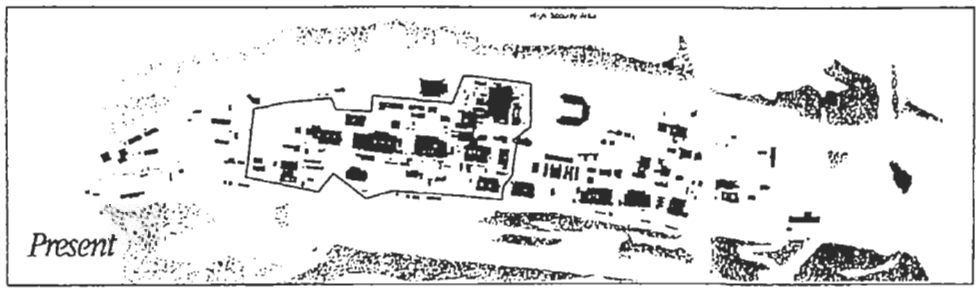
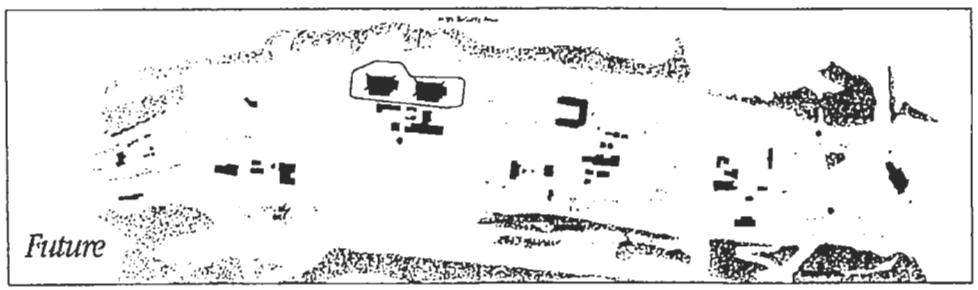
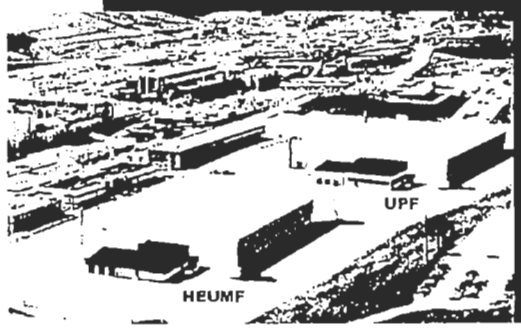
Y-12 TEN-YEAR SITE PLAN







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Y-12 National Security Complex
Ten-Year Site Plan

FY 2008–2017

March 2007

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under contract
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BWXT Y-12 and the NNSA Y-12 Site Office are working in support of Complex 2030's four overarching, long-term strategies as enumerated and briefly described below.

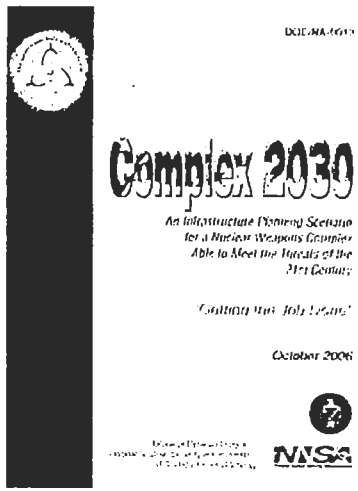
1. **In partnership with the Department of Defense (DoD), transform the nuclear stockpile through development of Reliable Replacement Warheads, refurbishment of limited numbers of legacy designs, and accelerated dismantlement of the Cold War stockpile.** The B61 Alt 357 program met the First Production Unit (FPU) for both the Mod 7 and Mod 11 configurations, and is in the process of ramping to steady-state production. The Y-12 NSC is currently on schedule to supply the W76 LEP FPU in mid-FY 2007 and will begin steady-state production in FY 2008. The Dismantlement Program is preparing for a high level of effort in FY 2008. For the first time, the Y-12 NSC and other production sites fully participated in the design process for the Reliable Replacement Warhead (RRW). A design was recently selected by NNSA for a joint NNSA and U.S. Navy program to provide a replacement warhead for a portion of the nation's sea-based nuclear weapons. Y-12 will support manufacturing of test hardware for eventual production of the first RRW.

2. **Transform to a modernized, cost-effective Nuclear Weapons Complex (NWC).** Y-12 has a well-defined modernization plan. As described throughout this Ten-Year Site Plan (TYSP), the Y-12 NSC is implementing line item projects that enable the Complex 2030 vision, such as the Highly Enriched Uranium Materials Facility (HEUMF) and the Uranium Processing Facility (UPF). The Readiness Campaign has sponsored projects in support of the UPF Technology Plan over the past 3 years. Y-12 is reducing its deferred maintenance in Mission Critical facilities and has demolished over one million square feet of floor space to date. The Y-12 Throughput Improvement Plan (YTIP) is focusing on improving productivity and ensuring we meet out commitments.

3. **Create a fully integrated and interdependent NWC.** The Y-12 NSC is heavily involved as a member of the Nuclear Weapons Complex Integration Committee, working to define specific complex integration initiatives, including leading the NWC-IC effort to evaluate security requirements and provide opportunities for Complex-wide risk-based decisions. Y-12 is also working with other NWC sites to establish cross-cutting projects that integrate activities of mutual interest. NNSA Headquarters has formulated a unique Testworks Project construct that catalyzes participation across the NWC and accelerates development and deployment of technology-based solutions.

4. **Drive the science and technology base essential for long-term national security.** The Y-12 NSC is working joint development programs with the design agencies to achieve Nuclear Weapons Enterprise objectives of increasing safety, decreasing response time, and increasing reliability of the current and future stockpile. Y-12 will increase its Work for Others (WFO) efforts, recognizing that WFO will play an essential role in maintaining NNSA capabilities.

The ability to sustain current infrastructure and implement Complex 2030 over the next 5 years and beyond is not without challenges. Delaying key Complex 2030 infrastructure projects can only serve to increase both mission risk and annual operating costs. It is also important to recognize that many existing facilities must "bridge the gap" to modernized, new structures that are a part of the Complex 2030 vision. To sustain performance, NNSA and BWXT Y-12 must work to resolve the following facility and infrastructure challenges to ensure implementation of the Y-12 NSC component of the Complex 2030 vision:



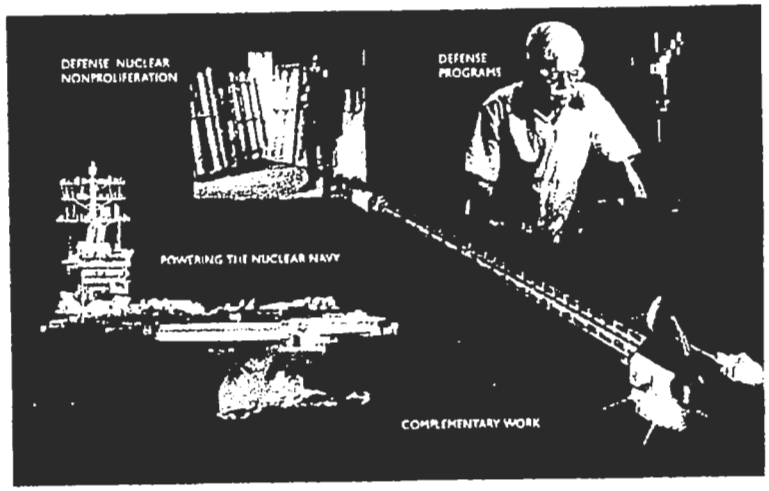
NNSA's planning scenario for Complex 2030.

Executive Summary

Over the past year, the National Nuclear Security Administration (NNSA) has been working to develop its vision and plan to provide a responsive infrastructure for the future while meeting its nuclear weapons stockpile commitments. In October 2006 NNSA released *Complex 2030: An Infrastructure Planning Scenario for the Nuclear Weapons Complex Able to Meet the Threats of the 21st Century.* The Complex 2030 scenario recognizes the Y-12 National Security Complex (Y-12 NSC) as the Uranium Center of Excellence. As such, the Y-12 NSC will continue to perform a vital role in U.S. national security. This role includes:

- manufacturing, dismantlement, and assessment of nuclear weapon secondaries, cases, and other weapons components;
- safely and securely storing and managing special nuclear material (SNM);
- supplying SNM for use in naval reactors;
- promoting international nuclear safety and nonproliferation; and
- reducing global dangers from weapons of mass destruction.

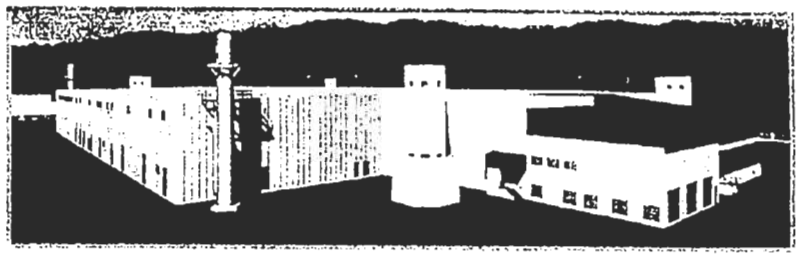
From Y-12's perspective, NNSA's Complex 2030 scenario not only provides for meeting global national security threats through a responsive infrastructure but also enables reliable and affordable problem solving to address the ever-changing risks to homeland security and other security challenges. As stated in the BWXT Y-12 Strategic Plan, the Y-12 NSC will embrace and expand its role in Complex 2030 as the internationally recognized Uranium Center of Excellence. To achieve the Complex 2030 vision, we must plan for and enact the transformation of Y-12 NSC during the next 5 years and beyond. The BWXT Y-12 strategy will embrace and enable our priorities of safety, security, productivity, and modernization as we transition to Complex 2030.



- The design and construction of UPF should be accelerated. **Current funding levels in FY 2007, FY 2008, and the current ICPP will not support completion of UPF on the current Critical Decision 1 (CD-1) schedule.** As the foundation of the Complex 2030 Uranium Center of Excellence, UPF—in conjunction with the funded HEUMF—will consolidate all highly enriched uranium operations into a high-security area one-tenth the current size, retire facilities that will be over 65 years old, and eliminate the risk of losing enriched uranium capabilities to support defense programs needs in the future. Delays in UPF may increase the likelihood of making seismic, ventilation, and other upgrades (b)(2)High Delays will significantly impact future safeguards and security costs due to the level of protection required by the decentralized locations of enriched uranium. The costs for maintenance and operations and for providing requisite security will markedly shrink after consolidation, resulting in a payback for UPF within 5 years.
- Maintenance, repair, and recapitalization budgets must be sufficient to sustain the required facilities and infrastructure during the transformation to Complex 2030. The extension of FIRP through 2013 is a positive indication of NNSA's recognition that facility and infrastructure improvements must continue to be addressed to achieve Complex 2030. Y-12 NSC has over $218 million of deferred maintenance associated with its utility infrastructure. Funding for Readiness in Technical Base and Facilities (RTBF) and FIRP must be sufficient to ensure that mission critical facilities will continue to operate during the transformation to UPF and other production modernization initiatives.
- RTBF and DSW funding is required to complete the implementation of Quality Evaluation Relocation, the Depleted Uranium Consolidation, SNM Material Consolidation, and Accelerated Dismantlement activities that are vital to Y-12's modernization, footprint reduction, productivity improvement, and Design Basis Threat (DBT) compliance efforts.
- Funding in DSW must be sufficient to maintain production equipment while transforming to Complex 2030 over the next 10 years covered by this TYSP. Current indications are that the DSW budget will be $9 million short in FY 2008, which could have significant ramifications on meeting Y-12's commitments.
- Funding will be required to address an increasing legacy of contaminated facilities and materials that will become excess. Initiatives such as the Integrated Facility Disposition Project need to be supported at some level to address high-priority actions (b)(2)High Over one million square feet of process-contaminated space is excess today, and another one million is likely in the next 2–3 years. Increasing environmental liabilities and surveillance and maintenance costs will hinder Complex 2030 implementation if these legacies are

(upper) **Work on the new HEUMF is 45% complete, with operations expected to begin in 2010.**
(lower) **Artist's rendering of the UPF.**

(b)(2)High



1

Introduction

1.1 Overview

This Ten-Year Site Plan (TYSP) for FY 2008–2017 describes the missions, work scope, and corresponding facilities and infrastructure investment needs for the Y-12 National Security Complex (Y-12 NSC), consistent with Complex 2030. The TYSP contains five chapters as described here.

Chapter 1, Introduction, provides an overview of the content of the TYSP and outlines the foundation upon which the site's long-range facilities and infrastructure planning needs are based. This foundation is based principally on the assumptions provided, the integration of the National Nuclear Security Administration's (NNSA's) Complex 2030 vision, and BWXT Y-12's plans for modernization of Y-12 NSC.

Chapter 2, Site Description, provides a general description of Y-12 NSC, its location, physical composition, condition, and other functional site parameters evaluated as part of long-range master site planning activities. This chapter also includes, consistent with Complex 2030 and other relevant NNSA strategic planning guidance, the site maps that express the Y-12 long-range master plan and the 5-, 10-, and 15-year plans.

Chapter 3, Mission Needs and Program Descriptions, describes the site's missions and related programs for both NNSA and non-NNSA, consistent with Complex 2030 and other relevant strategic planning guidance. The emphasis is on current or future changes to program missions that impact facility and infrastructure activities or requirements, with particular focus on mission critical facilities.

Chapter 4, The Plan, provides information on the planning process, real property management, condition, utilization, site footprint management, maintenance, deferred maintenance (DM), and security infrastructure in the context of current and future (10-year) expectations.

