NATIONAL NUCLEAR SECURITY ADMINISTRATION

Infrastructure Plan for the NNSA Nuclear Complex

APRIL 2003

Congressional Tasking

This ***NNSA Infrastructure Plan*** satisfies the statutory requirement of Section 3008 of the National Defense Authorization Act for Fiscal Year 2002, contained in Public Law 107-107 of December 28, 2001.

SEC. 3008. PREPARATION OF INFRASTRUCTURE PLAN FOR THE NUCLEAR WEAPONS COMPLEX.

(a) INFRASTRUCTURE PLAN FOR NUCLEAR WEAPONS COMPLEX-

(1) PREPARATION AND SUBMISSION - Not later than the date on which the budget for the Department of Energy for fiscal year 2004 is submitted to Congress, the Secretary of Energy shall submit to Congress an infrastructure plan for the nuclear weapons complex adequate to support the nuclear weapons stockpile, the naval reactors program, and nonproliferation and national security activities.

(2) SPECIAL CONSIDERATIONS – In preparing the infrastructure plan, the Secretary shall take into consideration the following:

(A) The Department of Defense Nuclear Posture Review required pursuant to section 1041 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (as enacted into law by Public Law 106-398; 114 Stat. 1654A-262).

(B) Any efficiencies and security benefits of consolidation of facilities of the nuclear weapons complex.

(C) The necessity to have a residual production capability.

(b) REGARDING REALIGNMENTS AND CLOSURES- On the basis of the infrastructure plan prepared under subsection (a), the Secretary shall make such recommendations regarding the need to close or realign facilities of the nuclear weapons complex as the Secretary considers appropriate, including the Secretary's recommendations on whether to establish a process by which a round of closures and realignments would be carried out and any additional legislative authority necessary to implement the recommendations. The Secretary shall submit the recommendations as part of the infrastructure plan under subsection (a).

(c) DEFINITIONS – In this section:

(1) The term "Secretary" and "Secretary of Energy" mean the Secretary of Energy, acting after consideration of the recommendations of the Administrator for Nuclear Security.

(2) The term "nuclear weapons complex" means the national security laboratories and nuclear weapons production facilities (as such terms are defined in section 3281 of the National Nuclear Security Administration Act (50 U.S.C. 2471)) and the facilities of the Naval Nuclear propulsion Program provided for under the Naval Nuclear Propulsion Executive Order (as such term is defined in section 3216 of such Act (50 U.S.C. 2406)).

Recommendation

This Infrastructure Plan concludes that the existing configuration of the NNSA Nuclear Complex, comprised of twelve sites each with unique capabilities, is essential based on an analysis of the NNSA missions and present national policy documents and, therefore, recommends that no sites should be closed. In particular, it is consistent with the 2001 Nuclear Posture Review and the necessary residual production capability to support the associated Nuclear Weapon Stockpile planning. Within the current configuration of the NNSA Nuclear Complex, the strategy of the Infrastructure Plan is to modernize and to reduce the footprint of the twelve sites. Although no site closures are planned, our strategy is to, on a limited basis, consolidate functions on an inter-site basis and, to a greater extent, consolidate functions on an intra-site basis. Since no site closures are proposed, no process by which a round of closures and realignments is needed and no additional legislative authority is necessary to implement this recommendation.

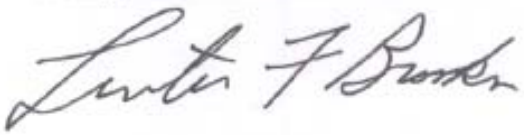
The Department has adopted a policy requiring the elimination of excess facility floor-space equal to the square footage of new construction upon beneficial occupancy. At a minimum, the NNSA Nuclear Complex will comply with this policy across the twelve-site configuration (less grand-fathered Fiscal Year 2002 starts) and will demolish excess facilities as early as possible, with the overall goal of reducing the square footage by more than required.

The existing configuration of the NNSA Nuclear Complex is essential to meeting the programmatic responsibilities of the NNSA. Therefore, any security benefits of consolidation will take place on a limited basis through functional transfers among the twelve-site configuration. More extensive security benefits of consolidation are expected through intra-site consolidation of programmatic and security functions. As the missions and threats to the NNSA Nuclear Complex evolve, NNSA will continue to carefully consider the potential program efficiency and security advantages of consolidated research, development, test, and production functions. Within the facility acquisition process for major capital line-item construction projects, NNSA will consider the appropriate location, operating efficiencies and security benefits pertaining to physical, personnel, cyber, and information protection.

I believe that this Infrastructure Plan will place the NNSA Nuclear Complex on the right path to achieving both our mission and our vision of an integrated, responsive enterprise that is recognized as preeminent in technical leadership and facilities management.

Spencer Abraham
Secretary of Energy

Ambassador Linton Brooks
Acting Administrator NNSA



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Introduction

Legislative Tasking

This National Nuclear Security Administration Infrastructure Plan, including the requested special considerations and recommendations, is submitted by the Secretary of Energy as directed by the National Defense Authorization Act for Fiscal Year 2002, as contained in Public Law 107-107 of December 28, 2001*, Section 3008, PREPARATION OF INFRASTRUCTURE PLAN FOR THE NUCLEAR WEAPONS COMPLEX*, hereinafter referred to as the "Section 3008 Plan" or the "NNSA Infrastructure Plan."

Definition of Terms

Section 3008 defines the term “nuclear weapons complex” to describe the infrastructure that will support the three NNSA missions collectively. However, this document refers to the collective Defense Programs, Nuclear Nonproliferation, and Naval Reactors set of twelve sites/facilities as the "NNSA Nuclear Complex," and the term "Defense Programs’ Nuclear Weapons Complex" to describe the eight Defense Program sites, as it has been traditionally used. Additionally "consolidation of facilities" within this report means the shutdown of a complete site and the transfer of its missions and program activities to another site.

Policy-Based Infrastructure Planning

The NNSA Infrastructure Plan is policy-based and is derived from statutes as well as guidance promulgated by the Department of Defense and the President. The programs of the NNSA and its Infrastructure Plan are based on policy reflected in the United States National Security Strategy; the Quadrennial Defense Review; the Nuclear Posture Review; the Nuclear Weapons Stockpile Plan, and various National Security Presidential Decision Directives. There is also a multitude of statutes articulating policy direction for the nuclear weapons stockpile, naval propulsion, and nuclear nonproliferation programs. National policy is also provided in international arms control and nuclear nonproliferation agreements. The NNSA Infrastructure Plan is also based on policies regarding environmental, safety and health statutes and executive direction as well as policy pertaining to safeguards and security.

Relation to Planning, Programming, Budgeting, and Evaluation Process and the Program and Project Management for the Acquisition of Capital Assets (PPMACA) Process

The NNSA Infrastructure Plan is consistent with the NNSA Planning, Programming, Budgeting and Evaluation process (PPBE), and the DOE management process pertaining to Program and Project Management for the Acquisition of Capital Assets. It is based on the hierarchy of plans including the DOE Strategic Plan, NNSA Strategic Plan, Multi-Year Program Plans, and Program Execution Plans. In particular, the activities and projects described in the NNSA Infrastructure Plan are supported in the FY 2004 Congressional Budget and related Future Years Nuclear Security Program (FYNSP) that sets out the NNSA budget for the period FY 2004 through FY 2008. Annual long range plans such as the Ten Year Comprehensive Site Plans (TYCSP) and Naval Reactor’s Ten-Year Infrastructure Plan that extend through FY 2013 are compliant through FY 2008 with the FY 2004 Congressional Budget Submission and related Future Years Nuclear Security Program. A baseline of construction line-item projects for the Nuclear Weapons Complex is contained in the Integrated Construction Program Plan (ICPP) that conforms to the FYNSP and represents the planning base for the period beyond the FYNSP. All of the line items are subject to adjustment as new information becomes available and as they are considered in the Program and Project Management for the Acquisition of Capital Assets management system within the context of the NNSA PPBE.

NNSA Facility Management Process

The condition of the nuclear weapons complex has been described in a series of internal and external assessments published during the period CY 1997 – CY 2001. These include: " Defense Programs Facilities & Maintenance Program Assessment, Phase 1 Maintenance Shortfalls & Backlog" – May 1997, "Defense Programs Phase II Facilities & Maintenance Study" – May 1998, "Commission on Maintaining United States Nuclear Weapons Expertise" – March 1999 (Chiles Report); "Defense Programs Facilities and Infrastructure Assessment, Phase I, Report 2000"; "Management of Nuclear Weapons Production Infrastructure" – September 2000 (DOE Inspector Audit Report); and "FY 2000 Report to Congress of the Panel to Assess the Reliability, Safety, and Security of the United States Nuclear Stockpile" – February 2001 (Foster Report). Independently, each assessment concluded that the nuclear weapons physical complex is old, with half of its facilities 40 years or older. They pointed out that in certain instances, facilities were being run to failure. Most importantly, they were united in the finding that to restore the complex to an acceptable condition, substantial additional annual funding is needed, on the order of some $300 - $500 million per year for about a decade.

In his response to these assessments, the Secretary of Energy testified before the Committee on Armed Services of the United States Senate on 8 February 2001 that the aging infrastructure must be recapitalized, that the production plants had been allowed to degrade leaving "tremendous backlog of deferred maintenance and modernization," that mission readiness was threatened, and finally, that the maintenance backlog could be as high as several billion dollars.

The NNSA Administrator testified before the Senate Energy and Water Development Appropriations Subcommittee on 13 March 2001, and again on 26 April 2001, with a more detailed message. He requested significant additional funding to restore the nuclear weapons complex to an acceptable standard, with a commitment to improve NNSA's facilities management. Congress responded in FY 2002 with additional new monies for NNSA's Readiness in the Technical Base Facilities (RTBF) program, and the establishment of a new, separate but complementary, Facilities and Infrastructure Recapitalization Program (FIRP).

The physical infrastructure of the nuclear weapons complex is managed by NNSA within a corporate facilities management framework. While specifics are discussed in the following sections, the general NNSA approach is that daily operations and maintenance to ensure the availability of facilities and infrastructure essential to the Stockpile Stewardship mission are principally funded within the Defense Programs' Readiness in the Technical Base and Facilities program. Capital renewal and sustainability are the focus of the Facilities and Infrastructure Recapitalization Program. Capital acquisition (line item construction) is managed across several program areas, in accordance with an Integrated Construction Program Plan. The NNSA is committed to responsible and accountable facility management processes, including budgetary processes, so that the condition of NNSA facilities and infrastructure is maintained equal to or better than industry standards. This integrated corporate approach, encompassing improved facilities management and significant additional funding, will ensure the recovery, and subsequent sustainment, of the nuclear weapons complex.

Elimination of Excess Facilities

The NNSA will comply with the DOE policy to eliminate excess facilities. This policy calls for the elimination of an area of excess facilities equal to the area of new construction projects requested in FY 2003 and thereafter. Identified excess facilities will be eliminated based on the greatest impact on long-term costs and risks.

This policy will constrain the growth of the nuclear weapons complex absent any approved waivers. Some growth is anticipated in as much as this policy begins with FY 2003 projects and thereafter, and there are a number of major facilities such as MESA and NIF that received funding before FY2003. Nonetheless, it is the intent of the NNSA, and Defense Programs nuclear weapons complex in particular, to have a smaller area footprint in the long term than currently exists not withstanding the exemption of construction projects funded prior to FY 2003.

Overview of the NNSA Nuclear Complex

NNSA was formed in 2001 and was given programmatic responsibility for the DOE's three primary nuclear security missions: the nuclear weapons stockpile, the Naval Reactors Program, and nonproliferation and national security activities. These NNSA duties include oversight of the acquisition and management of the facilities and infrastructure that support these functions. Day-to-day management of the twelve major sites for these three ongoing programs, including all operational and facilities and infrastructure planning, has been and will be the responsibility of the NNSA headquarters and site office organizations and the individual management and operations contractors. The three mission offices include:

- The Office of Defense Programs (DP), which operates three research and development laboratories, one test site, and four production plants,
- The Office of Naval Reactors (NR), which operates two research and development laboratories, one prototype site, and one operations site, and
- The Office of Defense Nuclear Nonproliferation (NN), which funds activities at the National Laboratories through contracts, but has no dedicated sites.

