

**Statement of Thomas P. D'Agostino  
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U.S. Department of Energy  
Before the  
Senate Committee on Armed Services  
Subcommittee on Strategic Forces**

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**Introduction**

Mr. Chairman, thank you for the opportunity to appear before you today to discuss nuclear weapons policies and programs. My remarks today focus on the Reliable Replacement Warhead (RRW) program and our planning for the future nuclear weapons complex infrastructure—we call it Complex 2030. This is my first appearance before this Committee as the Acting Department of Energy (DOE) Under Secretary for Nuclear Security and Acting Administrator for the National Nuclear Security Administration (NNSA) and I want to thank all of the Members for their strong support for critical national security activities.

My testimony today will focus on the broad strategic context for our nuclear weapons program and, more specifically, describe how the experiences gained and lessons learned over the past 15 years have shaped where we are today and where we are heading in our efforts to “transform” the nuclear weapons stockpile and supporting infrastructure. I will do this by addressing the following questions:

- What is the role of nuclear weapons in the post-Cold War era?
- What was our original strategy for sustaining the stockpile and supporting infrastructure?
- Why do we need to adjust that strategy and why now?
- Where do we want to be in 2030?
- How is our RRW strategy consistent with non-proliferation and arms control?

**What is the role of nuclear weapons in the post-Cold War era?**

The policies guiding our nuclear weapons programs, and our strategic capabilities more generally, evolve from the 2001 Nuclear Posture Review (NPR), the follow-on Strategic Capabilities Assessment (which led to the dramatic reductions in the nuclear weapons stockpile approved by the President and announced in May 2004), the 2006 Quadrennial Defense Review, and the efforts of the Nuclear Weapons Council leading up to the RRW design selection announcement earlier this month.

The totality of this work has resulted in a number of conceptual breakthroughs in our thinking about nuclear forces—breakthroughs that have enabled concrete first steps in the transformation of our nuclear forces and capabilities. The recognition of a more dynamic and uncertain geopolitical threat environment but one in which Russia does not pose an immediate threat, the broad reassessment of the defense policy goals that we want nuclear forces to serve, and the evolution from a threat-based to a capabilities-based strategic force posture have enabled dramatic reductions in the nuclear force as well as reductions in operationally-deployed strategic warheads that were codified in the Moscow Treaty. This has also led to the deep reduction in the total nuclear warhead stockpile required to support operationally-deployed forces.

In response to the new and changing global environment, the United States has appropriately reduced its reliance on nuclear forces. Precision conventional strike and missile defenses are playing a relatively larger role in our overall security strategy and help strengthen deterrence by providing the President with a broader range of response options that can convince adversaries that any aggressive plans would not succeed. But nuclear weapons are still an important component of our security. Moreover, as we continue to draw down nuclear forces, we intend to rely more on a nuclear weapons R&D and manufacturing infrastructure that can respond in a timely manner and decisively to any new threats that do emerge. The concept that in an uncertain threat environment we can achieve defense policy goals by relying less on “inventory” and more on “capability to produce” was a profound outcome of the NPR.

What then is the role of nuclear weapons? Why, after the Cold War, are we retaining any nuclear weapons at all? And why are we retaining the number we plan to retain? All are fair questions. The last one is, of course, a work in progress—the President has said that he seeks the lowest number of weapons consistent with our nation’s security and has moved aggressively to that end since taking office. He has authorized a reduction in the stockpile by nearly a factor of two since assuming office. (Details about this reduction, and the rationale for the size and composition of the remaining stockpile were provided in the classified May 2004 Report to Congress on the Revised Nuclear Warhead Stockpile Plan.) As a result of this and earlier reductions, the stockpile today is one-quarter its size at the end of the Cold War.

Several nations currently possess nuclear, chemical, and/or biological weapons, and the means to deliver these weapons, and have given no indication they are willing to give them up. But the rationale for our own nuclear forces is broader. Quite simply, U.S. nuclear weapons:

- Deter nuclear and other weapons of mass destruction (WMD) threats against the U.S., its forces, and its allies. This implies an ability to hold at risk those elements of power that a potential adversary values. While we should not expect that our nuclear weapons will deter terrorist WMD threats, they can deter transfer of nuclear weapons and other WMD from rogue states to terrorist groups.
- Deter large-scale wars of aggression against the U.S. or its allies.
- Dissuade potential adversaries from trying to match or exceed our nuclear capabilities or from engaging in strategic competition. This requires that we maintain a combination of forces and infrastructure so that a future competitor seeking to gain some nuclear

advantage would conclude that its buildup could not occur more quickly than the U.S. could respond.

