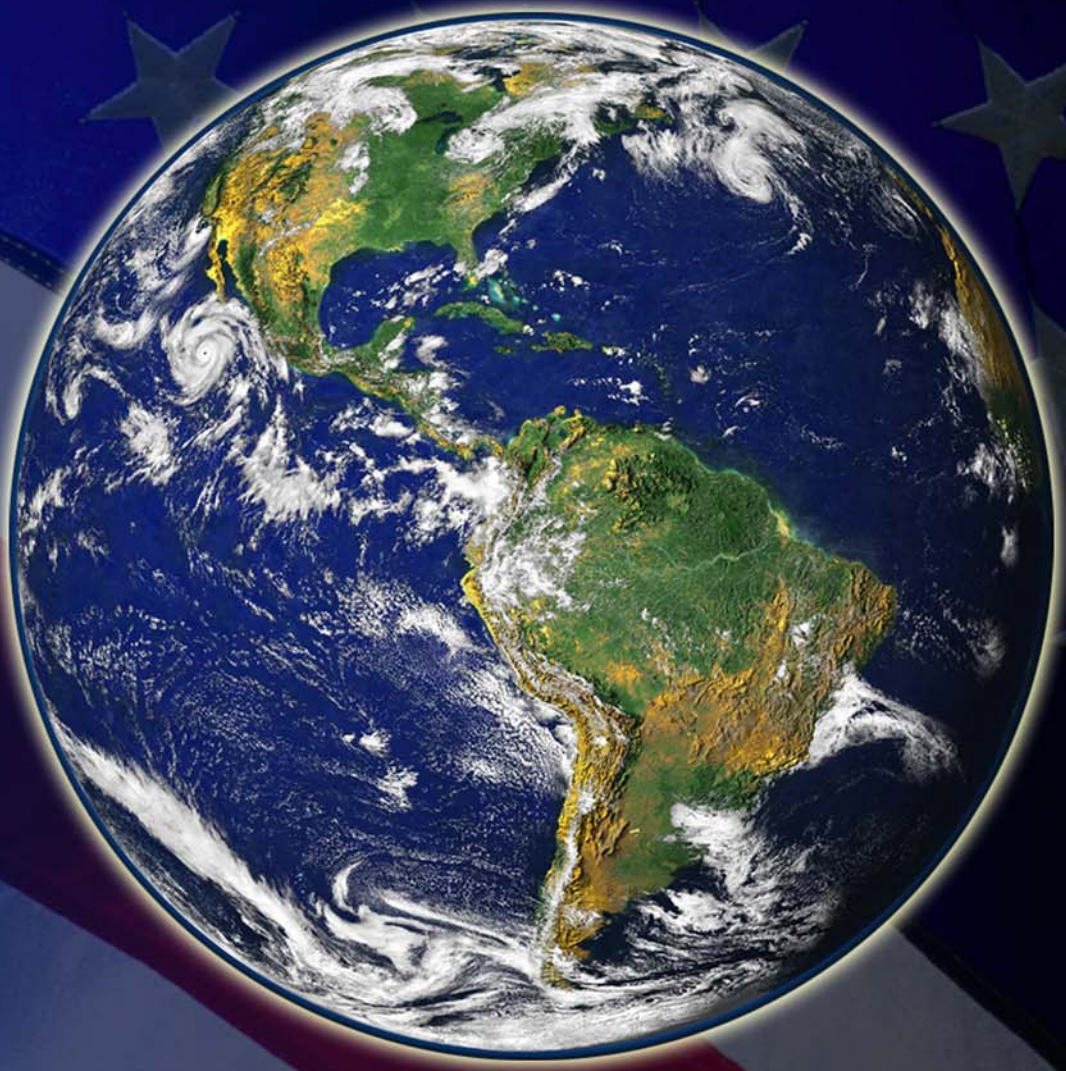
The National Nuclear Security Administration

Strategic Planning Guidance For FY 2010 - FY 2014

April 2008



National Nuclear Security Administration

Department of Energy
National Nuclear Security Administration
Washington, DC 20585

April 4, 2008

OFFICE OF THE ADMINISTRATOR

MEMORANDUM FOR DISTRIBUTION

FROM: THOMAS P. D'AGOSTINO
ADMINISTRATOR

SUBJECT: NNSA STRATEGIC PLANNING GUIDANCE (NSPG) FOR FISCAL YEAR (FY) 2010-2014

The National Nuclear Security Administration (NNSA) mission is to strengthen U.S. national security by ensuring a safe, secure and reliable U.S. nuclear weapons stockpile; by limiting and preventing the spread of nuclear weapons and associated materials, technology, and expertise; and, by providing the Navy with safe, militarily-effective nuclear propulsion plants.

The NNSA Strategic Planning Guidance provides my overarching direction to facilitate your internal planning efforts in developing the FY 2010-2014 program plans under NNSA's Planning, Programming, Budgeting, and Evaluation process. The NSPG elaborates the vision outlined in the NNSA Strategic Plan and helps to ensure that all current policies, requirements, external conditions, and emerging issues that may affect the NNSA Baseline Program are given due consideration. The NSPG also provides my priorities and program direction for the planning period, tasks specific analyses with programmatic implications, and provides a means to communicate our vision for an integrated NNSA program plan to organizations outside NNSA.

This NSPG is different from earlier versions. It represents guidance that has been significantly updated from the last NSPG (which covered the years FY 2008-2012). Each area has been extensively revised and sections on Complex Transformation have been included.

To enable NNSA to accomplish its national security mission, program planning shall be conducted within Headquarters, the field offices and at contractor facilities consistent with the guidance contained in these documents and the NNSA Program and Fiscal Guidance. Comments on the NSPG, or requests for elaboration, can be directed to John R. Harvey at 202-586-9044.

Attachment

DISTRIBUTION:

Chief, Defense Nuclear Security
Deputy Under Secretary for Counterterrorism
Deputy Administrator for Defense Programs
Deputy Administrator for Defense Nuclear Nonproliferation
Deputy Administrator for Naval Reactors
Associate Administrator for Emergency Operations
Acting Associate Administrator for Infrastructure and Environment
Associate Administrator for Management and Administration
Director, Service Center

NNSA STRATEGIC PLANNING GUIDANCE FOR FISCAL YEARS 2010-2014

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A PURPOSE AND OBJECTIVES

The National Nuclear Security Administration's (NNSA) Planning, Programming, Budgeting, and Evaluation (PPBE) process is designed to strengthen program management. At the heart of this approach is the Programming process that culminates in development of a Future-Years Nuclear Security Program (FYNSP) designed to bring stability to NNSA planning and budgets. Detailed Five-Year Program Plans are to be developed in concert with six goals:

- Enhance national security through the military application of nuclear energy;
- Advance the safety, reliability, and performance of the nuclear weapons stockpile;
- Provide the Navy with safe militarily effective nuclear propulsion plants;
- Promote international nuclear safety and nonproliferation;
- Reduce the global danger from weapons of mass destruction;
- Advance United States leadership in science and technology.

As part of the PPBE process, the NNSA Strategic Planning Guidance (NSPG) articulates the Administrator's vision, and provides his guidance, regarding the development of Five-Year Program Plans, and in aligning and integrating those plans to achieve the overall objectives of the NNSA Strategic Plan. It applies to all NNSA programs and activities including those within Headquarters, the field offices, and at contractor facilities. The NSPG, coupled with the Administrator's Program and Fiscal Guidance, helps to ensure that all current policies, requirements, external conditions, and emerging issues that may affect the NNSA Baseline Program are given due consideration during the programming phase. Specifically, the NSPG:

- Establishes the Administrator's view of the 5-15-year future planning environment,
- Provides the Administrator's priorities and specific program direction and initiatives,
- Tasks specific analyses with programmatic implications,
- Provides a mechanism for communicating the Administrator's vision for an integrated FYNSP to organizations outside NNSA.

The NSPG is developed in the context of a projected security environment and is responsive to other national policies that influence and shape the evolution of nuclear weapons and threat reduction programs including those articulated in the *Report to Congress on the Nuclear Posture Review* (December 2001), *Report to Congress on the Nuclear Weapons Stockpile for 2012* (May 2004), *National Military Strategy to Combat Weapons of Mass Destruction* (February 2006), *National Security Strategy* (March 2006), *National Security and Nuclear Weapons: Maintaining Deterrence in the 21st Century* (July 2007), *National Security and Nuclear Weapons in the 21st Century* (March 2008), and various National Security Presidential Directives including on the command and control of nuclear forces and an annual directive on the nuclear weapons stockpile.