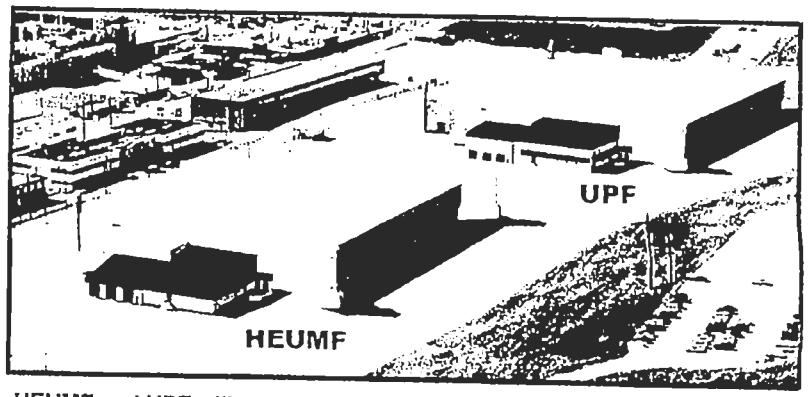
Chapter 5, Facilities and Infrastructure Projects, Activities, and Cost Profile, describes the project and cost projections for Readiness in Technical Base and Facilities (RTBF), Facilities and Infrastructure Recapitalization Program (FIRP), Safeguards and Security, and other non-NNSA infrastructure investments on Y-12 NSC for the 10-year planning horizon. Significant project deletions and additions from the previous TYSP are identified, and Attachment A, Facilities and Infrastructure Cost Projection Spreadsheets, is included.

not addressed. **Funding is not currently in place to support the disposition of an increasing liability of legacy facilities as noted in the long-range Y-12 NSC site vision.**

- A less risk-averse culture and a greater degree of flexibility in managing multiprogram funding are needed in this environment of continuously evolving security threat requirements and aging plant infrastructure. More discretionary funding leeway, within some congressional controls, is needed to more effectively control resources required to meet program expectations and implement necessary facility and infrastructure improvements. To become less risk-averse, DOE, NNSA, and management and operating (M&O) contractors must reexamine and change policies, regulations, and procedures that were promulgated during the Cold War and the zero-risk eras of management and operation.
- Private-sector investment is paramount to achieving the Y-12 modernization plan and implementing Complex 2030. Once a valid economic case is made, there must be a seamless and highly efficient process on the federal side to quickly execute the approval of these projects. History on the Oak Ridge Reservation has shown that private-sector projects, from inception to completion, are 40–50% more cost effective and efficient than traditionally funded/managed federal projects. This method of providing support to facility and possibly utility infrastructure improvements/replacement allows NNSA to focus its limited capital funding resources on Complex 2030 mission critical needs such as UPF, the Consolidated Manufacturing Complex, and other mission-critical needs.

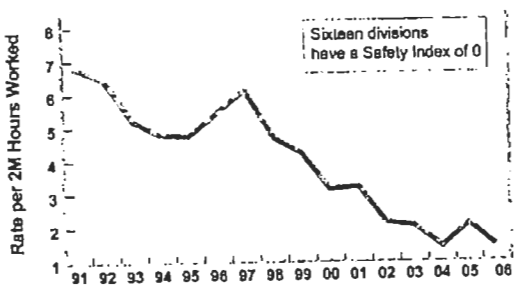
The landscape of Y-12 NSC is already changing and reflective of Complex 2030. Through various modernization projects, deferred maintenance reduction, enhanced security measures, technology enhancements, infrastructure reduction, and innovative ways of doing business, the Y-12 NSC is becoming a more responsive and cost-effective enterprise, as evidenced by:

- Accelerated dismantlement is being implemented to reduce space requirements for the storage of SNM. This effort is vital to Y-12's material protection strategies and to ensure that the new HEUMF can accommodate the storage of all Category I and II SNM by maximizing can storage and minimizing drum storage.
- HEUMF, Y-12's second major modernization project, is 45% complete and scheduled for construction completion in FY 2008 and for operations in FY 2010.
- UPF, which will consolidate all remaining enriched uranium operations into a second designed-denial facility near the HEUMF, is currently awaiting CD-1 approval. When operational, the new UPF will facilitate reduction to the high-security area by 90%, enable annual operating cost reduction of approximately $150 million per year, and show a return on investment within 5 years. The UPF is specifically referenced in the NNSA Complex 2030 Plan for transformation of the NWC.



HEUMF and UPF will consolidate all enriched uranium operations at Y-12 in 90% less security footprint than today.

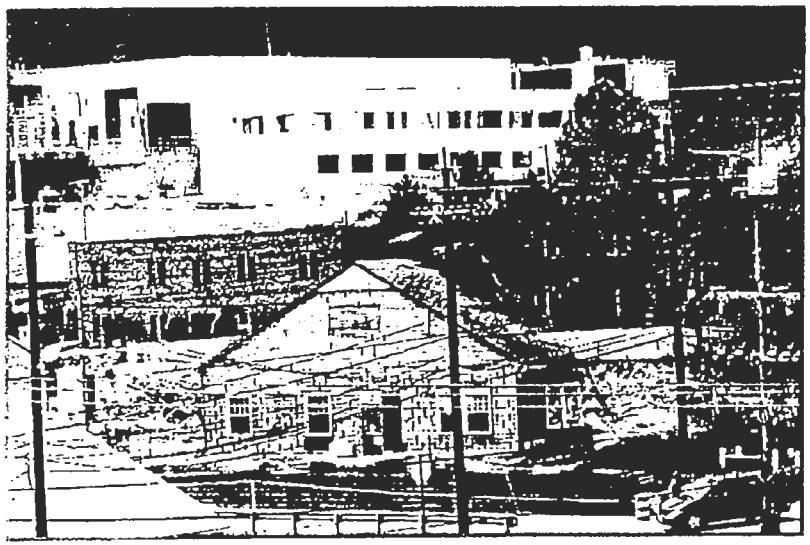
- Y-12 has made excellent progress in implementing the DBT policy. Work has been completed to enhance protection of enriched uranium material storage until the new HEUMF is completed and to detect, delay, and deny adversary activity at key locations. Through close coordination with NNSA, Y-12 gained approval for a cost-effective, risk-based DBT implementation plan that is scheduled for completion in FY 2011.
- The Campaigns Program invested over $38 million in developing and deploying technology at Y-12 NSC in FY 2006. Some of this investment provided advanced inspection technologies and state-of-the-art machine tools to manufacture high-precision parts. Campaigns will invest $32.5 million in FY 2007, providing additional inspection technologies such as digital radiography and advanced coordinate measuring machines, and advanced machining. Several smaller projects are also being funded and deployed to modernize Y-12's infrastructure to support the manufacturing and certification of parts.
- Y-12 continues to see improvements in its recordable injury/illness rate. The Integrated Safety Management/Integrated Safeguards and Security Management (ISM/ISSM) framework is used to systematically integrate safety and safeguards and security into management, work practices, and modernization projects at all levels so that all work is accomplished safely and securely.



Y-12 NSC currently *(left)* and transformed to a smaller, more responsive, cost-effective enterprise *(right)*.

While significant progress has been made, the overall NNSA budget constraints and the inability to fully fund key modernization projects such as UPF will only serve to increase NNSA's current and future facility, infrastructure, security, and compliance cost. The Y-12 NSC modernization plan is one of the few in the NWC that will provide a significant reduction in footprint and future costs.

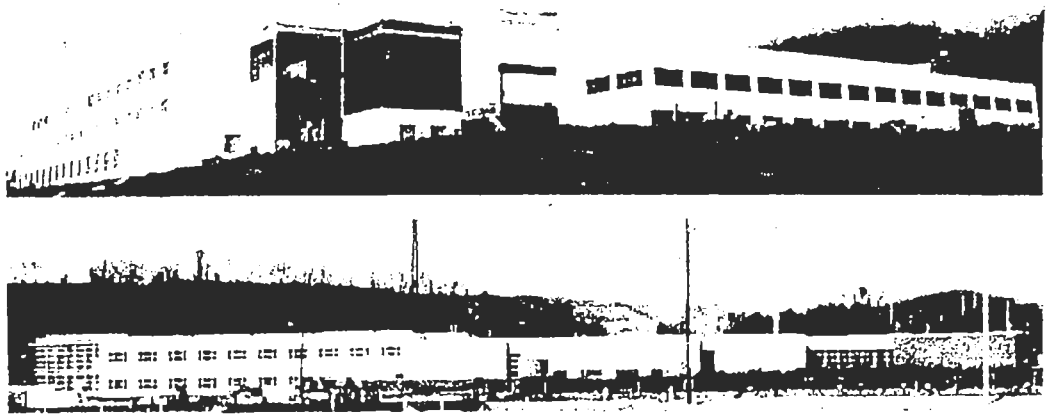
As NNSA moves forward with the Complex 2030 programmatic impact statement, we strongly believe that NNSA's October 2006 infrastructure planning scenario is the right path. Continued emphasis must be placed on the modernization of the enriched uranium factory (HEUMF and UPF) at Y-12.



Demolition continues on Y-12 NSC *(foreground)* as the construction of Jack Case Center *(background)* further transforms the site.

- FIRP is providing line item funding to upgrade Y-12's compressed air system, steam plant, and potable water system. During FY 2006 FIRP funding under the Small Business Program was used to complete the East End Records Storage Facility and the Vehicle Maintenance Facility.
- Y-12 is building on previous successful efforts and has launched the Y-12 Throughput Improvement Plan. YTIP focuses on ensuring we can meet our customer commitments while continuously improving productivity. Y-12 has joined the NWC Lean Six Sigma working group to ensure collaboration and integration of productivity initiatives.
- Using private sector financing, two new technical/administrative facilities will be completed by August 2007. The Jack Case Center and the New Hope Center will house over 1400 employees from BWXT Y-12 and the NNSA Y-12 Site Office. Construction of these facilities allows the demolition of over 290,000 ft^2 and the cancellation of 100,000 ft^2 of leased space.

- Supported by funding from the Facilities and Infrastructure Recapitalization Program (FIRP), Y-12 is continuing its integrated program to reduce excess facilities. In FY 2006, 111,786 ft^2 of banked floor space was demolished on Y-12 NSC, making Y-12's total 1,001,429 ft^2 (banked and nonbanked) demolished under FIRP and other funding since FY 2001. FIRP funding reduced a total of $41 million in deferred maintenance in FY 2006, making Y-12's total deferred maintenance reduction $205 million from the original FY 2003 baseline. Y-12 will fully integrate FIRP with Complex 2030 to produce effective and efficient infrastructure change.



***(upper)* Jack Case Center is nearly 75% complete and is expected to be ready for occupancy in July 2007.**

***(lower)* New Hope Center is also nearly 75% complete and is expected to be ready for occupancy in July 2007.**

1.2 Assumptions

This TYSP, consistent with Complex 2030, addresses the facilities and site infrastructure required to support near- and long-term mission readiness within the fiscal constraints of the Future Years National Security Plan (FYNSP). However, significant investment is required to consolidate Y-12's enriched uranium operations, maintain or upgrade site infrastructure, and meet the current design basis threat (DBT). The consolidation of enriched uranium operations is the most effective approach in addressing the DBT in the long term. In addition, the consolidation of Quality Evaluation (QE) and Depleted Uranium must be completed to further reduce the Y-12 footprint and improve security and operational efficiencies. Near-term readiness must be integrated and balanced with a long-term, sustainable readiness that includes these and other projects that may prove difficult to implement within current FYNSP levels. BWXT Y-12 believes that only a major reconfiguration of Y-12 NSC can achieve the future safeguards and security, operational safety, and operating cost reductions that NNSA Complex 2030 requires. The long-range master site plan for Y-12 is based on the assumptions that follow. The end state will be a national security enterprise that implements Complex 2030 and is functionally and technologically optimized, significantly smaller, and highly safe and secure.

Capabilities

Y-12 must possess and maintain the capabilities (people, facilities, and infrastructure) to ensure the following:

- modification, repair, or replacement of uranium, lithium, and other components and radiation cases;
- production of hardware to support design laboratory tests required for stockpile certification;
- surveillance of weapons through disassembly, inspection, and electronic documentation of findings;
- dismantlement, storage, and disposition of nuclear weapon materials and components returned from the stockpile;
- management and secure storage of nuclear materials and other strategic assets designated for national security purposes and/or pending disposition;
- supply of special nuclear material (SNM) for use in naval reactors;
- processing of weapon materials—including chemical recovery, purification, and conversion to a form suitable for safe, secure, long-term storage, disposition, and future use; and
- management, technical, and applied technology expertise in support of Nonproliferation, Homeland Security, and other programs of national importance.

Capacity and Work Scope

Y-12 capacity and workload requirements will be established through the following:

- Near-term production readiness and capacity will be driven by Production and Planning Directives (P&PDs) and, as deemed necessary, other workload planning guidance received from NNSA.
- Long-term production readiness and capacity will be driven by the "New Triad" of flexible response capabilities established in the January 2001 Nuclear Posture Review (NPR) and summarized more recently (April 2005) by Ambassador Linton Brooks before the Senate Armed Services Subcommittee on Strategic Forces. NNSA is rethinking its sizing requirements, with capacity and stockpile numbers lower than previous guidance ranges. Workload at Y-12 would involve the following over the next 10 years:
  - The Life Extension Programs (LEPs) will be completed for the B61 and initiated for the W76 and W78.
  - The RRW-1 program will be initiated.

square feet. Current NNSA utilized square footage is approximately 4 million square feet based on use surveys and extrapolations of survey data. While NNSA is responsible for approximately 74% of the total floor space (7.1 million square feet) on Y-12 NSC, other Department of Energy (DOE) program offices have facilities located on the Y-12 site. The DOE Offices of Science and Nuclear Energy (DOE-SC/NE) are responsible for approximately 1.2 million square feet, and the DOE Office of Environmental Management (DOE-EM) is responsible for approximately 0.6 million square feet.

