

Senator MURRAY. Okay. Well, I would then ask, I assume you're going to request additional, or sufficient funding in the 2009 request for where you need to be.

Mr. TOBEY. We're certainly going to try and make sure that we support the project, we would very much like it to go forward. We would like the spending for it to be proportionate among the partners that are funding it.

Senator MURRAY. Okay. Thank you very much, Mr. D'Agostino.

Mr. D'AGOSTINO. Thank you, Senator.

Senator MURRAY. We do appreciate your support of this. This is very critical and we want to make sure it continues to move forward. And, we know the importance of all the partners involved in it, but we've got to keep it moving. So, thank you very much.

Mr. D'AGOSTINO. Thank you, Senator.

Senator DORGAN. Thank you, Senator Murray.

Senator Domenici.

Senator DOMENICI. Thank you very much, Mr. Chairman.

Senator Feinstein, it's good to see you here. I didn't think I would see you on this issue as soon as this. And, I assume I will hear you address this issue in a negative manner, the new nuke formation. I hope not.

PREPARED STATEMENT

But, I want to say, I have an opening statement that I would just ask you make a part of the record.

Senator DORGAN. Without objection.

[The statement follows:]

PREPARED STATEMENT OF SENATOR PETE V. DOMENICI

Thank you Mr. Chairman, I would like to welcome our witnesses. We have Tom D'Agostino, Acting Administrator for NNSA who is joined by Admiral Kirkland Donald, Naval Reactors, and Mr. Will Tobey, Nuclear Nonproliferation.

Gentlemen, I appreciate your participation and hard work at the NNSA. You have a challenging job and these budgets make your job an even greater challenge.

Mr. D'Agostino, I would like to congratulate you for executing the Reliable Replacement Warhead design competition and making a difficult selection between the two extremely innovative designs.

As an original sponsor of the RRW program, I continue to believe that this program provides the best opportunity to transform the stockpile and reduce the overall number of warheads and weapons systems.

It is clear to me that without a demonstrated capacity to produce a weapon that applies state-of-the-art use controls, increased reliability margins, and the ability to be certified without testing, military leaders will not accept a significantly smaller stockpile than we have today as they manage future risks through a massive inventory of weapons. Mr. D'Agostino, I want to compliment you for your advocacy of this program. You have worked hard to articulate the vision for this program since its inception in the fiscal year 2005 Energy and Water Conference Report.

However, if this program is to survive and we are to realize the goal of a smaller deterrent, then it is vital for this administration to defend this program.

Today, I will be sending a letter to the Secretary of Defense, Secretary of State and the National Security Advisor urging them to take a more active role in supporting the RRW program and to answer the concerns that have been raised with the creation of the RRW weapon system.

This administration has a strong record on reducing our nuclear stockpile. They are committed to reducing the stockpile to its lowest levels since the Eisenhower Administration, and the RRW is consistent with this objective.

For anyone interested in further reducing our nuclear stockpile and building on the current momentum—now is the time for action, and the RRW program is the right vehicle.

Now let me turn to the other aspects of this budget request.

I do have concerns about the cuts to the science, engineering and experimental activities that support the science-based stockpile stewardship activities. Funding for these activities has been cut by more than $113 million in this request. I believe the focus on transformation puts too much emphasis on facilities and not enough on science.

Going forward it is vital that we sustain our scientific capabilities, especially with an RRW design. The JASONs, an independent team charged with evaluating the RRW program, also indicated that resolving important scientific questions is critical to having confidence in the stockpile without underground testing.

The facts speak for themselves; all three of the labs received a net reduction in funding, while funding for the manufacturing plants was increased despite the fact there is $60 million in unobligated balances at the plants.

I am surprised by the differences between the Office of Science and NNSA budget requests for fiscal year 2008. The Office of Science is committed to fully utilizing its experimental facilities and expanding its computational and simulation capabilities.

The NNSA budget has taken the opposite strategy and reduced funding for science and experimental activities and proposes to reduce the number of NNSA computers from three machines to two.

I do not believe this strategy is sustainable.

Now let me turn to Nonproliferation. One of the most challenging projects before this subcommittee has been the MOX plant. This facility remains the preferred alternative to eliminating 34 tons of excess weapons-grade plutonium and fulfills our commitments under the Fissile Materials Agreement with Russia.

I am told by NNSA that the MOX plant remains the most cost effective and timely solution to eliminate this material.

I continue to support this initiative and believe DOE should do more to dispose of excess plutonium as a means to mitigate the rising security costs. The fiscal year 2008 request includes $881 million for security, an increase of $120 million above the fiscal year 2007 level. I am concerned that security costs continue to take a larger and larger bite out of the mission.

Mr. D'Agostino, your testimony only makes brief mention of your consolidation efforts. I would like to learn more about NNSA's strategy to permanently dispose of our excess material and put a stop to the rising security costs.

Mr. Chairman, I believe we need to give very close scrutiny to the level of assistance we are providing Russia. When we initiated many of the projects under the Cooperative Threat Reduction initiative, Russia did not have the financial means to protect and secure nuclear material within its country.

Now, that picture has changed and Russia enjoys a budget surplus as they have profited immensely from the high price of crude oil and natural gas. I no longer support providing massive subsidies to Russia's military establishment and believe they should now be expected to pay for their full share of the nonproliferation obligations.

I intend to work with the NNSA to identify areas where we can reduce our subsidies to Russia.

Finally, I would like to make mention of the success of the Naval Reactor program. This program supports the safe and reliable operations of 103 nuclear plants in our naval warships.

I am very proud of the long-term record of success of this program and I wish you well in the future.

Mr. Chairman, I appreciate your patience and I will have several questions for our witnesses.

Senator DOMENICI. But, I want to say, for a small committee, we have a very big sized plate that is full, not just full of money, but full of some of the most important issues to the American people that any subcommittee, any full committee should have, much less this small subcommittee that you chair. That people wonder, what in the world is energy and water anyway.

And, we have a series of funds in here for Russia. Let's go back about 8 or 10 years, and I want to look at this with you very in-depth because I'm wondering whether we ought to give them anything. I was the proponent of the Russian programs. But, Russia's got more money than we do to spend. If they don't care about the nonproliferation, I'm just wondering why we should. These are nonproliferation programs, pure American dollars. That's one program.

We've got GNEP in here, at least we've got to fund some of it. It's a huge program to finish the closed fuel cycle on nuclear energy, of nuclear waste and the development of nuclear power. Big monster program with three or four stopover points where buildings would be built, technology would be applied that is, as much as the biggest we've got around would be built anew. Do we do it or not? Do we have enough money? Good questions. Clearly, we have some big problems with whether or not the entity that you run today, Mr. D'Agostino, NNSA, whether it's working right or not. We're not going to have a long time in my opinion.

Mr. D'AGOSTINO. Right.

Senator DOMENICI. Before it's determined that you cleaned it up and fixed it, or you didn't and it failed.

Mr. D'AGOSTINO. Right.

RELIABLE REPLACEMENT WARHEAD

Senator DOMENICI. That's a giant job after we had so much faith in that new approach to handling the weaponry. Then we have last, but not least, the RRW program.

I want to say to you, sir. If you represent the administration, and if they favor this program like I assume they do. And, if they assume, like I do, that it is a tremendous approach to reducing the stockpiles of nuclear weapons dramatically in the United States, both in number and size, within a reasonable time. And, that the same should occur and accrue to the Soviet Union, Russia, who has big monsters and they keep rebuilding them, monstrous bombs. And, we are supposed to set the world on edge here by telling that

we are for the newest of technology in the RRW and to get on with the first, the second little batch of funding, which is going to bring a huge debate. And sir, if you represent the administration, you better leave this hearing and advise them that we better hear from some very big members of this administration who are charged with this problem and who have credibility. Because they are going to be attacked, this program is going to be attacked as being not what we say it is, or what you say it is, but something else, without any question.

Mr. D'AGOSTINO. Yes, sir.

Senator DOMENICI. The opposite. I have found lacking, and I told the chairman, I found lacking the Secretary of Defense's ideas and yet, this is a defense program as much as it is not. I found that Secretary Rice was not forthcoming, at least had not been. And, I found that the Secretary of Defense has not been forthcoming. And, I believe that in short order this subcommittee ought to know from all of them, how they stand and why, and can we really do this, and is it good for the country and why.

It's not too tough for me. I don't need much explaining right now. I'm not that smart, but I got a jump start because we funded a little bit of it last year. I think you know that. But, to me, if we can not convince people that it is time to have a new generation, completely different kind of nuclear weapons, a complete gigantic build down.

Incidentally, this administration has a done a terrific job of building down the nuclear stockpile. They are the only administration that comes close to reducing to the levels of the Eisenhower administration, in reducing warheads that Americans had available for war use. This administration did it in spades. Now they want, without testing, they aren't saying, "Let us test." They're adding to this that they won't test, right? Is that right, Mr. D'Agostino?

Mr. D'AGOSTINO. Yes, sir. To certify the warhead, that's right.

Senator DOMENICI. This whole new thing will say, "We'll produce the weapon and we'll produce assurance it will work. It will be small, it will be different, and you won't have to test it." Right?

Mr. D'AGOSTINO. That's right, sir. That's right. To certify the warhead we will not have to test. I believe it will reduce the likelihood, certainly, especially compared to the stockpile we have right now, we would ever need to test.

Senator DOMENICI. Mr. Chairman, I have about 20 more that I'll put in later. I do want to thank you for your diligence and say what a great start this subcommittee's had, and is going to have under your leadership. In my opening remarks, if I don't get any more of them in here, I will put them in the record.

I'll close by saying, Admiral, I hope that every time you appear before this subcommittee, the fact that you are asked no questions does not mean that, that we have anything but the greatest admiration for the work you do. If every department of the Federal Government could accomplish its mission pursuant to its goal as set and never miss the pencil point, we would have short hearings and great praise.

Admiral DONALD. Yes, sir. Thank you very much. It's an honor to appear before this subcommittee, and I do appreciate the sup-

port the subcommittee's provided over the years to this program. It's been a large part of the success.

Senator DORGAN. Senator Domenici, thank you.

Senator Allard.

PREPARED STATEMENT

Senator ALLARD. Thank you, Mr. Chairman. I have a statement I'd like to make a part of the record if I might.

Senator DORGAN. Without objection.

[The statement follows:]

PREPARED STATEMENT OF SENATOR WAYNE ALLARD

Thank you, Mr. Chairman, for holding this important hearing today on the National Nuclear Security Administration budget request for the coming fiscal year 2008.

Over the years I have consistently supported sustaining our nuclear weapons stockpile, as well as efforts to develop concepts for future weapons. I believe that our Nation's national security is strengthened by our possession of such weapons.

Some opponents of these weapons believe that they are a threat to our civilization. Others believe our possession of such weapons raises the possibility that they might be used. Many believe that if the United States dismantled its nuclear stockpile, then other nations would follow suit. And, unfortunately, some believe that nuclear weapons should be destroyed no matter the cost to our national security.

These arguments do not always reflect the global security environment. First, as more than 50 years of deterrence has proven, the best way to ensure that a nuclear weapon is not used is to have a strong national defense, including nuclear weapons.

Additionally, opponents have attacked the Bush Administration's nuclear weapons initiatives over the past few years, including the feasibility study for the Robust Nuclear Earth Penetrator, the development of Advanced Concepts, enhanced test readiness, and the construction of a new modern pit facility.

The question that I continue to raise is where do we go from here? After the test moratorium went into effect and the stockpile stewardship program ramped up, most of our efforts became centered on sustaining our current nuclear stockpile. Given the political dynamics of the post-cold war era, this strategy seemed to make sense. But, we must all recognize that this decision only put off, at least for the time being, a larger policy decision about the future of the U.S. nuclear weapons stockpile. We must face the facts that our current stockpile is on average approaching 20 years in age.

Again, thank you Mr. Chairman for bringing us here today and I look forward to hearing Mr. D'Agostino's testimony today on these and many other issues.

SECURITY AT NATIONAL LABORATORIES

Senator ALLARD. It seems like the Department of Energy consistently has problems that raise concerns about being able to protect our Nation's secrets. And, we've just got a inspector general's report, March 2007, where we have computers that are missing, as far as inventories are concerned. And, I'm brought back to—was it 1997, 1998 I—think, Senator Domenici, where we had computer and security problems related to computers at Los Alamos and our national laboratories.

Senator DOMENICI. Yes.

Senator ALLARD. And, we are back in with the agencies that have some of our Nation's top secrets losing computers again. And, I'm wondering if you can explain to us how that happens?

Mr. D'AGOSTINO. This is my question?

Senator ALLARD. Yes.

Mr. D'AGOSTINO. Admiral?

Senator ALLARD. How do you pronounce your name?

Mr. D'AGOSTINO. D'Agostino, Senator.

Senator ALLARD. D'Agostino. Okay.

Mr. D'AGOSTINO. Yes.

Senator ALLARD. Got you.

Mr. D'AGOSTINO. Thank you. It's hard. I believe you might be referring to the counterintelligence laptops.

Senator ALLARD. This is an inspector general report and it was on the counterintelligence section, yes.

Mr. D'AGOSTINO. That's right. With respect to control of material, of computers and security in general because I think it's not just a problem that exists at one site. It's something that the Secretary and I are very concerned about across all areas.

Most recently, as you are well aware, we had a concern at Los Alamos National Laboratory last fall that resulted in multiple inspections by the inspector general, and the Government Accountability Office to look at what is going on with respect to cyber-security. We call it cyber-security. What we have found as a result of that, we had too many directives that were issued, by memo or email and not enough, actually, written down in a clear concise way and put into the contracts themselves. So the contractors had, what I would say, is too much conflicting information.

Since that time, the Secretary had directed our Chief Information Officer to look at this particular problem specifically and the inspector general investigation that was done. He commissioned a special task force to look at that specific problem. Mr. Pike, who is the Chief Information Officer, provided a report. I was part of that task force that looked at that. We came out with a number of recommendations to deal with it.

The Secretary is implementing those recommendations, in fact, two of the biggest recommendations were to start from scratch and simplify the cyber-security directives to make sure that it's clear what we expect from our contractors, how we expect our contractors to perform. And, more importantly, put those requirements in the contracts themselves.

Those contract modifications are being put into the contracts themselves and then the next step is follow through with oversight by the Federal site offices and headquarters to make sure that we tie expectations and performance, money, and reward fee that we have to it. I can't explain that specific incident and I apologize. I don't have the details behind that particular incident on the laptops, but I know the Secretary is very concerned about this particular problem and we're taking a look at it, not just at the nuclear weapons laboratories and not just across the eight nuclear weapons sites, but across all 17 laboratories within the Department of Energy.

Senator ALLARD. It's my experience here in the Senate that this is a chronic problem with the Department of Energy losing track of computers. We always set up a committee to check it out and recommendations are applied and, you know, 4 or 5 years later it erupts again. And, I'm hoping that somebody around here is beginning to take this problem seriously. I think it's intolerable, from my point of view.

Mr. D'AGOSTINO. Right.

Senator ALLARD. My question is, do you have money to make sure that you have proper controls over our Nation's classified information?

Mr. D'AGOSTINO. I know the answer to that question is yes and I'll explain how. In fact, right now within the NNSA our cyber-security budget has gone up by more than 15 percent compared to fiscal year 2007. But, actually there's more to it than that.

For fiscal year 2009—we're putting our budget together for that right now—we're applying what we call risk-based and risk management decision processes to make sure that we know what it takes to fund that area. My expectation in 2009 is we'll be seeing additional resources in this area to address these particular problems. Resources are part of the problem, but the other part of the problem is attitude and understanding and having clear expectations.

The one thing I've learned in this job over the last couple of years and in Defense programs is that setting clear, simple expectations is very important, having the expectations defined in contracts and in performance expectation, performance evaluation plans, and tying financial resources to those expectations so it actually drives behavior. I think that's how were going to get to solving this problem.

Senator ALLARD. Mr. Chairman, I have one more question. I can either ask it now, if you'd like, or wait for another round.

Senator DORGAN. You may proceed.

Senator ALLARD. Okay, thank you.

Senator DORGAN. Then I'll call on Senator Feinstein.

Senator ALLARD. Thank you.

MIXED OXIDE FUEL FABRICATION FACILITY

I strongly support the Mixed Oxide Program in Savannah. I think it's also referred to as MOX Plus, am I correct?

Mr. D'AGOSTINO. We just call it MOX.

Senator ALLARD. Okay. When do you plan to complete your design work for the facility and then when do you plan on to begin construction and have you got any thoughts about cost scheduling?

Mr. TOBEY. Senator, the design is some 90 percent complete at this point. Small portions of the designs balance will go on for years because it just makes sense to do some of the design as the building is completed. We're ready to begin construction as soon as we're permitted by law, after August 1 of this year. And, it would, the construction would go on for some 15 years, is the baseline.

Senator ALLARD. And, when do you think you'll be able to process materials?

Mr. TOBEY. The construction will be complete in 2016. We'd be able to process materials immediately thereafter.

Senator ALLARD. Thank you.

Mr. TOBEY. And, it would run for 15 years after that.

Senator ALLARD. Thank you, Mr. Chairman.

Senator DORGAN. Senator Allard, thank you.

Senator Feinstein.

Senator FEINSTEIN. Thank you very much, Mr. Chairman.

Mr. D'Agostino, I want to thank you for the time you spent with me on Monday.

Mr. D'AGOSTINO. Yes, ma'am.

RELIABLE REPLACEMENT WARHEAD

Senator FEINSTEIN. I want to say that you're a straight shooter and that you're honest and direct. And, I want you to know that I really appreciate this.

Mr. D'AGOSTINO. Thank you.

Senator FEINSTEIN. I believe I now have a very good idea of what is involved in this warhead. This is a real point of conscious for me. I grew up following Hiroshima, 15 kilotons, and Nagasaki, 7 kilotons. And, I saw the wake of that all during my childhood. And, the mushroom cloud was the thing we most feared growing up——

Mr. D'AGOSTINO. Right.