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B THE 5 TO 15-YEAR PLANNING HORIZON

NNSA's principal mission is twofold, encompassing *nuclear threat management* and *threat reduction.* NNSA assists in *managing* worldwide nuclear threats by helping to ensure that the United States maintains (a) safe, secure, effective and reliable nuclear weapons stockpile and (b) effective nuclear propulsion systems for sea-based forces, to deter or, if necessary, respond to threats from weapons of mass destruction (WMD). NNSA assists in *reducing* worldwide threats by helping to prevent the proliferation of WMD, and particularly their acquisition by terrorist groups or rogue states. NNSA seeks to achieve threat reduction through a range of activities that include multilateral and bilateral engagement with allies and partners, and a robust program of research and development (R&D) in non-proliferation detection and assessment.

In formulating strategic planning guidance, it is important to first review the current U.S. security environment, assess the threats that may evolve in the future, and determine how NNSA should best position itself to respond. Since no one can predict the future with any degree of certainty, national security planning that evolves from a particular set of assumptions about the future must be resilient to variations in those assumptions.

Summary

During the Cold War, our greatest security concern related to the Soviet Union. Potential threats from China and regional states such as North Korea were considered to be lesser included cases that could be addressed by the capabilities deployed to counter the Soviet threat. The current global security environment is radically different. The primary national security challenge facing the United States is the nexus of violent extremists and regional states of concern that are seeking or have WMD. Some states have demonstrated a willingness to transfer advanced weapons or sensitive weapon technologies to other states, or to support terrorist groups. China, a rapidly growing economic power and the only recognized nuclear weapons state under the Nuclear Nonproliferation Treaty (NPT) that is both modernizing and expanding its nuclear force, is also a potential concern. Currently Russia is not considered a threat. However, concerns exist regarding Russia's large nuclear force, including the world's largest non-strategic nuclear arsenal.

Although trends in the security environment are uneven, we live in a complicated, unpredictable and dangerous world. Challenges that the United States may confront in decades ahead include:

- **States of Concern**: states that either have or seek weapons of mass destruction (WMD) and the means to deliver them and whose behavior is outside of international norms;
- **Violent Extremists and Non-State Actors**: non-state organizations that are motivated by goals and values at odds with our values, and resort to violent means to further their goals; some seek WMD and the means to deliver them;
- **Established Major Nuclear Powers Outside of NATO**: China and Russia are each modernizing their nuclear capabilities; the future direction of each remains uncertain.
- **Asymmetric Threats.** While the threat of nuclear war between nation-states has declined, the economic sabotage and espionage threat – physical and electronic – has increased with globalization and the interconnected, constant-communication world in which we now live.

States of Concern

Ongoing efforts of nation-states to develop WMD and delivery systems constitute a major

threat to the U.S., our deployed forces, and our allies and friends. North Korea and Iran are of particular concern because of the demonstrated willingness of each to transfer sensitive weapons technology to others and/or the willingness to sponsor groups that engage in terrorism.

The pursuit of illicit nuclear weapons programs by North Korea and Iran jeopardizes the global nonproliferation regime, threatens regional stability, and has the potential to trigger a "cascade" of nuclear proliferation. Both North Korea and Iran violated their nuclear safeguards obligations under the NPT—using technology provided for peaceful purposes they concealed their diversion of this technology into efforts to develop nuclear weapons.

The announcements by North Korea to provide a full declaration of its nuclear programs and dismantle them may be an important step in reversing its nuclear ambitions and returning North Korea to full compliance with the NPT. However, North Korean declarations must be verified as accurate and supported by a long-term commitment. Iran continues to pursue uranium enrichment capabilities in defiance of the UN Security Council. Iran's leaders have made numerous threats to destroy regional friends of the U.S., have made direct threats to the U.S. and continues to pursue policies that are directly inimical to U.S. interests.

Violent Extremists and Non-State Actors

The U.S. and its allies face a threat from violent extremists and other non-state actors who receive support from states that seek to use them as proxies. Some violent extremist groups seek WMD for use in their acts of terrorism. U.S. policy is to hold state-sponsors of terrorism accountable for the actions of their proxies.

China

The 2006 Defense Quadrennial Review (QDR) states "U.S. policy remains focused on encouraging China to play a constructive, peaceful role in the Asia-Pacific region and to serve as a partner in addressing common security challenges, including terrorism, proliferation, narcotics and piracy." The QDR also notes that, when looking forward, "China has the greatest potential to compete with the United States and field disruptive technologies that could, over time, offset traditional U.S. military advantages." China is pursuing a comprehensive transformation of its military forces to improve its capabilities for power projection, anti-access and area denial. Specially, China's nuclear force modernization is enhancing its capabilities for strategic strike beyond the Asia-Pacific theater.

Russia

The U.S. is engaging Russia in important areas of common interest (e.g., counter-terrorism, nuclear security and nonproliferation) and does not consider Russia to be an immediate threat. Even as the U.S. and its allies work to engage Russia cooperatively, and promote greater transparency and predictability with respect to nuclear forces and other military capabilities, uncertainty remains about Russia's future direction. Recent statements by President Putin heralding Russia's nuclear modernization program and its operational readiness further increase concern regarding Russia's strategic intentions.

India and Pakistan

Although not a threat to the U.S., Indian and Pakistani nuclear weapons add uncertainty and nonproliferation concerns in a region of the world racked by terrorism, extremism and instability. Continuing unrest and political uncertainty in Pakistan only adds to this concern. Additionally, both nations continue to upgrade and expand their nuclear weapons delivery systems.

Nonproliferation and Threat Reduction

The proliferation of WMD and the threat of nuclear terrorism will continue to represent two of the most serious threats facing the United States and the international community. These threats, while not new, are growing, and taking on new and more complex dimensions. Several developments are putting additional stress on the international nonproliferation regime and its associated international safeguards system:

1. the global expansion of nuclear energy;
2. Iran's noncompliance with the NPT;
3. disablement, dismantlement, and verification of DPRK nuclear programs;
4. the emergence of new proliferators (both state and non-state actors), and;
5. the development of illicit nuclear supply networks.

While recent developments in North Korea and Iran may be promising, further proliferation of nuclear weapons and technology remains a serious concern. This concern is demonstrated by the wide-reaching proliferation network run by A.Q. Kahn discovered in the last decade. The risk of proliferation coupled with non-state actors attempting to gain WMD will remain the top defense and counterterrorism priority.

Proliferation Challenges of the Global Nuclear Energy Renaissance

Increasing energy demands and concerns about climate change will make civilian nuclear power more attractive. By 2025, experts estimate a 75 percent growth in electricity demand and a much greater increase by mid-century. Nuclear energy is the most promising technology available to meet these huge requirements. This suggests a vast increase in the number of states that will develop or expand nuclear power capacity (an increase from 30 nuclear power-using states to perhaps 50-60 by mid-century). In addition, with the end of the HEU-LEU Purchase Agreement in 2013, the United States will lose its direct access to about 50 percent of the nuclear material currently available for energy production. Unless these initiatives for increased nuclear energy are carefully managed, civilian nuclear power expansion risks introducing serious proliferation dangers. This nuclear renaissance is moving forward quickly. We must ensure that nonproliferation needs are closely coupled with this renaissance from the outset. Assured nuclear fuel services for states that renounce proliferation sensitive enrichment and reprocessing capabilities is a key component to ensuring that the renaissance proceeds in a safe and sustainable manner.

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C OVERARCHING GUIDANCE TO NNSA PROGRAMS

NNSA has commenced transforming the Cold War nuclear weapons complex into a 21st Century national security enterprise. If this is not challenging enough, this transformation is taking place during a period of intense national security challenges—a global conflict against terrorism and the continued need to maintain a nuclear weapons stockpile. Meeting this challenge will require overcoming our own internal bureaucratic stovepipes and working together to find solutions to these challenges. Throughout the coming years one item is certain—maintaining the status quo will not be acceptable. The following provides overarching guidance to all programs and lays the foundation for more detailed program guidance.

Managing Safety and Security Risks

NNSA's top priority is to "get the job done" safely and securely. We must never lose sight of the unique responsibilities entrusted to us in maintaining our nation's nuclear deterrent safely and securely. To achieve this, it is essential that we manage more effectively the safety and security risks inherent to nuclear weapons and related programs.

Contributing to Victory in the War on Terrorism

The Manhattan Project, NNSA's legacy, brought an end to World War II. Today our nation is engaged in a world wide struggle against terrorism. By leveraging scientific and technical skills developed in our nuclear weapons program, NNSA's national security enterprise must stand ready to provide solutions to a wide variety of pressing national security challenges.

Meeting Customer Needs

We must meet our nuclear weapons commitments to the Department of Defense on time and on budget. Similarly, our nonproliferation and counterterrorism programs must strive to meet commitments to our domestic (federal, state and local government) and foreign partners.