Collectively the NNSA Nuclear Complex (NR, NN and DP) currently (FY2002) comprises 38.8 million square feet of facilities and includes twelve sites (eight DP and four NR sites). Table 1 provides a summary overview of the NNSA Nuclear Complex.

Table 1 Summary of NNSA Nuclear Complex

	2002 (Millions of sq. ft.)	2008 (Millions of sq. ft.)	2013 (Millions of sq. ft.)
I. Defense Programs:			
Kansas City Plant, Kansas City, MO	**3.09**	**2.95**	**2.85**
Savannah River Site, Aiken, SC	**0.30**	**0.35**	**.35**
Y-12 Plant, Oak Ridge, TN	**5.45**	**5.26**	**5.17**
Pantex Plant, Amarillo, TX	**2.98**	**2.85**	**2.98**
Sandia National Laboratories, Albuquerque, NM & Livermore, CA	**6.04**	**6.55**	**6.96**
Los Alamos National Laboratory, Los Alamos, NM	**8.60**	**7.60**	**6.23**
Lawrence Livermore National Laboratory, Livermore, CA	**6.72**	**6.83**	**6.65**
Nevada Test Site, Las Vegas, NM	**2.47**	**2.63**	**2.65**
I. Nuclear Weapons Complex (Total)	**35.65**	**35.02**	**33.84**
II. Naval Reactors			
Bettis Atomic Power Laboratory, Pittsburgh, PA	**0.922**	**0.965**	**0.883**
Knolls Atomic Power Laboratory, Schenectady, NY	**0.891**	**0.925**	**0.817**
Kesselring Site, Ballston Spa, NY	**0.639**	**0.622**	**0.635**
Naval Reactors Facility, ID	**0.691**	**0.739**	**0.719**
II. Naval Reactors Site (Total)	**3.143**	**3.251**	**3.054**
III. Nuclear Nonproliferation	**0.00**	**0.500**	**0.775**
NNSA Nuclear Complex	**38.793**	**38.771**	**37.669**

The square footage estimates for FY 2008 and FY 2013 are based on current planning documents. NNSA is also committed to reducing these estimates further through improved infrastructure management and contracting.

Evolving Security, Safety, and Health, and Environmental Requirements

This NNSA Infrastructure Plan is based on knowledge of current security, safety and health, and environmental requirements as these apply to the NNSA mission areas that support the nuclear weapons stockpile, the Naval Reactors Program, and nonproliferation and national security activities. As these requirements continue to evolve, the projected construction, operations, and demolition of facilities for the NNSA Nuclear Complex will be affected. NNSA will consider these requirements at the earliest phases of its planning and design processes, and throughout the facility life cycle.

Organization of the Plan

The NNSA Infrastructure Plan includes a brief statement of mission, history, current policy and mission assessment, recommendations, and infrastructure plan of the three NNSA mission areas with respect to the facilities and infrastructure for each of the NNSA sites. The recommendations of each Deputy Administrator are approved by the NNSA Administrator and Secretary of Energy and contained in their overall recommendation to Congress. The Facility and Infrastructure Recapitalization Program (FIRP) is administered by Associate Administrator, Facilities and Operations (AAFO), and is described in the AAFO section of this plan.

Office of Defense Programs

Mission

The Office of Defense Programs (DP) has two principal missions: first, to ensure the continued high confidence in the safety, security, reliability and effectiveness of the enduring stockpile; second, to develop and maintain the research, development, and manufacturing capabilities to respond to changes in the strategic environment that call for increases (or decreases) in numbers of weapons or, if required, weapons that meet new or emerging military requirements. This encompasses many of the key aspects of the life cycle of a nuclear weapon including design, testing, manufacturing, maintenance, certification, transportation, staging, and ultimate disposal. DP is also responsible for support functions including underground test readiness, and strategic nuclear material management necessary to support the enduring stockpile**.**

History: Evolution of the Post-Cold War Nuclear Weapons Complex

As the Cold War ended during 1987 to 1991, the Nuclear Weapons Complex consisted of facilities at sixteen locations across the country. These sites were three National Laboratories, (Lawrence Livermore, Los Alamos, and Sandia); the Nevada Test Site; and twelve production plants responsible for the various materials and components of the nuclear weapons: Hanford Plant (Hanford, Washington), Fernald (Cincinnati, Ohio), Portsmouth Gaseous Diffusion Plant (Portsmouth, Ohio), Paducah Gaseous Diffusion Plant (Paducah, Kentucky), K-25 (Oak Ridge, Tennessee), Pantex Plant (Amarillo, Texas), Kansas City Plant (Kansas City, Missouri), Y-12 Plant (Oak Ridge, Tennessee), Savannah River Site (Aiken, South Carolina), Rocky Flats Plant (Rocky Flats, Colorado), Mound Plant (Miamisburg, Ohio), and Pinellas Plant (Pinellas, Florida). Collectively, these sites comprised 70.08 million square feet of facilities.

The end of the Cold War and other considerations (including expectations concerning the effect of the 1987 Intermediate-Range Nuclear Forces (INF) Treaty and 1991 START I Treaties on the stockpile and the results of DOE studies[1]) resulted in a series of policy decisions, commitments, and activities that influenced the downsizing and make-up of the Nuclear Weapons Complex. An excess inventory of special nuclear materials and safety concerns caused the Hanford site, in 1991, and the majority of the Savannah River Site (over 10 million in facility square feet), in 1996, to be shut down and transferred to the Office of Environmental Management.

The President committed to a moratorium on underground nuclear testing in 1992, but also committed to being capable of returning to testing within 36 months if required. With no requirement for new weapons design or production, but the requirement to maintain the existing stockpile and a *residual production capability*, a phased approach was used to reconfigure the production elements of the Nuclear Weapons Complex into a smaller, less diverse, and less expensive complex. In September 1993, a final Environmental Assessment and a finding of no significant impact were issued for the Non-Nuclear Reconfiguration project.[2] Under the Non-Nuclear Reconfiguration Project, the DOE terminated the production missions at the Mound and Pinellas Plants and the non-nuclear missions at the Rocky Flats

[1] These studies included the DOE's Nuclear Weapons Complex Reconfiguration Study published in January 1991.

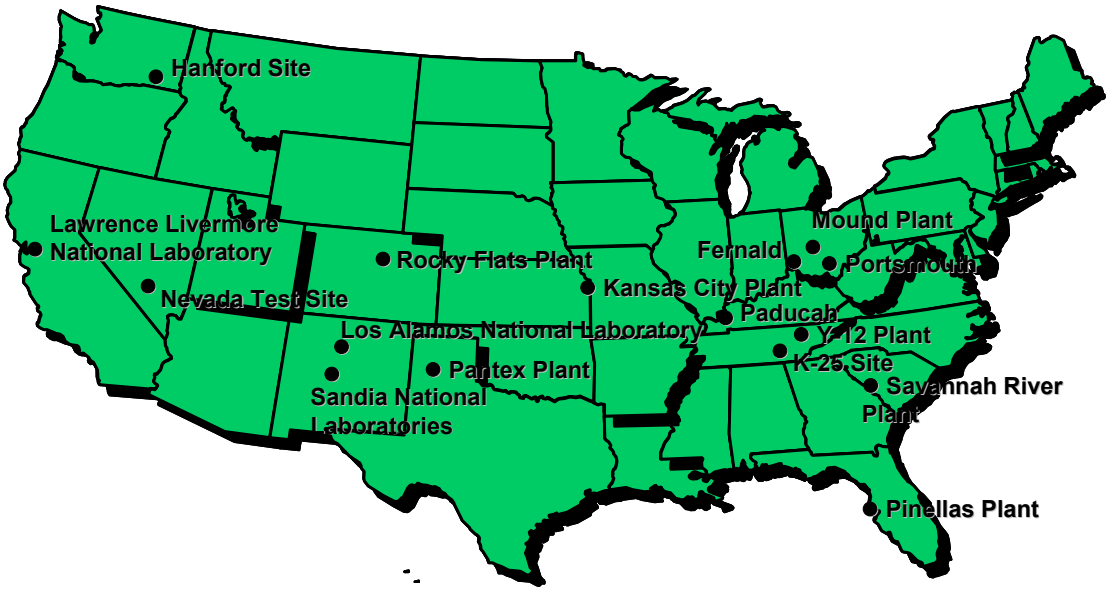
[2] Nonnuclear Consolidation Environmental Assessment, Executive Summary, Nuclear Weapons Complex Reconfiguration Program, DOE, Office of Defense Programs, Deputy Assistant Secretary for Weapons Complex Reconfiguration, June 1993.

Plants[3]. Production operations at Mound and Pinellas ceased in September 1994 and the transfer of missions within the complex was completed in FY 2001.

All of the sites closed since the 1980s require environmental cleanup and were ultimately transferred to the DOE Office of Environmental Management. The Pinellas Plant was subsequently sold to the County of Pinellas for industrial development use. These closures reduced the DP nuclear weapons complex to its present eight sites.

In 1996, the Department issued the Record of Decision for the Programmatic Environmental Impact Statement for Stockpile Stewardship and Management. The Record of Decision provided that the interim pit component fabrication capability and capacity would be reestablished at Los Alamos National Laboratory, and that the other production plant capability/capacity would be "down-sized in place." This programmatic assessment culminated in the development and implementation of the Stockpile Management Restructuring Initiative. The Stockpile Management Restructuring Initiative involved (1) the downsizing of weapons assembly/disassembly and high explosives at the Pantex Plant; (2) downsizing non-nuclear component manufacturing at the Kansas City Plant, (3) downsizing weapons secondary and case fabrication at the Oak Ridge Y-12 Plant; and (4) consolidation of existing tritium operations at the Savannah River Site.

Figure 1 – DP Nuclear Weapons Complex as the Cold War Ends (1987-1991)