Senator FEINSTEIN [continuing]. In this very great country. A December 2006 report by the national laboratories, has showed us that the plutonium pits have a lifespan of at least 85 years. And, it's my understanding that next week, the American Association for the Advancement of Science is expected to issue a report calling on the administration to develop a bipartisan policy on the future of nuclear weapons and nuclear weapons policy before moving ahead with the RRW. My vote on this, depends on whether I believe this is, in fact, a new nuclear warhead. I told you that Monday. I have thought about it all day Tuesday. I've gone over in my mind, those things that we shared in that classified briefing.

I worked with Sam Nunn, when he was in the Senate of the United States. And, I want to quote for a moment, his testimony on March 29 before the House Energy and Water Appropriations Subcommittee. And he noted, and a quote, "On the RRW itself, if Congress gives a green light to this program in our current world environment. I believe that this will be misunderstood by our allies, exploited by our adversaries, complicate our work to prevent the spread and use of nuclear weapons and make resolution of the Iran and North Korea challenges all the more difficult." That's Sam Nunn, who's the chairman of the Nuclear Threat Reduction. And, I think very well respected for his background and work in this area.

I would hope that every member of this subcommittee would get a classified briefing on this proposed new, proposed change in the warhead. Let me ask this question. Has the NNSA assessed the impact of the United States development of a new warhead on U.S. nonproliferation efforts, including efforts to convince other countries not to acquire nuclear weapons? And, how do you justify this cost to our nonproliferation efforts?

Mr. D'AGOSTINO. Thank you, Senator. I appreciate your comments earlier.

I'm going to answer it and I'd like Mr. Tobey, as well, to talk a little bit about the international piece. His folks spend a tremendous amount of time overseas talking about this very subject. I don't recall if you were in the room when I responded earlier to the idea.

Before we made the announcement on the Reliable Replacement Warhead concept, we did talk to our allies, the North Atlantic Treaty Organization (NATO), as well as other allies, including Russia and China about the strategy and the understanding that we

want to reduce the size of our stockpile. As I mentioned to you earlier this week, I'm committed to making sure that when we reduce the size of our stockpile and we look at a future nuclear deterrent, that my responsibility is to make sure that that deterrent is as safe and as secure as humanly possible, as our technology allows it to be. I'm convinced that our cold war stockpile has, even though we assess it on an annual basis right now.

Senator FEINSTEIN. You assess that it's safe and secure on an annual basis?

Mr. D'AGOSTINO. Assess it, assess it's safe and secure on an annual basis. That over time, we'll be put into a situation where this country will be faced with a question that I don't want the President, whomever the President may be in the future, to have to decide whether we need to conduct an underground test. I want to stay as far away from the underground test question as possible.

The question in my view, becomes if there is a future nuclear deterrent, and I do understand Senator Nunn's comments, then how should, what should it look like? I believe it should be small, as small as possible.

I believe the nuclear footprint on the United States, how many sites and the size of the sites and how much money the Nation invests over a lifetime, should be commensurate with that. I believe that the Nuclear Posture Review that was put out a few years ago, which was the concept of replacing the large number of nuclear warheads as a nuclear deterrent during the cold war is not as good as having a small number of very safe and secure warheads with the ability of the Nation to respond in the future.

Right now we are faced, I believe, with a fairly important point, as you are absolutely right, on what strategy is the right strategy. I'm concerned that if we go down a track of, without considering this, without understanding what RRW really means, then we won't actually have the information that I can present to you and say, "This is what it really means with respect to how small the stockpile can be."

Senator FEINSTEIN. Which you don't have yet.

Mr. D'AGOSTINO. I don't have that, that's right, ma'am. And, that's what I'd like to do in the next 9 to 12 months, is to develop the cost, the schedule, and scope with the United States Navy to give you a real number. How much it costs? What are the offsets? How small does the stockpile get as a result of this? What does this mean to nuclear testing, exactly what does this mean to nuclear testing? And, how many more nuclear weapons should we be dismantling? I want to be able to put that in writing, almost like a contract, if you will.

Senator FEINSTEIN. Could you speed it up and do it before we vote on whether to approve this appropriation?

Senator DORGAN. Would the Senator yield on that point?

Does the appropriation request for this coming fiscal year also include some small amount of money for an RRW–2, which would be a follow up, follow-on contract? And, if so, what, what's the purpose of talking about a second RRW before the Air Force, prior to making the decision the Senator from California is asking?

Mr. D'AGOSTINO. That's a good question, sir. We have to look at our B61 bomb. The B61 bomb is an Air Force bomb. It was de-

signed in the early 1960s, essentially, almost 40, 45, 50 years ago. It's got vacuum tubes inside the system itself. We have other concerns that I'll be glad to talk specifically in a classified session, I'll be glad to talk about that.

And so, the idea was, do we—right now, we're going to be doing a life-extension plan, starting in the 2012, 2010 to 2012 timeframe. And the question is, does it make sense to rebuild a bomb? As we will do if we don't move forward in a different direction or we build bombs the same way we did back in the 1950s and 1960s? I think that's irresponsible to do that. The technology has changed so much in the last 50 years. The threats have changed so much in the last 50 years. It would be irresponsible for us to replicate the past.

I don't think it's right for our workforce, it makes them work on components like Beryllium. Beryllium is a very hazardous material, and causes berylliosis, which is a disease we didn't know about 50 years ago. In fact, this Nation is spending money right now, essentially compensating our workers who, over the past 40 years have devoted their life to national security, and now are finding themselves sick. I don't want to get into that in the future.

Senator FEINSTEIN. Would you go back to your proposal?

Mr. D'AGOSTINO. I think it would make sense and I want to make sure the subcommittee gets the detailed information on the cost, the scope and the schedule of what an RRW could do, and that's what we're working on right now. We are authorized and appropriated to do that, and we are doing that. And it's going to carry forward into 2008.

When we get that information together, and when we can look at what this means to the size of the stockpile, to what things we take off the table from our current plans, and how does this impact the actual infrastructure—and I use that term to describe buildings and processes—and how much money we save from that, I think the actual data that I have right now is compelling, but I want it to be, what we call, budget quality. In other words, the quality that I feel I can stand behind, and come to this.

Senator FEINSTEIN. I thought what you had said to me earlier, that it might be possible to actually speed up the reduction of the nuclear fleet, so to speak.

Mr. D'AGOSTINO. Oh, okay, yes, ma'am. We were talking about dismantling warheads.

Senator FEINSTEIN. Right.

WARHEAD DISMANTLEMENT

Mr. D'AGOSTINO. Yes, ma'am. A little bit different from RRW, we're going as quickly as possible given the resources to work with the Navy to get the picture right.

On dismantlements, what we did last year was we made a unilateral decision outside of the Defense Department space, to accelerate by about 25 percent, on average, our dismantlements of cold war nuclear warheads.

In fact, in fiscal year 2007, this year, we're in right now, we had made a commitment, I made the commitment to the Secretary, and the Secretary talked to the Secretary of Defense, of a 49 percent increase in the number of warheads we're dismantling, compared to fiscal year 2006.

In all likelihood, we're going to not only hit that target, we're going to exceed it. We'll probably dismantle twice as many warheads this year as last year. The key will be keeping on that pace year in and year out. Right now, even though we've dismantled 13,000 warheads in the timeframe I mentioned earlier, in the 1990s, and we have a number of warheads to dismantle, that what we've got is a plan that takes us out into the early 2020 decade. And, ultimately, in the end, we need to pull that date, the end date, up forward.

Senator FEINSTEIN. How many warheads are in the RRW, long-term program?

Mr. D'AGOSTINO. If you take the concept to its end. If we believe that we're going to have fewer and safer and securer, it would be the number of warheads that I can talk about publicly, it's the Moscow Treaty number of 1,700 to 2,200 warheads plus, a number of what we call reliable spares.

Because, when we say operationally deployed, these are warheads that are with the Department of Defense, whether they're in silos or at Navy bases, and we need to maintain a fraction of that number within the Department of Energy because we do surveillance. We take some systems out and we replace them to check on their quality.

That is ultimately the number that you need to understand and that I need to understand that the Department of Defense can collectively come to. I have in my mind what it could be, it would be not appropriate, I don't believe, to discuss it in public until I've had a chance to talk to the Defense Department.

Senator FEINSTEIN. So, we could sit down with you, again, in a classified way and go over some of this?

Mr. D'AGOSTINO. Yes, ma'am——

Senator FEINSTEIN. Because it's very important.

Mr. D'AGOSTINO. [continuing]. Yes ma'am, I'd be glad to do that, I will look forward to it, thank you.

Senator FEINSTEIN. Thank you.

Thank you, Mr. Chairman.

Senator DORGAN. Senator Feinstein, thank you.

I think that might be a good idea, I'm interested in this issue of deployed weapons, versus total weapons, and the circumstances surrounding that, weapons spares, et cetera.

Mr. D'AGOSTINO. Yes, sir.

Senator DORGAN. And I think that is most appropriately discussed, I think, in a classified setting.

Senator Domenici, did you have other questions you wish to ask?

Senator DOMENICI. First I want to say to the members of the subcommittee that are here, and in particular, Senator Feinstein, that it is quite amazing, as a Senator, to be able to say in the record this afternoon that great issues like the one we are discussing are frequently done without a lot of television, via a hard-working subcommittee. I'd say this one works hard, it couldn't produce anything if it didn't, it's so complex, unless we just abdicated to someone and said, "We don't want to do anything," and your questioning indicates to me that you can join in a discussion that is predicated upon good sense of the past, and some good thinking about the future, even if it's in the most complicated, and

almost horrific context, that has to do with building nuclear weapons and dismantling and destroying them.

I do want to say to you that someone like me whose age you would just have to guess, because I'm in such great shape, nobody knows I'm a very old man, and people think I'm 55—pretty good, right? But, what I wanted to say to you, whatever generation I came from, I had the same recollection of the bombs, and I learned an awful lot more about it by being not too far from Los Alamos for my childhood.

When we used to drive to Los Alamos as a family, in our family car, just for the pleasure of being turned down by the armed guards at Los Alamos who would tell this wonderful little American family, "Well, you can go no further, make a U-turn and go home." And we used to all wonder in our car, and talk with my dad, who had only a fourth grade education, about all of the things we imagined that were going on behind that high wall. That was it, that was the central focus for all of the building that has occurred since then, that you are aware of.

I then involved myself very deeply in the next phase around here, which had to do with stopping testing, underground testing, unless the American future was at stake. And, I learned all I could about that, and for the first time, in spite of my great friend Sam Nunn, who just called me yesterday for a wonderful, ever-so-often conversation, if I had that I would have asked him about it, but I forgot. Because we agree on most things, but I would ask him if he would sit down with me, and discuss the alternatives, which I think he must do. Because his voice is too loud to remain unfettered, he must tell us what he will do, if he won't do this.

Because that's going to end up being the question—if we're not going to do this, in terms of a dismantlement and change, what are we going to do? Are we going to leave this stockpile as our legacy, this one, and say, "We just hope we never have to test." I don't want to do that, because I feel kind of confident that this subcommittee could make a good decision. And I think we ought to make the decision, not leave it for 10 years from now, when somebody will make it secretively, and you'll hear about it as a puff out there in Nevada, because we can't tell the world what we did.

MIXED OXIDE FUEL FABRICATION FACILITY

Now, having said that, I wanted to ask you about MOX, and the facility—how is it coming, and if we budget what the President asks for, where will we be? Whose got MOX?

Mr. D'AGOSTINO. Well, I'm going to ask Mr. Tobey to comment on that, and I can follow through.

Mr. TOBEY. Senator, as you probably know, we are ready to start construction after August 1 of this year. We're eager to do so, we believe it's an important program. It's consistent with U.S. national security and nonproliferation interests. We would aim to have the facility complete by 2016, and to operate it for at least 15 years thereafter.

Senator DOMENICI. What is it going to do, so we'll all have on the record—we're going to build this building and do something, what are we going to do?

Mr. TOBEY. In the first instance, we will dispose of at least 34 metric tons of U.S. plutonium access to defense needs.

Senator DOMENICI. Where did we get that?

Mr. TOBEY. Pardon me?

Senator DOMENICI. Where did we get that?

Mr. TOBEY. From the dismantlement of weapons.

Senator DOMENICI. Our own?

Mr. TOBEY. Yes sir. And it will also, it is part of an agreement with Russia under which Russia would also dispose of 34 metric tons of weapons-grade plutonium.

Senator DOMENICI. And I'm very glad to say, as a member of this subcommittee, I had something to do with that. In fact, I sat over there in Russia, with the President of the United States, seeing if they would agree. They agreed, and it took 3 more years before we could get started. Now, we have people saying, we shouldn't build in the United States—shouldn't proceed in the United States.

I knew all the answers that I, questions I asked, but it's absolutely impractical to me to have a facility that over the ages, we could not build because of political problems. It approved on all sides, and then the Russians agree to dismantle and deliver the equivalent of 34 tons of plutonium to be run through a MOX facilitating plant to produce mixed oxide fuel. That's what it is, isn't it?

Mr. TOBEY. Yes, sir.

Senator DOMENICI. Where it gets its name—that's going to be reusable, isn't it?

Mr. TOBEY. Yes, it would become fuel for U.S. reactors.

Senator DOMENICI. Fuel for U.S. reactors——

Mr. TOBEY. With significant value.

Senator DOMENICI [continuing]. And we have people not wanting to do it. I wonder what they would want to do with the residual that is high-flying plutonium. And we get to run it through this piece of equipment, and it changes from that to something much less maligned than its current status, is that right?

Mr. TOBEY. Yes, sir, it is. There are no good alternatives, certainly none that would provide the nonproliferation benefits. And frankly, simply continuing to store the material, using 50-year life cycle costs, is the most expensive thing we could do with it.

Senator DOMENICI. You got it.

Mr. TOBEY. And, given that the half-life of plutonium is 24,000 years, it's not unreasonable to use a 50-year life cycle cost standard.

Senator DOMENICI. I thank you very much, and I want to say to the chairman that I would like to join in a more in-depth briefing if you would like that, and of course, the Senator from California wants to do that, and I would like to go with you so we don't have to do it twice if you think that's a good idea.

Senator DORGAN. Senator Domenici, I think what we will do is arrange a classified briefing and invite members of the subcommittee to it, so that we can have a fuller discussion in a classified setting of all of these issues.

Mr. TOBEY. Yes, Mr. Chairman.

Senator DORGAN. Senator Reed. I have no further questions.

Senator REED. Thank you very much, Mr. Chairman.

RELIABLE REPLACEMENT WARHEAD

I want to just cover some specifics. I think the questions have been asked, but I just want to nail things down. We're in phase 2A right now in the RRW, when do you anticipate requesting permission from the Nuclear Weapons Council and the Congress to start phase 3?

Mr. D'AGOSTINO. Senator, I'd expect it'll take us 9 to 12 months to finish this phase 2A activity, probably putting us in the January/February timeframe of next year, roughly. Then we would take that decision to the Nuclear Weapons Council. I sit on the Nuclear Weapons Council with Mr. Krieg and others from the Defense Department.

We will look at that phase 2A study. In particular, we will look at what it does to what we call the nuclear weapons stockpile memorandum. This is a memorandum the President ultimately signs and sends over to Congress, which provides the details on the size of the stockpile. And, I think what I—not only do I believe as a matter of course, but I think it's important for this Congress is to understand how RRW drives the size of that and provides the details of the stockpile.

We will have a vote within the Nuclear Weapons Council on whether to move forward on what we call phase 3, which is a little bit of a development phase, or design development phase, where we would do some engineering work. We would run more calculations, maybe do some materials tests, so that would be later on next year.

Senator REED. Later on, being July, June, August—just to——

Mr. D'AGOSTINO. We're having our first meeting with the Navy out at Lawrence Livermore on May 1, so I'll have a schedule, probably in another 2 months that I can come talk to you about, sir.

Senator REED. Just, specifically, and you've already, I think, answered this in response to other questions—the RRW design is a new warhead, will be a new warhead, correct?

Mr. D'AGOSTINO. It is a new design for an existing warhead. I'm not a lawyer, but it's an existing military capability. It's a replacement warhead, but it's a new design for that warhead.

Senator REED. The warhead is the one for the Navy program, the D–5 missile program?

Mr. D'AGOSTINO. It's to replace the W76, that's right, sir.

Senator DOMENICI. Senator?

Senator REED. Yes, sir.

Senator DOMENICI. Can I ask you if you would do me a favor?

Senator REED. Yes, sir.

Senator DOMENICI. Out in the audience are 10 trainees from the NNSA Training Program, Mr. D'Agostino, it's your training program for students from up in your country?

Mr. D'AGOSTINO. Yes, Senator, they are what we call Future Leaders. The average age in the NNSA is close to 50 years, and we recognize that we need to train and bring in the best folks we can, similar to the model that Admiral Rickover and Admiral Donald go off and interview and bring in bright people, bring new ideas into the organization. Ten of them are here, sir.

Senator DOMENICI. Could they stand up?

Mr. D'AGOSTINO. Sir.

Senator DOMENICI. Mr. Chairman, I greatly appreciate you permitting us to do this, and could I just welcome them, thank you for coming, and we hope you have a good time.

Mr. D'Agostino, thank you for being so cordial to them.

Mr. D'AGOSTINO. Thank you, sir. I appreciate it, it's good to see them here. I appreciate having them here.

Senator DORGAN. All of us welcome you, and we hope that you've enjoyed the subcommittee hearing, and we appreciate your service to our country by serving in public service, which is a very honorable and important thing to do. So, we welcome you here.

Senator Reed.

Senator REED. I think a critical question here, with respect to RRW is the issue of testing. Is it a specific objective of the program to be able to eliminate the need for testing in the future? Yes or no, is that going to be a specific objective?

Mr. D'AGOSTINO. I want to be very precise in my answer, I think it's a little bit more difficult than a yes or no. But, here's what I'm going to say—we will not move forward with RRW, if it requires a test to certify that warhead. That is not something I would recommend to the Nuclear Weapons Council. It would be a long discussion in the Nuclear Weapons Council before that happened.

Now, we do assess, on an annual basis, our stockpile for testing. I can't predict what might happen 40 years from now, as that warhead ages, but that's not, my view, is not moving forward.