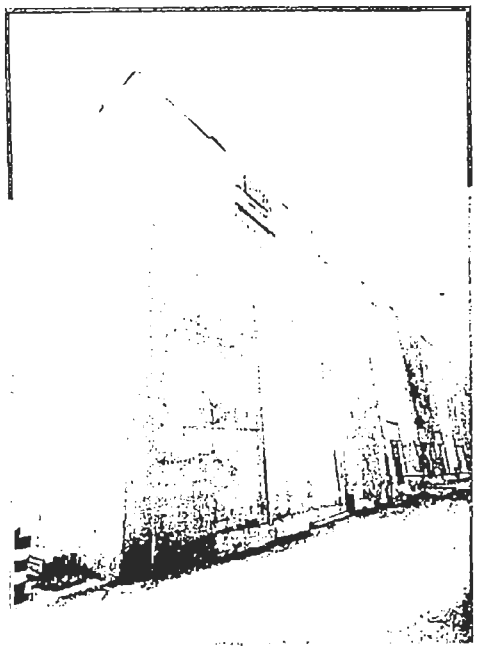
NNSA building types include large production, light and heavy laboratory, sophisticated and standard warehousing, and a mix of new and World War II (WWII) vintage technical and administrative wooden office structures. More than 70% of all the floor space (NNSA, DOE-SC/NE, and DOE-EM) at Y-12 was constructed prior to 1950 as part of the Manhattan Project. There are 13 facilities totaling 2,741,287 ft^2 million square feet that are Mission Critical consistent with the approved FY 2007 Mission Critical List provided by NNSA.

Modernizing Y-12's aging infrastructure has been a strategic goal for over 15 years. A renewed emphasis became apparent when BWXT Y-12 became the contractor in November 2000. Progress has been made along several fronts, including the construction start on HEUMF (Fig. 1), the completion of the Purification Facility (Fig. 2), and significant investment in DM and infrastructure reduction through FIRP. The UPF, which is awaiting CD-1 approval from NNSA, is a key project of Strategy 2 described in the Complex 2030 vision: "Transform the Complex." The UPF and continued investment from FIRP and RTBF will be required to "transform to a modernized, cost-effective nuclear weapons complex."

The next 10 years are not without challenges in ensuring that Y-12's facilities and infrastructure can be sustained and meet the objectives envisioned in Complex 2030. The major facilities and infrastructure challenges are listed here:

- The consolidation of the depleted uranium and QE operations (b)(2)High (b)(2)High (b)(2)High must be completed. These facilities are costly to maintain, contain significant amounts of excess material and equipment, and have no inherent value for future missions.

  The acceleration of the UPF project would reduce long-term security and operational costs and minimize the risk of having to invest significant funding in the existing facilities to meet increasing seismic and other physical condition concerns.



(left) **Fig. 1. The Highly Enriched Uranium Materials Facility, which is 45% complete.**

(below) **Fig. 2. The recently completed Purification Facility.**

(b)(2)High

- The production of JTA units is expected to decrease in FY 2010 and thereafter be sustained at the newly established level.
- Quality evaluation (surveillance) rates are expected to remain at current levels.
- Dismantlement will sustain the high throughput levels established in FY 2006.
- Work associated with National Security Programs, Complementary Work, and NNSA's nonproliferation mission areas are projected to increase.

Planning

The following assumptions guide 10-year and longer-range facility and infrastructure planning at Y-12:

- The land requirements will generally remain stable. While some disposition of land will occur to support alternative financing projects, Y-12 will continue to require security and emergency response buffers that preclude release of any real estate for public use.
- Continued infrastructure funding through FY 2013 is expected from FIRP. Funding will be in the areas of utility line items, general plant projects (GPPs), capital equipment, and DM reduction. At this juncture, funding for excess facility demolition will cease in FY 2009. DM reduction in mission critical facilities and aging utility infrastructure systems will be the primary drivers in the prioritization of FIRP projects in support of Complex 2030 objectives.
- The total operating space required to perform the NNSA missions and functions will be approximately 50% less than today. Ultimately, this translates into an NNSA active footprint of approximately 2.5–3.0 million square feet versus the 5.3 million square feet today.
- The impacts of infrastructure modernization and technology improvements, the optimization of safeguards and security operations, and the streamlining of requirements should result in the reduction of resources to support the Office of Defense Programs (DP) missions to approximately 2000–2500 people sometime in the next decade. Increasing Y-12's Complementary Work and identifying potential new mission work will offset the reduction in DP base missions. The objective of these efforts will be to keep the current BWXT Y-12 workforce at essentially a stable level, albeit with a change in workforce skills mix.
- Facilities and real estate will not continue to house material or equipment that is excess to NNSA needs as determined by analysis of mission and workload. NNSA will declare this material surplus, and the material will be demilitarized, sanitized, shipped off-site, sold, or disposed. Only those materials or equipment of strategic importance will be stored in permanent facilities, designed for their intended use. The resultant surplus facilities, with no inherent value to DOE, NNSA, or the community, will ultimately be demolished.
- Based on Complex 2030's timeline and FYNSP projections, the transition to a smaller, more responsive complex will require that much of the planned workload during the next 5–10 years be accomplished in many of Y-12's existing Mission Critical facilities. Accordingly, RTBF, FIRP, DSW, and Campaigns investments will be based on the risk in meeting mission commitments and on environment, safety, health, and security requirements, balanced with the need to implement Complex 2030 facility and infrastructure improvements.
- Upgrades or replacements of Safeguards and Security systems and equipment to address life cycle concerns until the Highly Enriched Uranium Materials Facility (HEUMF) and the Uranium Processing Facility (UPF) are operational must be addressed.

1.3 Current Situation

As of February 2007, a BWXT Y-12 workforce of approximately 4500 people support mission-related activities, in 390 facilities in various states of utilization that total approximately 5.3 million

- Significant quantities of excess equipment and materials, as well as legacy and newly generated waste containers, are present. Conservative estimates place the square footage of this excess equipment and materials at over 1 million square feet for NNSA-controlled space. Currently, no long-range, consistently funded program is in place to address the disposition of this material.
- Excess facilities and space exist today. While FIRP provides funding for demolition of non–process contaminated facilities, there is little to no funding provided for characterization, stabilization, and deactivation of process-contaminated facilities. The deactivation and/or demolition of this space is necessary to reduce future liabilities, DM, and operating costs.
- While infrastructure improvements and DM reduction must continue, significant investment is required to upgrade or replace Y-12's aging utility systems.
- More emphasis is needed to provide modernized research and development facilities to support Y-12's position as the Uranium Center of Excellence. Alternative financing is one method to provide this capability faster and for less investment than traditional line item funding.
- Mission support infrastructure, such as laboratory, maintenance, warehousing, and emergency command center space, is in need of upgrades or replacement. Innovative approaches such as private-sector financing should be evaluated to meet these needs.
- The efficiency of vehicular and pedestrian circulation (workflow) has been affected by ever-increasing security requirements and the finding that existing parking lots are prime locations to consolidate uranium operations. Funding will be required to modify access roads and construct new parking lots in the next few years.
- Some gaps exist in both capability and capacity to prepare for future mission requirements. Budgets for processes and equipment maintenance and repair must be sufficient while restoring and enhancing technologies and manufacturing processes.

The above facility and infrastructure challenges, further detailed in Chapter 2, Site Description, have been used to form the basis of a master site plan and the facility infrastructure investment strategies to achieve the Y-12 component of Complex 2030. This approach is described and portrayed (by site maps) in Chapters 2, 4, and 5.

1.4 Changes from Prior Year TYSP

Major changes to line item and other project investments are described in Chapter 5. Listed below are the significant site planning and/or modernization strategy changes that have occurred since the March 2006 TYSP.

- The NNSA objectives and plans for the Y-12 NSC have been incorporated into the appropriate sections of the TYSP.
- Mission dependency changes consistent with NNSA and Federal Real Property Council guidance have been incorporated into Section 3.2.
- The extension of FIRP through FY 2013 and its associated impact Attachment A has been incorporated into Section 5.
- This TYSP recognizes that NNSA will be reevaluating its deferred maintenance reduction goals in FY 2007, and therefore Section 4.1.4 address Y-12's overall progress at reducing deferred maintenance versus achieving a specific goal at this time.
- UPF project information in this TYSP reflects the CD-1 submission to NNSA in March 2006. While this information needs to be updated, there is no firm basis for establishing a new baseline. It is recognized that current funding levels in FY 2007, FY 2008, and the current ICPP will not support completion of UPF on the current CD-1 schedule. This information will be updated following CD-1 approval and establishment of an approved project funding profile.

2

Site Description

2.1 General Site Description

BWXT Y-12, L.L.C., a BWXT and Bechtel enterprise, operates Y-12 NSC for NNSA, having been awarded the contract for management and operation on November 1, 2000. Y-12 is one of eight NNSA sites comprising the Nuclear Weapons Complex (NWC) (Fig. 3).

Y-12 NSC is located on DOE's Oak Ridge Reservation (ORR), which covers approximately 34,000 acres (Fig. 4). Most of the ORR lies within the corporate limits of the city of Oak Ridge, Tennessee, and is located approximately 2 miles southwest of its population center. The ORR is bordered on the north and east by the city and on the south and west by the Clinch River/Melton Hill Lake impoundment. Knoxville, the largest city in east Tennessee, is located approximately 15 miles east of the ORR.

In addition to Y-12, the ORR is home to Oak Ridge National Laboratory (ORNL) and East Tennessee Technology Park (ETTP). ORNL is managed and operated through a partnership between The University of Tennessee and Battelle, known as UT Battelle, for DOE-SC/NE. The Bechtel Jacobs Company (BJC) operates the ETTP under a management and integration-type contract for DOE-EM. The ORR contains approximately 3500 acres of waste

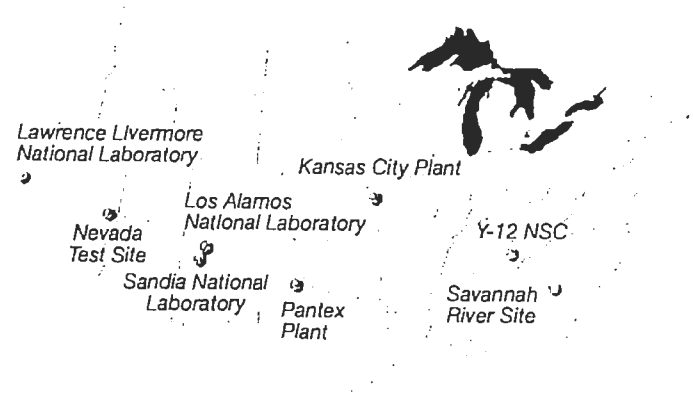


Fig. 3. The NNSA Nuclear Weapons Complex, which encompasses design laboratories, weapon component production plants, and the test site.

sites or remediation areas. The large land area surrounding the developed site areas and waste sites serves as a buffer between DOE activities and the city of Oak Ridge. This buffer is used primarily for

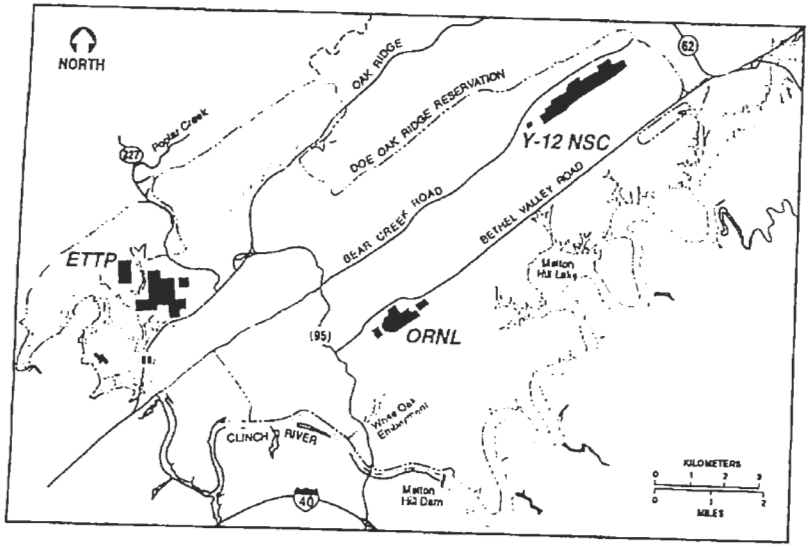


Fig. 4. The ORR, home to three principal DOE installations and host to numerous programs and activities for DOE and NNSA.

environmental research, utilities, protection of natural and cultural resources, wildlife management, and limited recreation.

The industrialized area of the Y-12 site covers approximately 800 acres, nearly 600 acres of which are enclosed by perimeter fences. The main site, which has controlled access, is roughly 2.5 miles in length and 0.5 mile wide. Private development exists on the northern and eastern boundaries of the site. As of February 2007, a BWXT Y-12 workforce of approximately 4500 people supports NNSA-related activities. The total site population, which includes the NNSA Y-12 Site Office (YSO) and several other subcontractors supporting other DOE/NNSA activities, can vary between 6000 and 6500 people.

At the end of January 2007, real property on Y-12 NSC includes over 440 buildings with a floor area of approximately 7.1 million square feet (Fig. 5). Other key site infrastructure on Y-12 NSC includes:

- Over 15 miles of roads
- 70 acres of parking areas
- 20 miles of sanitary sewer
- 24 miles of treated water
- 5 industrial gas plants, with 12 miles of distribution lines
- 18 cooling towers
- 2 substations, and 25 miles of electrical distribution lines

While NNSA is responsible for 74% of the floor space (5.3 million square feet), other DOE program offices have responsibility for the remaining 26% (Fig 6). DOE-SC/NE owns approximately 1.2 million square feet, and DOE-EM owns approximately 0.6 million square feet. As defined by DOE Order 430.1B, *Real Property Asset Management*, and the subsequent DOE guidance, the Asset Utilization Index (AUI) for the NNSA-controlled space is currently 88.45%, and the sitewide AUI is 76.87%. NNSA currently leases approximately 157,000 ft^2 of office and site support space in six facilities located off site.