Program Management

We must ensure sound project, procurement and contracting management as well as scientific and technical competence. We will be judged by our ability to deliver projects on time and on budget; adherence to sound management principals will be key to our success. Programs are directed to fully fund all construction projects that have achieved Critical Decision-2 (CD-2) approval; that is, the decision point where we "baseline" the scope, schedule, costs and funding profile. For pre-CD-2 projects, programs shall fund at the level required to meet the project milestone schedule.

Complex Transformation

Today's nuclear weapons complex is too big, too old, too costly and cannot continue to meet the national security needs of the 21st Century. It must be transformed into a leaner, more efficient and less costly enterprise. This effort is not solely centered on the weapons program; every component within NNSA must align its activities to this common goal or we will not succeed. On December 18, 2007, the Administrator approved a draft Supplemental Programmatic Environmental Impact Statement (SPEIS) for Complex Transformation. The next two sections articulate NNSA's vision for transformation and provides the intellectual foundation for more detailed program guidance in subsequent sections. Section D articulates the need for complex transformation and its end-state vision. Section E addresses transformation as applied to the national laboratories and highlights the challenge of advancing their historic scientific and technical capabilities required to maintain the nuclear deterrent while at the same time evolving to address 21st Century security challenges facing the nation.

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D TRANSFORMING THE NUCLEAR WEAPONS COMPLEX TO MEET FUTURE NEEDS

Our Vision…

…is a nuclear weapons enterprise that provides the nation a credible nuclear deterrent through the capabilities of its forces, its leading science and technology, responsiveness of its infrastructure, and its world-class workforce…and does so with the lowest number of nuclear weapons consistent with national security needs.

Our Mission…

…provide safe, secure, and reliable nuclear warheads in support of the nation's deterrent…

Our Challenge…

…move from a nuclear complex designed for Cold War requirements to a smaller, efficient, safer, more secure and more responsive complex at the forefront of science and technology employing America's best scientists, engineers and technicians, and led by a management team employing 21st century business standards of excellence…

Rightsizing our Nuclear Complex

For six decades nuclear weapons have been the backbone of United States security policy, providing the ultimate guarantor of our national security. America's nuclear deterrent maintained the peace during the Cold War. Now, as we enter the 21st Century, the mission of our deterrent has evolved to address an unpredictable international environment, persistent proliferation dangers, and emerging nuclear capabilities that could threaten vital American interests and international peace and security. Our deterrent has also undergone major changes since the Cold War. Russia is no longer an immediate threat and accordingly we no longer size our nuclear forces against Russia. Freed from the logic of Cold War deterrence, we have achieved historic reductions in nuclear weapons, including an 80 percent reduction in operationally deployed strategic warheads, eliminated more than a dozen nuclear weapons types including most tactical systems, accelerated dismantlement of retired systems, reduced reliance on nuclear weapons, and will soon have the lowest nuclear stockpile in more than 50 years.

Stockpile reductions support our commitments under the Nuclear Nonproliferation Treaty (NPT). Our nuclear forces contribute to nonproliferation in significant ways by assuring friends and allies and dissuading potential adversaries. These requirements can be met with fewer weapons and a smaller nuclear infrastructure to support them. Large gains have already been made, with the "footprint" of the nuclear weapons complex having been roughly halved since the 1980s. However, a more fundamental transformation of our complex is needed for the United States to maintain a safe and reliable nuclear arsenal without nuclear testing and to rebuild our infrastructure in ways that will overcome current production limitations and preserve our deterrent with fewer weapons.

The Complex at a Crossroads

Although the United States will maintain a nuclear deterrent for the foreseeable future, the nuclear weapons complex today is at a crossroads and faces a set of challenges not seen since its inception in the 1940s. The moratorium on underground nuclear testing and the suspension of new warhead development and production in the early 1990s brought major changes—both technical and cultural—to the complex. The stockpile stewardship program was established and brought forth new scientific and computational tools to monitor the health of the stockpile. At the same time that these new tools were being commissioned, our manufacturing capabilities and support infrastructure were being significantly curtailed. We could no longer maintain a continuous cycle of new development, production, deployment and retirement of warheads; rather, the complex shifted to extending the life of existing warheads in the nuclear stockpile. Today, a transformed

nuclear complex is needed to ensure effective deterrence in the future with a much smaller stockpile. Five issues help highlight some of the challenges we face:

- *Plutonium pit production capacity:* Restoration of very limited plutonium pit production to support the W88 warhead took ten years. This limited capacity, and aging scientific and manufacturing facilities, will not support anticipated future needs and, if not redressed would require maintaining a larger stockpile than otherwise would be desired.

- *Uranium component production facilities:* Our uranium facilities date to the Manhattan Project and securing these facilities to the terrorism threats we face post-9-11 is increasingly difficult and costly. Given the long lead times to build new facilities to meet future Life Extension Programs (LEP) and/or Reliable Replacement Warhead (RRW) requirements, decisions need to be made now to maintain support for the deterrent.

- *Managing the right mix of LEPs and RRWs:* Our deterrent is aging with some warheads designed over 40 years ago. These systems will require either replacement with RRWs or major refurbishment via LEPs. Neither approach would introduce new military capabilities to the stockpile. With RRW, however, we believe we can achieve potentially steeper reductions in the nuclear stockpile, optimize the safety and security of weapons remaining in the stockpile, and reduce the potential need for nuclear testing. However, more scientific and technical work is required to confirm this and establish the feasibility of eventual transition of an all-RRW stockpile in coming decades. Until then, we will prudently manage risk by pursing both paths. Of key concern, some of the technologies and capabilities in our manufacturing complex, required for both the LEPs and RRW, have atrophied and may have to be reconstituted from the ground up.

- *Complex security*: Both physical and cyber security will continue to require substantial resources. The current complex, including some Manhattan Project era facilities, is not optimized to provide both a robust and cost-effective security posture. Our classified and sensitive unclassified networks are a disjointed collection of stand-alone systems, which inhibit rather than enable effective sharing of scientific and technical information.

- *Funding:* Flat budget projections are forcing difficult decisions and trade-offs that can undercut achievement of our complex transformation goals.

The Process of Transformation

We are moving forward to transform to a smaller, more efficient and less-expensive complex that will meet future deterrence requirements. The new complex is one that will remain distributed, but is an interconnected, interdependent, and cooperative business arrangement of Headquarters, production facilities, national laboratories, and administrative activities. Our transformation strategy relies on four pillars:

- Maintain the stockpile through the Stockpile Stewardship Program.

- Support needed capabilities for our physical infrastructure.

- Employ best business practices to maximize efficiency and cost controls.

- Maintain our science and technology base as the cornerstone of nuclear deterrence.

The strategy and facilities we use to provide warhead design and production capabilities for the future will depend on a number of factors,

including the results of environmental impact studies and business case analyses. The current Complex Transformation Supplemental Programmatic Environmental Impact Statement (SPEIS) effort is the first step in this process. The SPEIS updates the environmental assessment that now more than a decade old, and will provide the means to make decisions on several major facilities.

Our transformation strategy embraces the notion of focusing on core competencies, eliminating redundancies and maximizing consolidation of materials, particularly those that require high levels of security. When complete, modernized "centers of production excellence" for plutonium, uranium, tritium, specialized non-nuclear components, and assembly/disassembly will be in place to support the enduring stockpile. To preserve intellectual competition and robust, rigorous peer review, we also envision two independent "centers of excellence" for nuclear weapons design, development and assessment. We plan to reduce the footprint of our nuclear weapons complex by at least one third from its size today. The facilities that provide our future warhead stewardship and production capabilities—regardless of the specific details—will be modern, agile, safe, and secure.

The nuclear weapons complex of the future will have an integrated set of laboratories and manufacturing plants that apply leading-edge science and technology to maintain nuclear forces sufficient to deter future adversaries or to respond to foreign technological breakthroughs. Our transformation strategy will also continue to advance our science and technology base as well as our NPT commitments.

The Key to Transformation: People

President Truman stated the task of nuclear weapons complex management was "an opportunity to render exceptional service in the national interest." Every employee in the complex—federal, contractor and military—renders exceptional service in the national interest. The thirty-seven thousand employees of the complex are partners in the effort of transformation. Consolidation of facilities, reductions in physical security requirements, and planned efficiencies in operations, however, will lead eventually to a smaller workforce that directly supports the weapons mission. Maintaining the stockpile, understanding military needs, providing capabilities to counter emerging threats, and managing complex nuclear weapons programs will continue to require a workforce that is "second to none." The scientists and engineers, designers and manufacturers, operators and technicians, and our ability to retain and regenerate these experts, are essential to our nation's security and the preservation of effective nuclear deterrence. Our vision for transformation includes a streamlined leadership and management structure that will enable the nuclear weapons complex to fully leverage the critical skills of our workforce.