Senator REED. Because Admiral Donald's been so cooperative, he never gets asked a question.

NAVY HOME PORTING

Admiral Donald—how does your Office of NAVSEA and the Department of Energy participate in the overall EIS process for Navy home porting changes for potential additional submarines for Guam? In 20 words or less.

Admiral DONALD. Yes, sir, we participate with the Navy anytime there's an environmental impact statement or a home port change or a significant—potential significant impact to the environment. We participate as part of that team, obviously with concerns about the facilities that may be needed to support the nuclear-powered ships in the area, obviously with our environmental record, that subject is a matter of public record as well. And that's part of that consideration should that, any expansion be required in that area.

NONPROLIFERATION RESEARCH AND DEVELOPMENT

Senator REED. Thank you, sir. The chairman's been very kind, but I have one additional question, Mr. Tobey. You might want to take this for the record, because we, we talked about this before, I think, in the Armed Services Committee, which is—if additional funding were available for nonproliferation research and development, how would you use it? And—would you like to take that one back and send us a note, or——

Mr. TOBEY. I think I actually would like to answer that, if that's all right, Senator?

If the Congress appropriated, and the President signed additional funding for research and development, I think we would direct that funding toward greater efforts on radiological detection.

That's a critical effort that will support our abilities across the board, as you may understand, and as we've discussed. We're moving our efforts from those that are concentrated mainly on the former Soviet states, to threats that are originating elsewhere, and also from the immediate facilities that house nuclear weapons and material where our work is coming to closure, to being more vigilant on borders, and in other places.

And, in order to meet the emerging threat, we do need to work on radiological detection, we are working on radiological detection, and the President's budget does support that. But, that would be an area of additional interest.

Senator REED. Thank you very much.

Thank you, Mr. Chairman, you've been very kind.

Senator DORGAN. Senator Reed, thank you very much.

These are—as I indicated when I started—very complicated issues. And I have tried very hard to meet with a lot of people, study these issues, try to understand these issues in recent months. And there's a lot to know, and a lot to understand, and many answers that you don't have, Mr. D'Agostino, and I don't have, and Senator Domenici doesn't have—but we have to try to, as best we can, think through these issues, in the context of what is in the best long-term interest of this country.

The survival of this planet, I think, depends on our getting these things right. We've been very lucky that for 60 years, we have not had another nuclear weapon used in anger. Because once one is, a planet in which there are 15,000 to 20,000 nuclear weapons, and the release of them back and forth, this civilization will cease to exist, at least as we know it.

I said earlier, at another hearing, that I very much opposed and felt it reckless for those at a time, who talked about the potential use of nuclear weapons, the need to build new nuclear weapons, the need to build designer nuclear weapons, the need to be able to burrow into caves and create bunker busters, and some talked about nuclear weapons were simply another weapon, and they were usable, were needed to be used under certain circumstances, I view that as pretty reckless, and pretty troubling, personally.

Because there are a lot of nuclear weapons that exist, and because our country has signed up to a treaty that says we agree to some sort of goal at some point, not described with respect to time, that we would like to abolish nuclear weapons. Because of all of that, I mean, the question for all of us now is how do we reach into the future, and describe a future without nuclear weapons, or at least moving toward the reduction of nuclear weapons?

I want to just tell you, I read a book awhile back that describes something I'd previously read in a—I believe, Time or Newsweek, about October 11, I believe it was exactly 1 month after September 11, 2001. A time during which a CIA agent code named Dragon Fire reported that a small, I believe 10 kiloton, at least, a small Russian nuclear weapon had been stolen, and had been smuggled into either New York City or Washington, DC, by terrorists, and was to be detonated in a major American city. That didn't hit the press, was not a part of a public story, but for about 1 month, at least, there was great, great concern about whether or not that report was accurate.

It was later discovered to have not been an accurate intelligence report, but in the post-mortem, the evaluation was that it was perfectly plausible, that perhaps someone could have stolen a 10 kiloton nuclear weapon. Perhaps, if stolen, and gotten by a terrorist organization, it was plausible that it could have been smuggled into an American city, and plausible that such a weapon could have been detonated. And then we wouldn't be talking about several thousand casualties, we'd perhaps be talking about several hundred thousand casualties.

That is the angst about the potential loss of, or stealing of one nuclear weapon. One. There are about, we believe, 20,000 on this Earth. I think the survival of our planet depends on our getting all of this right—we've been very lucky for 60 years. Maybe we'll be lucky for the next 600 years, I don't know.

We have, in fact, a Stockpile Stewardship program in this country, that goes on, has gone on for some while. That means that we work on the weapons that exist, to make sure that they are weapons that are available in the event that we were threatened as a country, so there's nothing new about stockpile stewardship, about people in your organization that routinely do this kind of work.

The RRW program, my colleague from California raises definitional questions, I don't know the answers to those. I think the discussions that will continue now in the early stages of this program, we'll try to find those definitions, and try to think through—what are the consequences, Senator Domenici asked, what are the consequences of not proceeding? Senator Feinstein would ask, what are the consequences of proceeding? That's the sort of thing, it seems to me, that this country needs to grapple with as a set of policies.

Senator Domenici today has said that—and he showed me the letters—that he has written to the Secretary of State, Secretary of Defense, and one other—and I think, this is—as I—the reason I describe all of this at the end of this hearing, is this is not just some other issue. Senator Domenici is right—this subcommittee has in its lap some very serious questions to answer.

You, Mr. D'Agostino, run an organization that is very, very important, and also needs to get this right, working with us to get it right, and I've said previously, with some of the folks who have appeared, I'm impressed with the quality of some of the folks who have come to public service, I'm very impressed, Mr. D'Agostino, with your willingness to sit with us——

Mr. D'AGOSTINO. Thank you.

Senator DORGAN [continuing]. You and I have had a chance to visit on a couple of occasions, and have traveled to New Mexico to Sandia. I thank you for serving our country.

I'm not sure how I come out on all of this at this point. I'm trying to understand it all, it's very complicated. And I don't think my colleague, Senator Domenici, would allege it's simple at all——

Senator DOMENICI. Oh.

Senator DORGAN [continuing]. It's very complicated, for everybody on all sides.

But I pledge that I, and I think all members of this subcommittee want to try to find a way to get to the right answer here on these issues. Because I think the survival of the planet, at some

point, I don't think it's expressing it too starkly—depends on our doing the right thing.

And, so I want to thank the witnesses for coming. Mr. Tobey, thank you, you have a very important part of this. I'm going to submit to you some questions, and Mr. D'Agostino, I'm going to submit some additional questions to you.

Mr. D'AGOSTINO. Sure.

Senator DORGAN. Admiral, thank you for your service.

And, let me again, to the new leaders, say to you—I think public service is an unbelievable honor. Those of you who come to Government and say, "I want to be a part of this," thanks for doing that, and it's nice to see an agency that worries about the future. I think it's sort of crass and unbelievably inept of you, Mr. D'Agostino, to define 50 years of age as old.

Mr. D'AGOSTINO. I apologize.

Senator DORGAN. But, we welcome to those of you, if you choose to have them, it does you no service on this subcommittee, does it?

But in any event, thanks for being worried about renewal for those old codgers who are nearing 50.

Mr. D'AGOSTINO. I don't have much hair.

Senator DORGAN. Senator Domenici, thank you, and let me thank the witnesses, this hearing is recessed.

Senator DOMENICI. Mr. Chairman?

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

Senator DORGAN. Yes?

Senator DOMENICI. I just want to say, and then you certainly are welcome to comment, you used the word that we have been "lucky" for the last 60 years, I think you really mean, we have been fortunate. We have not been lucky—we have spent more brain power of the highest quality, and more money, if money means anything, than on any other issue or program that has to do with military, we've spent more on nuclear weapons and the defense that goes with them, and defending from them, and making sure they're never used. Because most of what we spend money on is to make sure nobody uses them, because they know they can't use them, because they know for absolutely for certain, that it would be a useless gesture. We spend much on that. And there's much to learn from how well we've done as we move ahead with what we contemplate in the future.

And I know what you meant, and you know what I meant. I sounded flippant a couple of times, in speaking about Sam Nunn, I didn't intend to be, and you don't intend to be, and use any of the words here, they're all most difficult.

Senator DORGAN. No, I think, but I use the word luck for this reason. I think in 1945 had someone said, "You know what? We're going to build thousands of additional nuclear weapons, thousands of them, and by the way, in the next 62 years, none will be used in anger, that's going to require some unbelievably good work, and a little luck."

Senator DOMENICI. You got it.

Senator DORGAN. I think most people would believe that to be the case.

ADDITIONAL COMMITTEE QUESTIONS

The subcommittee will submit the balance of the questions for your response in the record.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED TO HON. THOMAS P. D'AGOSTINO

QUESTIONS SUBMITTED BY SENATOR PETE V. DOMENICI

COMPLEX 2030

Question. Mr. D'Agostino, Last year GAO reviewed the NNSA's Complex 2030 and had several recommendations that NNSA address as part of its $1.5 billion transition plan. The GAO was critical of the NNSA decision to proceed with a plan, without knowing the military requirements for the stockpile.

GAO recommended that DOD should provide clear, long-term requirements for the stockpile, including quantity, type and mission. Based on this information NNSA could then develop cost estimates based on the military requirements and then develop a transformation plan to support the preferred stockpile.

Mr. D'Agostino, it appears that without the Department of Defense requirements it would be tough to develop an accurate or precise transformation plan.

Has the Department of Defense provided its long-term requirements for the stockpile? What about pit capacity and future RRW requirements?

Answer. The President defines the size and composition of the nuclear weapons stockpile by his Nuclear Weapons Stockpile Plan (NWSP), which is reviewed annually. The official requirements documents, such as the NWSP, may lag expectations relative to the size and composition of the future stockpile. Consequently, our transformation plans must be sufficiently robust to cover a realistic range of future requirements.

With the President's commitment to achieving the smallest possible stockpile size consistent with national security, future production requirements are likely to support a much smaller stockpile. In evaluations led by the Department of Defense, we have established a range of possible stockpile scenarios that bound the most likely threat environments of the future. For each scenario, we have determined warhead production capabilities and capacities, including the manufacturing quantities needed for plutonium and highly enriched uranium components. Thus, the range of possible scenarios provides bounds for production capabilities and capacity ranges that we might need in the future. The capabilities to design, certify, and produce Reliable Replacement Warhead (RRW) concepts and to manufacture 125 (net) pits per year are consistent with these evaluations.

As warhead quantities are reduced, it is important to recognize that defining future capability requirements becomes more important than specifying capacities. We must have a given capability (e.g., manufacturing uranium parts with specific characteristics) regardless of whether we are making one or several hundred warheads. We frequently find that the capacity provided by the mere existence of a specific capability is sufficient to provide quantities needed to support a small stockpile. For example, a new plutonium facility designed according to modern lean manufacturing, safety, and security practices could have a minimum capacity in the range of 125 RRW pits per year and a lower value for legacy pits. Reducing the design capacity further would not result in significant reductions in facility square footage or cost. However, eliminating a specific capability requirement reduces the floorspace and fixed-cost for maintaining that capability in a state of readiness. One benefit of an RRW approach is that fewer challenging or problematic capabilities must be maintained when compared to legacy systems, thus, enabling better optimization of the Complex in the long-term.

Question. Without the DOD requirements, how has the NNSA adopted the transformational plan? What if one or more of the elements such as the RRW isn't implemented?

Answer. We need to transform the nuclear weapons complex infrastructure whether we proceed with Reliable Replacement Warhead (RRW) concepts or retain legacy designs. However, RRW concepts enable better optimization of the Complex in the long-term because some specific capabilities (e.g., beryllium component production) do not have to be retained. A primary objective of nuclear weapons complex transformation is to establish a responsive infrastructure capability that is sustain-

able and cost-effective for the long-term. There are key capabilities that must be present to meet this objective. The Complex must have functional capabilities to: (1) design, develop, and certify nuclear weapons; (2) manufacture and surveillance of plutonium components; (3) manufacture and surveillance of uranium components; (4) produce and manage tritium; (5) manufacture and surveillance of non-nuclear components; (6) assemble and disassemble nuclear weapons and components; (7) storage and transport of nuclear weapons and material; and (8) provide the science, engineering, and technology essential to our nuclear deterrent and our ability to respond to technological surprise. In the absence of detailed projections of stockpile size and composition for future decades or without an RRW, transformation plans must be sufficiently robust to cover a realistic range of future requirements.

Question. Have you reviewed the GAO findings and how has this changed your strategy as a result?

Answer. The Government Accountability Office (GAO) findings in Views on Proposals to Transform the Nuclear Weapons Complex (GAO–06–606T) reiterated that decisions regarding nuclear weapons complex transformation must be based on good information. We concur and thus the GAO findings have not changed our strategy. Specific findings identified four actions that the GAO felt were critical to successful transformation:

—Clear long-term requirements from the Department of Defense (DOD) for the nuclear stockpile.

The National Nuclear Security Administration has been working jointly with the DOD to establish a range of possible stockpile scenarios that bound the most likely threat environments of the future. For each scenario, we have determined required warhead production capabilities and capacities, including plutonium and highly enriched uranium operations with some sprint capacity. This set of possible scenarios bounds the range of production capacities that we might need in the future to plan proposed production facilities. Given that stockpile projections will never be exact or remain stable for decades into the future, bounding future estimates of required production capabilities and capacity ranges are sufficient.

—Accurate cost estimates of the proposals for transforming the weapons complex.

We have undertaken a process in compliance with the National Environmental Policy Act before issuing a Record of Decision containing specifics for the plan to transform the physical infrastructure of the Complex. Transforming the physical infrastructure is costly and impacts other transformation actions. Cost estimates of the alternatives for transforming the weapons complex are being prepared in parallel with the ongoing preparation of the Complex 2030 Supplement to the Stockpile Stewardship and Management Programmatic Environmental Impact Statement (PEIS). Business case studies are progressing concurrently with the PEIS, which are considering life cycle costs, decontamination and demolition costs, present worth analyses, cash flow analyses, qualitative analyses, and comparative costs. These business case studies will be instrumental in determining the course of action to be chosen in the late 2008 Record of Decision.

—A clear transformation plan containing measurable milestones.

We are committed to establishing annual "Getting the Job Done" lists and multi-year Complex 2030 transformation progress measures. These represent measurable milestones that are meaningful to stakeholders. However, a number of the progress measures of greatest interest to stakeholders are dependent on the Complex 2030 Record of Decision to be released in late 2008.

—An Office of Transformation with the authority to make and enforce its decisions on transformation.

In order for transformation to be successful, new approaches must be firmly anchored in the culture of the entire enterprise. This means implementing line organizations and programs must own the new approaches to ensure changes are sustainable and will outlast any single office. The Office of Transformation, which was established in June 2006, is my agent of change within the National Nuclear Security Administration (NNSA) for nuclear weapons complex transformation. It is establishing transformation implementation strategies and ensuring ownership of changes by existing line organizations. While the Office of Transformation has my full support, I am the one responsible for seeing that the commitments we make to transformation are implemented. I have the authority to make and enforce decisions on transformation.

Let me clarify one comment about the cost of transformation. There is no $1.5 billion transition plan in our documents or the April 2006 GAO report. Some media and non-governmental organizations have incorrectly quoted a November 2006 GAO report estimating a total $150 billion cost of the NNSA nuclear weapons enterprise over the next 25 years as equal to the cost of transformation. NNSA plans to achieve transformation to Complex 2030 through existing programs and manage-

ment structure, and within projected funding levels. If major new facilities are justified, incremental funding requests for capital projects will be supported by business case analyses.

CLOSING LOS ALAMOS NATIONAL LABORATORY

Question. Some Members of Congress have suggested closing LANL. It strikes me that this would be contrary to our Nation's national security needs and unachievable based on the LANL mission responsibilities.

It's no secret that I am a supporter of our national laboratories and I believe we should continue to take necessary steps to improve the safety and security at the labs—as well as make the necessary investments to continue to support world class scientific research.

Mr. D'Agostino, can you detail for us why we need LANL and what role they play in our national security.

Answer. From a National Nuclear Security Administration (NNSA) perspective, Los Alamos National Laboratory (LANL) is responsible for the majority of warheads in the nuclear weapons stockpile. Personnel at the laboratory are intimately involved with the maintenance, surveillance, and assessment of the warheads designed at LANL. LANL plays a key role in the annual assessment of the safety and reliability of the nuclear weapons stockpile, in the absence of nuclear testing. We are presently still tied to our underground test data for our legacy systems. Advances in science and technology enable a Reliable Replacement Warhead (RRW) strategy and will provide a future predictive capability for legacy and RRW-type systems; LANL is critical in the advance of our science and technology base. The experienced staff and the premier facilities at LANL are key to our nuclear weapons program. LANL also contributes to other aspects of national security such as threat reduction and support to the Department of Defense and the Department of Homeland Security and analysis of intelligence information. Overall, LANL is a critical contributor of science and technology that underpins U.S. national security.

Question. Can you also elaborate the practical impacts to science and research if we were to shut down the lab and divide up the workforce?

Answer. Los Alamos National Laboratory (LANL) continues to have a critical role in the National Nuclear Security Administration (NNSA) science and research program through its people and facilities. Closing LANL would seriously damage the science and research for the Stockpile Stewardship Program.

People can be encouraged to move but a move cannot be mandated. With the demographics of the designer community, it is likely that we would lose the majority of the remaining experienced designers. In addition, we will also loose experienced staff in other LANL areas of key technical expertise: weapons materials and chemistry support for the complex, nuclear physics, and computational science.