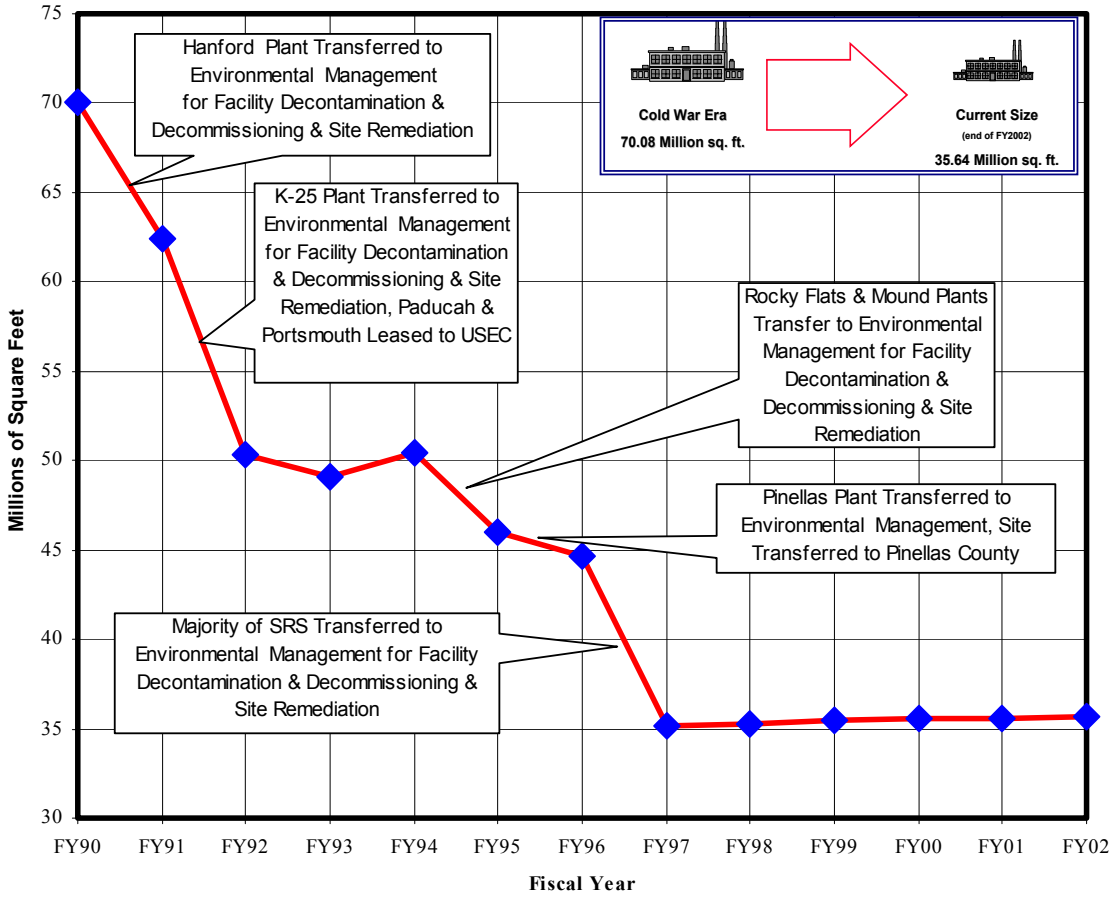
These policy decisions resulted in the necessity for science-based stockpile stewardship and certification centered on computer simulation of all aspects of the weapons and their functions, supported by above ground testing and experiments. The decision to use simulation without underground nuclear testing was a radical departure from the ultraconservative processes of the past. The need to develop a series of computers with record-breaking speeds and to develop application programs required computing and simulation centers at each of the national laboratories. New facilities to provide alternative sources of experimental data resulted in an equally radical change in the direction of the weapons complex infrastructure. Furthermore, maintaining a residual manufacturing and maintenance capability in the face

[3] The nuclear mission at Rocky Flats Plant was terminated in 1989 for "difficulties in achieving satisfactory progress in meeting and maintaining standards for environmental, safety, and health; an excessive and growing maintenance backlog; and population encroachment on a formerly remote site." Nuclear Weapons Complex Reconfiguration Study, DOE/DP0083, January 1991.

of facility and site closures required the migration of certain reduced/modified mission-maintenance capabilities to research and development sites.[4]

The decisions and closures described above reduced by half the square footage from Cold War levels. The infrastructure floor space historical trends since the Cold War for the DP Nuclear Weapons Complex sites are provided in Figure 2. At the end of the Cold War, the DP Nuclear Weapons Complex measured 70.08 million square feet in size, and at the end of FY 2002, 35.6 million square feet. The national laboratories and the Nevada Test Site measured 23.8 million square feet in FY 2002 and the production plants encompassed 11.8 million square feet.

Figure 2 – Historical NNSA/DP Complex



Current Policy & Mission Requirements Assessment: Role of the DP Nuclear Weapons Complex in Support of National Defense

Even since the Cold War ended, the role of nuclear weapons as both a dissuasion and deterrence element of National Defense policy has remained a cornerstone of United States strategic planning. The Stockpile Stewardship Program was established in response to the FY 1994 National Defense Authorization Act (P.L. 103-160), which called on the Secretary of Energy to "establish a stewardship program to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons." It is the policy of the United States Government that the nation's nuclear weapons stockpile be maintained in the absence of underground nuclear testing. The Stockpile Stewardship Program must meet the

[4] For example, these migrations included the interim pit capability at Los Alamos National Laboratory and the neutron generator capability at Sandia National Laboratories.

requirements for performance, safety, reliability, and security set forth in statutes, Presidential Decision Directives, the Nuclear Weapons Stockpile Plan, the Nuclear Posture Reviews, and other national security guidance. DOE is also required to provide for tritium production (P.L. 104-106 and 106-65), to maintain a manufacturing infrastructure capable of meeting the objectives of the Nuclear Posture Reviews (P.L. 104-106), and to carry out a program to provide for the extension of the effective life of weapons in the stockpile (P.L. 106-65).

Special Consideration: "Nuclear Posture Review"

The Department of Defense conducts periodic strategic planning reviews from which programming guidance is derived. The Quadrennial Defense Review for FY 2002 articulates, and the December 2001 Nuclear Posture Review reaffirms, four key defense policy goals. Briefly, the goals are to: (1) assure allies and friends by demonstrating the United States' steadiness of purpose and capability to fulfill its military commitments; (2) dissuade adversaries from undertaking military programs or operations that could threaten United States interests or those of allies and friends; (3) deter threats and counter coercion against the United States, its forces and allies; and (4) defeat any adversary decisively and defend against attack if deterrence fails.

In seeking to meet these goals, the December 2001 Nuclear Posture Review[5] established as its centerpiece a "New Triad" of flexible response capabilities. One of the key elements of this "New Triad" is a "responsive research and development and industrial infrastructure needed to develop, build, and maintain nuclear offensive forces and defensive systems…" which improves "the U.S. capabilities to counter emerging threats." The Nuclear Posture Review refers to the clear need "for a revitalized nuclear weapons complex that will be able, if directed, to design, develop, manufacture, and certify new warheads in response to new national requirements; and maintain readiness to resume underground nuclear testing if required."

The December 2001 Nuclear Posture Review established a goal of reducing the *operationally deployed* strategic stockpile to 3800 nuclear warheads by 2007 and 1700-2200 nuclear warheads by 2012. Although the NPR did not address specific stockpile quantities by year, it did describe the stockpile as consisting of *operationally deployed* and *responsive forces*. Operationally deployed warheads are warheads fully ready for use and either mated on, or allocated to, operational delivery systems; these warheads are part of the active stockpile.[6] Responsive warheads are warheads available to be uploaded to delivery systems in the event that world events require a more robust deterrence posture; most of these warheads would also be part of the active stockpile. While a smaller nuclear stockpile is expected to result, the enduring stockpile (consisting of operationally deployed and responsive forces) is projected to contain most of the current types of nuclear weapons. This smaller enduring stockpile will require much of the same support required of Defense Programs that is required today.

Now that the Cold War is over, an infrastructure focused on sustainment and sized to meet the needs of a smaller stockpile will nonetheless provide capabilities to respond to future strategic challenges. For example, a future adversary nation seeking to gain some nuclear advantage would be forced to conclude that its buildup could not occur quicker than the United States could act to reconstitute higher force levels. Alternatively, an ability to innovate and produce small builds of special purpose weapons, characteristic of a smaller but still vital nuclear infrastructure, would convince an adversary that it could not expect to negate United States nuclear forces, for example, by seeking to house vital command and control functions in hard, deeply buried installations. More generally, an effective nuclear weapons infrastructure will provide a mechanism by which the United States can respond to new, unexpected, or emerging threats in a timely manner.

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[5] Section 3008 requires that this infrastructure plan take special consideration of The Department of Defense Nuclear Posture Review, which was required pursuant to section 1041 of the Floyd D. Spence National Defense Authorization Act for FY 2001 (as enacted into law by Public Law 106-398; 114 Stat. 1654A-262).

[6] Active weapons are fully maintained with all Limited Life Components installed. Inactive weapons will have the Limited Life Components removed upon expiration and may have further reductions in their readiness state.

The Nuclear Posture Reviews reflect recognition of the importance of a *responsive* Nuclear Weapons Complex as a key element in achieving the nation's overall defense strategy. Defense Programs must also have the capability to respond to changes in the strategic environment, if need be, by being able to reconstitute larger force levels with safe and reliable warheads and develop, produce and certify new or modified nuclear warheads to meet new military requirements.

Special Consideration: Potential "efficiencies … of consolidation"

The three weapons laboratories, (Los Alamos, Lawrence Livermore, and Sandia National Laboratories) possess most of the core intellectual and technical competencies of the United States in nuclear weapons, encompassing more than 50 years of weapons knowledge and experience. The science and engineering technology base at the three weapons laboratories controls all technical requirements for a nuclear weapon. The laboratories perform the basic research, design, system engineering, development testing, reliability assessment, and certification of nuclear performance. In addition, these laboratories provide all technical specifications that are used by the production plants for manufacturing and surveillance operations and for maintenance operations conducted by Department of Defense.

The three design laboratory configuration provides the differing scientific approaches, span of technologies and technical peer interactions necessary to ensure high confidence in the safety and reliability of the nuclear weapons stockpile without nuclear testing. Using more than one approach, which is an essential element of the scientific process, is the only credible way to address problems where the methods of solution are uncertain, where definitive testing of conclusions is precluded, and where the consequences of incorrect actions are severe. For these reasons, the preservation of the dual-design laboratory configuration with a strong capability for independent analysis and peer review is a critical component of the moratorium on nuclear testing and is fundamental to the presidential-mandated annual certification of each nuclear weapon in the stockpile.

In the Defense Programs experience over the entire course of the nuclear weapons program, the three laboratories have continually developed new insights and discovered the unforeseen through a broad-based assessment capability and a thorough investigation of weapons safety and reliability issues. Moreover, effective oversight of the stockpile requires that surveillance be coupled with a broad-based assessment capability to understand and resolve both design and manufacturing issues detected or predicted through surveillance. The laboratories are configured to have the range of common capabilities in scientific disciplines, engineering fields and various supporting technologies which are critical to fundamental understanding of nuclear weapons behavior, materials aging and myriad other issues. Specialties also exist among the laboratories in certain technologies that, together with other capabilities in common, provide a range of capabilities without unnecessary duplication to help ensure the safety and reliability of the nuclear weapon stockpile.

Preservation of fully capable design laboratories to ensure independent analysis and peer review remains vital to the Unites States nuclear weapons program. A broad-based assessment capability and research program is crucial for the improved scientific and engineering understanding so essential to ensuring the safety and reliability of the nuclear weapons stockpile and responding to unforeseen national security requirements.

Consolidations of the weapons laboratories would counter efforts to maintain core competencies, independent analysis, and peer review, and to develop the new technologies necessary to ensure continued high confidence in a safe, secure, and reliable stockpile. Current stockpile activities in this regard, such as ongoing efforts to extend the lifetimes of enduring stockpile weapons, would also be hampered. For the foreseeable future, Defense Programs is confident, particularly in an era of no nuclear testing, that the three design laboratory approach is the most prudent course of action.

Since there can be no absolute guarantee of complete success in the development of enhanced experimental and computational capabilities, the Defense Programs must, as directed by law, maintain the capability to conduct nuclear tests as a "supreme national interest." Defense Programs will need to maintain the capability for nuclear testing and experimentation at the Nevada Test Site and the necessary

technical capabilities at the weapons laboratories to design and conduct such tests. Current Defense Programs plans, following recommendations in the Nuclear Posture Review, are to move to an 18-month test readiness posture within the next 36 months

The research, development and simulation element of the nuclear weapons complex is less sensitive to the number of weapons in the enduring stockpile and associated workload since it is influenced more by the diversity of the types of weapons in the stockpile and the challenges of certification without nuclear testing. Nonetheless, as the research, development and simulation facilities of the stockpile become inefficient because of outmoded technology or obsolete as a result of more demanding environmental, health and safety considerations, opportunities become available to replace equipment and facilities with better technologies and consolidations within a site that will result in smaller footprints.

Special Consideration: "…residual production capability"

In 1995, the Department formally evaluated production facility downsizing, and consolidation and relocation of missions in the Stockpile Stewardship and Management Programmatic Environmental Impact Statement (SSMPEIS). The Record of Decision (ROD) documented the preferred alternative for restructuring the stockpile management complex (referred to in this report as the DP Nuclear Weapons Complex). The Secretary of Energy approved the Record of Decision on December 19, 1996. Specifically, the Record of Decision provided that the interim pit component fabrication capability and capacity would be reestablished at Los Alamos National Laboratory, and that the other production plant capability/capacity would be "down-sized in place."