Approximately 48% of all the NNSA-controlled floor space on Y-12 NSC was constructed prior to 1950 as part of the Manhattan Project (Fig. 7). A significant portion of the NNSA floor space (almost 50%) contains nuclear material processing, manufacturing, and storage operations which are performed in a strict, conduct-of-operations manner. Replacing some of these 65-year-old legacies of the Manhattan Project era is a key strategic objective of BWXT Y-12 and is consistent with NNSA Complex 2030.

(b)(2)High

Y–12 National Security Complex

Facility Responsibility

National Nuclear Security Administration (NNSA)	5,259,241 S.F.
DOE Office of Science and Office of Nuclear Energy	1,268,711 S.F.
DOE Office of Environmental Management	609,076 S.F.
Total Gross Square Feet	7,137,028 S.F.

Key Site Infrastructure

Plant Site Acreage	over 800 acres
Number of Buildings	over 380
Storm Drain System	50 miles
Sanitary Sewer System	20 miles
Treated Water System	24 miles
Industrial Gas System	12 miles
Roads	15 miles
Parking Lots	70 acres
Electrical Distribution System	25 miles
Substations	2
Industrial Gas Plants	6
Steam Plant	1
Cooling Towers	18
PIDAS Fencing	2.5 miles

Fig. 5. Y-12 NSC has about 7.1 million square feet of floor space connected by a complex infrastructure.

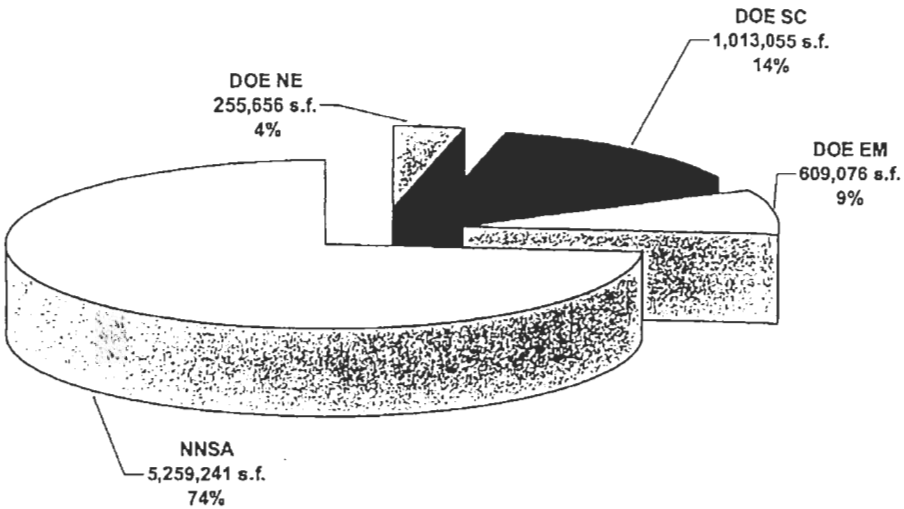


Fig. 6. DOE/NNSA program responsibility for Y-12 NSC facilities.

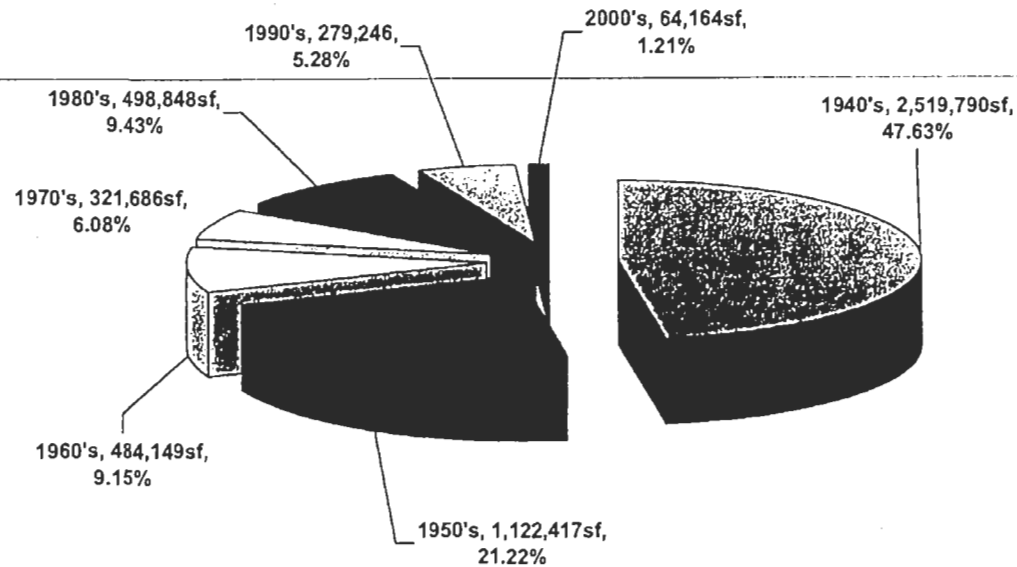


Fig. 7. Y-12 NSC construction chronology.

Figure 8 illustrates the various facility use codes for the NNSA-controlled floor space on Y-12 NSC as of January 2007. For simplification, the Facility Information Management System (FIMS) code for the Institutional Use was combined with the Service Use code in the descriptions below. Other structures and facilities are not included in the totals. As shown, the Production/Manufacturing use code comprises over 50% of the NNSA floor space, the majority being constructed over 60 years ago. Additional information on each use code is provided below.

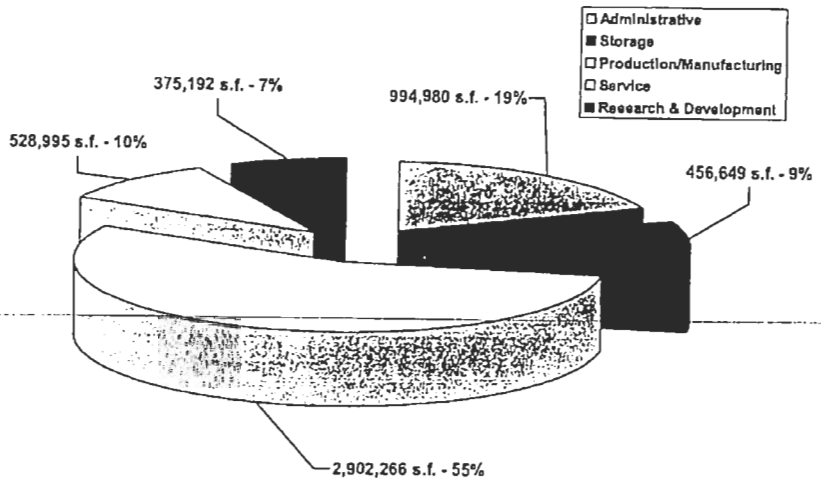


Fig. 8. NNSA facility use on Y-12 NSC.

Administrative. This category generally includes freestanding office or other structures that house technical, administrative, and management functions. The 994,980 ft^2 in this category contains a number of older facilities that were not designed for their current use. (b)(2)High (b)(2)High (b)(2)High A significant amount of this floor space (over 290,000 ft^2) will be demolished when the Jack Case and New Hope Centers are completed.

Production/Manufacturing. The 2,902,266 ft^2 contained in this category includes the original WWII process facilities built in the 1940s and 1950s. These are commonly referred to as the Alpha and Beta buildings. Alpha buildings housed the initial process for separating uranium-235 from uranium-238, the Beta buildings contained the processing equipment for the second step. These are the largest facilities on the Y-12 site, as evidenced by only six facilities representing 1,732,537 ft^2 of the total space in this category. These Alpha and Beta buildings have been reused continuously for over 60 years. Over 900,000 ft^2 of this space is projected (b)(2)High become excess to NNSA's needs in the next 2 to 3 years, (b)(2)High

Research and Development. For the NNSA-controlled facilities, this category includes materials development laboratories housing BWXT Y-12's Applied Technologies organization. This use code totals 375,192 ft^2. The Y-12 Applied Technology Organization is the primary occupant in Buildings (b)(2)High which total 171,109 ft^2 in this category.

Service. This FIMS category (combined with the Institutional code) includes numerous facilities such as maintenance shops, utility structures, changehouses, medical and food service facilities, and sampling laboratories. Over 200 facilities are represented in this group with a combined total of 530,154 ft^2. A vast majority of these buildings are less than 10,000 ft^2.

Storage. *This is a general category that includes facilities used to house material, supplies, and equipment.* Facility use includes buildings that store enriched uranium, standard shipping and receiving facilities, construction warehouses, and other general-purpose warehouse structures. A total of 60 buildings comprise this category totaling 456,649 ft^2. HEUMF will become the largest addition to this category when occupied in FY 2010.

Figures 9, 10, and 11 illustrate the facility status for all NNSA, DOE-SC/NE, and DOE-EM floor space, respectively, as of January 2007. Five standard FIMS codes have been used to portray the facility use as described. These use codes and their map-context descriptions are provided below.

Operating—3,239,978 ft^2. This category includes buildings with active operations projected for the next 10 years (FY 2008–2017) for which there is no identified consolidation or modernization project planned to render them excess before 2017. As reflected by Figs. 9 through 11, allocation by program is NNSA, 3,181,668 ft^2; DOE-SC/NE, 13,632 ft^2; and DOE-EM, 44,678 ft^2. An operational designation does not consider the utilization or underutilization of space; the building is either operational or it is not.

Operating Pending D&D—2,542,781 ft^2. This category includes buildings with active operations; however, their D&D is "pending" based on implementation of modernization projects for Y-12 and ORNL. For example, the new administrative and technical support facilities to be constructed with private sector financing will permit the demolition of over 15 buildings. Buildings [redacted] are examples of facilities included in this category due to future consolidation or modernization projects that will render them excess to NNSA or DOE-SC/NE needs over the next 10 years. Allocation by program is NNSA, 1,993,895 ft^2; DOE-SC/NE, 548,166 ft^2; and DOE-EM, 720 ft^2.

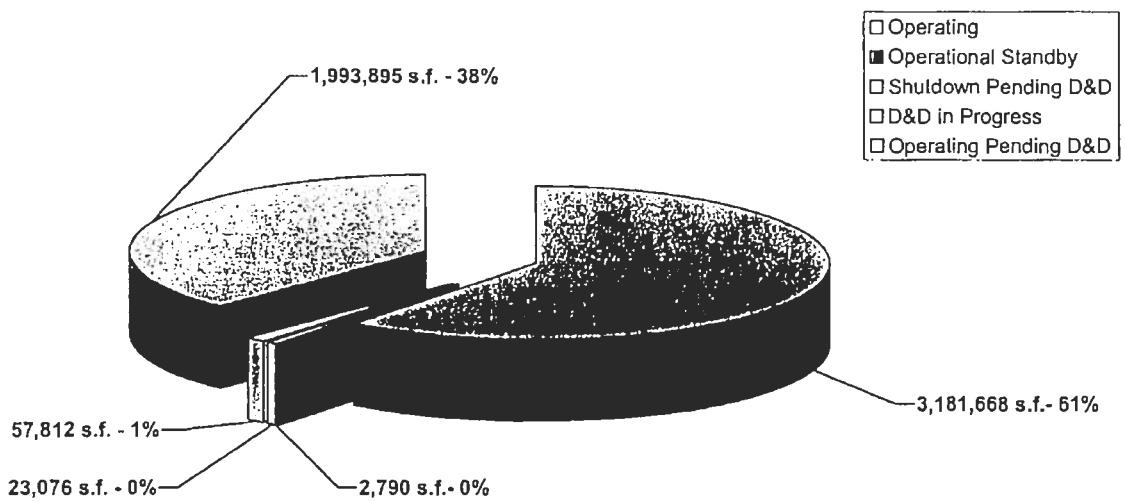


Fig. 9. Status of NNSA facilities on Y-12 NSC.

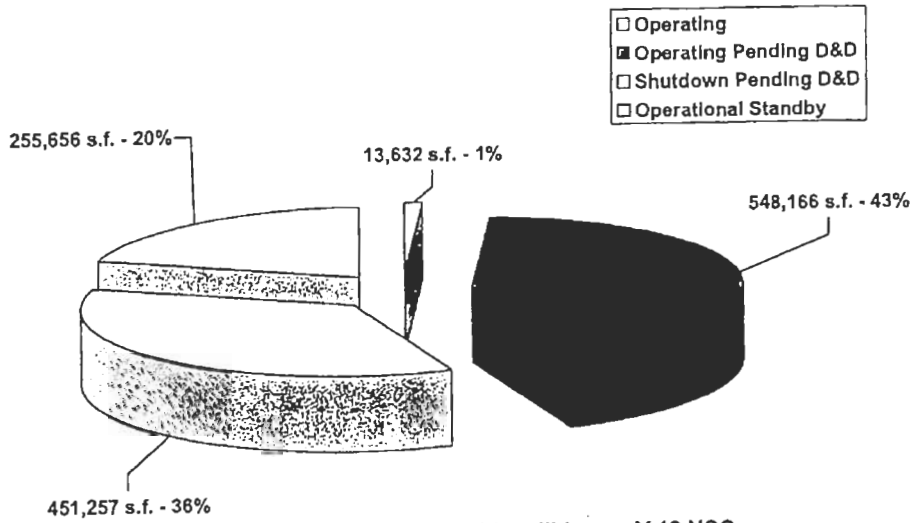


Fig. 10. Status of DOE-SC/NE facilities on Y-12 NSC.