Within the areas of defense science and research, LANL provides at least three major and unique elements required for Stockpile Stewardship: neutron cross-sections to reduce uncertainties in nuclear weapon performance calculations; radiography to assess implosion performance; and an integrated plutonium production and research facility. LANL's Los Alamos Neutron Science Center (LANSCE) is a multipurpose facility that supports materials research and hydrodynamics research through proton radiography and neutron scattering in a classified environment. This is unique in the complex and has supported Reliable Replacement Warhead (RRW) designs already, as well as supporting improved understanding and predictive capability for legacy as well as RRW designs. LANSCE also supports basic neutron science through the Lujan Center. The Dual Axis Radiographic Hydrodynamic Test (DARHT) Facility is a unique radiographic facility and, when the second axis becomes available with multi-pulse capability, DARHT will be unique in the world. The multi-axis and multi-pulse capabilities of DARHT will significantly enhance our understanding of the implosion phase of nuclear weapons, especially as we assess the legacy systems or implement improved safety and surety features without nuclear testing. The plutonium complex at LANL has an integrated research capability to support the pit manufacturing activities. Such capabilities could not be replicated somewhere else without a severe loss of capability and a decade gap in restarting the operations. Superblock, which NNSA is presently committed to move out from, does not have the capacity to take over all TA–55 functions.

In addition, LANL has numerous smaller scale research and development (R&D) capabilities required for Stockpile Stewardship, responding to emerging threats, and advancing science broadly for national security. Among these are the capability for classified beryllium manufacturing R&D, plutonium-238, high explosives chemistry, actinide chemistry, uranium R&D, and tritium R&D. LANL is an international leader in criticality science and its applications in safety, materials transportation and

detection. LANL makes significant contributions in astrophysics, climate analysis, biology and forensics. Shutting down LANL and reassigning people would have an immediate and possible irreparable impact on the nuclear weapons program and, to a lesser degree, the broad national security science infrastructure.

RELIABLE REPLACEMENT WARHEAD

Question. As you know, I was hopeful that the New Mexico RRW design team would be named the lead design. However, that was not the case. You selected the Livermore design based on several criteria, but it was clear that avoiding underground testing was a key driver in your decision.

As an original sponsor of the RRW design competition I continue to support the project as it is vital if we are to transform the stockpile to a significantly smaller stockpile that is cheaper and safer to maintain.

Your budget provides $88 million for the RRW program. Can you please tell me how this funding will be spent and how this will support a Congressional decision to proceed with the engineering design authorization next year?

Answer. The fiscal year 2008 request funds the Reliable Replacement Warhead (RRW) Phase 2A study. The National Nuclear Security Administration's (NNSA) intent is to develop high fidelity baseline schedules and cost estimates. The laboratories will further refine the concept design and work with the plants concurrently during the Phase 2A study to support a sound planning effort. This activity will include: some revising and extending of the selected design, analyzing and scheduling the required development work, planning and executing any required peer reviews, developing the detail cost estimate. As and example the certification plan will be prepared in detail including identifying and scheduling the hydrodynamic experiments required and computational analyses necessary for certification. Some computations and potentially some technology tests will be performed during the study to assure that the project scope is correctly assessed. NNSA will return to Congress at the appropriate time to seek both authorization and appropriations to proceed into the engineering development phase, if the Nuclear Weapons Council decides to proceed with development of the RRW.

Question. Can you tell me what role Los Alamos will play in the RRW design and how they will be integrated into the project?

Answer. Los Alamos National Laboratory (LANL) will lead the independent peer review team for the Reliable Replacement Warhead (RRW) and participate in development of technologies and advanced science analysis for potential insertion in the future stockpile. Until a long-term pit manufacturing capability is in place, the pit manufacturing facility at LANL will implement the manufacturing process for the RRW pits eventually manufacture them during Phase 3A.

COMPLEX 2030—FACILITIES BEFORE SCIENCE

Question. Mr. D'Agostino, I am deeply concerned about the funding profile for the Science and Technology accounts within the NNSA.

It is clear from recent budget requests that the NNSA has put more emphasis on facilities and security than on supporting the science based stockpile stewardship activities.

However, considering the fact that the Complex 2030 transformation is based around the Reliable Replacement Warhead, I believe this warrants more scientific research in order to develop the weapon system without underground testing.

The JASONs study group, which is undertaking a review of the RRW design, found that, "though we see no insurmountable obstacles to certification of the RRW at present, there are substantial scientific challenges to developing a new stockpile system . . ."

Mr. D'Agostino, how can you meet all the life extension responsibilities for existing weapons systems and support the RRW program with declining science and technology budgets?

Answer. The current Life Extension Programs for the B61 and W76 are either in the production phase or entering into the production phase at the end of this fiscal year. The research for these existing life extensions is largely complete. The National Nuclear Security Administration strategy provides that Nuclear Weapons Council (NWC) approved Life Extension Programs would continue as directed, but Reliable Replacement Warhead (RRW) programs would be developed to replace legacy Life Extension Program efforts. In the science and technology arena, we are committed to the work required to support the stockpile and to develop predictive capabilities. We are at a period where we are completing the construction of major science facilities, and the associated development and construction costs are decreasing. We are moving to exploit these new facilities to advance the science and tech-

nology base for the program. However, we believe that we can do more within the present planned budgets by integrating our science and technology efforts across the laboratories, for example: ensuring access to the premier facilities and computational capabilities and developing integrated science and technology roadmaps. The broader science and technology needed to support the health of our nuclear weapon design and production can be augmented via enhanced integration with other agencies, and broader interaction with the general scientific community. The Complex would then be operated in a more cost effective manner. The combination of these factors (replacing life extensions with RRW, reductions in construction costs, and integration of resources) should allow us to meet needs within decreased science and technology budgets.

Question. Can you please provide for me in writing your science and engineering R&D plan for the next 5 years that will answer the technical questions surrounding the RRW program and show me where this plan is financed in our budget?

Answer. Science and engineering research and development (R&D) necessary for fundamental support of Weapon Activities as well as direct support of the Reliable Replacement Warhead (RRW) program is programmed within Defense Programs' Campaign structure. The Science, Engineering, Inertial Confinement Fusion Ignition and High Yield, and Advanced Simulation and Computation Campaigns together comprise about $1.42 billion in the fiscal year 2008 budget, while an additional $0.44 billion is requested for addressing manufacturing and production readiness in the Readiness and Pit Manufacturing and Certification Campaigns. The basic R&D activities within each Campaign are described in the fiscal year 2008 budget request, consistent with the Program Plans maintained for each of the six Campaigns. Collectively the R&D activities that the Campaigns undertake are described in the fiscal year 2007–2011 Stockpile Stewardship Plan. As a relevant technology becomes more mature and the technical questions more unique to the specific weapon, the effort shifts to Directed Stockpile Work and the RRW program.

An integrated planning effort by the program efforts above, the predictive capability framework, is ongoing to ensure timely delivery of science and technology to the program. The end goal of a predictive capability for nuclear weapons should in of itself increase efficiency by ensuring validated models that can be applied to all systems to increase confidence and decrease the repeat work frequently done system by system. The predictive capability framework plan will be completed this fiscal year. Due to the complexity of these activities, some of the scientific advances cannot be completed in time for the first RRW certification process, but the first RRW is designed to have sufficient margin and tie to nuclear test history to offset the higher uncertainties.

INSUFFICIENT FUNDING FOR Z OPERATIONS

Question. In the fiscal year 2007 NNSA budget, hearing last year Ambassador Brooks promised that I would be pleased with the funding provided for Z machine—I am not pleased. This budget continues to support past practice of providing everything and more for NIF, while providing insufficient funding for Z.

This budget continues funding Z from three separate accounts and fails to fully fund operations at a full shift. This is in direct contrast with the priorities of the Office of Science budget, which makes operational runtime a top priority.

(NNSA provided $26 million to High Average Power Laser R&D in fiscal year 2007, which NNSA admits has little to no bearing on the weapons program)

Why does the Department continue to play games with the Z budget when it funds projects like the High Average Power Laser program that does not support the weapons program?

Answer. The National Nuclear Security Administration (NNSA) has requested $63.9 million for operation and use of the Z Facility at Sandia National Laboratories (SNL) in fiscal year 2008. These funds are provided for activities in pulsed power fusion and other areas of high-energy-density weapons physics. This amount of funding will enable a solid program of experiments which meets high priority NNSA requirements as defined in joint plans developed by the Science, Inertial confinement Fusion Ignition and High Yield, and Advanced Simulation and Computing Campaigns. Compared to the fiscal year 2007 request, funding was shifted from other activities in fiscal year 2008 to increase funding for Z activities to this level. Requested enhancements of the SNL pulsed power program beyond this level were carefully considered, but determined to be of insufficient priority for funding based on program requirements.

NNSA allocated $26 million to Inertial Fusion Technology for these activities ($10 million for the Nike laser at the Naval Research Laboratory and $16 million for the High Average Power Laser (HAPL) program) in the fiscal year 2007 Operating Plan

submitted to Congress on March 16, 2007. No funds are requested for the Nike or HAPL activities in the fiscal year 2008 budget request due to the need to fund higher priority activities.

Question. Why does the Department continue to fund Z from 3 or more accounts, when NIF is funded from a single account (Inertial Confinement Fusion)?

Answer. Funding for the Z facility at Sandia Laboratories is currently provided from three different accounts: Readiness in Technical Base and Facilities (RTBF), the Inertial Confinement Fusion (ICF) program, and the Science Campaign. Funding provided by the ICF program and the Science Campaign covers their areas of responsibility, namely, pulsed power fusion and non-ignition weapon physics, respectively. The Department is aware of the unintended confusion arising from these multiple categories. In the fiscal year 2009 budget submission, the National Nuclear Security Administration has proposed consolidating all operational funding for Z in the ICF Campaign in the same manner as currently done for Omega and the National Ignition Facility.

CHEMISTRY AND METALLURGY RESEARCH FACILITY REPLACEMENT

Question. The Departments commitment to long-term support of the CMR-Replacement facility seems to have changed substantially over the past 2 years.

Mr. D'Agostino, when you attended the groundbreaking in Los Alamos, you declared this facility vital to the mission. The fiscal year 2006 budget request proposed $160 million for fiscal year 2008 and now the fiscal year 2008 request has been reduced to $95 million. Your budget request now seems to reflect a wait and see attitude as it pertains to the CMR-Replacement.

At the same time, the NNSA has provided $25 million to initiate design work on the Consolidated Plutonium Center as part of your Complex 2030 plan, despite the fact that the Defense Department has not provided you with a total pit requirement or justification for any additional pits beyond what can be already produced.

With flat budgets, I do not believe the NNSA has the luxury of spending money on new facilities without a clear justification or need.

Mr. Schoenbauer, do you recall when the House and Senate Energy and Water bill eliminated funding for the proposed Modern Pit Facility in fiscal year 2006?

Answer. The termination of the Modern Pit Facility project did not eliminate the need to manufacture plutonium pits in sufficient quantities to support the nuclear weapons stockpile. In the year 2000, our plutonium strategy assumed two facilities to meet our long-term mission requirements. One facility would support plutonium research and development (R&D) and surveillance and a second would support pit manufacturing at a capacity greater than 50 net pits per year to the stockpile. The Chemistry and Metallurgy Research Replacement (CMRR) Facility and other buildings in the Los Alamos National Laboratory (LANL) TA–55 complex were to execute plutonium R&D mission. The Modern Pit Facility, as a separate facility at a site to be determined, was to execute the mission to manufacture pits in sufficient quantities to support the legacy stockpile.

The events of September 11, 2001, evolving information on plutonium aging, current stockpile projections, and development of reliable replacement warhead concepts have changed our strategy from the year 2000. Increasing physical security costs for special nuclear materials (SNM) are driving us to fewer sites with Category I/II quantities of SNM and increased reliance on hardened, engineered-security facilities. Thus, our Complex 2030 planning scenario assumes that we will have Category I/II quantities of plutonium at only one site (e.g., a consolidated plutonium center (CPC)) in the long-term for R&D, surveillance and manufacturing. Los Alamos is one of five sites under consideration for the plutonium mission.

Our Complex 2030 planning scenario also assumed that we would rely on TA–55 at LANL, supported by a CMRR, for interim pit production until a CPC became available in 2022. Our business case analyses indicated this was an appropriate choice for a CMRR with a total project cost estimate in the range of $850 million. In late 2006, LANL completed an independent review of the planned CMRR and the revised the cost estimate for the Nuclear Facility (NF) approximately doubled. This greatly weakened the business case for CMRR–NF to only support interim pit production and would have required an unacceptable budget re-alignment over the next 5 years to retain the original CMRR schedule. Thus, our revised CMRR approach to best manage risks includes: (1) completing the CMRR Radiological Laboratory and Utilities Office Building; (2) continuing with design of the CMRR–NF, and (3) deferring commitments to construct the CMRR–NF until completion of the Complex 2030 Record of Decision in late 2008. In parallel with preparation of a Complex 2030 Supplement to the Stockpile Stewardship and Management Programmatic Environmental Impact Statement, we are evaluating business cases for all plutonium

facility alternatives. These alternatives include several CMRR–NF options and long-term consolidation of all plutonium functions to Los Alamos.

Question. What makes you think that by changing the name and doubling the request, we would be interested in funding a similar facility, just 2 years later?

Answer. The consolidated plutonium center (CPC) is not a name change for the Modern Pit Facility. The CPC would be the one site in the nuclear weapons complex in long-term for all research and development, surveillance and manufacturing involving Category I/II quantities of plutonium. The CPC would represent a consolidation of many functions performed at Lawrence Livermore National Laboratory Building 332, and Los Alamos National Laboratory plutonium facilities. The fiscal year 2008 funds are requested to provide conceptual CPC design definition and alternative evaluations necessary to support upcoming plutonium facility decisions. These alternative evaluations include options for Los Alamos as a possible site for a CPC.

EXPERIMENTAL HYDRO TESTS

Question. What impacts do you foresee on hydro testing as a result of funding reductions you have recommended within the Directed Stockpile Work Account?

Answer. The total funding for the hydrodynamic experimental program in the Directed Stockpile Work (DSW) account is not changing. However, the total funding has been re-aligned from one line (Stockpile Services) to three lines: Stockpile Systems, Life Extension Programs, and Stockpile Services. The reason for this change was to fund activities more consistent with the scope of the newly established DSW Work Breakdown Structure.

Question. What are the likely impacts to the Life Extension Program as a result of reductions in funding for hydro tests in fiscal year 2008?

Answer. No major impact. All major hydrodynamic experiments funded by the Directed Stockpile Work Hydrodynamic testing program scheduled to support current Life Extension Programs have been conducted.

HIGH PERFORMANCE COMPUTING

Question. Mr. D'Agostino, as you know, the NNSA and its laboratories have developed the world's fastest computing architecture. This was developed in response to establishment of the stockpile stewardship program and the necessity to simulate weapons performance in order to maintain the existing underground testing moratorium.

I am concerned that NNSA does not have a long term R&D strategy to keep the Nation at the forefront of High Performance Computing. It is my understanding that both NNSA and the DOE Office of Science are contributing less than $20 million to be a minority partner in a much larger DOD R&D program.

Due to the rapid technological advance in this field, I believe the Department of Energy must establish a 10-year R&D roadmap for High Performance Computing by integrating the NNSA and Office of Science efforts.

Why doesn't the NNSA and the DOE Office of Science work together on a joint engineering R&D program to develop the next computing breakthrough rather than take a minor stake in a DOD computing R&D program as provided in this request?

Answer. The National Nuclear Security Administration (NNSA) has a proven track record of successful research and development (R&D). However, while computing R&D is important to providing the capabilities we will need to be successful, it is not our main driver. Our system investments are strongly influenced by NNSA mission need. We are investing in the Roadrunner architecture, which we took unilateral responsibility for developing, but are expanding to include a wider science community. We are also acquiring a capability to attack the problem of quantifying and aggregating uncertainties in our simulation tools with a system designated "Sequoia," to be located at Lawrence Livermore National Laboratory. This too will be a unilateral effort to start, but will involve a larger community as it takes shape. We exercise strong control over Roadrunner and Sequoia as we expect those machines to make critical mission contributions to the NNSA.

NNSA's advanced architecture investments include an important, co-funded collaboration with the Office of Science for Blue Gene R&D to capitalize on the success of Blue Gene/L and produce future generations of high-performance, low-power systems.

Our participation in the Department of Defense High Productivity Computing Systems (HPCS) program, which includes participation by other Government agencies, including the DOE Office of Science, is but one investment in our portfolio of advanced system developments. While we invest a small amount in HPCS compared to the source selection authority, we participate as an equal in technical debates.

The Defense Advanced Research Projects Agency (DARPA) recognizes that much of the technical experience of designing and deploying supercomputers lies in other agencies. Consequently, our small investment belies our larger technical influence. The result is a win-win situation for both DARPA and NNSA.

Currently NNSA is meeting other programmatic needs for computing R&D and contributing meaningfully to the Nation's overall computing R&D. All of these investments are captured in the Advanced Simulation and Computing (ASC) program 2020 Roadmap as well as the ASC Platform Acquisition Strategy.

Question. Do you believe the NNSA labs could contribute to the development of a High Performance R&D program that would support research into advanced architectures, software and algorithm development?

Answer. The National Nuclear Security Administration's (NNSA) laboratories could and they do make such contributions. The Advanced Simulation and Computing (ASC) program and the NNSA laboratories have historically been world leaders in these areas and continue to be so today. Our need to predict with confidence the performance of a nuclear weapons systems will drive us to exa-scale computing, 1,000 times peta-scale, by 2018 as defined in our Roadmap. We are focused on and driven by that need for predictivity not only for Stockpile Stewardship, but also for broad national security issues. As a consequence, we are investing in advanced architectures, operating environments and algorithms that we believe are essential to meeting our mission responsibilities. We share our technology advances and should participate in any national program to advance architecture, software and algorithm development.

Question. I find it a little disappointing that the Office of Science is expanding its purchase of high performance computers for DOE labs as part of the American Competitiveness Initiative, while NNSA is cutting the number of high-speed computers it supports from 3 to 2. Why is the Office of Science expanding, while NNSA is contracting?

Answer. Funding for the Advanced Simulation and Computing (ASC) program has been declining since fiscal year 2005, while the American Competitiveness Initiative is infusing new money into basic science. With respect to ASC, the nuclear weapons complex has been challenged to reduce its footprint. One method being pursued is to reduce duplicate capabilities across the complex and computer operations is one area where such savings are possible. It should be noted that the National Nuclear Security Administration (NNSA) has drawn down by moving to two major facilities, one in New Mexico and one in California. The enabling technologies associated with secure distance computing make it possible for scientists at one site to compute seamlessly and effectively at any other of the Department's classified sites and thus the ability for computing to meet mission needs is not eroded. Our consolation was motivated by both budget constraints and NNSA's commitment to support the transformed "Complex 2030."