Urgency of Beginning Transformation Now

In order to maintain the stockpile and provide for future requirements, complex transformation must begin now. Decisions are urgent because of the degraded condition of existing plutonium and uranium facilities and increasing costs of delay. By focusing on a responsive capability with minimum sufficient capacity, critical decisions regarding uranium and plutonium can be made now to support RRW or LEP decisions occurring in the coming years.

The need for transformation has been identified by a number of diverse government offices and private groups. The Defense Nuclear Facilities Safety Board, the Defense Science Board, the Secretary of Energy Advisory Board and the JASONs have all raised concerns about the aging manufacturing infrastructure being able to meet anticipated future requirements. Facilities for uranium component manufacture are among the oldest in the complex—some facilities date to the Manhattan Project—and among the most expensive to secure and operate. Every currently scheduled and anticipated LEP as well as potential future RRW production will require uranium component production. Moving forward now with a modern facility that

incorporates state of the art security built into the design will avoid substantial long-term expenditures required to secure existing facilities, will be easier to maintain and pose less risk to the workforce and environment. Delays will only exacerbate an already constrained budget. Moreover, irrespective of the production capacity that we will establish in the future to produce plutonium components, we must replace the aging R&D facility at Los Alamos that supports surveillance and ongoing pit manufacture as well as other critical national missions. Further delays of the Chemistry and Metallurgical Research-Replacement (CMRR) facility may well increase safety risks to our workforce, the community and the environment and compromise our mission.

Successful Transformation Requires Cooperation and Compromise

Transformation will be difficult and not without controversy. Budget pressures, leadership challenges, public interest, and political will, to name a few, need not be struggles among opponents but opportunities for partnering. As members of the nuclear weapons complex, we are all stakeholders in the security of our nation and complex transformation. A well informed transformation based on a broad base of input—most importantly from our employees—will be key to successfully transforming the complex and providing the best result for the nation.

E FUTURE VISION FOR NNSA's NATIONAL SECURITY LABORATORIES

The NNSA's national security laboratories—Los Alamos National Laboratory, Sandia National Laboratories, and Lawrence Livermore National Laboratory—have world class scientists, engineers and facilities and are unique national assets. [1] These laboratories, in partnership with NNSA and its predecessors, have led large-scale science, technology and engineering (ST&E) efforts that enabled major changes in the US national security posture. From the innovation that contributed to the end of the Cold-War—the technical base that allowed the nuclear testing moratorium and the development of nuclear weapons life-extension programs—to the application of technical solutions that enable a safer and more secure nuclear weapons stockpile without resorting to full-scale nuclear testing, NNSA's national security laboratories necessarily developed broad and deep, multi-disciplinary, science-based enterprises that span all the way from basic scientific discovery to successful product delivery.

As the nation moved into the post-Cold-War era, we recognized a changed world in which monolithic threats no longer dominate, and the means to disrupt an increasingly technology-based society are rapidly multiplying. As a result of the fundamental changes in the national security calculus, in partnership with the Department of Defense and the Congress, NNSA has engaged in planning a transformation of the nuclear weapons complex (the Complex) to realize the responsive infrastructure and enduring science and technology base envisioned by the 2001 Nuclear Posture Review. As an essential element of this transformation effort, NNSA has reevaluated the cold-war infrastructure in its laboratories, plants and sites in the post-cold-war context. The physical footprint of the Complex, as well as the scientific and intellectual human capital required for the future, has been closely examined with NNSA concluding that consolidation across the Complex can and should proceed. NNSA and its national security laboratories have reached a consensus that their future mission is not limited solely to the historic nuclear weapons core mission, but rather is a more expansive one encompassing the full spectrum of national security interests.

The scientific capabilities and infrastructure developed for the nuclear weapons mission have been utilized by many national security agencies and are recognized as essential to fulfilling their responsibilities. Maintenance of a strong infrastructure, both the workforce and the facilities, will require joint support from these national security agencies, as well as careful planning and budgeting by NNSA and its national laboratories, to enable this broader national security mission.

As the federal agency that directs immense interdisciplinary projects in which fundamental science is the essential tool, NNSA will lead the national security laboratories in the structural extension of the historical nuclear weapons mission to broaden support for this more complete national security mission. NNSA, as the landlord for the defense laboratories, provides internal coherence across the national security programs, a coherence that fosters the synergies across scientific and technical disciplines important to complex missions. NNSA also provides a single management umbrella within the federal government for championing a broader national security ST&E base that is critical to meeting commitments to the nuclear weapons stockpile, as well as developing technologies to address evolving 21st century post-cold-war needs. For their part, the national security laboratories bring the world-

[1] "National security laboratory" is defined in Section 3281 of the National Nuclear Security Administration Act as including Los Alamos National Laboratory, Sandia National Laboratories, and Lawrence Livermore National Laboratory. Because of the vital role of the Nevada Test Site as a "user facility" for the laboratories, it is included in a more expansive view of what constitutes the national security laboratories.

class science and engineering talent, as well as the perspective of what is required to sustain this truly unique capability to handle one-of a-kind national security challenges for decades into the future. Together, NNSA and the national security laboratories are well-positioned to create a future that ensures an appropriate balance of science and technology base investment and work, both for NNSA and other federal agencies, to guarantee that these national assets remain vital and relevant.

Re-Orienting the Enterprise

An enduring ST&E core is essential for nuclear weapons and is critical to the broader national security challenges faced by the country in the 21st century. The DOE and NNSA are committed to invest in the necessary elements of the scientific infrastructure, sustain essential capabilities that can be exploited to meet other agency needs, and build relationships with these other agencies for joint problem-solving. The national security laboratories will maintain and strengthen their recognized world-class capabilities for developing solutions to large, complex problems that challenge our national security.

NNSA's nuclear weapons life-extension programs demonstrate that large-scale technology hand-offs through long-term inter-agency plans are viable, reflecting the entire course from basic research to product deployment. This demonstrated capability will benefit partnering agencies in meeting their national security responsibilities. Where the national laboratories expanded mission intersects with the responsibilities of other agencies, it is natural to explore joint activities and a shared commitment to the requisite funding.

Application of Unique Capabilities to a Broader National Security Mission

The core nuclear weapons mission will always require committed national security laboratories that are distinguished by:

- Inherently high-security environments involving classified work,
- Multidisciplinary approaches,
- Broad and deep intellectual fabric for the future,
- Responsiveness to national urgencies,
- Ability to conduct high-hazard complex experiments,
- Structure to deliver critical integrated technical solutions on a short schedule, and
- Long-term commitment to technical excellence, integrity, and innovation across a wide range of ST&E.

The unique competencies in the science, technology, and engineering of the NNSA and its laboratories, are equally applicable to a wide range of pressing national security responsibilities that fall under the aegis of DOE and other federal agencies. The broad range of research and development activities at the NNSA laboratories also ensures that the Nation is equipped to deal with technological surprises and anticipate new national security threats. Indeed, consistent with the act establishing the NNSA[2] and recent Congressional language[3], the role of NNSA laboratories clearly is aligned with and responsive to the national security environment of the 21st century.

A sampling of ST&E areas of expertise that the NNSA laboratories can bring to the national security mission include sensor and detection technology, high-performance computing, microsystems, chem/bio technology, and explosives science. The NNSA laboratories have been jointly participating with other government agencies in addressing a wide-range of national security challenges. Recent examples include:

- supporting war fighter needs in Iraq with IED modeling and analysis,

[2] *Public Law 106-65,* October 5, 1999.

[3] For example, see Senate Energy and Water Appropriations for FY 2008, S1715 Report 110-127, p. 151.

- supporting DoD and FBI in emergency render-safe team and post-event technical nuclear forensics,
- aiding the intelligence community in its counterterrorism and nonproliferation efforts by drawing upon our nuclear weapons expertise,
- developing and deploying integrated systems for countering aerosolized bioterrorist releases and bio-decontamination technologies, and
- developing and deploying portal detector technology to prevent smuggling of special nuclear materials.

In addition, basic research at the national security laboratories has provided technology for airborne detection of toxic chemicals, critical infrastructure modeling for disaster response, and modeling of response strategies for potential influenza pandemics.

In the broader context of national security issues facing our nation, these laboratories have been partners in understanding the effects of human activities on our environment and in developing innovative energy supply technologies. Indeed, in the nuclear power arena these laboratories are key contributors to finding an integrated solution to problems of wide-spread use of nuclear power and nuclear proliferation.