- Assure allies of our continuing commitment to them and of our ability to make good on that commitment—the implication is that nuclear forces must be effective and reliable. This strengthens our ties with allies and also serves our non-proliferation objectives because those allies with the capability to develop nuclear weapons can continue to forego doing so, safe in the knowledge of the reliability of the U.S. nuclear umbrella.

More broadly, nuclear forces are the nation’s “insurance policy” for an uncertain future and remain a key element of U.S. national security strategy. As a result, NNSA must continue to assure the safety and reliability of the U.S. nuclear stockpile and, consistent with the President’s direction to continue a nuclear test moratorium, do so without nuclear testing.

### **What was our original strategy for sustaining the stockpile and supporting infrastructure?**

What post-Cold War, post-nuclear testing strategy did we decide would best sustain the stockpile and supporting infrastructure? In the years following the end of the Cold War, budgets for nuclear weapons programs were in “free fall”—funding was simply not available to sustain both R&D and production capabilities. A strategic decision was made to sustain and strengthen weapons program scientific and technical activities in order to ensure a future capability to certify the stockpile. While this was a reasonable decision given the limited resources at that time, in effect we mortgaged the present to ensure the future.

That future was seen as science-based stockpile stewardship and life extension of our Cold War legacy warheads.

When the U.S. stopped nuclear testing in 1992, it sought to replace this critical tool with a Stockpile Stewardship Program (SSP) that emphasized science and technology coupled with a vigorous experimental program as a means to understand better the physics and chemistry of nuclear weapons and their operation, and provided enhanced warhead surveillance tools so that we would have a much better chance of detecting the onset of problems in the stockpile.

The goal of the SSP has been to predict the effects of aging in our warheads so that we could replace aging components before they degraded overall system reliability. The end of the Cold War provided this opportunity—our focus was no longer on a continuous cycle of fielding new warheads to provide new military capabilities, but on sustaining existing nuclear capabilities.

We call this “life extension”—the process of observing the aging of individual components of warheads and replacing them before they fail. Consider this challenge. Your 1965 Ford Mustang, which you maintain as a collector’s item, has been sitting in your garage for 40 years. You monitor it for such items as a clogged carburetor, corrosion in the engine block, battery discharge, etc. and you replace parts when you deem it necessary. But you don’t get to start the engine and take it for a test drive. The trick is to assure that if you do need it right away that it would work with certainty. That’s what we have to do in a nuclear weapons “life extension program” or “LEP.”

By the mid-1990's we had embarked on a program to acquire the new tools of stockpile stewardship—advanced computing, high energy density physics capabilities, modern diagnostics facilities, enhanced surveillance, etc.—that would provide the best available alternative to nuclear tests to assure continued confidence in stockpile safety and reliability. Since then, we have made good progress in acquiring and employing these new capabilities.

In 2001 when this administration took office, it thus inherited:

- A strong science base and surveillance program.
- A safe and reliable, but aging stockpile, with serious questions about the future.
- A plan for warhead life extension (but no new development programs underway).

But, it also inherited a deteriorating or non-functioning manufacturing complex characterized by:

- Protracted underfunding
- Idled production capabilities
- Inability to produce plutonium parts
- Inability to produce/extract tritium
- Key facilities not being maintained
- Overly risk averse culture
- Aging workforce

To be fair, some declining production capabilities were not needed at that time to support the stockpile. And we were able, after several years delay, to rebuild components for the W87 LEP which commenced in the 1990's and completed in 2004. While we couldn't produce tritium, we didn't need to then because the large reductions in the stockpile at the end of the Cold War ensured adequate tritium reserves for an extended period for remaining warheads. Nonetheless, by not maintaining some key production capabilities, we ran additional risks in terms of not being responsive to unanticipated events.

Despite problems with the production infrastructure, follow-on efforts to the 2001 NPR led to a substantial reduction in the size of the nuclear stockpile. But, because we couldn't produce warheads when and if they were needed—to hedge technical problems in the stockpile or adverse geopolitical changes—we still had to maintain a larger stockpile than desired.