The following Defense Programs mission objectives are consistent with the assumptions and conclusions contained in the SSMPEIS: (1) fully support the evaluation, enhanced surveillance, maintenance, and repair of the enduring stockpile; (2) provide flexibility to respond to new requirements or to achieve further reductions in the stockpile size; (3) maintain and improve the manufacturing technology necessary to fully support the stockpile; and (4) achieve significant reductions in operating costs for the complex.

Broadly stated, there are five major manufacturing and surveillance functional areas in the industrial base represented by the production plants. Since almost every nuclear weapon component in one or more of these functional areas could require replacement over an extended lifetime, a production capability in each area must be maintained. These five major manufacturing and surveillance functional areas can be described as:

- Weapon Assembly and Disassembly
- High Explosive components,
- Pit, Secondary and case components,
- Nonnuclear components, and
- Tritium processing and recycling

These operations require specialized facilities and extensive support infrastructure. The components require various manufacturing and technology bases that are complex and varied due to the large number of component types and high reliability requirements. For example:

- *Weapon Assembly/Disassembly and High Explosive Component:* Pantex Plant is the only site that assembles or disassembles complete nuclear weapons. These operations require specialized infrastructure such as facilities designed and built to explosive safety standards and to limit nuclear material dispersal in case of a High Explosive accident. Pantex Plant currently manufactures HE components in special facilities built to explosives safety standards.
- *Pit Components.* Only Los Alamos National Laboratory has the mission to produce pit components. LANL is developing precision component manufacturing capability, and has an extensive and complete plutonium facility infrastructure, but does not yet produce certified pits.

- *Secondary and Case Component:* The Y-12 Plant produces the secondary and case components. These components require an extensive uranium and lithium technology base and facility infrastructure.
- *Nonnuclear Component:* Kansas City Plant and Sandia National Laboratories-NM currently manufacture the majority of the nonnuclear components. While the facilities are not unique in structural design, the manufacturing technologies are complex and varied due to the large number of component types and high reliability requirements.
- *Tritium Processing And Recycling*: Savannah River has specialized nuclear facilities used to recycle tritium, and for the processing and surveillance of limited life components.

Although the enduring stockpile is expected to see limited changes in weapon system types and total numbers, some reduction in historical manufacturing capacity is possible nonetheless. This is because the Life Extension Programs do not involve the production of a complete weapon, but rather the manufacturing of selected components, subassemblies, or major assemblies. The manufacturing capacity required to reconstitute a weapon from the inactive stockpile to the active stockpile is also less demanding on historical manufacturing capacity. In some instances, it may be a relatively simple matter of installing selected components.

As the manufacturing facilities become inefficient because of outmoded technology or obsolete as a result of more demanding environmental, health and safety considerations, opportunities become available to replace equipment and facilities with better technologies and consolidations within a site that will result in smaller footprints. These factors that may reduce capacity are somewhat offset by the need to maintain some capacity for small builds of specialized weapons that may be required by Department of Defense in the future in response to evolving threats.

The requirements for support of a smaller enduring stockpile, and the Nuclear Posture Review requirement for a responsive infrastructure, clearly indicate that the manufacturing and surveillance capabilities of the current production plants are basic needs that must be maintained for the foreseeable future. The industrial base, represented by the production plants, constitutes key core competencies, such as manufacturing and product/process quality control. However, with a smaller stockpile, industrial capacity can continue to be streamlined and modernized to meet anticipated manufacturing requirements for stockpile activities.

Mission Requirements

Within the framework of the Nuclear Posture Review and the need for a *responsive* Nuclear Weapons Complex, key Defense Programs mission requirements can be derived. These serve as the basis for an infrastructure focused on sustainment and sized to meet the needs of a smaller stockpile. These key mission requirements are:

Annually assess the enduring stockpile. In the absence of underground nuclear testing, certification is being achieved through combined efforts in stockpile surveillance, stockpile maintenance, non-nuclear experimentation and testing, aboveground high-energy-density physics laboratory experiments, and computational simulation. Rigorous development of non-nuclear experimental facilities, of aboveground laboratory facilities such as the Dual Access Radiographic Hydrodynamic Test Facility (DARHT), the National Ignition Facility (NIF), and the Z accelerator (Z) and of computational facilities and processes for the evaluation of archived test data are essential to maintain high confidence in the safety, security, and reliability of the stockpile. The cumulative assessment of these data sources is used annually to advise the president on the need to resume underground nuclear testing to ensure the safety, security, and reliability of the stockpile

Refurbish the stockpile. During the next decade, it will become necessary to refurbish and modernize stockpiled weapons, such as the B61 and W80 in FY 2006 and the W76 in FY 2007. These refurbishments encompass replacement of limited-life components, upgrade of tritium storage technology, and modernization of weapon surety features. Because significant changes will be made to these weapons

systems, and underground nuclear tests may not be performed, it will be necessary to use a significantly different approach for certification than has been used in the past. This new approach requires that planned computational facilities be available to simulate weapon performance with full-fidelity physics in three dimensions and that aboveground experimental facilities be available that can approach the conditions present in weapons and thus can provide the data to validate the models in the weapon performance codes. Additional radiographic facilities, both x-ray and proton, are required, as well as facilities in which to develop microsystem-based surety options. While some of these facilities exist today (e.g., subcritical test facilities) or are under construction (e.g., DARHT, National Ignition Facility at LLNL, Microsystems & Engineering Sciences Applications (MESA) Complex at SNL, Gas Transfer Capacity Expansion at Kansas City Plant, Cleaning and Loading Modification at Savannah River Site, Building 12-064 Bays Upgrade, Building 12-044 Cells Upgrade, and the Special Nuclear Material Component Requalification Facility at the Pantex Plant, and the Test Capability and Revitalization Project at SNL). Other facilities are only in a preliminary, pre-conceptual planning stage. Because the Stockpile Life Extension Program calls for production of refurbished weapons by FY 2006, it is essential to continue development of facilities that are underway and transition from planning to development and construction in accordance with our hierarchy of planning documents.

An important focus of the planned upgrades is to increase nuclear weapon surety (safety, reliability, and security), consistent with DoD Directives and DOE Orders that implement those directives. Surety features in stockpiled weapons are based on 1960s and 1970s technology. Considerable progress during the past five years now makes it feasible to incorporate new technologies based on microsystem devices. These technologies offer the possibility of eliminating all safety exceptions and security "hot spots" in the current stockpile. Failure to develop and deploy these technologies during the next 3-5 years will necessitate the re-use of 20- to 30-year-old technology in refurbished weapons, which then would remain in the stockpile for at least thirty years. Various new facilities are needed to implement these new surety features.

New mission capabilities, such as the reacceptance of pits, will require renovated facilities and the implementation of new manufacturing and inspection technologies at the Pantex Plant. For secondary components, the recapture of previous manufacturing capability will require new and renovated facilities at the Y-12 Plant.

Resume the production of certified pits. When Rocky Flats was closed in 1989, the United States' pit production came to a halt, interrupting the production of war-reserve W88s. Presently, the United States is the only nuclear power that lacks the ability to manufacture pits that are certified for use in its weapons. Although DoD does not require DOE to produce pits *per se*, it does require DOE to support the stockpile defined by the Nuclear Weapons Stockpile Memorandum. To support the stockpile, DOE performs surveillance on weapons to assure that their performance can be certified. Because of the increased longevity of weapons in the stockpile, there is a requirement to manufacture pits so as not to deplete the required stockpile level because of surveillance requirements. The first certified pit required to be manufactured, by the end of FY 2007, is the W88. Subsequent to the W88, the next pit manufacturing requirement to support the surveillance program will be for the W87.

Ability to resume underground nuclear testing. By Presidential Decision Directives, the President has stipulated that DOE must be prepared to resume underground nuclear testing within 24 to 36 months. Presently, DOE plans, following recommendations in the Nuclear Posture Review, to move to an 18-month test readiness posture within the next 36 months. The ability to resume testing is highly dependent on the necessary infrastructure being in place to provide the required facilities, diagnostics, and equipment.

Maintain Responsive Infrastructure. Stockpile stewardship requires state-of-the-art research and development capabilities to predict, discover, and evaluate problems in the current stockpile (especially those associated with component aging or defects); to design, develop, and certify new warheads in the absence of testing; and to attract and retain a world-class technical staff. Thus, in addition to modernizing production capabilities, efforts are under way to restore and improve the research and development

infrastructure, which supports the technical base of the Nuclear Weapons Complex, and to develop advanced capabilities to meet future requirements.

Research, development and production excellence are built on a foundation of science and engineering research capabilities. These research capabilities, which differentiate Defense Programs from universities and many other federal laboratories and which are slated for improvement within the next ten years, include materials and process science; computational and information sciences; microelectronics and photonics sciences; engineering; and pulsed power sciences. In addition to these capabilities, Defense Programs will focus on several specific technology areas during the next few years: intelligent integrated microsystems (including microelectronics); modeling and simulation capabilities; hydrodynamic and subcritical testing capabilities for warhead assessments; high-energy-density-physics projects to improve understanding of the physics of nuclear explosions; simulation-based life cycle engineering and manufacturing; surety science and technology; in situ inspection of weapons components for materials aging; measurement of material properties in pressure and temperature regimes; deployment of modern production capabilities and processes; and biotechnology.

The current DP production capability consists of several "one of a kind" facilities: the Y-12 Plant (uranium and case components), the Pantex Plant (warhead assembly, disassembly, disposal, High Explosive components), the Kansas City Plant (non-nuclear components), and the Savannah River Plant (tritium extraction and handling). In addition, production activities for specific components occur at two national laboratories: Sandia National Laboratories (neutron generators), and Los Alamos National Laboratory (plutonium/beryllium parts, detonators, tritium targets for neutron generators).

The production infrastructure, consisting of the six production plants, requires interrelated facilities with state-of-the-art capabilities to conduct a series of nuclear weapon activities to ensure the reliability and safety of the stockpiled weapons throughout their operational life. Efforts are under way to restore and improve the production infrastructure, which supports the technical base of the Nuclear Weapons Complex, and to develop advanced capabilities to meet future requirements. These capabilities,[7] many of which are slated for improvement within the next ten years, include:

1) Assembly/disassembly and dismantlement, including disposition of specified products or materials,
2) Evaluation and surveillance (Joint Test Assemblies and Test bed fabrication and assembly), including component shelf-life programs,
3) Repair, retrofit, and modifications,
4) Manufacturing process development and deployment, including management of related technology bases,
5) Acquisition of raw stock, piece parts and production materials inventories,
6) In-house production and/or outside procurement of components,
7) Packaging and transportation,
8) Storage of the Strategic Reserve of Special Nuclear Materials,
9) Production and recycle of nuclear materials, and
10) Support work for others (i.e., DOE, other government agencies, or requests from the private sector) in accordance with reimbursable work guidelines.

[7] Details on specific mission responsibilities of the production plants can be found in the classified Production Site Mission Assignments document, Attachment to classified Memorandum dated July 11, 1997, Titled: *Revised AL Production Mission Assignments (U),* Bruce G. Twining to Those on Attached List.

Mission Capability Assessment

In 2002, the NNSA prepared and submitted a report to Congress[8] that assessed the information needed to determine that the nuclear weapons stockpile is safe and reliable and a description of the relationship of the science-based tools. Science-based tools include facilities that incorporate experimental, computational and simulation equipment. The report also provided clear and specific criteria for judging whether the science-based tools for determining the safety and reliability of the nuclear weapons stockpile are performing in a manner that will provide an adequate degree of certainty that the stockpile is safe and reliable. The structure used to define and develop the criteria was to: describe the information needed; identify the tools presently in use; identify the gaps caused by the inadequacies in the present tools; identify the future tools needed to address gaps: and provide the criteria developed to date for the tools. A test readiness cost study has been completed for nuclear test resumption.[9]

Over the last three years, NNSA has conducted a series of Production Readiness Assessments[10] of the manufacturing sites within the Nuclear Weapons Complex to evaluate the "production readiness" state of the complex. The Production Readiness Assessment assessed production complex capabilities and capacities by focusing on five distinct elements, a key element being facilities & infrastructure (support activities, facilities, buildings, utilities, facility support personnel, and capital equipment that provide direct support to the production effort.)