Addressing complex threats to our national security such as nuclear and biological terrorism, cyber attacks, and nuclear proliferation requires a sustained national commitment to innovative science-based technological and engineering solutions. This is also true for the broader national challenges of energy security at the overlap of energy, water, environmental consequences, and traditional national security challenges. To perform the core nuclear deterrent mission, the Administration and Congress continue to support a unique science-based culture at the NNSA national security laboratories—one that integrates multiple disciplines to solve highly complex technical problems that often have no previously known solutions. Although efforts listed above meet the immediate needs of the respective agencies, a more systematic and enduring approach to leveraging the NNSA laboratories' unique capabilities for high-priority national security challenges is essential to the nation. To be able to contribute its unique capabilities, NNSA will partner with other segments of the DOE and other agencies with national security responsibilities to direct and support the underlying science, technology, and engineering development at the national security laboratories, rather than just soliciting funding for individual short-term technology applications.

Defense Laboratory Centers of Excellence

NNSA is focusing on improving integration among the laboratories to exploit major facilities that are not duplicated, such as Dual Axis Radiographic Hydrodynamic Test Facility (DARHT), National Ignition Facility (NIF), Z Refurbishment Project (ZR), Microsystems and Engineering Sciences Application facility (MESA) and the Nevada Test Site underground resources, while sustaining the essential ST&E agility of each laboratory through a range of investments in a broad base of local competencies. It is important to recognize that certain major capabilities are needed at each of the science and engineering laboratories if they are to continue to effectively contribute to national security. For example, high-performance computing and its integration with theory and modeling have become essential tools for predictive science and engineering across the entire Complex, including the laboratories and the plants.

Each laboratory and the NTS will continue to emphasize different areas as distinguishing strengths of their necessarily broad multidisciplinary portfolios of competencies. Los Alamos emphasizes materials and matter-radiation interactions; Lawrence Livermore emphasizes high-power lasers and high energy density science; Sandia emphasizes systems engineering and microtechnology; the Nevada Test Site emphasizes high-hazard experimentation. Within each laboratory, centers of excellence in specific technical areas

may be developed consistent with a jointly agreed upon vision of NNSA and the respective national security laboratory. As with the Office of Science nanotechnology centers, this may mean that each laboratory approaches a common area of ST&E with a different approach and perspective linked to its pre-existing competencies. Enabling this broadened national security role will require leadership and direct funding from NNSA and DOE, as well as investments by the broader national security community.

Summary

We will advocate for and enable a broader national-security role for NNSA and its laboratories that will help to ensure continuity and stability for their core nuclear-deterrent mission as they evolve to provide the nation a critical advantage in meeting 21st century national security challenges. The Nation's ability to respond to as yet unknown challenges in the future demands nothing less.

F PLANNING GUIDANCE FOR NUCLEAR WEAPONS PROGRAMS

State of the enterprise

Nuclear forces continue to be the ultimate guarantor of U.S. national security and the security of its allies. That said, the United States has made significant reductions in its nuclear arsenal over the last decade, and is on the path to deploying no more than the 1700-2200 strategic nuclear weapons by 2012, as called for by the Moscow Treaty. To maintain a credible deterrent at these lower levels, the United States requires nuclear forces that can adapt to changing needs, and a responsive industrial infrastructure that can maintain existing capabilities and manufacture replacement or new components.

Today, our labs and production plants are ensuring that American nuclear weapons are safe, secure and reliable. The Stockpile Stewardship Program (SSP)—developed over the last 15 years in response to the underground nuclear testing moratorium—continues to evolve and sustain the stockpile. Today's stockpile remains safe and reliable, and the SSP has worked well, so far, to identify and resolve problems that in the past would have required nuclear testing. The directors of our weapons laboratories, however, are concerned about their ability to maintain that stockpile for the foreseeable future without nuclear testing. Specifically, maintaining certification of the finely-tuned designs of an aging Cold War stockpile through life extension programs is becoming increasingly difficult absent nuclear testing, and involves increasing risk. Our aging warheads will continue to be a technical challenge for our best scientists and the risk of a significant technical failure occurring as our warheads age cannot be ruled out. The one certainty we do know is that warhead certification will become more difficult—especially as life extensions and component aging move the warhead further away from the tested designs.

At present, the United States does not have the ability to produce new nuclear weapons is sufficient quantity. In the absence of adequate warhead production capability, the United States must retain significant numbers of reserve warheads as a hedge against technical failure of a warhead type and against adverse geopolitical developments that could require augmentation of the force. Our long-term goal is to rely more on a revived infrastructure and less on the non-deployed stockpile to respond to unforeseen events. Until a truly responsive infrastructure is operational, however, the United States will need to retain an appropriate inventory of non-deployed warheads to manage geopolitical risks.

To address the emerging concerns with the future viability of the stockpile, NNSA has embarked on two major initiatives to maintain the long-term sustainability of the deterrent: Complex Transformation and the Reliable Replacement Warhead (RRW) study. Replacement warheads have the potential to provide enhanced safety and security features, be less sensitive to manufacturing tolerances or to aging of materials, and be certifiable without nuclear testing.

Administrator's Overarching Guidance for Defense Programs

Defense Programs (DP) programmatic efforts must emphasize the following three overarching goals.

Meet our commitment to the Department of Defense: DP's "Getting the Job Done!" annual goals have set the tone to meet on-time delivery to the Defense Department. But meeting our commitments to the Defense Department is more than just on-time delivery of weapons. It means we continue to advance the stockpile stewardship program to push the scientific and engineering boundaries needed to maintain our nuclear arsenal. It also means maintaining the basic science and engineering that is the foundation of the weapons program.

Advance Complex Transformation: DP must provide the intellectual foundation and resources to guide the transformation from a Cold War nuclear weapons complex to a 21st Century national security enterprise. Throughout transformation, we must not lose sight of our fundamental responsibility to maintain the reliability, safety and security of the stockpile.

Transform the nuclear weapons stockpile: DP must be ready to move forward with both RRW and LEPs. The next administration will make fundamental decisions on the size and composition of the stockpile. Current work on advanced certification related to RRW will provide information to assist those decisions.

Administrator's Priorities for Defense Programs

1. ***Meet the immediate needs of the stockpile, including W76-1 Life Extension Program (LEP) commitments.*** Maintain the safety, security, and reliability of the stockpile; replace LLCs and repair warheads and conduct stockpile assessment and surveillance activities. Execute the plan to refurbish the W76-1 warheads currently in the stockpile to extend their service lives, and incorporate modern technologies and enhanced surety features as required. Meet planning milestones and phase 1 and 2 objectives for the Stockpile Life Extension Program.

2. ***Advance Nuclear Weapons Complex Transformation.*** Execute Complex Transformation milestones, including mission realignments, facility turnovers, staffing levels, CMRR, UPF, and Kansas City Responsive Infrastructure Manufacturing and Sourcing milestones. Support consolidation of SNM, other materials/operations across the complex. Enhance nuclear weapons complex integration and interdependence by implementing actions and information technology solutions to standardize technical processes, develop uniform business practices, and implement approaches to mitigate and manage risk more effectively. In partnership with the Defense Nuclear and Cyber Security programs, ensure effective, risk-informed protection of physical and electronic national security assets.

3. ***Demonstrate a responsive infrastructure while sustaining long-term leadership and vitality in science, engineering, and production to support national security.*** Achieve goals of Science Technology Roadmap and the Boost Initiative; continue to improve/apply methods, plans, and tools for qualification, assessment, and certification; and conduct the first National Ignition Campaign (NIC) experiment aimed at the achievement of ignition in FY 2010.

4. ***Transform stockpile surveillance.*** Transition to methodologies more appropriate for a reduced and aging stockpile emphasizing more component evaluation and transition from destructive tests to nondestructive tests and predictive methods.

5. ***Provide safe, secure transportation of nuclear warheads, components, and special nuclear material for DOE, DoD, and others.***

6. ***Enable RRW and the future stockpile.*** Establish consensus between the Administration and Congress on completing key RRW studies to assess its potential role in the future stockpile. Carry out RRW work that is authorized and funded by Congress.

7. ***Implement the Advanced Certification Campaign.*** Build on work started in FY 08 under the Advanced Certification Campaign to address plans and processes to certify an RRW option, as well as future LEPs, without nuclear testing. Examine new technologies and

systems to improve stockpile surety including options for a potential RRW.

8. ***Meet warhead dismantlement milestones.*** Return, store, and dismantle retired warheads and disposition components removed from the stockpile at the rates established in the P&PD.