The Office of Science has been explicitly funded to increase its capability at the high end of computing and simulation. While NNSA will be more challenged by budget tightening, our mission will force us to continue our long tradition of supporting American competitiveness. Our recent partnerships in bringing Red Storm and Blue Gene to market are stellar examples of improving our Nation's competitiveness while supporting our primary mission driver. NNSA's mission is national security and classified while the Office of Science's is general and open. The Department of Energy is well positioned for collaboration with all the elements of the American Competitiveness Initiative.

Question. In your budget justification I can find no mention of the Roadrunner platform, but did see that the Department is ready to embrace a new system called Sequoia. What is the Department's strategy on deployment on new computing platforms?

Answer. Both Roadrunner and Sequoia are included in the National Nuclear Security Administration's Platform Acquisition Strategy, and are key steps in achieving our long range strategic goal of predicting with confidence the performance of a nuclear weapon. The Roadrunner final delivery is scheduled for fiscal year 2008, pending a favorable technical review of this high-risk, high-reward system. Sequoia final system delivery is scheduled for fiscal year 2011, also pending favorable technical reviews, with delivery of a smaller-scale early technology system in late fiscal year 2008 on which to begin software porting and scaling in preparation for the final system. Both system delivery schedules are contingent on projected budget appropriations

ESTABLISHMENT OF A JOINT HIGH ENERGY PLASMA PROGRAM

Question. The fiscal year 2006 Conference Report and the fiscal year 2007 Senate E&W bill urged the Department to bring together the NNSA and the Office of Science to support a joint high energy density physics program to provide non-weapons scientists access to NNSA facilities such as Z machine. This would also expand the R&D possibilities for weapons programs as well. While it is still in its early stages, I want you to know I appreciate your efforts to enable this level of cooperation.

However, I am disappointed to find out that this program, which supports research in high-energy physics consistent with the ICF program is largely funded out of the Science Campaign.

Considering that the ICF campaign is flush with cash and has expanded every year, what is the justification for not funding this research out of this program?

Answer. Both the National Nuclear Security Administration (NNSA) and the Office of Science recognize the importance of stewarding high energy density physics and have established a joint program in high energy density laboratory plasmas (HEDLP). The funding request for this program is more than $24 million, split almost equally between NNSA and the Office of Science. Due to the late date in the fiscal year 2008 budget request preparation cycle when the joint program was established, the fiscal year 2008 request supports the joint program which represents primarily existing activities.

In formulating the fiscal year 2008 submission, funding for university grants and centers in HEDLP were moved from the Inertial Confinement Fusion (ICF) Ignition and High Yield Campaign to the Science Campaign. This was done in order to simplify program execution by placing all university accounts in a single Budget & Reporting Classification code. Thus, the joint program has not placed additional financial burdens on the Science Campaign. Programmatic oversight of university activities will continue to be performed by the ICF Ignition and High Yield and Science Campaigns as it has in the past, and the ICF Ignition and High Yield Campaign will serve as the NNSA integration point for execution of the NNSA and Office of Science joint program.

The President's request for the ICF Ignition and High Yield Campaign has decreased annually since 2005.

Question. Can you identify other NNSA programs that are appropriate for similar collaboration? What about High Performance Computing?

Answer. The Office of Defense Programs within the National Nuclear Security Administration (NNSA) and the Office of Science created the Defense Programs/Office of Science Strategic Council to appropriately integrate strategic planning on science of significant mutual interest. The goal is to assure senior planning leaders, including the Deputy Administrator for Defense Programs and the Under Secretary of Energy for Science, have awareness of each organization's plans and budgets to enable these program elements to leverage total value.

The Council exchanges information at least two strategic times during the budget process: (1) as budgets are in final preparation for submission to the Office of Management and Budget and (2) after submission of the President's budget to Congress as staff briefings and testimony are being prepared. Such exchanges are deemed necessary to guarantee planning information is shared at these strategic planning phases.

With respect to high performance computing, the NNSA requirement for classified computing is inconsistent with the Office of Science's mission to support open science. Consequently, the two offices do not share production computing systems. In addition, NNSA supercomputers are sized to meet mission needs and operate 24 hours per day performing weapons calculations.

RELIABLE REPLACEMENT WARHEAD-2

Question. The Nuclear Weapons Council has directed the Department to proceed with a RRW–2 conceptual study. As part of this study, will the NNSA consider the reuse of existing pits as a priority? With the positive news on pit aging, it only makes sense to consider using pits that are already in the stockpile.

How would pit reuse impact the administration's Complex 2030 strategy? How many fewer pits would be required as a result of such a reuse decision?

Answer. Pit reuse has the potential to relax near-term demand for quantities of new pits manufactured at the interim Los Alamos National Laboratory production facilities. This provides additional time to improve long-term pit manufacturing capacities. Long-term demand for new pits would not be significantly reduced unless we forego the safety and security advantages that can only be provided through newly-manufactured Reliable Replacement Warhead (RRW) pits. If we want to

achieve proposed RRW safety and security objectives without an underground nuclear test, the number of existing pits applicable for reuse in RRWs is limited to the hundreds, not thousands.

Plutonium aging results should not be extrapolated to have a much broader meaning in predicting the life of legacy stockpile weapons than is technically justified. The plutonium aging study only addressed one particular aging phenomenon (intrinsic radiation damage) in one component (a pit) among dozens of nuclear explosive package components and thousands of other components in a typical nuclear weapon.

NATIONAL IGNITION FACILITY

Question. It is my understanding that the NIF project is now in its final year of construction and will cost $3.5 billion, nearly $2.5 billion over estimate and 7 years late. Now NNSA will proceed with the National Ignition Campaign, which is estimated to cost over $4 billion, and it is already experiencing programmatic and budget growth just as the construction project enjoyed. As an example of this lack of budget discipline, I understand the NIC program will now support direct drive experiments on what was billed as an indirect drive machine.

What assurances does this subcommittee have that this program will stick to the programmatic and budget discipline we were promised when the program was rebaselined in 2005?

Answer. The National Ignition Facility (NIF) Construction Project is now over 90 percent complete and has maintained the identical scope and essentially the same schedule and budget that were determined and agreed to when it was rebaselined in 2001. The only minor changes to the schedule and budget were in response to Congressional redirection in 2005.

The National Ignition Campaign (NIC) was initiated in June 2005. It is being pursued under the discipline of Enhanced Management methods including earned value accounting. It has not experienced any scope or budget growth beyond the $1.6 billion that was specified in its original baseline (detailed in the NIC Execution Plan which was signed by all of the participating organizations: General Atomics, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Sandia National Laboratories and the Laboratory for Laser Energetics at the University of Rochester); in fact the fiscal year 2008 submission reduces the NIC approximately $8 million below the June 2005 baseline. The rigorous reporting required under Enhanced Management and a detailed milestone structure provides the basis for monitoring programmatic and budget discipline.

The NIC involves preparation of the NIF for experimentation in conjunction with NIF Project completion, and is thus a highly facility intensive activity. NIF completion and the NIC are managed as an integrated activity using the same discipline and successful project management tools developed for the NIF Project. The execution of complex ignition experiments in late fiscal year 2010, only 1½ years after NIF Project completion, would not be possible without this discipline.

Question. The National Ignition Campaign (NIC) goal is to conduct ignition experiments on NIF in 2010. The baseline approach is indirect drive with beryllium ablators. Please provide information and justification for all other elements within NIC that are NOT directly related to the baseline approach? For example, is it credible to believe that the direct drive approach—including the necessary targets—can be ready for experiments in the same time frame? What is the metric for switching ignition baselines in the NIC program?

Answer. Direct drive both reduces risk for the indirect drive program and provides an additional ignition option, which is prudent given the unprecedented challenge of achieving ignition in the laboratory.

Direct drive studies at Omega are currently examining physics and technology issues critical to the success of indirect drive. An important recent example is the University of Rochester achievement of record compressed densities in cryogenic deuterium-tritium capsules. This critically important result provided important new knowledge regarding capsule physics and the operation of cryogenic systems. This knowledge will directly benefit the indirect drive program.

From its inception, the National Ignition campaign (NIC) has included direct drive as a backup risk mitigation strategy (contained in the approved NIC Execution Plan). A milestone in fiscal year 2009 provides a decision point for moving forward with facilitization of polar direct drive on the National Ignition Facility (NIF). The mainline strategy remains indirect drive, and the bulk of NIF resources will be devoted to it. Only if major unforeseen problems arise with indirect drive will a change to direct drive be considered. No provision is being made to conduct direct-drive ignition experiments (with appropriate targets etc.) in the same time frame

as indirect-drive experiments. However, the direct drive concept will continue to be developed and tested on the Omega laser system at the University of Rochester as part of the NIC effort in order to minimize the delay in achieving ignition in the unlikely event that the indirect approach fails, and because the direct-drive approach may provide higher gain at lower energy than indirect-drive ignition, potentially providing additional capabilities for Stockpile Stewardship in the post-NIC time frame.

Many of the key scientific and technical issues associated with ignition are common to both direct and indirect drive. Because of this commonality, the University of Rochester team provides scientific leadership for both direct drive and certain key aspects of indirect drive. It is thus appropriate to consider the University of Rochester program not as a "backup" but rather a critical intellectual component of the Inertial Confinement Fusion Ignition and High Yield Campaign and the NIC.

SANDIA NATIONAL LABORATORIES ION BEAM LABORATORY

Question. Mr. D'Agostino, I understand the Sandia has managed the MESA project in such a fashion that it will come in under budget and ahead of schedule. The lab has proposed to use the budget savings to support a small project known as the Ion Beam Lab, which has fallen into disrepair.

Does NNSA support this project? When do you expect to provide approval for this funding transfer to occur?

Answer. The National Nuclear Security Administration (NNSA) supports building a replacement Ion Beam Laboratory at Sandia National Laboratories in New Mexico. The project team has submitted a justifiable mission need for the project which is under review. NNSA has provided justifications in the President's fiscal year 2008 budget requesting Congress to authorize the project. Upon congressional authorization and completion of the Microsystems and Engineering Sciences Applications (MESA) facility, NNSA will request Congress to approve transferring the uncosted balance from MESA project to start the Ion Beam Laboratory in fiscal year 2009. MESA is scheduled to be completed at the end of fiscal year 2008 and we expect the cost under-run to be sufficient to pay for the project capital costs. Additional expenditures from the operating expense funds will be required to complete the Ion Beam Laboratory.

HEAVY WATER INVENTORY

Question. Mr. D'Agostino, it is my understanding that the Spallation Neutron Source located at the Oak Ridge National Laboratory is in need of heavy water to support experiments on that machine. I recall that the Savannah River Site is storing a large amount of such material that it might provide to this Office of Science laboratory. Can NNSA help the Oak Ridge Lab and provide sufficient quantities of heavy water to support the experiments on the SNS?

Answer. The Savannah River Site does hold a large inventory of surplus heavy water, assigned to the Office of Environmental Management (EM) for disposition. The quality of this material is lower (more tritium contamination) than the material in the National Nuclear Security Administration (NNSA) reserve, but portions of this material may be adequate to meet Spallation Neutron Source (SNS) requirements. There is also a possibility the material may not meet the SNS requirements. In that case, this material could be used as barter to exchange for material meeting the SNS specification, from a commercial heavy water producer. There is material in the NNSA inventory that meets the SNS requirements, but it is critical that this material be retained to support planned Defense Programs activities. NNSA cannot replace the material from commercial sources due to use restrictions.

The NNSA will work with EM and the Office of Science to identify suitable materials at Savannah River, and to have those materials transferred to SNS.

SECURITY GUARDS AT PANTEX ON STRIKE

Question. Mr. D'Agostino, I understand the security guards at the Pantex Plant have been on strike since Sunday evening and you are operating the plant using security personnel from various sites around the complex.

Can you please update us on the status of the negotiations and if you are optimistic this strike can be resolved in the near future?

Answer. Negotiations have been ongoing since February 22, 2007. The Pantex Guards Union (PGU) voted to strike effective April 16, 2007, at 0001 hours. BWXT and the PGU have continued to negotiate since then, although the Federal mediator and negotiating parties agreed to a week-long "cooling off" period that ended May 2, 2007. The PGU has offered various reasons for maintaining the work stoppage but the most recent central issues appear to be wages, medical benefit cost shares,

and the desire for two additional paid days off each year. We are optimistic that an agreement can be reached quickly if both sides continue to negotiate in good faith.

Question. How long can the Department sustain it security readiness using this substitute guard force?

Answer. Security of the Pantex Plant will not be degraded at any time during the strike, regardless of its duration. Contingency force planning assumptions called for up to 60 days of continuous security readiness while maintaining plant operations through the use of non-union augmentation personnel from other sites and the Office of Secure Transportation. If the strike begins to approach the 60 day threshold, several additional alternatives will have to be considered, including but not limited to additional contingency force augmentation and a reduction of plant operations.

MOX PROGRAM

Question. The Department recently produced the independent cost estimate and corrective action plan for the Mixed Oxide Fuel Fabrication Facility as required by the Defense Authorization Act for fiscal year 2007. The new project baseline is now $4.7 billion. In addition, you have agreed to the recommendations for the Inspector General to improve project oversight, establish achievable milestones, and include performance goals into future contract negotiations. With a new project baseline are you prepared to move forward with construction once the congressional moratorium expires in August?

Answer. Yes, DOE is prepared to move forward with construction once the congressional moratorium expires in August.

MOX ALTERNATIVES

Question. I noticed in the budget request that the Office of Environmental Management has decided to proceed with a $500 million vitrification plant for an estimated 13 tons of non-MOXable plutonium. This plant seems to confuse many people who believe this is an acceptable solution for the weapons grade material identified for destruction in the MOX facility. Can you please clarify the Department's position regarding its plutonium disposal strategy?

Answer. The Department's proposed baseline approach for disposition of surplus weapons-usable plutonium consists of a MOX Fuel Fabrication Facility, a Pit Disassembly and Conversion Facility, and a Waste Solidification Building to dispose of at least 34 metric tons (MT) of weapon-grade plutonium, a proposed Plutonium Vitrification process to vitrify up to 13 MT of non-pit plutonium, and the operation of the H-Canyon/HB-Line facilities to process approximately 2 MT of plutonium bearing materials. DOE is currently evaluating the cost and feasibility of reducing or eliminating the mission that is currently being considered for the small-scale plutonium vitrification process and fabricating more surplus plutonium into MOX fuel. If feasible, it could permit DOE to use the MOX Facility and H-Canyon/HB-Line facilities to dispose of approximately 43 MT of surplus plutonium.

Question. Specifically, can the Department add the 34 tons of weapons grade material to the smaller vitrification plant? What impact would it have on the cost and schedule of this project? Are there any technical challenges that remain unanswered?

Answer. No. The small-scale vitrification process cannot be scaled-up to dispose of an additional 34 metric tons of weapon-grade plutonium. The radiation exposure from vitrifying plutonium in lanthanide borosilicate glass for up to 13 metric tons is manageable because the process will limit worker radiation exposure to levels well within acceptable limits. However, managing worker radiation exposure becomes problematic for much greater quantities of plutonium. Therefore, DOE would have to consider using ceramic immobilization instead. However, the amount of time needed to immobilize an additional 34 metric tons of surplus plutonium with high level waste would extend beyond the planned operating life of the Defense Waste Processing Facility at the Savannah River Site, and an insufficient quantity of high-activity waste remains to be processed at the Defense Waste Processing Facility to immobilize all of the surplus plutonium. Moreover, immobilization of plutonium in a ceramic form has never been done before and would require significant research and development before the facility could be designed and constructed. This approach is likely to take an additional 12–14 years before operation could begin and would likely result in significant cost increases and schedule delays. There would also be legal, political, and environmental concerns with redirecting the disposition strategy at this point.

GNEP AND MOX

Question. I have heard speculation that the MOX facility could be easily redesigned to process spent nuclear fuel and could serve as both a recycling facility and fuel fabrication facility. Has the Department looked at modifying this facility to serve as either a spent fuel recycling facility or as a fuel fabrication facility for advanced reactors? If so, what do you believe is the most promising option for expanding the mission of this facility? How will this impact the schedule and cost of this project?

Answer. The MOX Facility is a fuel fabrication facility and does not have the capability to recycle spent nuclear fuel; a separate, dedicated recycling facility would be required. With regard to fabricating fuel for advanced reactors, the MOX Fuel Fabrication Facility may be capable of fabricating start-up fuel for fast reactors as part of the Global Nuclear Energy Partnership (GNEP), if an oxide fuel form is selected for that program. Currently, DOE is evaluating both metal and oxide fuel forms for the start-up fuel. A decision on the fuel form for fast reactors will be made at a future time. The MOX Facility would not be able to produce transmutation fuel loads for advanced fast reactors as envisioned by GNEP because that fuel would contain all the transuranic elements from the recycled light water reactor fuel.

Given that the necessary GNEP fuel-related decisions are in the future, it is not reasonable to delay construction of the MOX facility to incorporate the potential GNEP required design and construction changes. Continued delays in MOX construction will result in increased costs and postpone the start of facility operations. DOE will continue to evaluate the option to use the MOX Facility in support of fast reactor start-up fuel as the requirements for GNEP are developed. In 2008, the Secretary of Energy plans to determine a path forward for GNEP.

In addition to the possibility of fabricating start-up fuel for GNEP advanced reactors, the MOX Facility could potentially provide the following capabilities:

—Disposition of additional surplus impure plutonium (currently planned for the proposed Plutonium Vitrification process at the Savannah River Site), if the chemical and isotopic impurities can be economically removed from the material; and

—Disposition of additional weapons plutonium (beyond the 34 MT) that is expected to be declared surplus as plutonium requirements are reevaluated, in connection with transformation of the nuclear weapons stockpile.