As a result, and in response to the NPR's call for a more responsive defense R&D and manufacturing infrastructure, we began to restore a balance in the overall program by:

- Continuing to fund R&D and aggressive stockpile surveillance,
- Implementing comprehensive stockpile life extension programs, and
- Restoring lost production capabilities and modernizing others as required.

The NPR was instrumental in our receiving additional resources to restore this balance. Indeed, over the past few years we have made substantial progress including initial steps to achieve the Complex 2030 vision for modernizing the nuclear weapons infrastructure. Specifically, we

- Restored tritium production and extraction from irradiated assemblies in TVA reactors,
- Restored key uranium operations at Y-12 in time to meet demanding LEP schedules,
- Recruited/retained strong workforce with the right skills for the mission,
- Are recapitalizing facilities suffering from years of deferred maintenance,

- Are implementing plans to ramp up to an interim plutonium pit production capacity of 30-50 pits per year at Los Alamos by 2012,
- Are reducing the number of sites with Category I/II special nuclear materials (SNM) and consolidating such material within the remaining sites,
- Are dramatically accelerating dismantlement of retired warheads, and
- Are streamlining and improving business practices including managing risk more effectively (e.g., recent success in increasing throughput at our Pantex facility).

But we have a ways to go including defining the right path to restore our ability to produce plutonium components in sufficient quantity to support the long-term needs of the stockpile.

### **Why do we need to adjust that strategy and why now?**

In 2003 we “took stock” of ten years of the SSP and came to some important conclusions. Let me first reemphasize that the SSP is working—today’s stockpile remains safe and reliable and does not require nuclear testing. This assessment is based on a foundation of past nuclear tests augmented by cutting edge scientific and engineering experiments and analysis including improved warhead surveillance. Most importantly, it derives from the professional (and independent) judgment of our lab directors advised by their weapons’ program staffs.

As we continue to draw down the stockpile, however, 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 national laboratories raised concerns about their ability to assure the reliability of the legacy stockpile over the very long term absent nuclear testing.

The evolution away from designs certified with underground nuclear tests, resulting from inevitable accumulations of small changes over the extended lives of these highly-optimized systems, is what gives rise to the concerns.

While we are confident that the stockpile stewardship program is working and that today’s stockpile is safe and reliable, it is only prudent to explore alternative means to manage risk in seeking to ensure stockpile reliability over the long term.

This is, in part, the impetus for our work on RRW: to ensure sustainment of the military capabilities provided by the existing stockpile, not develop warheads for new or different military missions.

A second major driver was the realization after 9/11 that the security threat to our nuclear warheads 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 from that time. Major enhancements in security are not easily available via retrofits in the legacy stockpile.

Specifically, the RRW program is examining the feasibility of providing replacement warheads for the legacy stockpile. Relaxing Cold War design constraints that sought maximum yield in a minimum size/weight package will allow design of replacements that are easier and less costly to manufacture, are safer and more secure, eliminate environmentally dangerous materials, and increase design performance margins, thus ensuring long-term confidence in reliability.

RRW, therefore, also offers a means to transform to a much more efficient and responsive, much smaller, and, we believe, less costly nuclear weapons R&D and production infrastructure.

In 2005, an RRW design competition was initiated involving two independent teams from our nuclear weapons design labs—Lawrence Livermore and Los Alamos, both working with Sandia. A competition of this sort has not taken place in more than two decades, and the process has provided a unique opportunity to train the next generation of nuclear weapons designers and engineers.

Last November, the joint DoD-DOE Nuclear Weapons Council concluded that RRW was a feasible strategy to sustain the nuclear stockpile over the long term.

In March 2007, the NNSA and DoD jointly announced the results of the design competition. The Lawrence Livermore/Sandia design was selected, and an integrated design team led by those two labs will head up joint efforts to develop a replacement warhead for a portion of the nation's sea-based nuclear deterrent. I want to emphasize that this announcement addressed selection of a baseline design for RRW in order to develop a detailed cost, scope and schedule; it was not a decision to begin engineering development of a warhead.