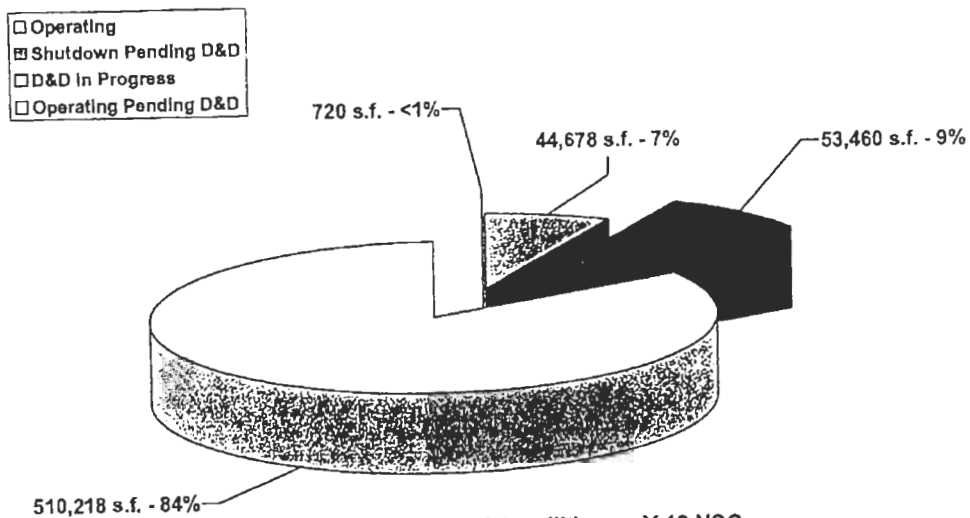


Fig. 11. Status of DOE-EM facilities on Y-12 NSC.

Operational Standby—258,446 ft^2. This category includes buildings that are maintained in cold or warm standby for possible future mission need. Allocation by program is NNSA, 2,790 ft^2; and DOE-SC/NE, 255,656 ft^2. Building 9204-3, a DOE-NE facility, is the largest facility in this category. UT-Battelle will be exploring options to establish this building's mission at the ORNL site. Building 9204-3 is historically significant and is being nominated for National Historical Register Landmark status. The NNSA space in this category consists mainly of security structures.

Shutdown Pending D&D—527,793 ft^2. This category includes currently excess buildings that do not have any active operation or functional activity in support of Y-12 site missions. They are awaiting funding for D&D and/or demolition. The DOE-SC Biology Complex is the principal example in this category. Allocation by program is NNSA, 23,076 ft^2; DOE-SC/NE, 451,257 ft^2; and DOE-EM, 53,460 ft^2.

D&D in Progress—568,030 ft^2. This category includes those buildings where D&D activities are in progress. (b)(2)High (b)(2)High Allocation by program is NNSA, 57,812 ft^2 and DOE-EM, 510,218 ft^2.

2.2 Site Maps

Master site planning is a continuous analytical process that projects facility and infrastructure needs into the future, typically out 20 years or more. The process involves translating NNSA mission, work scope, and workforce needs into an efficient and effective plan for the physical infrastructure. More recently, master planning now involves integrating NNSA's Complex 2030 Scenario into Y-12's overall plan for the physical infrastructure necessary to meet the threats of the 21st Century. Although the exact future can seldom be predicted and factors outside an M&O's control may delay or effect the plan, without a planning process and physical master site plan, site development and other events are left to chance and often can result in operating and maintenance inefficiencies. The master site plan presented herein will always be a work in progress. Plans and budgets must naturally address the short-term gaps (projects, activities) to ensure that BWXT Y-12 meets its commitments and obligations to its NNSA customers. At the same time, NNSA and BWXT Y-12 must continuously evaluate and aggressively pursue the implementation of the plans and budgets that will succeed in achieving Complex 2030.

The narrative and graphics that follow provide an overview of the current Y-12 site configuration; illustrate the future master site plan vision for the Y-12 site; and provide the 5-, 10-, and 15-year plans focused on achieving the site vision.

The master site plan vision represents a desired end state for the Y-12 site in approximately 15 to 20 years (Fig. 12). The plan presents a layout of the *major facilities* that will be required to support the current and future national security missions of Y-12. The planning basis for the master site plan and subsequent 5-, 10- and 15-year plans that follow are based on the following assumptions:

- The future missions can be accomplished in less than 50% of the floor space that exists today. Workload, technology, consolidated and modernized facilities, productivity, and the elimination of material and facilities no longer required will drive this reduction.
- By constructing designed-denial facilities for enriched uranium operations, the high security perimeter at Y-12 can be reduced by 90%, with a resultant significant savings in security protection costs and operational costs.
- Continued long-range reliance on Manhattan Project–era facilities designed for uranium enrichment will not meet NNSA responsive infrastructure objectives, not provide the level of safety, health, security and safeguards required for the future, and become more and more costly to operate.
- Recapitalization, maintenance, and DM reduction will continue to be required in many of the existing facilities until the major consolidation projects are achieved. Investment and other facility decisions will be risk-based on the long-term need for the facility and the consequence of assuming a level of risk by not making an investment in certain facilities.
- Flexible, multipurpose facilities will be required to support an ever-changing future with respect to nuclear weapons and the need to seek growth in complementary work and support any new missions.

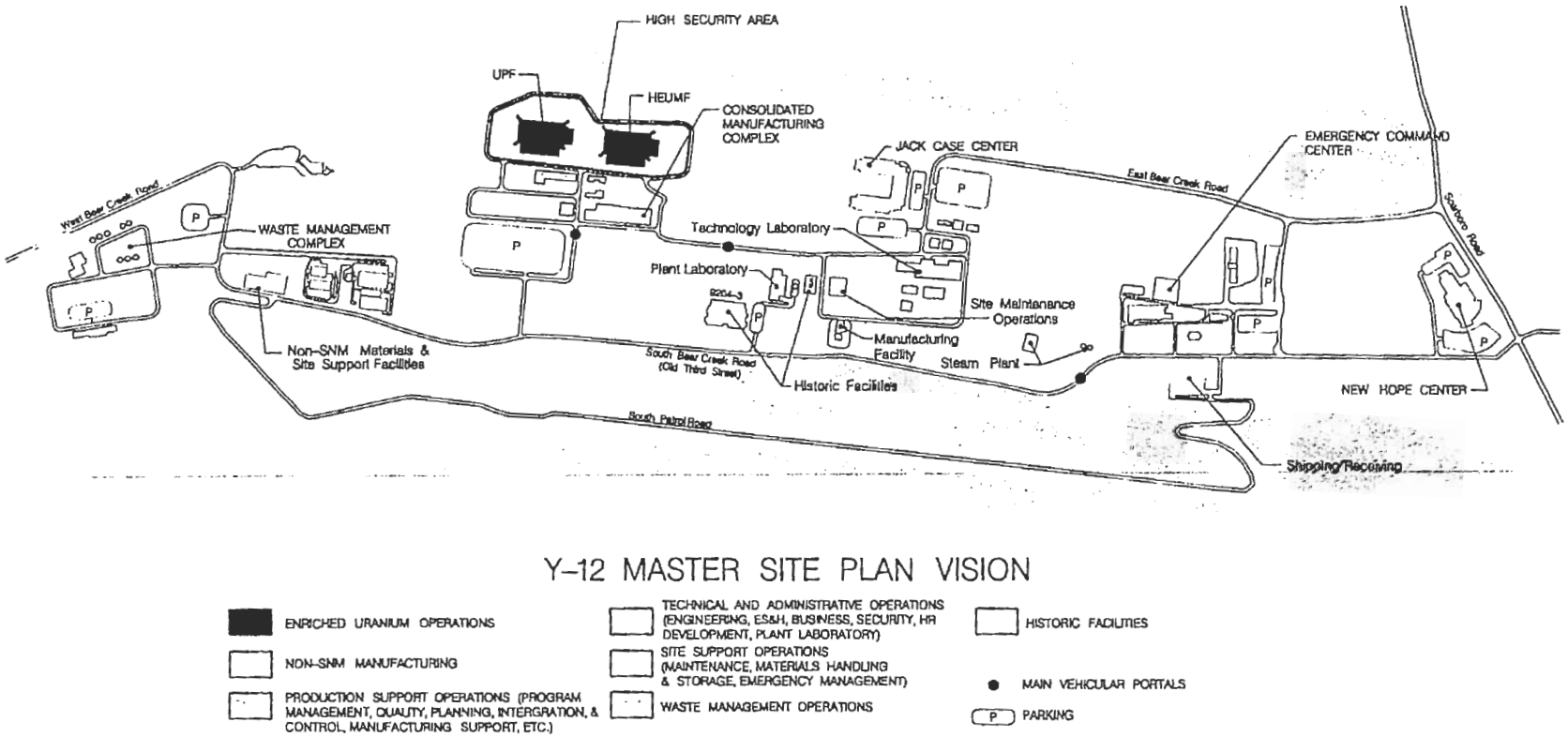


Fig. 12. Master site plan vision for Y-12 NSC.

The following facility and infrastructure planning principles guided the development of the master site plan:

- Create an overall site footprint, consisting of new and recapitalized facilities, that is at least one-half the size of today, thus creating a safe, secure, and environmentally sound work environment.
- Consolidate manufacturing and processing operations, reducing the number of facilities and amount of square footage required, to improve workflow efficiencies and facilitate reduction of the high-security perimeter.
- Consolidate material storage operations and reduce the number of buildings and the amount of square footage required to reduce long-term maintenance and operating costs.
- Consolidate administrative and technical operations into permanent and new facilities based on functional, security, and workflow requirements.
- Consolidate plant support operations into existing and new facilities to improve workflow efficiencies and reduce long-term maintenance, operation, and security costs.
- Upgrade transportation, utility, and security infrastructure to support a smaller, more functionally consolidated and secure footprint.
- Remove all excess facilities and materials from the site.

Master Site Plan Description and Key Features

BWXT Y-12's master site plan vision is consistent with the NNSA Complex 2030 Vision for establishing Y-12 as the uranium center of excellence. Existing and future assets will be managed from a life cycle asset management approach. In addition to new construction, the plan proposes significant decontamination and decommissioning (D&D) of excess facilities. If not addressed, these excess facilities will drain resources from future budgets and leave the "new Y-12 surrounded by the legacy of an old Y-12." Y-12 will continue to be an active NNSA site; however, within its boundaries lies a large amount of excess, process-contaminated floor space, whose D&D must be integrated into the overall DOE/NNSA plans for a responsive infrastructure.

From a land-use perspective, BWXT Y-12 envisions a site that ultimately consists of four distinct operations zones. These zones remain in a linear configuration across the Y-12 site. This linear configuration is indicative of a modernization-in-place, or brown field, approach to redevelopment. The approach must incorporate realistic funding for new facilities and for the D&D of excess facilities that render areas of the plant usable for redevelopment within the zones while at the same time continuing to operate the existing plant. The vision has incorporated the disposition of all buildings that will no longer be required to support the Y-12 missions. However, two facilities will be retained for historical preservation purposes. The four zones are described below.

Production Operations

This zone is dominated by the consolidation of all enriched uranium operations into the HEUMF (under construction) and the UPF (awaiting CD-1 approval). These two facilities are designed-denial facilities that will house all enriched uranium operations and help establish the center of excellence for enriched uranium as described in the NNSA Complex 2030 Vision. By consolidating all enriched uranium into these two facilities, the high-security area that now consists of approximately 150 acres can be reduced to about 15 acres—significantly reducing security costs. The first phase of this consolidation is under way with construction of the HEUMF, currently scheduled for operation in FY 2010. The second facility, the UPF, is in the conceptual design stage. Based on the CD-1 submittal, the UPF is planned for completion in 2014 and for operation in 2016. The D&D of enriched uranium facilities rendered surplus by UPF have been included within a project proposed by the DOE Oak Ridge Operations Office Integrated Facility Disposition Project, attesting to Y-12's approach to incorporate life-cycle asset

management planning principles into its long-range master planning for facilities and infrastructure.

The mission operations zone would also include lithium, depleted uranium, special materials, and general manufacturing operations. Currently, these operations are dispersed in several Manhattan Project–era or pre-1960 facilities. While facility upgrades, some consolidations, and maintenance of these facilities will continue in the short term, BWXT Y-12 envisions that a small complex, or possibly a single facility, should be designed and engineered to consolidate these various operations. This Consolidated Manufacturing Complex (CMC), along with the enriched uranium operations consolidation, would cut the current manufacturing footprint by at least 70% and complete the consolidation of all mission-related manufacturing/processing operations into one area. This project has been identified in the Integrated Construction Program Plan. If funded, the CMC would be operational around FY 2017.

Also contained within the mission operations zone are currently existing and proposed technical and site support operations. These would house functions such as program management and quality assurance.

Technical Support Operations

This zone is dominated by the Jack Case Center (under construction) and several other existing structures. Today, this zone has over 20 major facilities, many of which are Manhattan Project–era structures not designed for their current use as office buildings. The master plan envisions a zone that will contain Jack Case Center and retain several of the more permanently constructed buildings such as 9106, 9109, 9115, 9116, 9710-3, and 9733-5. The Jack Case Center, is located north of the former administrative building, 9704-2 is scheduled for occupancy by the end of FY 2007. This leased facility, constructed with private-sector money, will house approximately 1000 people from organizations such as Engineering, Business Management, Human Resources, Medical, Cafeteria, and Purchasing.