RUSSIA'S MOX COMMITMENT

Question. It is my understanding that the Russians have proposed to fulfill their commitment under the Fissile Materials Agreement to burn the plutonium in the existing BN–600 reactors and add an additional 6 reactors to burn MOX fuel. This will of course require the Russians to build a MOX fabrication facility. As far as I can tell, the Russians have yet to provide a firm commitment on their funding or schedule.

In addition, Russia's financial outlook has changed substantially from when this program was initiated. Russia now enjoys a budget surplus and earned $315 billion in oil and gas revenue last year, an increase of 96 percent from 1999.

Will U.S. negotiators demand to see a much larger contribution to the project costs from the Russians?

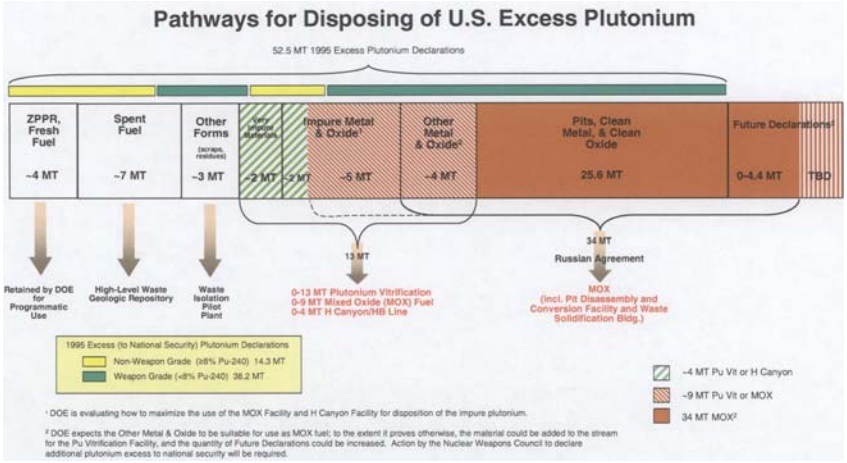
Answer. Rosatom recently provided DOE with a proposed technical plutonium disposition plan that is consistent with Russia's future nuclear energy strategy. Under this plan, Russia would irradiate weapon-grade plutonium as MOX fuel in fast reactors. Although no agreement has been reached on specific cost sharing arrangements pending final Russian Government approval of its technical disposition program, senior Rosatom officials have indicated that Russia could provide significant funding. We are currently reviewing Russia's proposed disposition plan to ensure that it is technically and financially credible, and will be discussing it further with Russian officials in the near future.

EXPANSION OF MOX

Question. When this program was first conceived back in 1998, the United States identified upwards of 50 tons of weapons-grade plutonium that was excess to the mission. Is this material still available and theoretically able to be used in producing Mixed Oxide Fuel?

Answer. In 1995, the U.S. Government declared 52.5 metric tons (MT) of plutonium (both weapon-grade and non-weapon-grade) excess to national security needs. Of that quantity, approximately 4 MT have been retained for a non-military programmatic use, approximately 3 MT of scraps and residues have been disposed of

at the Waste Isolation Pilot Plant, and approximately 7 MT in the form of spent fuel are designated for direct disposal in a high-level waste geologic repository. Of the remaining approximately 38.5 MT, a minimum of 25.6 MT is suitable for fabrication into MOX fuel, an additional approximately 4 MT is considered likely to be suitable for MOX fuel, and another approximately 5 MT might be suitable for MOX fuel after additional material analysis and characterization can be performed. To the extent the latter approximately 9 MT proves unsuitable for MOX, that material could be vitrified, and would be replaced in the 34 MT planned for disposition under the 2000 U.S.-Russian Plutonium Management and Disposition Agreement with future declarations of additional excess plutonium from weapons pits. The remaining approximately 4 MT (out of the approximately 38.5 MT) is considered unsuitable for use as MOX fuel, and would be disposed of either through vitrification or processing through Savannah River Site's H-Canyon/HB-Line facilities and subsequent disposal with the SRS waste stream. See chart below.



Question. Would the economics or design of the plant change significantly if a policy decision were made to increase the amount of plutonium to be processed through this plant?

Answer. The MOX facility is nominally designed for a 40-year life. The 34 metric tons disposition mission will require approximately 13 years. As a result, the MOX facility is capable of fabricating significant additional quantities of plutonium into MOX fuel. Once built, it will cost approximately $185 million per year to operate the MOX facility. Changes to the design of the facility are dependent on the specific characteristics of the plutonium to be fabricated into fuel in the future.

NNSA'S PLUTONIUM CONSOLIDATION AND DISPOSITION STRATEGY

Question. I am very concerned about the growing security budget and the financial impact it has on the defense and nonproliferation missions. Instead of waiting for a new multi billion dollar consolidated plutonium facility that is still years away from construction, I am more interested in taking steps now to consolidate and dispose of excess plutonium.

Can you please provide me with a written explanation of the Department's overall plutonium disposition strategy that includes schedule, estimated cost and potential impact it might have on out-year security funding.

Answer. The Department has prepared a "Business Case, Proposed Baseline Approach for Disposing of Surplus Plutonium," dated April 2007 (attached). The estimated cost, schedule, and future year funding requirements are contained in the Business Case.

BUSINESS CASE—DEPARTMENT OF ENERGY'S PROPOSED BASELINE APPROACH FOR DISPOSING OF SURPLUS PLUTONIUM, APRIL 2007

Executive Summary

This report presents DOE's plan to dispose of inventories of surplus weapons-usable plutonium[1] and includes a discounted cash flow analysis which takes into account the time value of money.[2] Data contained in the analysis are based on information provided by the National Nuclear Security Administration and the offices of Environmental Management and Nuclear Energy with input provided by Dr. David Kosson, Chair of Civil and Environmental Engineering, Vanderbilt University; Dr. Ian Pegg, Professor of Physics and Associate Director of the Vitreous State Laboratory, Catholic University; and Dr. David Gallay, Program Director, LMI Government Consulting.

DOE's proposed baseline approach is designed to accomplish the following three objectives:

—Dispose of[3] approximately 43 metric tons of surplus weapons-usable plutonium (both weapon and non-weapon grade) so that this material is rendered inaccessible and unattractive for weapons use while protecting human health and the environment. This goal is consistent with long-standing United States national security and nonproliferation policy with respect to eliminating, where possible, the accumulation of stockpiles of highly enriched uranium and plutonium;

—Encourage Russia to dispose of 34 MT of its surplus weapons plutonium consistent with the September 2000 U.S.-Russia Plutonium Management and Disposition Agreement; and

—Consolidate surplus non-pit plutonium currently stored throughout the DOE Complex in order to reduce the risks associated with storage of such materials at multiple sites and to help reduce storage and safeguards and security costs for nuclear materials.

DOE's current proposed baseline approach[4] for disposing of approximately 43 metric tons of surplus plutonium involves the following:

—Construct and operate a Mixed Oxide (MOX) Fuel Fabrication Facility, a Pit Disassembly and Conversion Facility (PDCF), and a Waste Solidification Building (WSB) to dispose of at least 34 MT of weapon-grade plutonium;

—Design, construct and operate a small-scale plutonium vitrification process in the basement level of the K-Reactor Building to vitrify up to 13 MT of non-pit plutonium[5] with high level waste; and

—Operate the existing H-Canyon/HB-Line facilities to process approximately 2 MT of plutonium-bearing materials for disposal through the Savannah River Site radioactive waste system (for vitrification with high level waste in the De-

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[1] This report addresses surplus weapons-usable plutonium covered by Public Law 107–107 and section 4306 of the Atomic Energy Defense Act, as amended. Surplus weapon-grade plutonium, as defined in the U.S.-Russia Plutonium Management and Disposition Agreement (less than 10 percent Pu–240 and withdrawn from nuclear-weapons programs) is a subset of surplus weapon-usable fissile materials.

U.S. national security and nonproliferation objectives include the disposition of 43 MT of surplus plutonium by rendering it unusable for nuclear weapons use and encouraging Russia to dispose of its surplus weapons plutonium. The 43 MT includes plutonium which has been declared surplus and some plutonium which may be declared surplus to national security defense needs in the future. This does not include surplus plutonium that already has a disposition pathway such as spent fuel, scraps, and residues. The analyses pursuant to the National Environmental Policy Act addressed the environmental impacts of disposition of up to 50 MT of such surplus weapons-usable plutonium, including plutonium that may be declared surplus in the future.

[2] This is consistent with the information used previously in DOE's 2006 report entitled, Disposition of Surplus U.S. Materials, Comparative Analysis of Alternative Approaches, and with DOE's 2007 Business Case Analysis of the Current U.S. Mixed Oxide (MOX) Fuel Strategy for Dispositioning 34 Metric Tons of Surplus Weapon-Grade Plutonium, although those reports: (1) do not discount future cash flows, and (2) the earlier studies analyzed the combined plutonium and uranium storage costs in lieu of the plutonium storage cost as described in this study.

[3] The phrase "dispose of" is used in this paper, consistent with the phraseology appearing in the 2000 U.S.-Russia Plutonium Management and Disposition Agreement. This paper addresses the costs of disposition prior to ultimate disposal (of mixed oxide spent fuel and vitrified plutonium with high-level waste) in the planned geologic repository for spent fuel and high-level waste at Yucca Mountain, Nevada.

[4] The proposed actions described in the following bullets are subject to appropriate review under the National Environmental Policy Act (NEPA), subsequent decisions, and compliance with other applicable law.

[5] This 13 MT includes approximately 2 MT of material currently proposed to be processed in the HB-Line, and vitrified in the Defense Waste Processing Facility and approximately 4 MT of material currently proposed to be fabricated into MOX fuel.

fense Waste Processing Facility) concurrent with the recovery of enriched uranium for subsequent down-blending to low enriched uranium and sale.

Based on a recent review by outside experts (cited above), and an assessment by Shaw-AREVA MOX Services (MOX contractor) of what plutonium materials can likely be fabricated into MOX fuel, DOE is currently evaluating the cost and feasibility of reducing or eliminating the mission that is currently being considered for the proposed small-scale Plutonium Vitrification process. Preliminary indications are that this approach could result in cost savings of approximately $500 million (estimated total project cost in constant 2006 dollars, excluding operating costs), although actual savings may change as the design of the small-scale Plutonium Vitrification process progresses. The Department is evaluating the feasibility of the following approach:

—Construct and operate a Mixed Oxide (MOX) Fuel Fabrication Facility, a Pit Disassembly and Conversion Facility (PDCF), and a Waste Solidification Building (WSB) to dispose of at least 39 MT of weapon-grade plutonium;

—Operate the existing H-Canyon/HB-Line facilities to process approximately 4 MT of plutonium-bearing materials for disposal through the Savannah River Site radioactive waste system (for vitrification with high level waste in the Defense Waste Processing Facility) concurrent with the recovery of enriched uranium for subsequent down-blending to low enriched uranium and sale.

Constructing and operating a Mixed Oxide (MOX) Fuel Fabrication Facility at the Savannah River Site for disposing of surplus plutonium is in the U.S. national interest and consistent with national security and nonproliferation objectives. Doing so will convert plutonium into forms not readily usable for weapons, and will encourage Russia to dispose of 34 metric tons of its excess weapons plutonium in accordance with the 2000 U.S.-Russia Plutonium Management and Disposition Agreement. Proceeding with the U.S. MOX program will also help reduce storage costs for nuclear materials, reduce safeguards and security costs, and support the Department's efforts to consolidate nuclear materials throughout the DOE Complex. The Department of Energy believes that irradiating plutonium as MOX fuel in existing commercial reactors is a prudent and effective means for disposing of surplus plutonium compared to other less mature disposition technologies.

MOX is a proven technology that has been in widespread use in Europe for over three decades. Moreover, the design of the U.S. MOX facility is 90 percent complete, the Nuclear Regulatory Commission (NRC) has issued a construction authorization, and DOE's contractor has submitted a license application to the NRC for operation of the MOX facility. In addition, MOX fuel lead assemblies, made from surplus weapons plutonium, are currently being successfully tested in a commercial reactor in South Carolina. Thus far, DOE has spent approximately $735 million on the MOX program for design, licensing, and site preparation activities as well as for the fabrication and irradiation of MOX fuel lead assemblies.[6]

DOE's proposed baseline approach provides a disposition path for the currently identified surplus plutonium that is or will be declared surplus in the future. It enables the Department to consolidate special nuclear material (SNM), including the removal of all surplus plutonium from Hanford as well as reducing the inventory of surplus plutonium at the Lawrence Livermore National Laboratory (LLNL) and the Los Alamos National Laboratory (LANL) by 2009. This would result in a reduction of existing Category I special nuclear materials storage (CAT I) facilities, and ultimately would result in the fewest number of DOE CAT I storage facilities, at the earliest date in time. The proposed consolidation would also facilitate the Department's plan to achieve its "Complex 2030" objectives, a more modern, smaller and efficient weapons complex.

As evidenced in the financial analysis, this proposed baseline approach would recover uranium and plutonium from the disposition of surplus fissile materials for energy production providing over $2 billion in revenues[7] (in constant 2006 dollars) to the U.S. Treasury. Included in this proposed baseline approach is approximately 2 MT of plutonium-bearing materials to be processed through H-Canyon/HB-Line at Savannah River. The net present value cost of this proposed approach (i.e. MOX,

[6] The approximately $735 million in sunk costs are not included in this baseline financial analysis. Sunk costs were included in the calculation of life cycle costs provided to the House Committee on Appropriations in March 2007, in accordance with specific direction from that Committee.

[7] Revenue is comprised of approximately $1.5 billion from the sale of MOX fuel and $700 million from the sale of uranium from dismantled nuclear weapons pits. Both are based on the prevailing price of uranium, which has been extremely volatile in recent years The discounted cash flow analysis used in this Business Case conservatively assumes that uranium and enrichment market prices that prevailed in November 2006 will prevail throughout the period of interest when the fuel materials will enter the market.

the proposed small-scale Vitrification, and H-Canyon) over a 28-year period is approximately $11.1 billion.

In addition to encouraging Russia to dispose of 34 metric tons of weapons plutonium, the capability to disassemble large numbers of nuclear weapons pits in the United States and fabricate the resulting plutonium into MOX fuel utilizes a mature technology and could potentially provide the following capabilities:

—Disposition of additional weapons plutonium (beyond the 34 MT) that is expected to be declared surplus as plutonium requirements are reevaluated, in connection with transformation of the nuclear weapons stockpile. While additional declarations would have to be approved by the President based on advice from the Secretaries of Defense and Energy, the MOX and PDCF facilities, once constructed and operating, could readily be used for this purpose. The Deputy Administrator for Defense Programs will specifically raise this request with the Nuclear Weapons Council.

—Currently, DOE is evaluating both metal and oxide fuel forms for use as the start-up fuel for fast reactors in support of the Global Nuclear Energy Partnership (GNEP). A decision on the fuel form for the fast reactors will be made at a future time. Given that the necessary GNEP fuel-related decisions are in the future, it is not reasonable to delay construction of the MOX facility to incorporate the potential GNEP required design and construction changes. Continued delays in MOX construction will result in increased costs and postpone the start of facility operations. DOE will continue to evaluate the option to use the MOX facility in support of fast reactor start-up fuel as the requirements for GNEP are developed. In 2008, the Secretary of Energy plans to determine a path forward for GNEP.

—Disposition of additional impure plutonium, e.g. plutonium containing levels of chlorides, fluorides and Pu-240, currently proposed to be dispositioned in DOE's proposed small-scale Plutonium Vitrification process. The Department is evaluating the cost and technical feasibility of maximizing the use of the MOX facility and reducing the mission that is currently being considered for the proposed small-scale Plutonium Vitrification process.

In conclusion, DOE's proposed baseline approach for disposing of surplus plutonium (MOX, the proposed small-scale Plutonium Vitrification process, and H-Canyon) would meet U.S. national security and nonproliferation objectives for disposing of 43 MT of surplus plutonium by rendering it unusable for nuclear weapons use, and encouraging Russia to dispose of its surplus weapons plutonium. In addition, the proposed baseline approach will help reduce storage costs for nuclear materials, reduce safeguards and security costs, and support the Department's efforts to consolidate nuclear materials within the DOE Complex.

BACKGROUND

The end of the cold war left a legacy of surplus weapons-usable fissile materials both in the United States and the former Soviet Union, leaving substantial quantities of plutonium, no longer needed for defense purposes. The global stockpiles of weapons-usable fissile materials pose a danger to national and international security in the form of potential proliferation of nuclear weapons and the potential for environmental, safety, and health consequences if the materials are not properly safeguarded and managed. In September 1993, in response to these concerns, President Clinton issued a Nonproliferation and Export Control Policy which committed the United States to seek to eliminate, where possible, the accumulation of stockpiles of highly enriched uranium or plutonium, and to ensure that where these materials already exist, they are subject to the highest standards of safety, security, and international accountability.

In early 1994, the U.S. National Academy of Sciences issued a report evaluating a number of plutonium disposition alternatives ranging from sending it into space to burying it under the ocean floor, before recommending two promising alternatives for further study: (1) fabrication and use as fuel, without reprocessing, in existing or modified nuclear reactors, or (2) immobilization in combination with high-level radioactive waste. To achieve a high degree of proliferation resistance, the National Academy of Sciences recommended that the national objective should be to make the surplus weapon-grade "plutonium roughly as inaccessible for weapons use as the much larger and growing quantity of plutonium that exists in spent fuel from commercial reactors," a state they defined as the spent fuel standard. This standard would require a form from which extraction and use in weapons of any residual plutonium and other fissile materials would be as difficult or unattractive as the recovery of residual plutonium from spent commercial fuel.

On March 1, 1995, approximately 200 metric tons of U.S.-origin weapons-usable fissile materials were declared surplus to U.S. defense needs (38.2 MT of weapon-grade plutonium and 174.3 MT of highly enriched uranium). In addition, DOE announced that it had 14.3 metric tons of other than weapon-grade plutonium that would be included in the disposition program.