The need to start RRW now is driven by two basic reasons. First, the introduction of the RRW system provides the benefit of additional diversity in the nation's sea-based nuclear force. RRW will replace a portion of W76 warheads deployed on the Trident SLBM system. That particular warhead comprises a very high percentage of our planned future strategic nuclear deterrent force under the Moscow Treaty and an even larger fraction of the force available on a day to day basis. Although we have not uncovered any problems with the W76, it is prudent to hedge against a catastrophic failure of that system by introducing a genetically-diverse warhead design into the SLBM force. Our ability over the next 15 years to produce new plutonium parts for the RRW is very limited—the sooner we start the sooner we can achieve this diversity.

Second, the RRW effort has provided a critical opportunity to ensure the transfer of nuclear design skills from the generation that honed these skills with nuclear testing to the generation that will replace them. In five years, nearly all of that older generation will be retired or dead. Without this opportunity coming at this time (and not five years hence), we would not be able to sustain and transfer the key knowledge and skills necessary to maintain the nuclear stockpile.

Finally, 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 approach. 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 for as long as they are needed, but to our efforts to design, develop and

produce replacement warheads that are safer, more secure, more reliable, and cost-effective over the long term without the need for nuclear testing.

### **Where do we want to be in 2030?**

We seek a Complex 2030 infrastructure that can respond on needed timescales to technical problems in the stockpile or emerging geopolitical threats. Such an infrastructure will provide, sustained long-term confidence in stockpile reliability, enhanced stockpile safety and security, a smaller stockpile with reduced likelihood of requiring future underground nuclear tests, excellence in weapons-related science and R&D, a modernized, fully capable, warhead manufacturing facilities with a production capacity of about 100 warheads per year (not the 2000 warheads per year capacity we had during the Cold War), and periodic exercise of key nuclear design capabilities that have lain dormant for two decades.

With such an infrastructure we believe that we can achieve reduced DOE and DoD ownership costs for nuclear forces over the long term. A smaller stockpile means a lower overall cost to certify, remanufacture, refurbish, and dismantle warheads. A complex in which we consolidate nuclear materials in fewer locations will help contain ever-increasing resources devoted, post-9/11, to physical security. Finally, we will continue to reduce costs by more efficient business practices, including better management of the safety and security risks inherent to our work.

### **How is our RRW strategy consistent with non-proliferation and arms control?**

The RRW strategy itself has positive implications for non-proliferation.

These warheads, by design, will not provide a new role for nuclear weapons or new military capabilities but will help sustain the military capabilities of the existing nuclear arsenal.

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 supports overall U.S. efforts to dissuade other nations from conducting nuclear tests.

In fielding RRWs, we will not be increasing the size of the stockpile. These warheads will replace existing warheads on at most a one-for-one basis.

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 go much further in eliminating spare warheads—further reducing the nuclear stockpile and, along with a host of other activities, demonstrating our commitment to Article VI of the Nonproliferation Treaty (NPT).

Our near-term strategy also includes an increased rate for dismantling warheads that are retired from the stockpile. Warhead dismantlements ensure that stockpile and infrastructure transformation is not misperceived by other nations as “restarting the arms race.”

A safe, secure and reliable U.S. nuclear deterrent, credibly extended to allies, supports U.S. non-proliferation policy because allies that are confident in U.S. extended nuclear deterrence guarantees will not be motivated to develop and field their own nuclear forces. This non-proliferation role of U.S. nuclear weapons is often underestimated.

Finally, we should not forget that the human capital and technical expertise built up over decades to support nuclear weapons programs are the same resources that support nonproliferation, arms control and threat reduction efforts. The linkages and synergies among these programs enhance overall security.

## **Conclusion**

Let me conclude by summarizing my basic message:

- To meet its own security needs and those of its allies, the United States will need a safe, secure, and reliable nuclear deterrent for the foreseeable future. We will achieve this with the smallest nuclear stockpile consistent with our nation's security.
- We see increased risk, absent nuclear testing, in assuring the long-term reliability of today's stockpile—i.e., the legacy warheads left over from the Cold War—that undergo a continuous process of aging, and refurbishment of aging components, and consequently accumulate small changes away from the original tested and certified designs.
- Today's nuclear weapons complex is not sufficiently "responsive" to technical problems in the stockpile or to possible adverse geopolitical change.
- Our task is to work to ensure that the U.S. nuclear weapons enterprise, including the stockpile and supporting infrastructure, meets long-term national security needs.
- Our approach is to develop and field replacement warheads for the legacy stockpile as a means to transform both the nuclear stockpile and supporting infrastructure.
- These warheads will have enhanced safety and security features.
- We intend to accomplish all of this in a manner fully consistent with our obligations under the NPT and without requiring underground nuclear tests.