Production Readiness, as used in these assessments, was defined as the ability to: (1) meet all manufacturing/production requirements for Directed Stockpile Work with sufficient manufacturing capability and capacity, and (2) respond with surge manufacturing capability and capacity to address emergency problems by replacing components for any one weapon system in the enduring stockpile at a rate of 10% of the START I quantities per year, with the first production unit delivered 36 months after a need is defined. For the purposes of these assessments, capability was defined as the ability to manufacture at least one production unit. Capacity was defined as the ability to produce at the rate required to meet the production schedule.

The current production complex is limited in the number of weapons that can be processed at the Pantex Plant, with the work split among units undergoing surveillance, refurbishment, or dismantlement. Planned renovations of existing facilities will expand this capacity, which will then be sufficient to meet the anticipated Nuclear Posture Review workload with a reserve capacity to fix unanticipated problems in the stockpile, respond to new warhead production requirements, or handle a potentially increased dismantlement workload (resulting from force reductions) without disrupting the planned refurbishment workload.

The ability to meet today's stockpile stewardship challenge is at risk because of the age and condition of the existing facilities. A principal vulnerability in this area is the age and condition of production facilities. For example, as documented in a 2001 facility assessment, 70% of the facilities at the Y-12 Plant, 80% of the facilities at the Kansas City Plant, 50% of the facilities at Los Alamos National Laboratory, 40% of the facilities at Pantex, and 40% of the Savannah River tritium facilities are more than 40 years old. These facilities were not designed or built for today's missions, safeguards, and security requirements, nor were they designed or constructed to meet today's environmental, safety, and health standards. As these facilities continue to age, the maintenance and operating costs continue to rise. In addition, the level of facility maintenance has been marginal, ranging from 0.4-1.4%—well below the typical 2-4% of replacement cost per year, as specified in the recommended industry standard (Federal Facilities Council Technical Report 131- October 1996).

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[8] See classified document: *Report on Criteria for Stockpile Stewardship Tools (U),* Prepared in Response to Section 3158 of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, DOE, May 2000

[9] Enhanced Test Readiness Cost Study, July 1, 2002, DOE/NNSA/Nevada Operations Office, DOE/NV—828.

[10] See classified documents: *Production Readiness Assessment for FY2000*, DOE, July 2000; *Production Readiness Assessment for FY2001*, DOE, August 2001; *Production Readiness Assessment for FY2002*, DOE, August 2002.

Regardless of the size of the future nuclear weapons stockpile, substantial work must be completed to get the complex to the point where it is "ready" to begin refurbishment work on key systems later this decade, to respond to changes in the strategic environment by being able to reconstitute larger warhead levels and to produce new or modified nuclear warheads to meet new military requirements.

In summary, various gaps have been identified in the ability of the existing facilities & infrastructure (specifically in support activities, facilities, buildings, utilities, facility support personnel, and capital equipment) that provide direct support to the research/development, production, or test readiness efforts. Achieving the objective of "modernizing this smaller infrastructure" – of overcoming the readiness "gaps" will require a strong commitment to the recapitalization of the nuclear weapons infrastructure. This will be a smaller infrastructure but one that is sufficiently modern and capable to fully support the nation's defense strategy.

Special Consideration: Potential "… security benefits of consolidation"

The existing configuration of the NNSA Nuclear Complex is essential to meeting the programmatic responsibilities of the NNSA. Therefore, any security benefits of consolidation will take place on a limited basis through functional transfers among the twelve-site configuration. More extensive security benefits of consolidation are expected through intra-site consolidation of programmatic and security functions. As the missions and threats to the NNSA Nuclear Complex evolve, NNSA will continue to carefully consider the potential program efficiency and security advantages of consolidated research, development, test, and production functions. Within the facility acquisition process for major capital line-item construction projects, NNSA will consider the appropriate location, operating efficiencies, and security benefits pertaining to physical, personnel, cyber, and information protection.

Conclusion for the Nuclear Weapons Complex

Based on a recent policy analysis of legislative direction and the Nuclear Posture Review, and also a combined technical analysis of the production readiness, test readiness and the scientific tools necessary to support the accomplishment of the Defense Programs mission, it is concluded that:

> **The current configuration of the nuclear weapons complex is necessary for the accomplishment of the defense programs mission in support of the Nuclear Posture Review. None of the existing eight sites is proposed for closure. Some limited inter-site consolidation of mission activities and intra-site consolidation of facilities is planned during the next ten years. Since no site closures are proposed, no process by which a round of closures and realignments is needed and no additional legislative authority is necessary.**

More specifically:

- Within the existing eight site configuration of the DP complex, the strategy for the Nuclear Weapons Complex encompasses an integrated, responsive infrastructure in support of the nuclear weapons stockpile of today and the future that is programmatically effective and cost efficient.
- The strategy for the DP Nuclear Weapons Complex will include the research, development, simulation, modeling, test readiness, surveillance, evaluation, assessment, and manufacturing functions in support of the nuclear weapons stockpile of today and the future. In addition, the strategy will address all industrial factors of the nuclear weapons complex including facilities infrastructure; processes and technologies; workforce; business practices; engineering and technical practices; and supply chains in a holistic and integrated manner to ensure synergy among all industrial factors of the nuclear weapon complex as a functioning preeminent nuclear weapons industrial enterprise.
- Within the strategy for the DP Nuclear Weapons Complex, the integrated, responsive infrastructure will be expected to demonstrate the following key attributes in the future:
    - Smaller footprint within the eight sites with lower maintenance and operating expenses.

  - Flexible capability and capacity, rapid, and integrated design and manufacturing functions.
  - Maintenance and recapitalization rates for facilities and equipment, which are commensurate with industry standards.
  - Environmental, safety, health, safeguards and security efficacy that is intrinsic to the design and operation of the nuclear weapons complex.
  - Preeminence in core competencies critical to the nuclear weapons program's research, development, simulation, modeling, surveillance, evaluation, assessment, certification, manufacturing and test readiness functions.
  - Partnership with other institutions to help ensure excellence in the nuclear weapons enterprise.
  - Management techniques to help ensure program performance are intrinsic in the nuclear weapons enterprise.
  - Application of core competencies for other national security matters in a manner that is complementary to the nuclear weapons program and responsive to national security issues.

- The strategy for the DP Nuclear Weapons Complex will be developed in partnership with the Department of Defense to ensure it is responsive to the regime of nuclear weapons targets, military characteristics, stockpile-to-target sequences, production quantities, production rates, certification risks, and testing restrictions that NNSA must support. Consultation with other national security partners such as the Department of Homeland Security will shape the strategy.

NNSA/Defense Programs Infrastructure Plan

Infrastructure Goal

Over the past decade, the focus of Defense Programs has been to develop the means to certify and support maintenance of the safety and reliability of the aging stockpile without underground nuclear testing. The size of the production infrastructure has been reduced consistent with post-Cold War force levels. The results of these efforts have been variable. To date, the NNSA has been able to certify and support maintenance of stockpile safety and reliability without underground nuclear testing, but the capability to do so as the stockpile continues to age remains uncertain. Lack of investment in facilities and infrastructure—in particular, in the production complex—has increased the risks and will limit future options. Currently, no capability exists to build and certify plutonium "pits" and certain secondary components, much less complete warheads. Many facilities are aged and in poor condition—some are unusable. Maintaining current nuclear weapons capabilities, and restoring lost capabilities, will require recapitalization of both laboratory and production infrastructure.

The December 2001 Nuclear Posture Review highlighted the importance of a responsive defense research and development and industrial base as a key element of the New Triad. Responsive infrastructure is characterized by the capability of the Nuclear Weapons Complex to anticipate innovations by an adversary and to counter them before our deterrent is degraded, and its resilience to unanticipated events or emerging threats—all the while continuing to carry out the day-to-day activities in support of the enduring stockpile. There are a number of capabilities and activities that will help Defense Programs to be prepared for an uncertain future including our ability to:

- Enhance readiness to resume underground nuclear testing, and
- Ensure sufficient base and reserve capability and capacity for both the research and development and production infrastructure, and
- Ensure the research and development and production infrastructure incorporates high standards of performance concerning safety, environmental compliance, and security of operations.

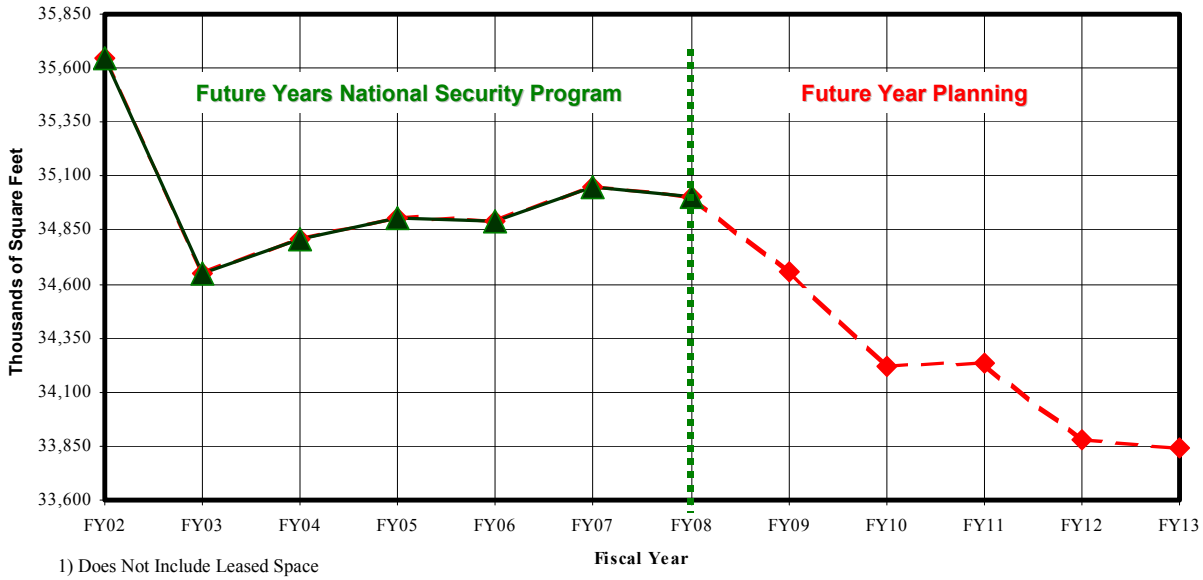
In order for NNSA to achieve the capabilities of a responsive defense research and development and industrial base, NNSA's goal today is one of modernizing the DP Nuclear Weapons Complex infrastructure to assure that the nation has the capabilities it will need in the future.

Nuclear Weapons Complex Infrastructure Plan

Infrastructure planning for the DP complex includes a series of major efforts to acquire: replacement and new facilities; upgrades of out-of-date facilities; reduction of maintenance backlog for equipment; renovation or replacement of basic office and support facilities to support a work environment conducive to productivity; and the decommissioning and demolition of the numerous excess and outdated structures and facilities.

Defense Programs plans to build approximately 1.3 million square feet of new facilities by the end of FY-2008. NNSA will remove approximately three million square feet of obsolete facilities by the end of FY-2009. Defense Programs plans to modernize hundreds of its key facilities over the next ten years as is evidenced within our individual sites' Ten Year Comprehensive Site Plans. NNSA will focus on major system and subsystem replacement and modernization such as electrical, mechanical, structural, and roofing. New office space will be built so that management & operating contractors may move out of temporary trailers. This in turn will improve not only the working conditions of our employees, but will save energy, reduce maintenance, and help offset the annual increases in the cost of facility operations. The introduction of new science tools and quality of life improvements will also help attract the quality workforce of the future. Figure 3 illustrates the DP Infrastructure Plan for the DP Nuclear Weapons Complex through FY 2013.