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PLANNING GUIDANCE FOR DEFENSE NUCLEAR NONPROLIFERATION

State of the Enterprise

Defense Nuclear Nonproliferation (DNN) manages cooperative programs, develops technology, and applies expertise from the U.S. national laboratories and contractors to detect, prevent, and reverse the proliferation of WMD, and mitigate the risks of diversion of nuclear weapons and weapons-useable nuclear materials. To implement its mission, DNN seeks to:

- Secure nuclear weapons and weapons-usable nuclear materials at potentially vulnerable sites in Russia and elsewhere,
- Secure radiological materials worldwide that could be used in "dirty bombs",
- Reduce quantities of nuclear and radiological materials and equipment of concern,
- Downsize the nuclear weapons infrastructure of the former Soviet Union (FSU),
- Strengthen the safeguards system,
- Bolster border security overseas and domestically
- Develop cutting-edge nonproliferation, safeguards and national security related technologies,
- Strengthen international nonproliferation and export control regimes,
- Roll back black market and illicit procurement networks,
- Facilitate non-weapons employment for WMD scientists in the FSU, Libya and Iraq, and
- Strengthen foreign emergency management capabilities.

The nature of the proliferation threat is evolving rapidly. Moreover, the political and security environment continues to evolve in Russia and other countries of the FSU. DNN's non-proliferation and threat reduction programs will need to be agile in adjusting strategies and priorities in light of evolving challenges, and in providing innovative responses.

Russia will continue to face long-term needs for assistance on key nonproliferation projects. Russia's desire to avoid the appearance of dependency on the United States, however, has been increasing as its economy continues to grow and government revenues increase. DNN programs must recognize and underscore the need to emphasize shared objectives, mutual benefits, and genuinely cooperative approaches in interactions with Russian counterparts.

Along these lines, DNN's work with Russia has begun to transition from assistance to cooperation on programs that fulfill shared nonproliferation and national security goals. Over the longer term, and consistent with support for the Administration's G-8 Global Partnership effort, DNN will reduce and eventually eliminate its assistance to Russia. DNN programs, therefore, should focus on sustainability of cooperative activities and, where and when appropriate, encourage Russia to commit its own resources to in the absence of U.S. assistance.

DNN programs are becoming increasingly global in scope as they strengthen and expand nonproliferation activities outside of the FSU. DNN currently works in over 90 countries with international partners and allies to prevent the spread of WMD through bilateral and multilateral arrangements. DNN will continue to focus on broadening the international scope of its nonproliferation mission.

Administrator's Overarching Guidance for Defense Nuclear Nonproliferation

DNN should continue its implementation of a long-term, global, and comprehensive strategy that combats WMD proliferation and limits the threat of nuclear terrorism by detecting, securing, and eliminating proliferation-sensitive materials, technology and expertise, and strengthening international compliance within the nonproliferation regime. To date, DNN threat reduction efforts, such as MPC&A and GTRI, have been highly successful. However, further nonproliferation efforts and initiatives are needed to secure these successes, especially as these threat reduction programs enter their sustainability stages in the years ahead.

Revitalizing the International Safeguards System: IAEA safeguards serve as the only international mechanism available to monitor nuclear activities in conformance with the NPT and safeguards commitments undertaken by states worldwide. The international safeguards system is under more strain than at any point in its history, due to expanding responsibilities and high-profile investigations in Iran, North Korea, Iraq, and of proliferation networks. Over the last 25 years, the number of safeguarded facilities has more than tripled, and the amount of HEU and separated plutonium under safeguards has increased by a factor of six. The number of states with Additional Protocols in force has increased from five to 84 over ten years. Sources of information are expanding, and methods of inspection are evolving. Against this backdrop, the IAEA regular safeguards budget has remained essentially flat in real terms (the exception being a one-time increase adopted six years ago, in 2002), large numbers of senior IAEA inspectors and staff are approaching retirement, and U.S. investment in safeguards technology has lost momentum and direction. If current trends continue, strains on the international safeguards system could break it completely. Moreover, the anticipated renaissance for nuclear power is expected to be significant, given growing concerns surrounding fossil fuel dependency and global climate change. This expansion would entail the deployment of new types of reactors and large-scale, complex facilities for fuel enrichment and fabrication, interim spent fuel storage, spent fuel processing, and long-term waste storage. Much of this growth could come in the developing world where the risks of terrorism and proliferation are greatest. It is imperative that DNN develop a comprehensive strategy to address these issues and work to strengthen the international safeguards system. Equally important is to ensure the necessary expertise and technology—both domestic and international—to implement a robust safeguards system.

Detecting and Dismantling Clandestine WMD Activities: DNN should improve capabilities to detect clandestine WMD activities and increase capabilities to provide for the transparent and verifiable dismantlement of WMD programs. In addition, it must lead the effort to provide advanced basic and applied technology to verify declared nuclear activities, detect undeclared nuclear materials and activities, and support the verifiable dismantlement of nuclear programs in countries of proliferation concern, such as North Korea and Iran. Such assistance would also increase the overall effectiveness and efficiency of IAEA safeguards and strengthen IAEA capabilities to detect undeclared nuclear activities. To determine the origin and pathways of materials or warhead diversion, and to ensure that potential threats to transfer warheads and materials to terrorists are bound by the logic of deterrence, DNN should work to strengthen national technical nuclear forensics capabilities.

Preventing Emergence of New Proliferators: Illicit procurement networks have assisted several countries in developing their nuclear weapons programs and capabilities. Disrupting such networks and preventing the emergence of new proliferators requires a defense-in-depth strategy. In addition to ensuring a robust and efficient safeguards system to deter against the theft or illicit diversion of sensitive material, technology, and expertise, DNN must work with international partners to ensure the implementation of effective export control systems and robust physical protection in countries and regions of proliferation concern; improved detection at customs points and

borders, especially in high-traffic transit states; and more strategic interdiction of potential transfer of controlled technology, information, and/or material. In addition, it must work to ensure international support for the implementation of UNSCR 1540, the Global Initiative to Combat Nuclear Terrorism, and the Proliferation Security Initiative.

DNN Role in Transformation: In addition, in keeping with the transformation of the National Laboratory complex to an agile and responsive enterprise, as well as the requirement to maintain a deep and technically sophisticated research and development workforce and technology base, DNN should continue to emphasize long-term basic research and development programs. Basic science discoveries and new technologies that can be applied to nuclear nonproliferation, homeland security, and national security needs provide valuable and irreplaceable capabilities not only to DNN, but also to Emergency Operations, and numerous other agencies of the USG. In concert with the research and development program supporting Weapons Activities, the nonproliferation R&D program must be a steward of the DOE science base and creator of new technologies for NNSA missions beyond stockpile stewardship.

Administrator's Priorities for Defense Nuclear Nonproliferation

1. ***Accelerate and expand efforts to secure vulnerable high priority nuclear/radiological materials in Russia and other countries.*** Lock in the valuable gains provided by these security upgrades by focusing on developing a vigorous sustainability effort.

2. ***Accelerate efforts to minimize and eliminate HEU.*** Convert reactors and Mo-99 production facilities to LEU and by remove the excess HEU.

3. ***Enhance border monitoring efforts.*** Assist customs officials in the United States and abroad to detect, deter, and interdict illicit trafficking in nuclear/radioactive and WMD technologies and materials, including under the Second Line of Defense Program, the Megaports initiative, and the International Nonproliferation Export Control Program.

4. ***Provide U.S. political and technical leadership to revitalize international safeguards and the safeguards technical base.*** As part of a long-term campaign to advance nuclear security and prevent nuclear proliferation, develop and demonstrate new safeguards tools and technologies; expand partnerships for safeguards cooperation; and revitalize the safeguards human capital base in the United States and abroad.

5. ***Expand efforts to secure high priority stockpiles of nuclear/radiological material located at civilian sites in the United States.*** Accelerate efforts to remove excess radioactive sources domestically (including public-private partnerships and permanent disposition). Fund R&D in alternative radiological technologies for medical, oil/gas, and agricultural applications.

6. ***Improve capabilities for detection of undeclared WMD activities.*** Increase capabilities to provide for the transparent and verifiable dismantlement of WMD programs.

7. ***Prevent the emergence of new proliferators.*** Implement nonproliferation controls, export controls, the next generation of safeguards, physical protection, scientist redirection, and regulations/laws) in partner countries.

8. ***Augment counterproliferation/ interdiction support comptabilities***.

9. ***Apply sound nonproliferation principles and goals to U.S. and international initiatives.*** Expand civil

nuclear energy use, including the development of reliable fuel services mechanisms and nuclear infrastructure support programs that promote the safe, secure use of nuclear energy.

10. ***Provide adequate resources and oversight to support the safe and secure disposition of surplus U.S. and Russian plutonium, and surplus U.S. highly enriched uranium.*** These efforts should be part and parcel of the Department's coordinated activities and schedules needed to support transformation of the complex and the closely-related efforts to support material consolidation.