Site Support Operations

These zones, located in the eastern and western portions of the existing Y-12 site, will contain site support functions such as maintenance and utilities, materials management, fire station, and emergency management operations. The New Hope Center, the second private-sector funded project for Y-12, is scheduled for occupancy by the end of FY 2007. This facility will contain the visitor center, conference and training facilities, light laboratories, and offices for functions that do not require a higher security level, such as benefit plans. Recently, two other FIRP-funded projects were completed in this area: the new maintenance garage and a records management facility. Two line item projects, the Steam Plant Life Extension and the Potable Water System Upgrades project, will also affect this area of the plant.

Waste Management Operations

This area currently houses several on-site waste management facilities, including the west end treatment facility, tank farms, and tanker terminal. This land would continue to be used to support Y-12 operations and cleanup actions.

Other Key Features of the Y-12 Master Site Plan Vision

Site Access and Parking

The consolidation of enriched uranium operations and implementation of the DBT policy is requiring that BWXT Y-12 and NNSA rethink how access to Y-12 is provided and how parking will be accommodated. The consolidation of uranium operations will consume all of the remaining parking lots that provide reasonably close proximity to work areas located in the west end of Y-12. The loss of these parking lots could come as early as FY 2009. The DBT implementation, now scheduled for completion in FY 2011, will close a portion of Bear Creek Road to east-west traffic flow. Considering that over 1500 people now travel this road to park in the

west end, major improvements in access and parking will be necessary in about 2 to 3 years. Several options are being explored to deal with this challenge. One option suggests that Bear Creek Road would consist of three parts—a West Bear Creek, an East Bear Creek, and a South Bear Creek. The South Bear Creek Road has several possible alternatives. The one shown in the master plan is an improved Third Street that would allow employees to travel east and west to the various parking lots near their prime work location. Another alternative that will be evaluated is constructing a road north of the existing Bear Creek Road that by-passes HEUMF and UPF, connecting back into the western end of Bear Creek Road near the Waste Management Operations Zone. A preferred alternative has not been chosen, nor has any funding scenario been proposed at this time.

In concert with the analysis of east-west access to the site, the future of parking at Y-12 will continue to be explored. There are two fundamental parking concepts: remote parking with a highly efficient transit system and on-site parking in close proximity to work location. A combination of the two across the Y-12 site is highly likely. By far the area that will experience the most impact on parking because of future projects is the west end of Y-12 (site of the UPF project). One alternative being explored provides parking to the west of UPF. This location is likely to require a shuttle service as distances to some facilities will be in excess of ½ mile. It is recognized that a solution to accessing the Y-12 site and parking will need to be a part of the overall planning for the new UPF and DBT implementation.

Facility Disposition and Historic Facility Preservation

From an operating cost perspective, long-term retention of excess facilities is not in the best interest of the government. DOE and NNSA have initiated efforts to address excess facilities and are developing an Integrated Facility Disposition Project (IFDP) for the Oak Ridge Reservation as a means of communicating and requesting funding for this need. A Critical Decision 0 (CD-0) request is currently before DOE Headquarters.

A number of facilities comprise the Y-12 historic district (Fig. 13). Two Manhattan Project–era facilities are being nominated for National Historic Landmark Status. These are Buildings 9731 and 9204-3. Building 9731 is an NNSA facility, and 9204-3 is a DOE-NE building. The master plan proposes these two buildings be preserved. At some point in the future, these buildings might be made accessible, under controlled conditions, to the public. Making them accessible will require the resolution of ownership and related costs along with any operational, environmental, safety, and security issues that may be imposed on an active nuclear weapons component manufacturing site.

(b)(2)High

Fig. 13. Historic facilities on Y-12 NSC.

FY 2007, 5-, 10-, and 15-Year Plans

The following narrative and graphics present the physical footprint plans and changes based on approved projects and the Future Years National Security Plan budgets for FY 2007, FY 2012, and FY 2017. The FY 2022 plan presented represents an unconstrained case to illustrate one plausible scenario for Y-12 NSC by 2022—8 years earlier than the Complex 2030 end-state.

Current State, FY 2007

Figure 14 represents the current and projected site configuration at the end of FY 2007. This site configuration is based on funded activities that affect real property facilities and infrastructure improvements in the FIRP and RTBF programs. Programmatic equipment projects are not shown on any map but may be described in the narrative if their impact is noteworthy. To track the change in plant size, a table is provided on the map. The terminology used is consistent with the Facility Information Management System (FIMS) designations for active and excess facilities. The Operating, Operating Pending D&D, Shutdown Pending D&D, D&D in Progress, Operational Standby, and New facilities are highlighted, and the square footage in each category has been projected. All NNSA, DOE-EM, and DOE-SC/NE facilities located on the Y-12 site are represented. The major DOE-EM and DOE-SC/NE facilities are indicated with their programmatic acronyms shown inside the building footprint.

Key elements related to the projected end of FY 2007 site configuration are provided below.

- Construction of HEUMF continues towards a completion date of FY 2008, and operational in 2010.
- The Jack Case and New Hope centers are under construction, with a completion date projected by August 2007, or earlier.
- A total of 106,581 ft^2 floor space will have been demolished during FY 2007.
- Construction of a centralized plant air system is complete.
- The only significant square footage in standby status is Building 9204-3, a DOE-SC/NE facility.
- The Biology Complex (Buildings 9207, 9210, 9211, etc.) is completely vacated, shut down, and awaits funding for demolition. This complex of buildings, which total approximately 450,000 ft^2, is deteriorating, and its demolition must be addressed in the near future.
- (b)(2)High
- As shown in the table on Fig. 14, a significant amount of footprint area is designated as Operating Pending D&D. This is indicative of major consolidation and modernization projects expected to render these facilities excess over the next 10 years. FIRP funding will demolish some of these facilities; however, the vast majority of the square footage is process contaminated, and D&D is not currently funded or budgeted.
- The total site footprint at the end of FY 2007 will be 7,583,824 ft^2. The NNSA site footprint will be 5,706,037 ft^2, with 1,971,579 ft^2 in the Operating Pending D&D, Shutdown Pending D&D, and D&D in Progress categories. This footprint includes the two leased facilities (Jack Case and New Hope centers), which total 550,000 ft^2.

(b)(2)High

Fig. 14. Configuration of Y-12 NSC, FY 2007.

5-Year State, FY 2008–2012

Figure 15 represents the projected site configuration at the end of FY 2012. This site configuration is based on funded activities that affect real property facilities and infrastructure improvements from FY 2007 through FY 2012. The Operating, Operating Pending D&D, Shutdown Pending D&D, D&D in Progress, Operational Standby, and New facilities are highlighted, and the square footage in each category has been projected. All NNSA, DOE-EM, and DOE-SC/NE facilities located on the Y-12 site are represented. The major DOE-EM and DOE-SC/NE facilities are indicated with their programmatic acronyms shown inside the building footprint.

Key elements related to the projected FY 2012 site configuration are provided below.

- Based on the CD-1 submittal awaiting approval, the construction of the UPF has begun. The scheduled construction start is FY 2009. This is the second designed-denial facility that will result in the consolidation of all enriched uranium into two facilities (HEUMF being the other one), with the resulting positive impact of reducing the high- security footprint by 90%.
- A total of 130,600 ft^2 of new space will be completed between FY 2008 and FY 2012, consisting mainly of the HEUMF, the new steam plant, and some new space assumed to be needed in the Security Improvements Project Line Item.
- (b)(2)High
- The Steam Plant Life Extension Project is complete. At the time of TYSP publication, the preferred alternative for a new natural gas–fired package boiler steam plant with fuel oil backup is shown in Fig. 15.
- The potable water system upgrades project funded by FIRP is complete.
- Interim security measures to meet the DBT guidance are completed. Included, among numerous other improvements, is the closure of a portion of Bear Creek Road as the site's main east-west access route. The impact of this closure will likely require increased shuttle service to the west end and possibly new parking lot construction.
- (b)(2)High
- Between FY 2008 and FY 2009, an additional 267,756 ft^2 of floor space has been demolished using FIRP funding.
- FIRP funding for demolishing non–process contaminated facilities has ended (in FY 2009). Between FY 2002 and FY 2009, BWXT Y-12 will have demolished nearly 1.4 million square feet using FIRP and non-FIRP funds.
- By the end of FY 2012, a significant amount of the total Y-12 NSC footprint (over 1.9 million square feet) will be Shutdown Pending D&D. Of this total, over 0.9 million square feet is NNSA space.
- The total site footprint at the end of FY 2012 is projected to be 6,884,099 ft^2. The NNSA site footprint will be 5,568,881 ft^2. This footprint includes the two leased facilities (Jack Case and New Hope centers), which total 550,000 ft^2. The Operating Pending D&D, Shutdown Pending D&D and D&D in Progress component of the NNSA footprint will total 1,703,823 ft^2. The Operating and New Facility component of this NNSA footprint is 3,862,268 ft^2, including the two leased facilities: Jack Case and New Hope centers.

(b)(2)High

Fig. 15.Configuration of Y-12 NSC, FY 2008–2012.

10-Year State, FY 2013–2017

Figure 16 represents the projected site configuration at the end of FY 2017. This site configuration is based on funded/budgeted activities that effect real property facilities and infrastructure improvements from FY 2013 through FY 2017. Programmatic equipment or other process-related projects are not shown on any map but may be described in the narrative if their impact is noteworthy. To track the change in plant size, a table is provided on the map. The terminology used is consistent with the FIMS designations for active and excess facilities. The Operating, Operating Pending D&D, Shutdown Pending D&D, D&D in Progress, Operational Standby, and New facilities are highlighted, and the square footage in each category has been projected. All NNSA, DOE-EM, and DOE-SC/NE facilities located on the Y-12 site are represented. The major DOE-EM and DOE-SC/NE facilities are indicated with their programmatic acronyms shown inside the building footprint.

Key elements related to the projected FY 2017 site configuration are provided below.

- Based on the current CD-1 submittal awaiting approval, the UPF is operational. It is recognized that current funding levels in FY 2007, FY 2008, and the current ICPP will not support completion of UPF based on the current CD-1 schedule. This Complex 2030 Scenario project priority, in concert with the HEUMF now houses all enriched uranium operations in designed-denial facilities within a high-security perimeter that is 90% smaller than existed in 2006.
- The PIDAS Reduction Project would be underway and scheduled for completion after UPF becomes operational.
- The Complex Command Center, which will consolidate Y-12 Emergency Management Operations, is complete. Y-12 is pursuing private-sector financing approach that could provide this facility by 2010.

(b)(2)High

(b)(2)High

- A total of 518,000 ft^2 of new space will be completed between FY 2013 and FY 2017, consisting of the Uranium Processing Facility, the Consolidated Manufacturing Complex and the Complex Command Center.
- (b)(2)High
- Assuming projects are funded, a significant amount of the total Y-12 site footprint (over 4.0 million square feet) will be Shutdown Pending D&D. Of this total, over 2.8 million square feet is NNSA space. The vast majority of this footprint is process contaminated. Consistent with NNSA guidance, the TYSP must reflect FYNSP funding levels. Therefore, no funding for the D&D of process-contaminated facilities has been assumed, resulting in the significant amount of floor space that is Shutdown Pending D&D reflected in the FY 2017 time period. At publication of this TYSP, a CD-0 for the IFDP is before DOE. The IFDP, when funded, provides for the D&D of several million square feet of excess, process-contaminated floor space.
- As shown in the table on Fig. 16, the projected total site footprint is 7,421,577 ft^2, with over 4.0 million square feet categorized as Shutdown Pending D&D due to overall budget constraints not supporting their disposition. The projected NNSA total site footprint in FY 2017 is 6,107,079 ft^2, with over 2.8 million square feet categorized as Shutdown Pending D&D due to FYNSP budget constraints not supporting their disposition. The Operating component of the NNSA footprint, including the new space constructed between FY 2012 and FY 2017, is 2,526,364 ft^2. This footprint includes the two leased facilities (Jack Case and New Hope centers), which total 550,000 ft^2.

(b)(2)High

Fig. 16. Configuration of Y-12 NSC, FY 2013–2017.

15-Year State, FY 2018–2022

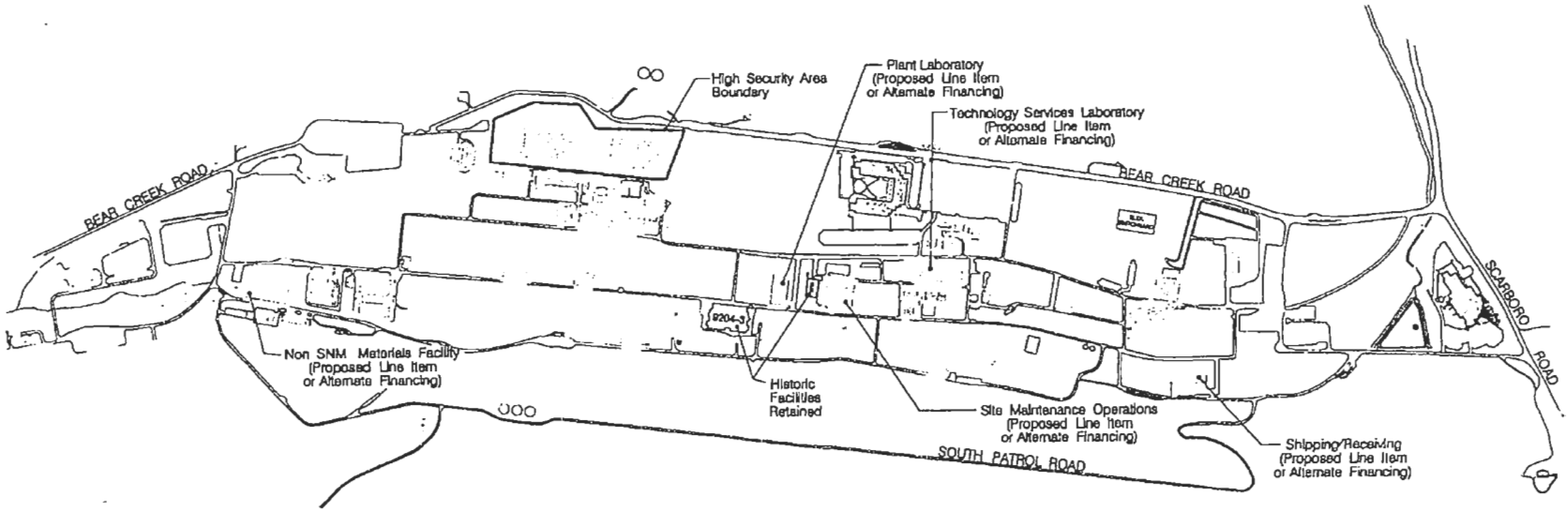
Figure 17 represents the projected site configuration at the end of FY 2022. This site configuration is based on an unconstrained funding case as described in the assumptions below.