Figure 3 –Nuclear Weapons Complex Footprint [1) 2)]



1) Does Not Include Leased Space
2) Includes Facilities Exempted from the DOE Policy on the Elimination of Excess Facilities such as MESA and NIF

The following is a synopsis of the infrastructure plan for the DP sites that is taken from the Ten Year Comprehensive Site Plans. The first section describes the construction planned for funding during the current Future Years Nuclear Security Program (FYNSP - FY2004 through FY2008) for each site, as noted in the ICPP. The second section describes the proposed work by site for FY2009 through FY2013 that is considered "future year planning." The third section of work described below within each site is typical "deactivation, decommission and demolishment" projects that are planned for the timeframe mentioned.

The Pantex Plant:

FY2004-FY2008 – Future Years Planning

At the Pantex Plant, facility construction is planned to add to capability and capacity of the core mission of assembly and disassembly of nuclear weapons by renovating an entire complex of production bays and cells; special nuclear material will be easier to requalify (the SNM Component Requalification Facility), and Stockpile Management and Restructuring Initiative will be completed during this FYNSP period. Additionally the new High Explosive Evaluation Facility will start construction in FY07 and enable safer operations with high explosives.

FY2009-FY2013 – Future Year Planning

Line items planned for completion during this period include: Various utility upgrades such as the Electrical Distribution System Upgrade, Upgrade Gas main and Distribution Lines, High-Pressure Fire Loop – Zone 12 South, and Sewer Equipment Refurbishment.

FY2004- FY2013 – Planned Footprint Reduction

The Pantex Plant plans to remove: high explosive preparation complex, high explosive synthesis complex, demolition within zone 10, the Elmes press facility, building 11-044, sewage treatment plant, inactive utility and storage facilities, high explosive machining complex, phase 1, building 12-009, miscellaneous buildings, temporary buildings, excess warehouses, office and storage buildings, firing sites, R&D facilities, high explosive formulation facility, and the nondestructive testing complex. The Pantex Plant plans to D&D an estimated 154 buildings, trailers or pieces of infrastructure as described within the FY03 TYCSP.

The Kansas City Plant:

FY2004-FY2008 – Future Years Planning

The Kansas City Plant is expanding its production technology and capacity with: the Gas Transfer Capacity Expansion project; the Polysilicon and Packaging Facility; and the LIGA (an acronym for the German words that mean lithography, electroplating and molding) Assembly Facility. A series of facility improvements are underway during this period (Structural Upgrades, Stockpile Management and Restructuring Initiative, and Replace Boilers and Controls) to ensure the readiness of the plant into the future.

FY2009-FY2013 – Future Year Planning

Line items planned for completion during this period include: LIGA Assembly Facility and the Polysilicon and Packaging Facility.

FY2004-FY2013 – Planned Footprint Reduction

The Kansas City Plant plans to complete one deactivation, decommissioning, and demolishment project during this period, the removal of oil storage tanks.

The Y-12 Plant:

FY2004-FY2008 – Future Years Planning

At the Y-12 Plant, three major production facilities have started construction, including Stockpile Manufacturing and Restructuring Initiative, the Highly Enriched Uranium Materials Facility, and the Purification Facility. In parallel, improvements to the site utility infrastructure, beginning with the Compressed and Breathing Air Upgrades, Steam Plant Life Extension projects, Potable Water System Upgrades and Improvements, and Upgrade Utility Distribution Systems will be made to increase overall plant reliability.

FY2009-FY2013 – Future Year Planning

Line items planned for completion during this period include: Depleted Uranium/Binary Consolidation, Enriched Uranium, Quality Evaluation Relocation, and the Complex Command Center.

FY2004-FY2013 – Planned Footprint Reduction

The Y-12 Plant plans to remove: trailers, storage facilities, utilities, cooling towers, change house, guard posts, wash building, chemical unloading, explosive forming, service station, test cells, disposal pits, parking facility, sampling station, transfer station, chemistry buildings, computer buildings, and manufacturing buildings. The Y-12 Plant plans to deactivate, decommission and demolish an estimated 150 buildings, trailers or pieces of infrastructure as described within the FY03 TYCSP.

The Savannah River Site:

FY2004-FY2008 – Future Years Planning

At the Savannah River Site, the Tritium Modernization and Consolidation project will be completed. This will revitalize the NNSA's ability to handle tritium. The Cleaning and Loading Modification will improve the safety and effectiveness of the gas transfer system filling process.

FY2009-FY2013 – Future Year Planning

The Savannah River Site is planning to complete the following line items during this period: the Tritium Development Laboratory and the Replacement Function (Real Time Mass Spectrometry equipped bell jar) Tester.

FY2004-FY2013 – Planned Footprint Reduction

The Savannah River Site has planned a limited small amount of deactivation, decommissioning, and demolishment projects during this planning period. Projects totaling 14,000 square feet are planned for completion.

New construction and planned demolition and disposal projects will result in a total plant footprint of about 11.4 million square feet in FY-08, as depicted in Figure 4.

Nevada Test Site

FY2004-FY2008 – Future Years Planning

At the Nevada Test Site, the Atlas pulsed power facility, originally developed at the Los Alamos National Laboratory, is being rebuilt, and once assembled will provide an important experimental capability for materials and hydrodynamics research. The JASPER two-stage gas gun is being commissioned to execute experiments on the properties of Plutonium. Plans are underway to move the critical assembly functions done at Technical Area-18 to the Device Assembly Facility at Nevada Test Site. U1H upgrades to the U1a facility. The Electrical Power Systems Safety upgrades and two new fire stations will add to the site's infrastructure reliability and greatly improve worker safety by locating first responders strategically across the site. Additionally, the Communications Upgrades will add operational capability to the site over the life of this planning period.

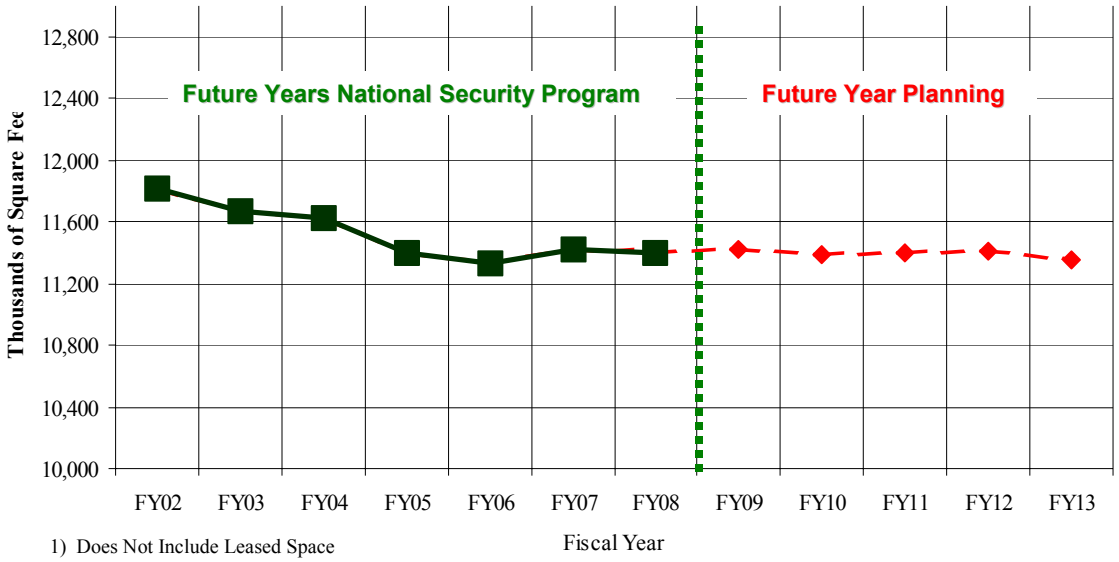
FY2009-FY2013– Future Year Planning

The TA-18 Relocation from LANL will be completed during this period.

FY2004-FY2013 – Planned Footprint Reduction

At the Nevada Test Site typical deactivation, decommission and demolishment projects will include: Storage facilities, electrical annex, fire pump house, radiation safe storage, booster stations, computer recording, guard stations, instrument stations, dormitories, service station, camera station, bunker, army well softener station, electrical storage, laborer's office, and signal timer station among others. Nevada Test Site plans to deactivate, decommission, and demolish an estimated 111 buildings, trailers or pieces of infrastructure as described within their FY2003 TYCSP.

Figure 4 - Production Plant Footprint (without Laboratories) [1)]



1) Does Not Include Leased Space

Sandia National Laboratory:

FY2004-FY2008 – Future Years Planning

At the Sandia National Laboratories, there are many planned and ongoing improvements. The construction of the Microsystems & Engineering Sciences Application (MESA) facility and the LIGA Technology Facility will provide new technologies that are essential to addressing the needs of the stockpile. The Model Validation & Systems Certification Test Center, and the Test Capability and Revitalization Project will enhance modeling and test capabilities for nuclear weapons. The Exterior Communications Infrastructure Modernization, and the Storm Drain, Sanitary Sewer, and Domestic Water Systems Modernization Project will revitalize the infrastructure that supports work at SNL.

FY2009-FY2013 – Future Year Planning

At present Sandia National Laboratory has no line items that start within the Post Future Years Nuclear Security Program period (FY-09 – FY2013), however SNL is planning to complete such line items as these during these out years: Nuclear Weapons Engineering and Product Support Complex, and MESA.

FY2004-FY2013 – Planned Footprint Reduction

At Sandia National Laboratory typical deactivation, decommission and demolishment projects will include: wind turbine, science exhibit center, security tower, trailers, storage facilities, molten core test cells, guard houses, Quonset buildings, re-entry burn-up test facilities, tanks, office trailers, laser physics laboratory. Sandia plans to deactivate, decommission, and demolish an estimated 298 buildings, trailers or pieces of infrastructure as described within its FY03 TYCSP.

Los Alamos National Laboratory:

FY2004-FY2008 – Future Years Planning

At the Los Alamos National Laboratories, new construction will advance ongoing revitalization and maintenance of facilities and will develop new capabilities to support and contribute to core competencies. The Dual Axis Radiographic Test Facility and the Nicholas C. Metropolis Center (formerly the Strategic Computing Facility) are essentially complete and have significantly enhanced the hydrodynamic testing and computation capabilities respectively of the complex. Additionally, the laboratory is planning numerous other major line items such as the Chemistry & Metallurgy Research Replacement Project, Nonproliferation and International Security Center, the new Emergency Operations

Center, DX Explosives Characterization and the Tech Area-16 Weapons Engineering Facility during this period.

FY2009-FY2013– Future Year Planning

At present the Los Alamos National Laboratory will start construction on the Radiography Facility within this period, additionally, it is planning to complete such line items as Chemistry & Metallurgy Research Replacement Facility and the TA-55 Infrastructure Reinvestment Project.

FY2004-FY2013 – Planned Footprint Reduction

At the Los Alamos National Laboratory typical deactivation, decommission and demolishment projects will include: obsolete trailers, explosive facility passageways, explosive rest houses, steam plant boilers, x-ray buildings, health and safety clinics, firing chambers, ion beam facility, substation, stack monitoring building, blower house, compressor building, laboratory buildings, and pulse power laboratory. The Laboratories plan to deactivate, decommission, and demolish 514 buildings, trailers, or pieces of infrastructure as described within its FY03 TYCSP.

Lawrence Livermore National Laboratory:

FY2004-FY2008 – Future Years Planning

At the Lawrence Livermore National Laboratory, major ongoing and planned construction projects will enhance the NNSA's ability to certify the safety and reliability of the nuclear stockpile through testing and computer simulation. Major facilities will be completed during this period: National Ignition Facility, Sensitive Compartmented Information Facility, Tritium Facility Modernization and the Isotope Sciences Facility. Revitalization of aging machining, high explosive processing, and nuclear chemistry infrastructure is being addressed by the Engineering Technology Complex Upgrade, the Energetic Materials Processing Center. The Sensitive Compartmented Information Facility provides increased space and modernized facilities for an expanding role in national security.