11. ***Support effort of the Elimination of Weapons-Grade Plutonium Production Program to shutdown the last plutonium production reactor through construction of a new fossil-fuel plant at Zheleznogorsk by December 2010.***

H PLANNING GUIDANCE FOR NAVAL REACTORS

State of the Enterprise

The Naval Reactors Program has total responsibility for all naval nuclear propulsion work, beginning with technology development, continuing through reactor operation, and, ultimately, reactor plant disposal. The Program's efforts ensure the safe operation of reactor plants in operating nuclear-powered submarines and aircraft carriers, and fulfills the Navy's requirement for new reactors to meet evolving national defense demands. The Program's long-term development work ensures that nuclear propulsion technology provides options to maintain and upgrade current capabilities, as well as meet future threats to U.S. security. As advances in various functional disciplines coalesce, work is integrated into the technology applicable to a naval nuclear plant.

The presence of radiation dictates a careful, measured approach to developing and verifying nuclear technology, evolving needed components, systems, and processes, and implementing them into existing or future plant designs. Substantial effort is also needed to ensure naval reactors are efficiently maintained and properly disposed of in a timely manner. Intricate engineering challenges and long lead times to fabricate the massive, complex components require many years of effort before technological advances can be introduced into the fleet.

With 102 operating naval reactor plants in warships comprising 40% of the Navy's major combatants, primary emphasis and most effort is placed on ensuring the safety and reliability of these plants.

Operating Assumptions

- The strategic importance of nuclear-powered warships will continue to require propulsion plants with the highest level of reliability and safety, and demands that nuclear propulsion technology be protected from foreign interests.
- Heightened demand for and increased operations tempo of nuclear-powered warships is likely to continue. This will place a greater demand on maintaining ships in a ready-to-deploy status.
- The Program will maintain its preeminent Pressurized Water Reactor (PWR) capability and expertise. The Program will continue to explore and develop new and innovative technology to provide quantum improvements toward meeting its mission and goals.
- The Program will continue its commitment to safety, health, radiological controls, environment, and fiscal responsibility. NR will provide for full compliance with applicable laws, regulations, consent orders, and agreements and will exercise prudent management of vulnerabilities and risks.
- Naval Reactors will continue to operate under Executive Order 12344, prescribed by Public Law 98-525 (42 U.S.C. §7158, note) and Public Law 106-65 (50 U.S.C. §2406), as a joint program under the DOE's NNSA and the Department of the Navy.
- Fleet demand for nuclear plant operators will continue at current or higher levels through the planning horizon.

Program Objectives

- Develop, deliver, and support safe, reliable, and militarily effective propulsion plants for naval nuclear-powered warships.
- Train personnel in the skills necessary for safe operation and maintenance of nuclear propulsion plants in support of

the Nation's defense requirements. Continue the use of prototypes as the method for initial qualification of nuclear plant operators.

- Improve the utilization of nuclear-powered warships. Warships must be on line more of the time, with increased flexibility, and stay in service as long as practical. This requires optimizing ship core life and energy capability by using the latest analyses of core life and core structural material performance, enhanced component reliability, and performance analysis to allow the Navy to reduce overall maintenance requirements.

- At the end of plant life, inactivate and dispose of prototype and naval nuclear propulsion plants in a manner safe to the workers, the environment, and the public. Promptly remove cores to ensure safety and enable scientific evaluation. When scientific evaluation complete, place in interim dry storage awaiting permanent disposal facilities.

- Continue disassembly and remediation of unneeded prototype reactor plants and other laboratory and prototype site facilities while maintaining outstanding environmental performance. The goal of the Program's ongoing effort is to achieve efficiencies, reduce overall Program costs, and eliminate potential environmental concerns.

- Ensure the safety and reliability of reactor plants in naval nuclear-powered warships and training platforms. Reactor safety will continue to be integral to all technical activities associated with design, construction, operation, and maintenance of naval reactor plants, and the training and qualification of nuclear operators. The Program must ensure operations have no adverse impact on human health or the quality of the environment, and will meet the intent of Nuclear Regulatory Commission regulations, as adapted to the unique application of nuclear power to naval propulsion.

- Pursue more efficient and cost-effective design, construction, and maintenance processes and practices to improve the affordability and endurance of naval nuclear propulsion, without compromising Program standards for safety and reliability.

- Maintain state-of-the-art skills necessary to support in-service plants and to undertake new design propulsion plant work.

- Maintain exploratory development work on concepts and enabling technologies to improve capability and effectiveness, reduce cost, improve reliability, or increase safety. This will help ensure that U.S. naval nuclear propulsion remains preeminent and affordable.

Administrator's Priorities for Naval Reactors

To supplement the above discussion, following are the key Program priorities:

1. The Program's primary emphasis and most effort is placed on ensuring the safety and reliability of the 102 operating naval reactor plants in warships comprising 40% of the Navy's major combatants.

2. Design and develop an overall new nuclear propulsion plant and electric plant for the new GERALD R. FORD-class aircraft carrier (CVN-78). The CVN-78 propulsion plant will provide about 25 percent more energy and substantially more electric generating capacity than the reactors and electric plant used in NIMITZ-class ships. This energy can support a higher operating tempo and future electrical load growth in the GERALD R. FORD class.

3. Ensure that, as identified and committed by the Department of Energy and Department of the Navy to the State of Idaho, Naval Reactors' fuel will be placed into interim dry storage and be among the early shipments of spent fuel for final disposal in a permanent repository. Continued achievement of processing and storage of spent fuel requires the recapitalization of Naval Reactors' fuel processing infrastructure.

4. Support increased utilization of nuclear-powered warships to meet National Security needs. This requires continued action to optimize ship core life and energy capability via a robust R&D program, as well as reducing maintenance requirements and further improving reliability.

5. Support design and development of naval nuclear propulsion plants to meet National Security needs. As assigned, near-term requirements may include platform development of a sea-based strategic deterrent and modification of an existing plant design for surface combatant application.

6. Maintain operation of Naval Reactors' land-based prototypes to support qualification of nuclear plant operators and testing capability for new technology development. This requires the refueling and maintenance overhaul of the S8G prototype.

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I PLANNING GUIDANCE FOR COUNTERTERRORISM

State of the Enterprise

Nuclear terrorism has become an increasing concern to our nation and an important focus for DOE programs. The Office of the Deputy Under Secretary for Counterterrorism (CT) was created to coordinate activities with the NNSA, to facilitate marshaling resources across all of DOE, and to be the Department's principal point of contact with other U.S. government agencies and foreign governments on counterterrorism matters.

NNSA's core expertise in nuclear sciences is central to the national effort to deter, detect, defeat, or attribute an attempted or actual nuclear or radiological terrorist attack. Its counterterrorism programs have evolved since the 9/11 terrorist attacks and play a crucial role in protecting the homeland. DOE and other agencies rely on the national laboratories' knowledge of nuclear weapons design to identify novel and unconventional nuclear threats; to support the design and evaluation of radiation detection systems; to design technologies to disarm a terrorist nuclear device; and, to evaluate safeguards and security of existing and future nuclear facilities.

NNSA's nonproliferation programs secure nuclear weapons and WMD materials in other countries, strengthen international nuclear safeguards and foreign export control capabilities, halt nuclear smuggling, and provide ground-based, air-based and space-based solutions to identify, locate and track WMD materials, processes and facilities. In addition to aiding in preventing the spread of nuclear weapons to hostile national states, these activities also reduce the danger that terrorists could obtain WMD weapons, materials or technologies.

NNSA works with other nations to develop emergency management programs and infrastructure to reduce the risk of nuclear and radiological events and to mitigate the consequences of such an event. Moreover, working with other agencies, we are expanding the overseas detection and interception tripwires to find and stop nuclear materials in transit. Finally, our response teams provide the nation's last line of defense to search for and render safe a nuclear device, and to provide consequence management support in the event of an incident.

DOE's ongoing efforts to ensure the nation's energy supply, protect critical energy infrastructure, support the U.S. intelligence community, and conduct broad-based scientific research contribute to our homeland security as well.

Viewed comprehensively, these programs, and related support to other agencies, comprise the elements of a multi-layered defense of the nation against the nuclear terrorism threat.

Administrator's Priorities for Counterterrorism

1. ***Strengthen coordination of counterterrorism cooperation among DOE, DoD, DHS and intelligence community components.*** This includes establishing control of sensitive IND design information scaled to appropriately meet the mission needs of each agency.

2. ***Advance Technical Nuclear Forensics capabilities.*** Ensure that DOE's overall contributions—in R&D, operational capabilities and supporting infrastructure—to all three mission areas of technical nuclear forensics (pre-detonation materials, pre-detonation device, and post-detonation) are fully integrated with other agencies' efforts to develop and sustain a national nuclear attribution capability. Identify any gaps in national capabilities and advise the Administrator of actions necessary to address DOE's role in closing gaps.

3. ***Facilitate cooperation with international partners to prevent nuclear terrorism.*** Develop new international agreements and programmatic relationships as required to advance this agenda.