- All projects contained in the ICPP, including the proposed projects, are supported, allowing Y-12 to complete its facilities modernization program.
- Funding to demolish process and non–process contaminated facilities will be provided to complete the D&D of all excess facilities by 2022.
- All utility systems have been reconfigured to support a smaller Y-12 NSC.

Based on the assumptions above, Fig. 17 represents the projected site configuration at the end of FY 2022. Key elements related to the projected FY 2022 site configuration are provided below.

- The Materials Handling and Maintenance Facility is complete. The concept behind this project is to consolidate all shipping and receiving, material handling and storage operations not in Material Access Areas and to consolidate maintenance operations not directly housed in manufacturing facilities.
- The Laboratory/Technology Development Upgrades are complete. The concept behind this project is to replace the current Plant Laboratory and Technology Development Operations
- The D&D of facilities not required to support the missions of Y-12 NSC has been completed, and all site remediation is complete.
- Major utility systems have been upgraded as part of line items to replace and upgrade electrical, storm sewer, and other systems tailored to meet the needs of a downsized and modernized site configuration.
- As shown in the table on Fig. 17, the total site footprint in FY 2022 would be 2,718,551 ft^2. The projected NNSA site footprint is 2,673,873 ft^2. The difference between the two numbers is a small amount of space assumed to be under the operation and management of DOE-EM.

The 5- and 10-year state figures graphically depict how BWXT Y-12 and NNSA are making progress towards the implementation of Complex 2030 under FYNSP constrained budgets, albeit with a huge legacy footprint remaining. The 15-year unconstrained state would implement Complex 2030 by FY 2022—8 years sooner—and address the legacy footprint. While budget constraints are always present, the ability to achieve the desired end state of the Complex 2030 master site plan must continue to be aggressively pursued. This master plan is fully integrated as it addresses both NNSA and DOE missions to transform the Weapons Complex *and* complete environmental stewardship and management objectives at the same time. The cost savings to the taxpayer should be significant—on the order of 50% to 60% less (in today's dollars) for maintaining and operating a footprint of ~3.0 million square feet in 2022 versus the ~7.0 million square feet today.



Fifteen Year State: FY 2022

	Footprint Data	Total Site EOFY 2022	NNSA Only EOFY 2022
ACTIVE		2,518,551 s.f.	2,473,873 s.f.
	Operating Pending D&D	0 s.f.	0 s.f.
		200,000 s.f.	200,000 s.f.
	Total Active	2,718,551 s.f.	2,673,873 s.f.
EXCESS	Shutdown Pending D&D	0 s.f.	0 s.f.
	D&D in Progress	0 s.f.	0 s.f.
	Total Excess	0 s.f.	0 s.f.
		0 s.f.	0 s.f.
	Total Site Footprint	2,718,551 s.f.	2,673,873 s.f.

Fig. 17. Configuration of Y-12 NSC, FY 2018–2022.

3

Mission Needs and Program Descriptions

3.1 Current Missions and Programs

Directed Stockpile Work

The work breakdown structure (WBS) for DSW includes (1) Life Extension Programs, (2) Reliable Replacement Warheads, (3) Stockpile Systems, (4) Retired Weapons, (5) Stockpile Packaging, and (6) Stockpile Services. The following describes these WBS elements:

Life Extension Programs

DSW's LEP resources perform maintenance and retrofit activities on weapon systems in the enduring stockpile. LEP activities are directed toward the production of refurbished, replaced, and/or redesigned weapons components. Activities include, but are not limited to, production of War Reserve materials and parts, activities supporting direct manufacturing specifications and procedures, and training personnel needed to meet steady-state production rates. LEPs depend on Y-12's capability to sustain and refurbish all nuclear weapons in the active and active reserve stockpile. This capability includes performing design, development, and production for authorized refurbishment programs; providing the required production capability to refurbish weapons on a schedule negotiated with the Department of Defense; and sustaining production competence to support production needs.

LEPs over the next 10 years are composed of the following systems:

B61 Alt 357

The B61 Alt 357 program will deliver war reserve hardware through FY 2008. In FY 2007 and 2008, production equipment and facilities must be maintained. In addition, tooling and procedures will be reworked, as necessary.

W76

Plans for the W76 LEP include preparation for an NWC-wide FPU in FY 2007. In FY 2008 and 2009, production quantities will ramp-up to a near steady-state level. Production will be ongoing for more than 10 years. Overlaps between B61 and W76 schedules may create some capacity issues that will be captured in planning activities.

W78

The W78 LEP currently has a first production unit date of FY 2015. In light of other production programs and changes in the Nuclear Weapons Enterprise strategy, the likelihood of a W78 LEP is

considered low. The program continues to be on the NNSA long range schedule.

Reliable Replacement Warheads

RRW-1 currently has a first production unit (FPU) between FY 2012 and FY 2014. Plans for RRW-1 include preparations for production, manufacture of test hardware for the Design Agency, and delivery of production units. Production activities include concurrent engineering efforts; product realization initiatives; advanced procurement of some special materials; preplanning activities with the Design Laboratory; procurement; installation, testing, and checkout of equipment provided by the Stockpile Readiness Campaign (SRC); and facility and process modifications.

As FPU approaches, the following will take place. Designs will be finalized. Tooling will be fabricated. Preproduction processes will be developed and evaluated against requirements. Procedures will be developed. Personnel will be trained. Production of components and assemblies will be initiated.

Stockpile Systems

The Stockpile Systems Program is conducted to detect and evaluate potential problems in the nuclear weapons stockpile that could affect safety, use control, and reliability. These evaluations are performed on materials and components used in weapon manufacturing, newly built weapons, weapons that have been retrofitted or upgraded, and weapons withdrawn from the stockpile. This evaluation, or surveillance activity, is a mainstay of the DSW workscope.

Stockpile Systems consists of four programmatic elements: Limited Life Component Exchange (LLCE), QE, shelf-life evaluation, and JTA production.

LLCE components are those that degrade with age and must be replaced periodically. Replacement components are obtained from storage or from new production. NNSA requires that BWXT Y-12 maintain and/or provide capabilities to meet stockpile maintenance requirements for enduring systems as defined by the latest P&PD.

Quality evaluation is a material performance activity conducted on a sampling of War Reserve or War Reserve–like components and assemblies to evaluate their functionality. The sampled materials may come from stockpiled weapons; retrofit evaluation systems test (REST) units, which are randomly selected during production, contain newly produced materials, and are tested in a laboratory; stockpile flight test (SFT) units, which are randomly selected from the stockpile and evaluated by flight tests; stockpile laboratory test (SLT) units, which are selected from the enduring stockpile and evaluated; and production samples.

QE activities are expected to remain relatively constant during the 10-year planning period. Through the Surveillance Transformation Project and the Enhanced Surveillance Campaign (ESC), efforts will be made to decrease traditional QE disassemblies. ESC will attempt to implement new technologies that will allow system evaluations to take place in a non-destructive mode. However, any decrease in traditional QE disassemblies is expected to be offset by new surveillance work on upcoming LEPs and the RRW.

Shelf-life evaluation is conducted on War Reserve or War Reserve–like components and assemblies stored for extended periods in a defined environment and evaluated on a scheduled or as-needed basis to determine their long-term functionality. Long-term storage material includes samples from War Reserve production held for evaluation for more than 6 months; aging studies material; and production of representative sample material.

JTA production is an activity to supply materials built to specifications developed jointly by the design laboratory and the Department of Defense that include, to the extent possible, War Reserve components minus the nuclear package. The physical appearance and characteristics of a JTA approximate a War Reserve unit to the maximum practical and possible extent.

The JTA program will provide flight test assemblies and components in accordance with schedule requirements defined by LLNL and LANL and implemented through the NNSA program control documents. JTA production is expected to decrease in FY 2010 and thereafter be sustained at the newly established level.

Y-12 must maintain and/or provide the capabilities to meet QE, shelf-life, and/or test hardware program requirements for the following weapons systems on the basis of schedules provided by NNSA:

B61	B61-3 JTA-9
B83	W76 High Fidelity JTA
W76	W76 JTA-1,2,7
W78	W78 JTA-5,6
W80	W87-1 JTA-3,4
W87	W88 JTA-1,2,3,4
W88	

Retired Weapons

Retired Weapons Program resources provide for the receipt, dismantlement, and disposition of weapons systems components returned from the nuclear stockpile. Weapons components returned to Y-12 are received primarily from Pantex following initial dismantlement.

Dismantlement includes all activities associated with weapons retirement, disassembly, component characterization, and disposition of materials and components.

Administrative, operational, security, and safety procedures are developed, and tooling is designed and fabricated for each dismantlement system. Components may require demilitarization, sanitization, and/or decontamination depending on the disposition path.

(b)(2)High

(b)(2)High

Dismantlement, storage, and disposition have provided an ongoing workload for Y-12, driven primarily by material reuse requirements, stockpile reduction, and treaty obligations.

Y-12 must maintain and/or provide the capability to perform dismantlement and disposition on the following weapons systems based on schedules provided by NNSA.

B43	W56	W76
B53	W59	W78
B61	W62	W79
B83	W68	W80
W48	W69	W84
W49	W70	W87
W55	W72	W88

Current projections show weapon receipts from Pantex will peak again in 2008 and then rise throughout the 10-year planning period. Implementation of the Nuclear Posture Review (NPR) recommendations and continued pressure to reduce the stockpile are expected, which will impact this workload. Continued initiatives to increase capacity are expected. Overall, dismantlements are expected to be sustained at a high level to address material demands, storage issues, and treaty requirements. Similarly, demilitarization, sanitization, and disposition activities will increase to reduce the space required for the storage and security of excess materials and classified parts generated by dismantlement operations.

Stockpile Packaging

The Stockpile Packaging Program provides safe, secure, efficient, and economical containerization for the transport of radioactive materials and nuclear components within Y-12 NSC and between Y-12 and other approved sites. Packages and package components are developed, designed, procured, tested, certified, maintained, and used in accordance with DOE directives, federal and state regulations, and other applicable national standards.

The program supports packaging requirements from the DSW and RTBF programs. The tasks required to support these missions are the following:

- certification of Type B packaging through the appropriate DOE offices;
- procurement and in-house fabrication of packaging following an approved quality assurance (QA) program that ensures full compliance with all regulatory requirements and standards;
- proper maintenance of packages, ensuring they remain in good condition and have adequate, accurate levels of inventories;
- selection, use, and refurbishment of packages for off-site transport of radioactive materials to and from Y-12;
- storage and disposal of decommissioned and unusable packages and package materials; and
- design, manufacture, and testing of packages for on-site transportation and storage of materials within the NWC.

All Type B packages must undergo a maintenance cycle after each use and an annual certification of the containment vessels. The maintenance cycle involves a visual inspection of each component of the package. A component can be repaired as allowed by the packaging safety analysis report, or it can be removed and replaced. Replaced components are procured with funding provided by this task. Procurement and certification activities of replacement parts for certified Type B packages are conducted in compliance with regulations of the Department of Transportation, Nuclear Regulatory Commission, and DOE Weapons Quality Division's Quality Criteria 1.

Over the next 10 years, the Stockpile Packaging Program plans to maintain NNSA/Service Center certification and availability of containers to support shipment of any weapon component in the active War Reserve, the Inactive Reserve, or the Strategic Reserve inventories. These containers will be needed to support future LEPs, the RRW Program, Stockpile Evaluation Programs, and Dismantlement Programs. Activities include development or modification of safety analysis reports for packaging, refurbishment of on- and off-site containers to meet certification requirements, refurbishment and shipment of containers to other NNSA sites, and implementation of new regulations and DOE order requirements.

Stockpile Services

The Stockpile Services program includes the efforts required to support the DSW mission that cross-cut multiple programs and cannot be attributed to a specified programmatic tail number. Stockpile Services consists of three programmatic elements at Y-12 over the next 10 years: Stockpile Management, Production Support, and Responsive Infrastructure.

Stockpile Management provides resources for planning, budgeting, reporting, and special scoping studies required across all DSW programs and the integration required for the different programs. Resources are also supported for multiple program management efforts that cannot otherwise be specifically attributed to a planned programmatic tail number.

Production Support work scope is focused on providing the manufacturing infrastructure to support Y-12 missions. The work scope is generally divided into manufacturing operations processes, production control systems, product assurance processes, and nuclear materials control and accountability activities:

- **Manufacturing operations processes** activities provide for the continued capability to manufacture and process components associated with Y-12 missions. Processes are needed to support the enriched uranium (EU), DU, and lithium material streams. Critical process equipment and auxiliary elements used in the manufacturing activities are maintained. Work scope performed in these areas includes ES&H compliance activities, maintenance functions, technical and configuration support, process supplies and consumables, instrument calibration, engineering design and support, radiation control support, boundary control supplies and

maintenance, boundary control operations, and generic/nonprogrammatic shop supplies.