FY2009-FY2013– Future Year Planning

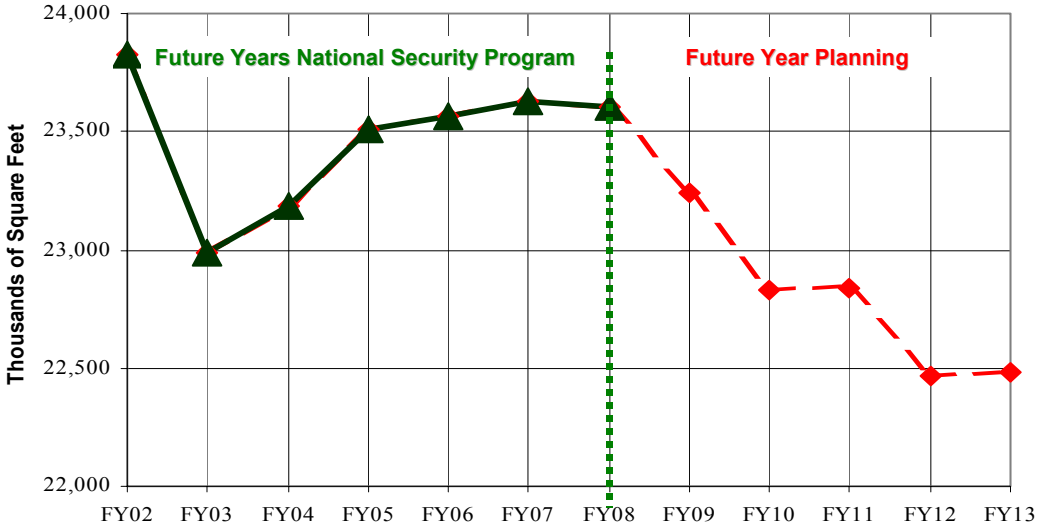
At present the laboratory is planning to complete during this period such line items as Materials Science Modernization, High Explosives Development Center, Seismic Upgrades, and Consolidated Security Facility.

FY2004-FY2013 – Planned Footprint Reduction

At the laboratory typical deactivation, decommission and demolishment projects include: DC power supply yard, trailers, obsolete office buildings, obsolete laboratories, flight tubes, accelerator buildings, and tanks. Lawrence Livermore National Laboratory plans to deactivate, decommission and demolish 160 buildings, trailers, or pieces of infrastructure as described within its FY03 TYCSP.

When these construction efforts are coupled with planned facility demolition and disposal under the Facilities & Infrastructure Recapitalization Program, managed by the Associate Administrator for Facilities and Operations, the overall national laboratory/Nevada Test Site cumulative footprint will be reduced from 23.8 million square feet to 23.6 million square feet, as depicted in Figure 5.

Figure 5 –National Laboratories/Nevada Test Site Footprint [1) 2)]



1) Does Not Include Leased Space
2) Includes Facilities Exempted from the DOE Policy on the Elimination of Excess Facilities such as MESA and NIF

Potential Mission Requirements

There are potential decisions regarding NNSA facilities and infrastructure-related activities that are being considered. The effects of these decisions on infrastructure are not known at this time. These include:

Modern Pit Facility

In the future, it may become necessary to manufacture large quantities of pits for stockpiled weapons due to unforeseen requirements that surface from the surveillance program or changing national security requirements. For the near term, support of the surveillance program will be met with the pit-production capability being implemented at Los Alamos National Laboratory. Larger manufacturing requirements would necessitate a significantly larger capital investment of approximately $2 to 4 billion. Planning and conceptual design of such a facility is underway and must continue to be supported in the event that such a facility would be required. At the same time, adequate resources must continue to be applied to provide certified-pit production capacity and plutonium-research capability at Los Alamos National Laboratory.

The need for a Modern Pit Facility (MPF) is being evaluated. Design funding is included in NNSA Future-Years Nuclear Security Program, and five candidate sites for MPF are being considered for the facility if the Secretary decides one is needed. Under current planning scenarios, an MPF will provide a capability to manufacture plutonium components and assemble replacement pits at larger capacities than Los Alamos, providing a long-term replacement for the Rocky Flats Plant (production shutdown in 1989) and interim manufacturing capability being established at LANL. A notice of intent to prepare an environmental impact statement on an MPF was issued in September 2002. Five sites are being evaluated to serve as the host for a modern pit facility, including Carlsbad, NM; Los Alamos, NM; Nevada Test Site in NV; Pantex Plant in TX, and the Savannah River Site in SC.

Advanced Radiographic Hydrotest Capability

The primary design community has expressed the belief that, in the long term, certification of primaries in the absence of underground nuclear testing will require an advanced radiographic capability with a sufficient number of views (4-12) and sufficient number of times that a 3-dimmensional "moving picture" of an imploding primary system could be reconstructed. The leading candidate technology to provide this capability would be to use proton based radiography.

Currently, the role of radiography in providing a quantitative assessment of primary performance has yet to be established. Therefore, the requirements for such a facility are still under study, and the NNSA must await the conclusion of those studies and the acceptance by the concerned community of the value of such a facility prior to making a mission need determination.

Y12 Modernization

Y-12's missions during the Cold War required a plant sized to produce nuclear weapons secondaries, cases, and other weapons components in large numbers to meet national security needs. Reduced production requirements and stricter environmental regulations have reduced the probability of further large-scale production at Y-12. Critical capabilities of the Cold-War infrastructure that remains must be preserved to maintain a residual production capability. This creates three competing sets of resource requirements: recapture of capability; determination of capacity; and decontamination, demolishment, and disposal of un-useable facilities and buildings. To re-establish the capabilities necessary to perform the above missions in the future will require a large investment in operational consolidation, materials and equipment disposition, and technology. Planning for several upgrades is underway. Analysis of the probable future needs for capacity and availability of replacement components based on stockpile requirements will be performed during the ICPP process. The purpose of these analyses will be to optimize the timing and location of these investments in each of the most critical areas in order to optimize technology-gains and facility-capacity design based on refined planning or actual stockpile size. On the other hand, progress is being made to reduce the footprint and eliminate unneeded materials and buildings, but a significant effort remains. Many underutilized buildings are being maintained. In some cases, these buildings may house one or two required mission-related operations with the vast majority of the remaining space full of excess equipment and materials. Re-location of these operations will require extensive planning and programming into the future.

Office of Naval Reactors

Mission

The Office of Naval Reactors (NR) is responsible for all naval nuclear propulsion work, beginning with technology development, and continuing through reactor operation and, ultimately, reactor plant disposal. The Program ensures the safe operation of reactor plants in submarines and aircraft carriers (constituting 40 percent of the Navy's combatants), and fulfills the Navy's requirements for new nuclear propulsion plants that meet current and future national defense requirements.

History

Naval Reactors was established in 1948 to develop naval nuclear propulsion technology. NR operates under Executive Order 12344, 42 U.S.C. 7158 and 50 U.S.C. 2406, as a joint program between the National Nuclear Security Administration and the Navy. The program is centrally directed, with prime contractors performing detailed work under government oversight. Due to the unique dual-agency nature of the Program and the success of its management structure, NR is exempt from NNSA's recently developed management systems. Since the end of the Cold War, NR has shut down six prototype plants no longer required for testing. These six plants are located at three sites, and the degree of inactivation of each shutdown plant and its peripheral infrastructure differs based on possible future infrastructure needs. Inactivation goals for the various facilities were based on the projected future use of each site at the start of this effort. Major inactivation work is nearly finished. NR has defueled all seven reactors (one plant has two reactors) with work well underway on the other aspects of inactivation. Inactivation and cleanup work at the Windsor Site in Connecticut is complete, and regulatory approval for unrestricted release has been requested.

At the Naval Reactors Facility (NRF) site in Idaho, NR has shutdown all three plants; however, the Expended Core Facility will continue to operate for the long term. As a result, and in recognition of the other shutdown reactor plants at the Idaho National Engineering and Environmental Laboratory, the inactivation plan for NRF includes defueling the shutdown plants, placing them in an environmentally benign lay-up condition, and remediating various facilities and supporting systems. The two shutdown prototype plants at the Kesselring Site in New York have been inactivated and defueled, and major dismantlement work will be completed shortly. Naval Reactors is still operating two prototype plants at that site. Thus, the intent is to dismantle the shutdown plants, and leave the supporting buildings for potential future use.

Current Policy & Mission Requirements Assessment

The Program's propulsion technology development provides for maintaining and upgrading current capabilities, as well as for meeting future threats to national security. Work is integrated as advances in various functional disciplines coalesce into the technology applicable to a naval nuclear plant. The presence of radiation dictates a careful, measured approach to developing and verifying nuclear technology, designing needed components, systems, and processes, and implementing them into existing and future plant designs. 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. These advances further enhance the Navy's nuclear powered warships' unique capability to safely sprint to any ocean in the world to provide the deterrent effects of United States presence or for around-the-clock power projection.

Conclusion for the Naval Reactors Complex

The Program's first priority is ensuring the safety and reliability of the 103 operating Naval reactor plants. With only four sites: two laboratories (Bettis and Knolls Atomic Power Laboratories), one prototype site (Kesselring), and one operations site (Naval Reactors Facility, Idaho), and with each site performing multiple critical functions, the Program's infrastructure size is appropriate to support this mission.

Based on analysis of present national policy, the Office of Naval Reactors' mission and the ability to accomplish that mission, it is concluded that:

> **The current configuration of the Naval Reactors complex is suitable for the accomplishment of the missions of Naval Reactors. The appropriate approach is to modernize the Naval Reactors complex infrastructure. Thus, no further sites are expected to be closed, and no major consolidation of mission activities or facilities is needed in the near term.**

NNSA/ Naval Reactors Infrastructure Plan

Planned construction projects will not increase the existing total footprint of the Program's infrastructure. In fact, by 2012, total Program square footage will decrease by approximately 90,000 square feet.

To guarantee that its mission can be supported in the future, NR generates a 10-year Construction and a 30-year long-range Facilities Plan. Semi-annual reviews are conducted to ensure active facilities are sufficient and unneeded facilities have reasonable decommissioning and decontamination plans in place.

Naval Reactors has consistently funded facility and infrastructure maintenance within Program targets. Much of NR's infrastructure is 50-plus years old. Many facilities require significant infrastructure work to ensure the protection, preservation, and continued reliable operation of Program facilities. In addition, temporary facilities were constructed 20-30 years ago to meet previous requirements such as prototype refuelings and maintenance. These facilities are also in need of maintenance upgrades or replacement for future operations.

Major maintenance and replacement work is necessary for facilities in New York, Pennsylvania, and Idaho. This significant infrastructure work is required to ensure protection, preservation, and continued reliable operation of Program facilities. Work will include:

- Upgrades to building exteriors to prevent degradation of exterior coating and potential release of hazardous constituents to the environment
- Upgrades to site electrical, sewage, storm water, and heat distribution systems
- Maintenance upgrades or replacement of obsolete facilities to support future Program operations
- Roof replacement

An example of this dated infrastructure is the Materials Technology Laboratories Facility planned at Bettis. This project will design and construct a new facility to consolidate the obsolete chemistry, radiochemistry, metallurgical, and physical testing laboratories of the Materials Technology Section. Consolidation of these facilities, currently widely spread across the Bettis site, into a new facility will significantly improve the Program's efficiency in this area.

As noted, the standardized hierarchy of planning and management documents NNSA has developed does not require NR to change its well-developed and operating infrastructure and facilities management processes. Selected management and reporting data, including F&I-related information, is reported to NNSA on a schedule that allows NR to be represented in the NNSA's annual Planning, Programming, Budgeting, and Evaluation process. Further participation by NR in the NNSA processes will require

selective integration, and only those parts that make sense and add value will be adopted, as noted in the discussion of those mission areas.