4. ***Assess new national security challenges for the national laboratories.*** Work with DP and DNN to address appropriate investments in scientific expertise to ensure the capability of the national laboratory system to support vital national security missions including nuclear counterterrorism.

5. ***Coordinate counterterrorism activities across DOE.*** Represent the Department in the interagency including to the National Counterterrorism Center Directorate for Strategic Operational Planning and provide strategic guidance to its efforts.

6. ***Establish procedures to coordinate improvised nuclear device (IND) and radiation detection research being conducted by the national labs, regardless of funding source.*** This includes, among other things, policy and procedures for resolving programmatic conflicts between other agencies and the Department.

7. ***Manage the Department's counterterrorism exercises program***.

J PLANNING GUIDANCE FOR EMERGENCY OPERATIONS

State of the Enterprise

Emergency Operations maintains an emergency operations center, provides national radiological search and emergency response teams, and maintains a comprehensive program to ensure continuity of essential DOE functions under all Continuity of Government contingencies. In order to provide a more comprehensive responsive capability, several existing technical activities within NNSA have been moved to Emergency Operations to provide synergy with existing roles and missions.

The Nuclear Counterterrorism/Incident Response (NCTIR) program now comprises the array of operational worldwide deployable capabilities that currently exist in the areas of Radiological Search and Identification, Nuclear Render Safe, Radiological Consequence Management and Nuclear Forensics (pre and post detonation). It also includes analytical efforts directed against potential terrorist nuclear weapons that was previously managed by DP. NCTIR provides technical assistance and training to multiple countries to raise their individual capabilities to counter nuclear terrorism.

The Nuclear Weapons Incident Response (NWIR) Program responds to and mitigates nuclear and radiological incidents worldwide as the nation's primary capability for radiological and nuclear emergency response.

The National Technical Nuclear Forensics Program develops and strengthens DOE capabilities to support pre- and post-detonation nuclear forensics. Continued development of this capability will facilitate the analysis and characterization of radiological and nuclear materials and improvised nuclear devices. Developing forensic capabilities is a critical component of nuclear material or device attribution.

Stabilization involves the use of advanced technologies to enhance our 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 will sponsor new research in this area and continue to leverage emerging technologies that have been demonstrated successfully by the DoD in support of the global war on terrorism. As this research matures. it will provide opportunities to add to the "toolbox" available to Federal response teams.

Administrator's Priorities for Emergency Operations:

1. ***Maintain readiness level for deployable nuclear incident response, including full support to FBI, DHS, and other Federal, state, and local responders.***

2. ***Develop and deploy stabilization tools to multiple cities across the country.***

3. ***Develop/execute nuclear forensics capabilities for pre- and post-detonation phases.***

4. ***Insure continued support to National Security Special Events.***

5. ***Support nuclear incident response exercise programs.***

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K PLANNING GUIDANCE FOR INFRASTRUCTURE AND ENVIRONMENT

State of the Enterprise

The Office of Infrastructure and Environment (NA-50) is key to a successful transformation of the Cold War nuclear weapons complex into a 21st Century national security enterprise. NNSA's facilities currently occupy over 35-million gross square feet of which over 25% will become excess as a result of Complex Transformation. Since a significant fraction of our production capability resides in Manhattan Project era facilities, infrastructure modernization, consolidation and sizing consistent with future needs is essential for an economically sustainable Complex.

NA-50 through its environmental stewardship programs works to reduces risk to human health and the environment at NNSA sites and adjacent areas. This includes operating and maintaining environmental clean-up systems; performing long-term environmental monitoring activities; and integrating a responsible environmental program with the NNSA mission activities.

Administrator's Priorities for Infrastructure and Environment

1. ***Lead NNSA's implementation of DOE project management policies, processes and best practices that result in improved project performance at NNSA sites.*** Provide expert project management oversight to ensure that the NNSA's construction projects are well managed.

2. ***Establish and implement plans for the consolidation and disposition of nuclear materials excess to national security needs.*** Work to "de-inventory" Security Category I and II quantities of nuclear materials from several NNSA sites. Provide for disposition of materials as needed, and continue ongoing efforts to consolidate and dispose of unneeded actinide materials, excess uranium, and other materials at NNSA sites.

3. ***Partner with Defense Programs, consistent with the goals of Complex Transformation, to execute the Facilities Infrastructure and Recapitalization Program.*** Restore enduring facilities and infrastructure to industry standards, and integrate the annual Ten-Year Site Plan process with Complex Transformation planning and NNSA management systems.

4. ***Establish and implement environmental management and regulatory compliance policies within the DOE as they related to the NNSA sites.*** Ensure environmental end-state planning consistent with environmental regulatory requirements for sites in the nuclear weapons complex that may undergo changes in mission/status under Complex Transformation. Coordinate appropriately with DP and DOE's Office of Environmental Management.

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L PLANNING GUIDANCE FOR DEFENSE NUCLEAR SECURITY

State of the Enterprise

The years since the 9/11 terrorist attacks have shown that the threat to our nuclear materials, warheads, and information continues to evolve and adapt. The March 2004 Madrid and July 2005 London transit system bombings, and the propensity of terrorists to employ suicide bombers, highlights the challenges facing physical security. High profile hacking cases affecting many federal agencies, including DOE and NNSA, show the tenacity and reach of cyber threats.

The Chief of Defense Nuclear Security (CDNS) oversees security programs for the protection, control and accounting of materials and warheads, and for the physical and cyber security for NNSA facilities. Accordingly, the CDNS provides strategic guidance to the Office of Defense Nuclear Security (NA-70) for physical security and the Office of the Chief Information Officer (NA-65) for cyber security.

Improvements have been made in every element of NNSA's security systems—both physical and cyber. The number of protective force officers at every site has increased and their weapons and equipment upgraded. Strict physical access control has been implemented around critical facilities to reduce vulnerability to vehicle-borne explosives. Improved cyber access controls have reduced the risk of data loss. Consolidation of special nuclear materials at most secure facilities is underway. Paralleling the efforts in physical security, the NNSA CIO has improved the cyber security posture at NNSA sites and offices. New cyber security standards and qualifications, reduction of access ports to classified systems, consolidation of classified electronic media, and improved cyber-security awareness across the complex have enhanced NNSA's cyber-security posture.

Administrator's Priorities Chief of Defense Nuclear Security

A great challenge facing the CDNS is to leverage the work of other federal and industry partners in managing the risks and costs of physical and cyber security during Complex Transformation. The stand-up of a new classified network, the consolidation of special nuclear materials, the shift to new and more secure facilities for these materials such as the Highly Enriched Uranium Materials Facility at Y-12, and the attendant reduction in the physical and cyber security footprint offers opportunities to realize security cost efficiencies in the long term.

1. ***Sustain and continue the security enhancements made to NNSA programs and facilities in the post 9/11 period.***

2. ***Reduce cyber and physical security vulnerabilities.*** Establish the Information Assurance Response Center (IARC) as the NNSA's enterprise cyber security operations center.

3. ***Provide Security Program Integration Leadership.*** Both within the Department and with other inter-agency and international partners.

4. ***Provide Security Program Management Leadership.*** Assist each site to achieve a cost-effective physical security—both personnel and technology solutions—and cyber security, using best-in-class risk management principles and processes.

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M PLANNING GUIDANCE FOR MANAGEMENT AND ADMINISTRATION AND THE NNSA SERVICE CENTER

State of the Enterprise

The Office of Management and Administration (M&A) and the NNSA Service Center serve the entire NNSA organization by providing a variety of day-to-day functions needed to operate the NNSA as a federal organization as well as the nuclear weapons complex. In response to Office of Management and Budget direction, NNSA is moving to more widespread use of direct contracting with the private sector, especially small business in conducting threat reduction work. The NNSA Service Center, working with program offices, is the key element in placing and managing these procurements in a prompt and efficient manner. The Service Center is developing an effective, transparent, and timely process to complete contract awards, as well as to track the performance and completion of contracting these efforts.

Administrator's Priorities for M&A and the NNSA Service Center

Above all, M&A and the Service Center must work to NNSA's goal of being recognized widely as "Employer of Choice."

1. ***Establish and institutionalize workforce planning.*** Align plans to Program Direction and Program budgets that provide for critical skills pipeline training, planning and investment; personnel development, and mobility and secession planning. Achieve diversity and continual learning; and pay-for-performance based workforce management.

2. ***Advance complex wide business management systems, processes and practices.*** Provide a complex wide supply chain and acquisition management process; increase the diversity of small businesses supporting NNSA; and standardize and integrate unclassified information management systems, tools and practices.

3. ***Establish Information Technology Governance and Enterprise Architecture.*** Ensure coordination of IT investments and alignment with NNSA goals and priorities, including those of Complex Transformation.

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