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.



Our FY 2008 Budget Request for Weapons Activities follows along with a statistical appendix that contains the budget figures supporting our Request. I look forward to answering any questions on the justification for the requested budget.

## **ATTACHMENT**

### **FY 2008 BUDGET REQUEST FOR WEAPONS PROGRAM ACTIVITIES**

The President's FY 2008 Budget Request for NNSA totals \$9.4 billion, an increase of \$306 million or 3.4 percent over the FY 2007 operating plan. We are managing our program activities within a disciplined five-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 five years as required by Sec. 3253 of P.L. 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 five-year fiscal period, in a level of detail comparable to that contained in the budget.

The FY 2008-2012 Future Years Nuclear Security Program -- FYNSP -- projects \$50.0 billion for NNSA programs through 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 FY 2008 request 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 FY 2008 Budget Request for the programs funded within the Weapons Activities Appropriation is \$6.51 billion, an approximately 3.8 percent increase over the FY 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 FY 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 FY 2008, we are requesting \$1.45 billion for DSW, an increase of \$21.5 million over the FY 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 FY 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 FY 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 FY 2005 and FY 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 FY 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 FY 2008 request for the six Campaigns is \$1.87 billion, a \$113 million decrease from the FY 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 modestly 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 FY 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 FY 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 FY 2008, the Budget Request includes \$215.6 million for Secure Transportation Asset (STA) Program, an increase of \$6 million from the FY 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 SafeGuards Transporters (SGT) in operation by two per year, with a target total of 51 in FY 2014. Due to resource constraints, SGT production has been slowed from three to two 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 FY 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 FY 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 FY 2008 Request for Defense Nuclear Security is \$744.8 million, an increase of \$121 million above the FY 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 FY 2008; Lawrence Livermore National Laboratory in FY 2008; the Nevada Test Site in FY 2009; the Y-12 National Security Complex in FY 2011; and, LANL in FY 2011. During FY 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 FY 2008 Request for Cyber Security is \$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.

# **National Nuclear Security Administration**

**Appropriation and Program Summary Tables  
Outyear Appropriation Summary Tables**

**FY 2008 BUDGET TABLES**



## National Nuclear Security Administration Appropriation and Program Summary

(dollars in millions)

	FY 2006 Current Appropriations	FY 2007 Operating Plan	FY 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 FY 2006 column includes an across-the-board rescission of 1 percent in accordance with the Department of Defense Appropriations Act, 2006, P.L. 109-148.

The NNSA budget justification contains information for five years as required by Sec. 3253 of P.L. 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 five-year fiscal period, in a level of detail comparable to that contained in the budget.

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

(dollars in millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 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

	(dollars in thousands)		
	FY 2006 Current Appropriation	FY 2007 Operating Plan	FY 2008 Request
<b>Weapons Activities</b>			
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
Environmental Projects and Operations	0	0	17,518
Safeguards and Security	797,751	761,158	881,057
Other	0	17,000	0
<b>Subtotal, Weapons Activities</b>	<b>6,425,031</b>	<b>6,308,583</b>	<b>6,545,312</b>
Use of Prior Year Balances			
Security Charge for Reimbursable Work	-32,000	-33,000	-34,000
Use of Prior Year Balances	-37,734	0	0
<b>Total, Weapons Activities</b>	<b>6,355,297</b>	<b>6,275,583</b>	<b>6,511,312</b>

**Public Law Authorization:**

John Warner National Defense Authorization Act for FY 2007 (P.L. 109-364)

## Outyear Funding Profile by Subprogram

	(dollars in thousands)			
	FY 2009	FY 2010	FY 2011	FY 2012
<b>Weapons Activities</b>				
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
<b>Subtotal, Weapons Activities</b>	<b>6,740,000</b>	<b>6,940,000</b>	<b>7,148,000</b>	<b>7,362,000</b>
Security Charge for Reimbursable Work	-35,000	-36,000	-37,000	-38,000
<b>Total, Weapons Activities</b>	<b>6,705,000</b>	<b>6,904,000</b>	<b>7,111,000</b>	<b>7,324,000</b>