Subsequently, the Department of Energy convened a team of laboratory, independent oversight and interagency experts to determine a range of reasonable disposition alternatives. Following a number of nationwide scoping meetings, the team released a screening report in March 1995 that pared 37 potential disposition options down to 11; 5 for reactor, 4 for immobilization and 2 for direct geologic disposal (deep borehole). The screening process led the Department to conclude that going beyond the spent fuel standard using advanced technologies, such as fast reactors and accelerators, was not appropriate. Such advanced options were found to require substantial additional research and development, with related increased costs and time, in order to provide the same assurance of technical viability as other, more readily available technologies.

At the April 1996 Moscow Nuclear Safety Summit, the leaders of the seven largest industrial countries and the Russian Federation issued a joint statement endorsing the need to render the surplus fissile materials (both highly enriched uranium and plutonium) in Russia and the United States to a high degree of proliferation resistance. Subsequently, former Russian President Yeltsin declared up to 50 metric tons of plutonium and 500 metric tons of highly enriched uranium as surplus to Russia's defense needs in September 1997.

Following the preparation of a Programmatic Environmental Impact Statement which evaluated various storage and disposition options, DOE issued a Record of Decision (ROD). In the 1997 ROD, DOE decided that it would consolidate the storage of weapons-usable plutonium at upgraded and expanded existing and planned facilities at the Pantex Plant in Texas and the Savannah River Site (SRS) in South Carolina, and continue the storage of weapons-usable HEU in upgraded facilities at DOE's Y–12 Plant at the Oak Ridge Reservation in Tennessee. After certain conditions were met, most plutonium stored at the Rocky Flats Environmental Technology Site in Colorado would be moved to Pantex and SRS. Plutonium stored at the Hanford Site, the Idaho National Engineering and Environmental Laboratory (INEEL), and the Los Alamos National Laboratory (LANL) would remain at those sites until disposition (or moved to storage prior to disposition). In accordance with the ROD, DOE would provide for disposition of surplus plutonium by pursuing a strategy that allowed: (1) immobilization of surplus plutonium for disposal in a repository pursuant to the Nuclear Waste Policy Act, and (2) fabrication of surplus plutonium into mixed oxide (MOX) fuel for use in existing domestic commercial light-water reactors.

In July 1998, the Department issued a draft Surplus Plutonium Disposition Environmental Impact Statement (SPD EIS) which analyzed candidate sites for plutonium disposition. The environmental consequences of siting, constructing, operating, and ultimately decommissioning the facilities under consideration for the plutonium disposition mission at one or more of four DOE sites was described in the draft SPD EIS issued in July 1998. In addition to assessing the environmental consequences of the disposition alternatives, DOE analyzed the cost and schedule differences between alternatives, taking into account information obtained during site visits, similar nuclear/industrial project costs, informal vendor quotations, previous estimates for similar equipment, parametric cost models, site-specific labor rates, and operational staffing requirements and salaries. A cost report was issued in July 1998 that focused on the differences in cost for siting the facilities at the different locations. In September 1998, at the Clinton-Yeltsin Summit, the two leaders committed their countries to enter into a bilateral plutonium disposition agreement.

In April 1999, DOE issued a Supplement to the draft SPD EIS, to address, among other things, impacts at the specific reactor sites which were identified pursuant to the contract with DOE's newly selected MOX contractor. In November 1999, DOE issued the Surplus Plutonium Disposition Final Environmental Impact Statement. This follow-on EIS evaluated the environmental impacts of conducting plutonium disposition activities at the following DOE locations: Hanford, Savannah River, Idaho National Engineering and Environmental Laboratory (INEEL) and the Pantex Plant. This was followed, in January 2000, by a decision that: the Pit Disassembly and Conversion Facility, the Mixed Oxide Fuel Fabrication Facility, and the Plutonium Immobilization Facility would be located at SRS; up to 33 MT of plutonium would be fabricated as mixed oxide fuel at the Savannah River Site; and up

to 17 MT of plutonium would be immobilized at the Savannah River Site.[8] The Department reasoned that pursuing this approach provided the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium. Further, it would send the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus weapons-usable plutonium as quickly as possible and in an irreversible manner.

Also in November 1999, DOE issued an additional cost report, Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document, which provided the full life-cycle costs for the Preferred Alternative as stated in the draft SPD EIS.

Making good on a pledge made at a 1998 Summit, the United States and Russia entered into a Plutonium Management and Disposition Agreement in September 2000 that committed each country to dispose of 34 metric tons of surplus weapon-grade plutonium.

In 2001, DOE undertook a review of U.S. plutonium disposition cooperation with Russia so as to identify a more cost-effective approach. The review considered more than 40 approaches for plutonium disposition, with 12 distinct options selected for detailed analysis (six MOX-based reactor disposition options, two advanced reactor disposition options, and four non-reactor options (immobilization and long-term storage). This resulted in a refined approach under which the United States would rely on the irradiation of MOX fuel to dispose of surplus plutonium. After preparation of a Supplemental Analysis pursuant to the National Environmental Policy Act, the Department issued an amended Record of Decision which, among other things, cancelled immobilization. Under the new approach, 34 MT of surplus plutonium would be fabricated into MOX fuel, including approximately 6.5 metric tons of impure plutonium previously destined for immobilization.

In 2006, DOE again evaluated its strategy for disposing of currently identified surplus weapons-usable plutonium, plus 26 MT of surplus highly enriched uranium for which viable disposition paths had not been identified. DOE's 2006 report titled, Disposition of Surplus U.S. Materials, Comparative Analysis of Alternative Approaches showed that all of the "going forward" various alternatives were within a few percentages of each other (in constant 2006 dollars), illustrating that monetary cost was not a major discriminating factor. In the case of storage, DOE would still have to incur the cost of disposition at the conclusion of the storage mission.

In March 2007, the Department also submitted to Congress a report titled, Business Case Analysis of the Current U.S. Mixed Oxide (MOX) Fuel Strategy for Dispositioning 34 Metric Tons of Surplus Weapon-Grade Plutonium, which included a business case rollup of going forward costs (in constant 2006 dollars) of various disposition alternatives. This report reconfirmed that the MOX approach was the most suitable disposition alternative and showed that continued storage was the most expensive alternative over time.

DESCRIPTION OF DOE'S SURPLUS FISSILE MATERIALS

In accordance with the U.S.-Russia Plutonium Management and Disposition Agreement, the MOX facility will fabricate at least 34 MT of surplus weapon-grade plutonium into MOX fuel for subsequent irradiation in existing commercial reactors. The majority of the material is comprised of surplus pits, clean plutonium metal, and clean oxide (approximately 25.6 MT). The remaining quantity of plutonium is comprised of weapon-grade oxides that are acceptable to the MOX process and from future weapons dismantlements. Some of the metal and oxides are impure, and until physical sampling, analysis and characterization can be performed on individual cans containing this material, the final quantities could vary. Based on currently available information, the 34 MT of weapon-grade plutonium is comprised of the following:

—25.6 MT of surplus plutonium pits, clean metal, and clean oxide;

—Approximately 4 MT of other metal and oxide; and

—Approximately 4.4 MT from future declarations of additional surplus pits.

In August 2006, DOE identified a small-scale plutonium vitrification process that could be used to dispose of up to 13 MT of plutonium. This 13 MT includes 4 MT of other metal and oxide that DOE currently believes are suitable for MOX and approximately 2 MT that is currently planned to be processed in the H-Canyon facility.

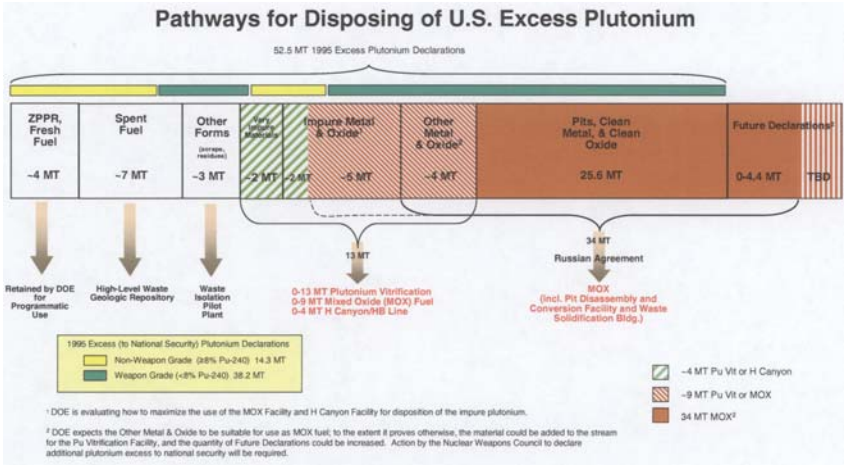
Based on currently available information, the 13 MT of plutonium is proposed to be distributed among the three facilities (MOX, the proposed small-scale Plutonium Vitrification process, and H-Canyon) based on the following material characteristics:

[8] About 4 MT of the 17 MT has been subsequently designated for programmatic use.

Disposition Approach	Quantity	Characteristics
MOX	~4 MT	Other Metal & Oxide: Clean WG (Weapon-Grade) (less than 10 percent Pu-240) Oxide and Slightly Impure WG Oxide.
Plutonium Vitrification Facility	[1] ~5 MT	Impure Metal & Oxide: Clean FG (Fuel-Grade) (greater than 10 percent but less than 19 percent Pu-240) Metal; Clean FG Oxide; Impure Plutonium Oxide with Chloride; Impure Plutonium Metal with Chloride.
	[2] ~2 MT	Impure Metal & Oxide: Power-Grade Oxide (19+ percent Pu-240); Fast Flux Test Facility Green Fuel (70 percent Uranium); Plutonium Oxide with Fluoride; Plutonium Oxide with Beryllium (Be); Plutonium Oxides and Metal with Thorium.
H-Canyon	~2 MT	Very Impure Materials: Material from 3013 Container Surveillances; Plutonium-Beryllium Metal; Plutonium-Vanadium Metal; Pu-Depleted Uranium Metal; Plutonium-Tantalum Metal; and Oxide with High Uranium Content.

[1] As discussed elsewhere in this analysis, some or all of this material may be fabricated into MOX fuel in the MOX facility.
[2] As discussed elsewhere in this analysis, some of this material may be processed in H-Canyon.

DOE will evaluate how to maximize the use of the MOX Facility for disposition of the non-pit plutonium currently being considered for the proposed small-scale Plutonium Vitrification process which is in the very early stages of design (less than 5 percent complete). DOE will continue to address technical and cost uncertainties as part of the Conceptual Design process and will arrive at a decision as to the need for the Plutonium Vitrification project as part of Critical Decision-1, planned for late 2007. The following is a graphical presentation showing the potential pathways for disposing of 52.5 MT of U.S. weapons-usable plutonium, which was declared surplus in 1995 (including spent fuel and fresh fuel retained for programmatic use), as well as plutonium which may be declared surplus in the future:



FINANCIAL ANALYSIS OF DOE'S PROPOSED BASELINE PLUTONIUM DISPOSITION APPROACH

DOE's proposed baseline approach includes a MOX Fuel Fabrication Facility, a Pit Disassembly and Conversion Facility (PDCF), and a Waste Solidification Building (WSB) to dispose of 34 MT of weapon-grade plutonium; a proposed Plutonium Vitrification process in the basement level of the K-Reactor Building to vitrify an expected 7 MT of non-pit plutonium (but potentially up to 13 MT of non-pit plutonium) currently unsuitable for fabrication into MOX fuel; and the H-Canyon/HB-Line facilities to process approximately 2 MT of plutonium bearing materials at the Savannah River Site to recover enriched uranium for subsequent down-blending and sale.

DOE uses a discounted cash flow analysis (or DCF) as the basis for its Business Case which takes into account the time value of money. The DCF method determines the present value of future cash flows by discounting them to the present using the U.S. Government's appropriate discount rate, as prescribed by OMB. This is necessary because cash flows (project related cost outflows and revenue stream

inflows from the sale of MOX fuel and down-blended low enriched uranium) occur in different time periods. This approach is consistent with the information used previously in DOE's 2006 report entitled, Disposition of Surplus U.S. Materials, Comparative Analysis of Alternative Approaches, and with DOE's 2007 Business Case Analysis of the Current U.S. Mixed Oxide (MOX) Fuel Strategy for Dispositioning 34 Metric Tons of Surplus Weapon-Grade Plutonium, although those reports do not discount future cash flows.

The underlying conditions of the economic analysis are as follows:

—The analysis is based on estimates published previously in DOE/NNSA budget documentation (updated, where appropriate) and on the approved, externally reviewed and validated MOX total project cost baseline. The analysis did not independently develop or verify any of those estimates.

—Revenues from the sale of MOX reactor fuel and uranium from dismantled pits are included, where applicable.

—All cash flows represent relevant differences in expected current and future costs and revenues among the alternatives. Previous sunk costs are not considered.

—The net present value costs are in discounted 2006 dollars.

—The common time period is 2007 through 2034 and therefore includes current year expenditures.

—The discount rate (representing the Government's time value of money) is 3 percent, as prescribed in OMB Circular A–94.

The "going forward" cost, in net present value terms and excluding sunk costs, of DOE's proposed baseline approach is approximately $11.1 billion. A detailed analysis and assumptions follow:

NET PRESENT VALUE COST TO DOE OVER A 28-YEAR PERIOD—MOX, VITRIFICATION AND H-CANYON OPERATIONS

[In millions of dollars]

Cost Element	Net Present Value Cost
MOX	3,402
PDCF	2,214
WSB	544
Other Plutonium Disposition Costs [1]	333
Vitrification	797
H-Canyon	340
Storage	3,426
Net Present Value	11,056

[1] Includes estimated costs associated with reactor modifications, reactor irradiation services, procurement of uranium feed materials, and fuel qualification.

MOX, Plutonium Disposition, H-Canyon Operations
Millions of Dollars
(Constant 2006 $)

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
		FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Real discount rate	3%																												
MOX Plant (34 MT)																													
Capital costs (TPC)		254	358	421	391	321	325	448	261	154	62																		
Operating costs (OPEX)											183	183	183	183	183	183	183	183	183	183	183	183	183	183					
Revenue (Value of MOX fuel to gov't)											-50	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-65				
Deactivation																										46			
Post-deact surv & mon w/term value																											6	6	206
Total annual cash flows		254	358	421	391	321	325	448	261	154	195	78	78	78	78	78	78	78	78	78	78	78	78	78	-65	46	6	6	206
Net present value	**$3,402**																												
PDCF (see above)																													
Capital costs (TPC)		42	49	62	154	225	257	389	365	304	191	173	127																
Operating costs (OPEX)		10	11	18	16	16	17	18						111	102	101	101	101	101	101	52								
Revenue (Value of LEU fuel to gov't)														-100	-100	-100	-100	-100	-100	-100									
Deactivation																						28							
Post-deact surv & mon w/term value																							10	10	10	10	10	10	343.3
Total annual cash flows		52	60	80	170	242	274	407	365	304	191	173	127	11	2	1	1	1	1	1	52	28	10	10	10	10	10	10	343
Net present value	**$2,214**																												
WSB (see above)																													
Captial costs																													
Capital coss TEC Costs		15.5	18.8	40	48	62.9	8.2																						
OPC Costs		4.5	3.9	4.2	8.3	12.2	6.2	3																					
Operating costs (OPEX)						4.2	20.4	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5					
Deactivation																									15				
Post-deact surv & mon w/term value																										1.5	1.5	1.5	51.5
Total annual cash flows		20	22.7	44.2	56.3	79.3	34.8	28.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	15	1.5	1.5	1.5	51.5
Net present value	**$544**																												
Other MOX Program Costs																													
Total annual cash flows		14.3	15.12	13.17	24.75	39.99	32.3	42.21	40.2	28.62	27.1	20.6	14.6	13.1	20.6	14.5	7.38	7.41	7.38	7.39	7.39	7.43	7.41	7.389	7.4	7.4	7.4		
Net present value	**$333**																												
Vitrification (7 MT)																													
Capital costs																													
Conceptual Design		10																											
TEC Costs			15	40	153	100	100	22																					
OPC Costs				10	9	9	10	20																					
Operating costs (OPEX)								40	75	75	75	75	75	75															
Total annual cash flows		10	15	50	162	109	110	82	75	75	75	75	75	75	0	0	0												
Net present value	**$797**																												
H Canyon (2 MT)																													
Operations (With Other Missions)		30	35	35	35	65	65	65	65																				
Total annual cash flows		30	35	35	35	65	65	65	65																				
Net present value (With Other Missions)	**$340**																												
Operations (Without Other Missions)		220	220	220	220	220	220	220	220																				
Total annual cash flows		220	220	220	220	220	220	220	220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net present value (Without Other Missions)	**$1,544**																												
Storage Costs (43 MT)																													
Hanford		90	75	68																									
KAMS - SRS																													
Operations		83	90	90	90	90	90	90	90	90	90	90	90	90															
S&S		56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9	56.9															
Pantex operating (w/term value)		16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	549.3
Pantex mod							10	46	46																				
LLNL		58	58	58	58	58	58	58	58																				
LANL		50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50												
Total annual cash flows		353.9	345.9	338.9	270.9	270.9	280.9	316.9	317	212.9	213	213	213	213	66	66	66	16	16	16	16	16	16	16	16	16	16	16	549.3
Net present value	**$3,426**																												

Assumptions:

—MOX construction begins August 1, 2007; the facility becomes operational in 2016 and operates through 2029.

—PDCF becomes operational in 2019 and operates through 2026.

—WSB becomes operational in 2013 and operates through 2029.

—Proposed Plutonium Vitrification process becomes operational in 2013 and operates through 2019.

—For surplus non-pit plutonium, approximately 2 MT is processed through H-Canyon/HB-Line, approximately 4 MT is processed through the MOX facility, and the remaining 7 MT is vitrified in the proposed Plutonium Vitrification process.

—All cash flows are represented in 2006 (real) dollars.

—Consolidation of surplus, non-pit plutonium to SRS begins in 2007 and is completed in 2009.

—H-Canyon/HB-Line are maintained as a safeguards Category II facility.

—The primary mission for H-Canyon/HB-Line is to process aluminum clad spent fuel and recover enriched uranium, which continues through 2019. The costs associated with the "with other missions" are the costs attributable to operating the facility for processing plutonium whereas the costs associated with the "without other missions" are the costs to operate the facility if the plutonium mission carries the full costs of facility operations. The numbers are derived from the actual annual operating costs.