Office of Defense Nuclear Nonproliferation

Mission

The mission of the Office of Defense Nuclear Nonproliferation is to detect, prevent, and reverse the proliferation of weapons of mass destruction (WMD), while promoting nuclear safety. Defense Nuclear Nonproliferation utilizes expertise concerning WMD detection technologies and expertise from headquarters as well as the national laboratories, but does not currently manage any dedicated sites or facilities.

History

The NNSA Office of Defense Nuclear Nonproliferation (DNN) was established in 1993 to assume the duties and expand the activities of the DOE Offices of Arms Control and Nonproliferation, Research and Engineering. The senior management of the Office of Intelligence and Nonproliferation was required to rapidly respond to many opportunities that resulted from the deterioration of the security structure in the former Soviet Union, including developing the materials protection, control and accounting concept. With a small cadre of Federal employees, the burgeoning programs were staffed with many support service and Management and Operating (M&O) contractors, including many from the NNSA labs, with specialized skills to work around the world, especially in the Russian Federation. As these base program requirements grew, and other programs including the Offices of International Nuclear Safety and Fissile Material Disposition were consolidated into the DNN, budgets, scope, and the complexity of programs grew significantly, as did DNN's dependence on the NNSA laboratories and plants both for knowledgeable people and R&D capability.

Current Policy & Mission Requirements Assessment

In a deteriorating threat environment, the nonproliferation activities of the NNSA are central to this administration's strategy, which listed 'Strengthened Nonproliferation' as one of the pillars of its approach to reducing the WMD threat. Following the devastating attacks on the United States on September 11, 2001, Defense Nuclear Nonproliferation was directed to accelerate many of its activities to address the proliferation threat more swiftly and effectively. Specific plans for this acceleration have been formulated, approved, and are in implementation phases. One of the conclusions of a recent comprehensive review by the National Security Council was that efforts to dispose of surplus U.S. plutonium should focus on the use of mixed oxide (MOX) fuel to save time and money. This has driven the acquisition of a Pit Disassembly and Conversion Facility and a MOX Fuel Fabrication Facility at the Savannah River Complex.

The strategic objectives for Defense Nuclear Nonproliferation are:

- Enhance the capability to detect weapons of mass destruction, including nuclear materials and terrorist threats
- Prevent and reverse the proliferation of weapons of mass destruction
- Protect or eliminate weapons and weapons-useable nuclear material or infrastructure, and redirect excess foreign weapons expertise to civilian enterprises
- Reduce the risk of accident in nuclear fuel cycle facilities worldwide.

The Office of Defense Nuclear Nonproliferation is organized into five major program offices to accomplish its mission:

The NNSA Nonproliferation Research and Engineering program is the only U.S. Government agency investing in high-risk technical solutions for nonproliferation and counter-terrorism missions. It accomplishes its mission by harnessing the technical excellence of the national laboratories to develop prototypes and conduct technology demonstrations of the resultant detection systems for DOE and a wide range of other agencies that operationalize the systems.

International Nuclear Safety and Cooperation program has three programmatic components: the program for the elimination of weapons grade plutonium production (EWGPP) in Russia; the HEU Transparency Implementation program that monitors the 1993 HEU Purchase Agreement with the Russian Federation; and, the nuclear safety and emergency cooperation program that deals with critical nuclear safety concerns on a worldwide basis.

The Nonproliferation and International Security programs prevent, and reverse the proliferation of WMD materials, technology and expertise, and reduce the threat of WMD terrorism. The Office also manages the Russian Transition Initiative to counter the "brain drain" from the weapons complex of the former Soviet Union. To perform these programs, the Office relies heavily upon a wide range of experts in the NNSA laboratories and production plants as well as other DOE facilities.

The International Nuclear Materials Protection and Cooperation program (known as MPC&A) reduces the threat to U.S. national security by securing nuclear weapons and weapons-usable nuclear materials in countries of concern and enhances the detection of illicit trafficking. The program employs project teams comprised of experts from several national laboratory, production facility technical experts, and technical contractors to work with counterparts from eight technical areas in foreign countries. The teams negotiate contracts with their counterparts that define all aspects of the work to be performed and post-work evaluation criteria. Payment is made to facilities or institutes upon satisfactory completion.

The Fissile Materials Disposition program is responsible for disposing of inventories of surplus U.S. weapons-grade plutonium and HEU, as well as providing technical support for, and implementation of, efforts to obtain reciprocal disposition of Russian surplus weapons grade plutonium. The program will focus exclusively on the irradiation of mixed-oxide (MOX) fuel to dispose of surplus plutonium.

Conclusion for the Nuclear Nonproliferation Complex

The Program's mission entails significant interchange with foreign governments, international organizations and other U.S. Government agencies. Work is managed from the Washington headquarters using contracts with existing U.S. facilities to cost-effectively satisfy individual requirements rather than creating redundant dedicated-infrastructure of its own. The Deputy Administrator does not currently control any facilities, but relies heavily on the NNSA national laboratories and plants for technical expertise and critical R&D support. The National Security Council has approved construction of two unique facilities (Pit Disassembly and Conversion Facility and MOX Fuel Fabrication Facility described below) at Savannah River Site that will provide mission support. Preparation for construction is underway.

Based on the Office of Defense Nuclear Nonproliferation's reliance on the NNSA national laboratories and plants for technical expertise and critical R&D support, it is concluded that:

> **No NNSA Nuclear Complex sites be closed. All of the Nuclear Nonproliferation programs utilize resources from across the complex and will continue to require the specialized expertise to accomplish their program mission into the future.**

Closures could:

- Cause a disruption of missions that have been accelerated by the Administration;
- Result in a significant increase in costs to replicate these capabilities;
- Diminish the country's ability to counter existing security and proliferation threats; and
- Affect the construction of two unique facilities at Savannah River Site that will expand the NNSA Nuclear Complex's capabilities and provide mission support.

NNSA/ Nonproliferation Infrastructure Plan

Under the revised strategy accepted by the National Security Council for fissile material disposition, the NNSA plans to build two facilities to process up to 3.5 metric tons per year of plutonium at Savannah River Site. The Pit Disassembly and Conversion facility (PDCF) will prepare plutonium-bearing components for disposition in the Mixed Oxide (MOX) Fuel Fabrication Facility that will produce completed mixed-oxide fuel assemblies for irradiation in domestic commercial reactors.

Construction of the MOX Facility is scheduled to begin in FY 2004. Operation of the facility is scheduled to begin in late 2008, with full-scale operation from 2009 continuing through completion of the MOX fuel fabrication mission in 2019. Construction of the Pit Disassembly and Conversion facility is scheduled to begin in 2007. Operation of the PDCF is scheduled to begin in 2011 and continue through 2019. Funding for these projects is reflected in the FY-2004 Budget request. Beyond FY-2004, the Administration is committed to supporting the important plutonium disposition program for the long term so that it remains on a trajectory to success.

Office of Facilities and Operations

Mission

The Associate Administrator for Facilities and Operations (AAFO) provides corporate leadership to integrate the development and execution of NNSA's facilities management policies and programs, project management systems, and safeguards and security and cyber security programs. The AAFO has specific responsibilities to recapitalize and restore facilities that support the nuclear weapons program and for disposition of certain facilities that are no longer required. The goal is to restore the nuclear weapons complex to contemporary industry standards within a decade through focused completion of the backlog of deferred facilities maintenance and foot print reduction as well as the institutionalizing of professional and accountable policies, processes and best practices regarding project and facilities management across the enterprise.

The AAFO leads the NNSA effort to develop and validate enterprise-wide project management policies, processes, systems-management and performance. The AAFO develops and directs technical assistance activities for pre-project planning, engineering reviews, project critical decisions, systems management, and independent project performance assessments. The AAFO is responsible for developing programs to maintain and improve technical proficiencies in the application of internationally accepted project management practices. The AAFO maintains a working relationship with DOE's Office of Engineering and Construction Management and private sector industrial associations to help ensure best project management practices and sustained performance across the NNSA complex. The AAFO office supports the NNSA Administrator, Executive Management Council and line management through reports and analyses on individual and complex-wide project efforts.

History

The Office of the Associate Administrator for Facilities and Operations (AAFO) was formally established in May 2001 consistent with the "Report to Congress on the Plan for Organizing the National Nuclear Security Administration", (May 3, 2001), pursuant to Title 32 of the National Defense Authorization Act for Fiscal Year 2000 and Section 3153 of the National Defense Authorization Act for Fiscal Year 2001. Organizational roles and responsibilities within NNSA and AAFO were expanded upon and clarified within the subsequent "Report to Congress on the Organization and Operations of the National Nuclear Security Administration," (February 25, 2002).

Current Policy & Mission Requirements Assessment

The NNSA Administrator specifically established the Office to lead and manage the Facilities and Infrastructure Recapitalization Program (FIRP) and institutionalize corporate facility management within the NNSA. With the requirement to demonstrate to the OMB and the Congress improved facilities management to support the new increased funding they are providing the NNSA; there is federal responsibility inherent in the FIRP program more rigorous than previous facility management efforts in the Department. Nonetheless, NNSA facility management processes and procedures have been carefully designed to ensure that while Headquarters is responsible for the "what," the contractor remains responsible and accountable for the "how."

Facilities and Infrastructure Recapitalization Program

The mission of the Facilities and Infrastructure Recapitalization Program (FIRP) is to restore, rebuild, and revitalize the physical infrastructure of the nuclear weapons complex. The program applies new direct appropriations to address an integrated, prioritized series of repair and infrastructure projects that will significantly increase the operational efficiency and effectiveness of the NNSA weapons complex sites. The FIRP mission is an integral component of the NNSA Strategic Goal to provide state-of-the-art facilities and infrastructure supported by advanced scientific and technical tools to meet operational and

mission requirements. The Facilities and Infrastructure Recapitalization Program was established specifically to address deferred maintenance and assure that the NNSA continues to meet its major performance objectives of ensuring the vitality and readiness of the national security enterprise.

Base maintenance and infrastructure efforts at NNSA sites are primarily funded within the Defense Programs' Readiness in Technical Base and Facilities (RTBF)/Operations of Facilities and through site overhead allocations. These efforts focus on ensuring that facilities necessary for immediate programmatic workload activities are maintained sufficiently to support that workload. FIRP addresses the additional sustained investments above this base for deferred maintenance and the infrastructure that are needed to extend facility lifetimes, reduce the risk of unplanned system and equipment failures, increase operational efficiency and effectiveness, and allow for recapitalization of aging facility systems. FIRP also manages utility line items. This capital renewal and sustainability focus is the core mission of the Facilities and Infrastructure Recapitalization Program.

A major metric for the recovery of the facilities and infrastructure of the nuclear weapons complex is the reduction of the NNSA's deferred maintenance, currently in excess of a billion dollars. The NNSA has committed to stabilize its deferred maintenance by FY 2005. Additionally, by FY 2009 the NNSA has committed to: reduce deferred maintenance to within industry standards and return facility conditions, for mission essential facilities and infrastructure, to an assessment level of good to excellent (deferred maintenance/replacement plant value less than 5%). FIRP will provide the major funding, and management effort, to achieve this reduction. A separate but vital sub-program is Facility Disposition. This congressionally directed effort requires that a portion of the FIRP funding be used to dispose of excess facilities that will provide the greatest impact on reducing long-term costs and risk. The NNSA is committed to reduce the nuclear weapons complex footprint by three million gross square feet of excess space by 2009. FIRP will provide the major funding, and management effort, to achieve this reduction.

Embedded within the FIRP program management is the NNSA commitment to Congress to demonstrate credible deliverables, efficient management, and fiscal accountability. The program's funding significantly ramps-up over the next several years until it reaches the level determined by the NNSA, and external reviews, required to be maintained for several years to restore the nuclear weapons complex and ultimately return the condition of the complex to industry standards by FY 2009.