—The MOX total project cost is based on the current approved project baseline ($4.8 billion). Note: The Revised Continuing Appropriations Resolution, 2007 (Public Law 110–5) provides that the Secretary of Energy may not make available funds for construction activities for the MOX facility until August 1, 2007. This delay results in an increase to the MOX total project cost which is included in the net present value calculations.

—The project cost for PDCF and WSB is based on the project data sheet in the fiscal year 2008 President's budget.

—The project costs for Plutonium Vitrification are based on the pre-conceptual cost range approved at CD–0, and are the same as those appearing in the fiscal year 2008 President's budget.

—Costs for all storage facilities are based on actual operating costs and/or those costs projected by each of the sites.

—Storage costs for LLNL and LANL continue until programmatic materials are removed consistent with Complex 2030 goals in the years 2014 and 2022 respectively. Pantex storage costs continue due to continued storage of programmatic material. Storage costs are based on the total, actual operating costs of the storage facilities for both surplus and non-surplus programmatic materials. These costs include security costs and the required staffing to operate and maintain a Category 1 Security facility. Such costs are incurred regardless of the quantity of materials stored in the facility and would be incurred so long as surplus or programmatic materials are stored at the facilities. The facilities at Pantex, LLNL, and LANL contain both programmatic and surplus materials and accordingly, storage costs would be incurred until all of the materials (surplus and programmatic) have been removed. For these reasons, it is not appropriate to allocate incremental storage costs for only surplus plutonium.

—The estimated nearer-term plutonium storage costs of $3.4 billion represent the storage costs to the Department until removal of surplus plutonium from Hanford, LLNL, and LANL pursuant to DOE's Complex 2030 and material consolidation goals. If consolidation of the surplus plutonium does not proceed and the materials continue to be stored at present locations, then an incremental storage cost of approximately $6 billion would be incurred, in addition to the future cost to dispose of the materials at a later time. Storage (without disposition) would be the most expensive option because the discounted (net present value) storage costs are within 10 percent of the proposed baseline approach and do not account for the additional cost to dispose of the material.

—The net present value costs are consistent with the information used previously in DOE's 2006 report entitled, Disposition of Surplus U.S. Materials, Comparative Analysis of Alternative Approaches, and with DOE's 2007 Business Case Analysis of the Current U.S. Mixed Oxide (MOX) Fuel Strategy for Dispositioning 34 Metric Tons of Surplus Weapon-Grade Plutonium, but differ in that: (1) the earlier studies did not discount the costs, and (2) the earlier studies analyzed the combined plutonium and uranium storage costs in lieu of the plutonium storage cost as described in this study. If DOE continues to store surplus materials at Hanford, LANL, and LLNL, cost savings from removing

plutonium pursuant with Complex 2030 initiative and materials consolidation would not be realized.

—Costs are included for construction of six magazines to increase storage efficiency for surplus pits in Zone 4 at Pantex.

—Costs of operating H-Canyon/HB-Line without other missions represent the total cost of operating H-Canyon/HB-Line and are based on actual annual operating costs. This scenario would occur if other planned missions do not take place and H-Canyon/HB-Line was operated solely for plutonium disposition.

—Revenues from the sale of MOX fuel and the uranium from dismantled pits are based on the price of uranium as of November 2006.

—A terminal value is used to assign an equivalent financial value to those activities assumed to continue indefinitely, such as storage and surveillance and monitoring.

EVALUATION OF ALTERNATIVE STORAGE AND DISPOSITION APPROACHES

The following section compares the Department's proposed baseline approach with other storage and disposition approaches on the basis of nonproliferation aspects, institutional factors, technical maturity and technical uncertainty, and cost and schedule considerations. Plutonium disposition approaches are grouped into two distinct categories. Those approaches in the first category meet U.S. national security and nonproliferation objectives concerning the disposition of surplus plutonium by rendering it unusable for nuclear weapons, and encourage Russia to dispose of its surplus weapons plutonium. Specific approaches in this category include: DOE's proposed Baseline Approach (MOX, the proposed small-scale Plutonium Vitrification process and H-Canyon/HB-Line) and Maximize Utilization of MOX and H-Canyon/HB-Line. The second category contains those approaches that fail to accomplish these objectives and include: large-scale (41 MT) Immobilization Facility and H-Canyon, Consolidate and Vitrify (~13 MT) Non-Pit Plutonium at SRS While Continuing to Store Surplus Pits at Pantex, Consolidate the Storage of Non-Pit Plutonium (~13 MT) at SRS and Store Surplus Plutonium (~43 MT) In-Place at Current Locations.

APPROACHES THAT MEET U.S. NATIONAL SECURITY AND NONPROLIFERATION OBJECTIVES

Proposed Baseline Approach (MOX, Plutonium Vitrification and H-Canyon).—The proposed baseline approach consists of: (1) construct and operate a MOX Fuel Fabrication Facility, a Pit Disassembly and Conversion Facility, and a Waste Solidification Building to dispose of 34 MT of weapon-grade plutonium; (2) design, construct and operate a plutonium vitrification process in the basement level of the K-Reactor Building to vitrify up to 13 MT of non-pit plutonium; and (3) operate the existing H-Canyon/HB-Line facilities to process approximately 2 MT of very impure plutonium bearing materials at the Savannah River Site, along with the mission to recover enriched uranium for subsequent down blending and sale.

DOE's proposed baseline approach for disposing of surplus plutonium meets all of the programmatic objectives. The detailed design of the MOX facility is about 90 percent complete, and the technology has been in use throughout Europe for three decades. The proposed Plutonium Vitrification process, on the other hand, is in the very early stages of design (less than 5 percent complete). As such, there remains uncertainty associated with the design and cost estimates and therefore, future cost growth is likely. DOE will continue to address technical and cost uncertainties as part of the Conceptual Design process. The MOX fuel fabrication facility, once operational, could potentially provide the following capabilities: disposition of additional plutonium from future weapons dismantlement, if declared surplus; possible fabrication of start-up fuel for GNEP fast reactors depending on fuel form selected and the 2008 determination of the GNEP path forward by the Secretary of Energy; and disposition of additional surplus impure plutonium (currently planned for Plutonium Vitrification), if the chemical and isotopic impurities can be economically removed from the material. This approach will incur additional costs if there is delay in pursuing the currently planned program.

Maximize Utilization of MOX and Operate H-Canyon (MOX and H-Canyon).—Construct and operate a MOX Fuel Fabrication Facility, a Pit Disassembly and Conversion Facility, and a Waste Solidification Building to dispose of approximately 39 MT of weapon-grade and fuel-grade plutonium, and to operate the existing H-Canyon/HB-Line facilities to process approximately 4 MT of certain impure and very impure plutonium bearing materials at the Savannah River Site, together with the mission to recover enriched uranium for subsequent down blending and sale.

As with the proposed baseline approach, this approach meets all of the programmatic objectives. Overall, it has the highest degree of technical maturity and is therefore likely to have the least unplanned programmatic cost growth. The pro-

posed small-scale Plutonium Vitrification process is in the very early stages of design (less than 5 percent complete). As such, there remains uncertainty associated with the design and cost estimates and therefore, future cost growth is likely. DOE will continue to address technical and cost uncertainties as part of the Conceptual Design process. Engineers are currently evaluating the cost and technical feasibility of maximizing the use of the MOX facility and reducing the mission that is currently proposed for the small-scale Plutonium Vitrification process. If feasible, it could permit DOE to use MOX and H-Canyon to dispose of the approximately 43 metric tons of surplus plutonium. Preliminary indications are that this approach may result in cost savings of approximately $500 million (estimated total project cost in constant 2006 dollars, excluding operating costs) when compared to the proposed baseline approach, although actual savings may change as the design of the small-scale Vitrification process progresses. Moreover, this approach would require minor modifications to the H-Canyon. As mentioned above, the MOX fuel fabrication facility, once operational, could potentially provide the following capabilities: disposition of additional plutonium from future weapons dismantlement, if declared surplus; and possible fabrication of start-up fuel for GNEP fast reactors depending on a decision by the Secretary of Energy on the scope of the GNEP program scheduled for June 2008.

APPROACHES THAT FAIL TO MEET U.S. NATIONAL SECURITY AND NONPROLIFERATION OBJECTIVES

Immobilization Facility and H-Canyon.—Under this approach, DOE would design, construct, and operate a new, large-scale (approximately 41 MT) stand-alone Plutonium Immobilization Plant (using ceramification technology, since immobilization of such a large amount of plutonium would not be feasible using vitrification in a borosilicate glass due to the high radiation levels produced). A Pit Disassembly and Conversion Facility would be needed to take apart nuclear weapons cores and convert the resulting plutonium metal to an oxide form for ceramification as would a Waste Solidification Building. Operation of the existing H-Canyon/HB-Line facilities would be used to process approximately 2 MT of plutonium bearing materials at the Savannah River Site, together with the mission to recover enriched uranium for subsequent down blending and sale.

This approach is likely to be seen by Russia as being inconsistent with the U.S.-Russia Plutonium Management and Disposition Agreement and is unlikely to encourage Russia to dispose of its surplus weapon-grade plutonium. Russia continues to view immobilization as another form of storage because it does not degrade the isotopics of the weapon-grade plutonium as would irradiation in a nuclear reactor. Therefore, Russia continues to believe that weapon-grade plutonium from the immobilized waste form could be retrieved for use in new nuclear weapons. This approach does support the program objectives of consolidating and disposing surplus plutonium in support of Complex 2030 and related DOE goals. Plutonium immobilization maintains the commitment to U.S. nonproliferation goals by potentially dispositioning 43 MT of plutonium in an intrinsically theft resistant form. The ability to complete the 41 MT immobilization mission with high level waste located at the Savannah River Site is not possible, however, because of an insufficient quantity of high level waste needed to fill the waste canisters, in order to provide an intrinsically self protecting theft-resistant form. Immobilization[9] of plutonium in a ceramic matrix also has a high degree of technical uncertainty because of the relatively low technical maturity associated with this technology. As a result, substantial future cost growth to accomplish plutonium immobilization is likely, and the overall programmatic cost is expected to be greater than DOE's current planned baseline program. In addition, significant program delays are likely because of the currently low technical maturity of this option, coupled with required new evaluations associated with such a major program change (e.g., extensive research and development, facility design and construction are likely to mean that an Immobilization Facility could not become operational for an additional 12–14 years).

Consolidate and Vitrify Non-Pit Plutonium at SRS and Continue to Store Pits at Pantex.—Design, construct and operate a Plutonium Vitrification process in the basement level of the K-Reactor Building to vitrify up to 13 MT of non-pit plutonium; operate the existing H-Canyon/HB-Line facilities to process approximately 2 MT (included in the preceding 13 MT) of plutonium bearing materials at the Savan-

[9] Immobilization of plutonium in a ceramic form has never been done before and designs for an immobilization facility do not exist. This approach would require extensive research and development followed by a detailed engineering effort to design an immobilization facility. This approach is likely to take between 10–12 years before construction can begin and result in significant cost increases and schedule delays.

nah River Site, with the mission to recover enriched uranium for subsequent down blending and sale, and continue to store DOE's inventory of surplus pits at Pantex.

This alternative approach would result in the disposition of approximately 13 MT of mostly non-weapon-grade plutonium but leaves thousands of surplus nuclear weapon pits in storage at Pantex. Thus, this approach does not meet U.S. national security and nonproliferation objectives with respect to rendering DOE's entire inventory of surplus plutonium unusable for future weapons use and does not encourage Russia to dispose of its surplus weapons plutonium. Upgrades would be needed at Pantex to continue to store the surplus nuclear weapons pits. As stated previously, the proposed small-scale Plutonium Vitrification process is in the very early stages of design (less than 5 percent complete). As such, there remains uncertainty associated with the design and cost estimates and therefore, future cost growth is likely.

Consolidate the Storage of Non-Pit Plutonium at SRS.—Under this approach, DOE would: consolidate the storage of up to 13 MT of non-pit plutonium from Hanford, Los Alamos National Laboratory and Lawrence Livermore National Laboratory at SRS; continue to operate the existing H-Canyon/HB-Line facilities to process approximately 2 MT of plutonium bearing materials together with the mission to recover enriched uranium for subsequent down blending and sale; and continue to store indefinitely DOE's inventory of surplus nuclear weapons pits at Pantex.

This alternative approach would not meet U.S. national security and nonproliferation objectives with regard to disposing of 43 MT of surplus plutonium by rendering it unusable for nuclear weapons use and would not encourage Russia to dispose of its surplus weapons plutonium. Since it would also fail to provide a disposition pathway out of the Savannah River Site for surplus plutonium brought there for disposition, existing law currently prohibits the further shipment of this plutonium to SRS under certain circumstances to achieve consolidation. This approach would not prevent the accumulation of stockpiles of surplus plutonium, deferring final disposition decisions and costs until the future. Upgrades would still be needed at Pantex to continue to store thousands of surplus nuclear weapons pits.

Store Surplus Plutonium In-Place at Current Locations.—DOE would continue to store surplus plutonium at current locations, i.e., Savannah River Site, Pantex, Hanford, Los Alamos National Laboratory and Lawrence Livermore National Laboratory. Under this approach, the existing H-Canyon/HB-Line facilities would process approximately 2 MT of plutonium bearing materials already at the Savannah River Site, with the mission to recover enriched uranium for subsequent down blending and sale.

This alternative approach would not meet U.S. national security and nonproliferation objectives. It would not meet U.S. obligations under the 2000 U.S.-Russia Plutonium Management and Disposition Agreement and would not encourage Russia to dispose of its surplus weapons plutonium. This approach would defer final disposition decisions and costs until some time in the future. Storage costs, discounted to the present, are within approximately 10 percent of DOE's planned baseline disposition costs, over the equivalent time period.[10] At the conclusion of the storage period, DOE would still have to fund an expensive disposition program, or continue to pay storage costs.

CONCLUSION

DOE's proposed baseline approach for disposing of surplus plutonium (MOX, proposed small scale Plutonium Vitrification process, and H-Canyon) would meet U.S. national security and nonproliferation objectives for disposing of 43 MT of surplus plutonium by rendering it unusable for nuclear weapons use, and would provide the best chance of encouraging Russia to dispose of its surplus weapons plutonium. In addition, the proposed baseline approach would help reduce storage costs for nuclear materials, reduce safeguards and security costs, and support the Department's efforts to consolidate nuclear materials within the DOE Complex.

The detailed design of the MOX facility, a key element of the baseline approach, is about 90 percent complete, and the technology has been in use throughout Europe for three decades. The Nuclear Regulatory Commission (NRC) has authorized construction and DOE's contractor has submitted a license application to the NRC for operation of the MOX facility. In addition, MOX fuel lead assemblies, containing surplus weapons plutonium, are currently being successfully tested in a commercial

[10] The 2007 Business Case Analysis of the Current U.S. Mixed Oxide (MOX) Fuel Strategy for Dispositioning 34 Metric Tons of Surplus Weapon-Grade Plutonium showed that storage costs in constant 2006 dollars for 50 years of storage would be $15.45 billion and would exceed the base case costs.

nuclear reactor in South Carolina and the irradiation of MOX fuel will generate electricity through which revenues are produced for the U.S. Treasury. Moreover, the MOX fuel fabrication facility, once operational, could potentially provide the following capabilities: disposition of additional plutonium from future weapons dismantlement, if declared surplus; possible fabrication of start-up fuel for GNEP fast reactors depending on a decision by the Secretary of Energy on the scope of the GNEP program scheduled for June 2008; and disposition of additional surplus impure plutonium (currently planned for Plutonium Vitrification), if the chemical and isotopic impurities can be economically removed from the material.

CYBER SECURITY FUNDING—INSUFFICIENT TO ADDRESS THE RISK

Question. It is clear that the cyber budgets have failed to keep pace with the enormous investment in physical security, despite the fact that every day of the year our classified network is attacked thousands of times by foreign entities looking for access to our national security secrets.

Has the NNSA requested a risk analysis of the Department's massive physical security buildup vs. the limited investment it has made in cyber security?

Answer. In December 2006, the NNSA Chief Information Officer (CIO) requested that a cyber security risk analysis be completed by each Site. The preliminary analyses were to be completed by February 2007, and the final analyses and reports are due to be completed in May 2007. After the NNSA CIO works with sites to identify and quantify the risks, the Administrator must review the risks of both cyber and physical and distribute the budget submission accordingly. In addition to the risk analysis, in 2007, the NNSA OCIO will publish a cyber security threat statement and risk assessment methodology to be used consistently across the NNSA complex.

Question. Considering that our country is constantly under cyber attack, wouldn't you agree that an independent review of the investment over the past several years would be helpful to know if we accurately assessed the risks by making physical security our priority?

Answer. Independent reviews of cyber and physical security are conducted annually by the Office of Independent Assessment (OA) and by the Office Inspector General (OIG). Cyber security has increasingly become a priority over the past several years, and budget requests reflect a change in the "balancing" of risks based on a revitalization of the cyber security program within DOE and NNSA.

CYBER SECURITY FUNDING—INSUFFICIENT TO ADDRESS THE RISK

Loss of Personal Data

Question. It greatly disturbs me that a subcontractor was able to walk out of Los Alamos lab with classified material last October, but I am equally frustrated with the numerous instances where the Federal Government has failed to protect personal information of employees. Last year, computer hackers were able to steal 1,500 names from NNSA's Albuquerque Service Center.

What is the Department doing to encrypt and protect personal employee data to ensure that information has the same level of protection that applies to classified information?

Answer. The Department's CIO published policy on the handling of Personally Identifiable Information (PII) in July 2006. The NNSA CIO further published implementing guidance in August 2006 that outlines the requirements for protection and reporting of PII and PII related information. These guidelines are in compliance with the OMB requirements for PII. In addition, the DOE and NNSA procured encryption software for use throughout the Department to facilitate the requirements implementation.

SUBCOMMITTEE RECESS

Senator DORGAN. This hearing is recessed.

[Whereupon, at 4:04 p.m., Wednesday, April 18, the subcommittee was recessed, to reconvene subject to the call of the Chair.]