- **Production control systems** include maintenance of the required capability for the classified computing infrastructure and the classified production control systems that are critical to Y-12's manufacturing capability. User/desktop computing provides classified desktop support services, computing access management, online computing help, classified e-mail services, classified networking support, access to classified web servers, classified password administration, virus removal and cleanup, training and education, and field support.

  Network management, operation, administration, and design support services to the Y-12 Classified Services Network are supported, as are communications security management and administration support services. Activities supporting operations, server/system administration, and database administration services also are provided.

  Work scope includes reporting and controlling weapon materials capabilities by operation and manufacturing area. Product configuration; configuration management; and control of design, engineering, process, and certification data are provided and maintained. Integrated planning and coordination; testing and certification of commercial, off-the-shelf software; definition and implementation of information security requirements; and development and implementation of interfaces to design agency systems and to Y-12 data management systems also are supported.

- **Product assurance processes** includes those processes that support the maintenance of process and certification standards, dimensional inspection, physical testing, and certification of components. Critical process equipment and auxiliary elements used in the quality and certification activities are maintained. Work scope performed in these areas includes ES&H compliance activities, maintenance functions, technical and configuration support, process supplies and consumables, instrument calibration, engineering design and support, radiation control support, and generic/nonprogrammatic shop supplies.

- **Nuclear Materials Control and Accountability** (NMC&A) processes support the accountability and control activities performed by operations or operational support personnel. All items included in the process are direct requirements from DOE. Activities related to the processes are inventories, both scheduled and emergency; accountability measurements; holdup measurements performed in support of NMC&A requirements; development or procurement of standards, equipment, software, etc. needed to perform NMC&A measurements; and continuous improvement teams, statistical analysis, process monitoring, and other technical support activities in support of NMC&A requirements.

- **Responsive infrastructure** provides resources required to support the NNSA directed program goals for the new triad. In 2002, a new triad was established to meet the nation's security needs consisting of nuclear and non-nuclear capabilities, robust defense, and responsive infrastructure. In the realm of responsive infrastructure, cost and duration of production processes must be significantly reduced to achieve the envisioned responsiveness. The strategy for responsive infrastructure will be to execute weapon manufacturing in an evolutionary manner through the existing Stockpile Stewardship Program. A continuous improvement process will be implemented on infrastructure projects.

Readiness in Technical Base and Facilities

The objective of the RTBF program is to provide the facilities, materials, and facilities support personnel needed to support the defined missions of the Y-12 NSC. Specifically, the Y-12 RTBF Program includes the following:

- Maintaining the base operations for the Mission Critical facilities;
- Management of all balance of plant facilities as well as the site utilities infrastructure; environment, safety, and health (ES&H) programs; and information technology systems.
- Capital Management including all pre-conceptual planning and other project costs for all RTBF funded line items;
- Containers for off-site transportation and on-site transfer of SNM related to Defense Programs missions;
- Integrated Site Planning including strategic planning, master site planning, and development of the TYSP;
- Planning, management, and coordination of logistics for the collection, storage, treatment, shipment, and disposal of all newly generated waste from Y-12;
- Management and storage of highly enriched uranium (HEU), lithium, and other materials; and legacy materials disposition to promote footprint reduction;
- Operations and maintenance of the recycle and recovery processes for HEU and lithium;
- Management of DOE precious metals and HEU scrap; and
- Chronic Beryllium Disease Prevention Program (CBDPP).

In addition to providing this critical base, RTBF also provides integral support to the security upgrades and Y-12 modernization efforts, including

- relocation of QE operations,
- construction of material vaults and associated relocation of material to consolidate the number of security interests,
- other project costs and readiness activities for HEUMF, and
- conceptual planning and other project costs for UPF.

The security and modernization efforts, in addition to addressing DBT and other security requirements, will provide more efficient, cost effective operations in the future.

The RTBF elements included at Y-12 are described here.

Operations of Facilities

Facilities Program

RTBF's Operations of Facilities Program ensures that production facilities and associated facility systems are effectively managed and that they continue to support DSW, RTBF, Campaigns, the Nonproliferation Program, and the National Security Program. The Operations of Facilities Program has responsibility for 13 manufacturing and process-related facilities and associated ancillary support facilities at Y-12. The majority of these facilities are defined as mission critical. A fourteenth facility funded by Operations of Facilities (DP0901), (b)(2)High is considered excess and is currently undergoing deactivation; management of this facility is included in the Infrastructure Reduction Program. Regardless of facility responsibility, all activities are conducted in a manner that protects the health and safety of employees, subcontractors, visitors, the public, and the environment in accordance with Integrated Safety Management System (ISMS) and Integrated Safeguards and Security Management (ISSM) requirements and practices and in compliance with DOE orders and other requirements. Each facility, along with its function(s), is listed in Table 1.

Table 1. RTBF Operations of Facilities Program

(b)(2)High

The Operations of Facilities Program includes activities required for continuous facility operations and also includes a minimal level of specific upgrade projects related to nonroutine repairs, maintenance or alterations of the facility and facility systems, and development of new authorization basis documentation.

The term *continuous facility operations* refers to the following:

- Facility Management
  - development of requirements and plans (scope of work) for the facility tasks
  - management of work scope execution and cost performance for the facility tasks
  - Operations Security Plans
- Maintenance
  - corrective and preventive maintenance of the facility and facility systems
  - configuration management of the facility and facility systems
  - field calibration, inspection, and testing of equipment
  - DM reduction as defined by the TYSP Guidance
- ES&H Compliance
  - assurance of continued implementation of ISMS
  - assurance that facility and facility systems are in compliance with all applicable ES&H requirements established by federal and state laws and DOE orders
  - fire patrols, if required
  - development of procedures related to the facility and facility systems (including testing and surveillance procedures for the facility systems)
  - storage, sampling, transportation, certification, and processing of facility waste (does not include process waste)
  - radiological smear sampling of the facility (does not include manufacturing and processing equipment)
  - maintenance of facility authorization basis (AB) documents, including annual updates of authorization basis documentation as well as processing facility–related Unresolved Safety Question Determinations.

From FY 2007 to 2015, the Operations of Facilities Program will continue to support the maintenance of the key manufacturing and process-related facilities listed above as well as new facilities that are currently being constructed or planned, including HEUMF and UPF. While FIRP funding continues to contribute to the reduction of the existing DM backlog in the facilities, the Operations of Facilities Program works in concert with FIRP to conduct a maintenance program that minimizes the level of additional DM that is added to the backlog via maintenance improvement initiatives.

In addition, implementation of the 10 CFR 830 nuclear safety rule compliance authorization basis documents (b)(2)High will continue through FY 2007. The Operations of Facilities Program

also has funding responsibility for the complex-wide Emergency Notification System, including the Criticality Accident Alarm System, as well as support for the Fire Protection Program Comprehensive Action Plan.

While the Y-12 Complex continues to perform its missions in a safe, secure, compliant manner, the facilities are aging. Over 70% of the facilities are greater than 50 years old and were not designed to meet today's ES&H and security requirements. Safe operation in these aging facilities requires a continuously increasing investment in operating, maintenance, and repair costs. RTBF funding reductions which began in FY 2006 further increase the risks associated with severely under funding the Y-12 infrastructure.

Integrated site planning includes development and update, as required, of the BWXT Y-12 Strategic Plan; long-range master site planning; and the development and annual submission to NNSA of the TYSP. The strategic plan sets forth the mission, vision, strategic objectives, and goals for Y-12. The Master Site Plan is a long-range (20- to 30-year) plan that links strategic and program planning projections and performance outcomes to ensure that efficient and effective real property assets are available to support the site's missions. The TYSP provides Y-12 site-specific funding profiles and projects that support the overall implementation of the Master Site Plan. The TYSP is a resource-constrained document. Master site planning is also responsible for all site selection activities for capital and expense-funded projects that require location on the Y-12 site.

Line Item Management

Line item management within Operations of Facilities provides the development, planning, and integration of all Y-12 capital construction projects. Activities include the development of mission need, requirements development, preconceptual planning and conceptual design, and performance of all Critical Decision activities through CD-1. This element also includes the other project costs (OPC) for all approved RTBF line item projects. Line item management will provide integration of line item activities including line item planning, integration with the NNSA Integrated Construction Program Plan, annual budget preparation, project authorization, tracking and reporting, and other activities.

Common Site Support

Common Site Support includes the management, maintenance and operation of balance of plant facilities, utility systems and plant grounds/roads as well as the following sitewide services and programs:

- Health- and safety-related sitewide services including Fire Department Operations, Industrial Hygiene Program, Radiological Control (RADCON) base program, Emergency Management Program and Dosimetry Program.
- Utility systems infrastructure, maintenance, operations, materials and commodities for the electrical substations and distribution system, steam generation and distribution system, raw and treated water distribution systems, sanitary sewage collection system, storm water drainage system, cooling towers and distribution systems and various gas storage and distribution systems.
- Maintenance work planning, control and execution including sitewide building janitorial services and structural maintenance for balance of plant facilities and utility systems, heavy equipment maintenance, plant grounds and roads upkeep, radio maintenance, vehicle leasing and maintenance and sitewide laundry services.
- Facility management including building management, offsite leased facilities management and rental costs and facility and utility systems condition assessments.
- Sitewide environmental services including National Pollutant Discharge Elimination System (NPDES) compliance sampling and reporting, stack air monitoring, ground water sampling, environmental analysis and reporting, Clean Air Program and NEPA/NHPA program.

- Waste management services including pollution prevention program, sanitary waste, recycle waste, legacy waste disposition and hazardous waste management program.
- Property management and sales, mail services and postage and plant materials receipt/storage/distribution.
- Legacy Workers Compensation Program management and payment of approved compensation claims.

Nuclear Materials Management, Storage, and Disposition

RTBF's Nuclear Materials Management, Storage, and Disposition Program ensures strategic materials supply and demand analyses are accurately and timely developed in support of the DP mission for replacement of limited-life components for the stockpile and other missions including Naval Reactors Fuel Program requirements. This program also ensures safe, secure, compliant storage of the nation's strategic reserve of HEU and lithium, as well as storage of all nuclear materials at the Y-12 site. Y-12 is designated as DOE's national repository for HEU.

Nuclear materials are stored at Y-12 in compliance with two major security levels. The areas requiring the highest level of security are designated as MAAs to house Category I quantities of enriched uranium materials. The remaining storage is defined as non-MAA and includes lithium; thorium; normal, depleted, low enriched, and most Categories III and IV enriched uranium; and other non-MAA qualified weapon components and materials.

MAA storage capacity is approximately 100,000-ft^2. (The 5,500-ft^2 reduction from the previous TYSP resulted from redefining areas that were previously used for long term storage.) The 100,000-ft^2 storage capacity can accommodate approximately 12,000 drums and approximately 6,500 cans of stored material. The estimated capacity of can storage is based on the assumption that existing Rackable Can Storage Boxes, a new and approved storage alternative to the modular storage vaults (MSVs), will be used with a corresponding loss of some MSV storage space as required.

(b)(2)High

(b)(2)High

Peak requirements for MAA storage are projected for the FY 2010 timeframe with an expected downward trend as a result of weapons dismantlement and various material disposition activities. Based on current projections for material receipts, dismantlement rates, outgoing shipments, and sustained material recycle and recovery operations, adequate storage space should be available for the very near future. However, due to HEUMF schedule delays, storage capacity models predict drum storage capacity could potentially be exceeded in FY 2009. To address this situation, the Nuclear Materials Management, Storage and Disposition Program is evaluating and implementing a variety of mitigating options. Major changes in planned receipts or shipments, the overall outcome of accelerated consolidations of material, and further delays to HEUMF would obviously affect the availability of storage space.

Plans are underway for the transfer of materials into the new HEUMF, scheduled to be operational by March 2010. The transition will occur over 18 months completing at the end of September 2011. The new facility will enable NNSA to consolidate HEU into a modern storage facility and reduce costs associated with facilities that can be vacated or the storage footprint reduced through other material consolidation and material disposition initiatives.

Non-MAA storage in multiple facilities is consuming approximately 120,000 ft^2. These facilities are used to store a wide variety of nuclear and non-nuclear materials primarily associated with DP missions.

Non-MAA storage also provides compliant long-term storage for classified materials which are required to be held. The Program funds and manages two large free-standing VTRs for such storage. Currently, contingency plans are being developed to convert MAA storage facilities which will be made available when materials are transferred to HEUMF into compliant non-MAA storage facilities. However, it is hoped that vigorous efforts toward material disposition will make the need for additional space unnecessary. Reassignment of existing space will, however, be required to meet future storage needs.

A major materials disposition initiative has continued beginning in FY 2003 and is planned to continue until such materials with no defined use have been dispositioned off site. (b)(2)High (b)(2)High (b)(2)High

Continued success has been possible due to additional funding provided by the RTBF Program through the NNSA-HQ led Nuclear Materials Management Team's (NMMT) disposition projects, which is expected to continue for the near future to improve employee safety and Y-12's overall legacy materials storage issues. Some of the NMMT projects have included efforts to disposition low-equity HEU materials within revised Economic Discard Limits. The successful off-site disposal of these excess materials has reduced the need for generating new storage space and eliminated future processing costs for the low-equity HEU.

Y-12 recently initiated two significant activities directed toward identifying and dispositioning unneeded lithium. (b)(2)High (b)(2)High

Additionally, a comprehensive supply and demand study was performed, that evaluated the needs for enriched lithium for the next 50 years. Based upon this analysis, a recommendation was made to the YSO and NNSA-HQ that a large quantity of the material should be declared no defined use, and either put to other uses or dispositioned appropriately. (b)(2)High

From FY 2007 to 2017, the Nuclear Materials Management, Storage, and Disposition Program will continue to provide safe, secure management and storage of the nation's HEU inventories and other weapons materials with improved facilities, technologies, and practices. Continued off-site disposal of excess materials is essential to footprint and cost reductions. Costs for repackaging and relocation of non-MAA materials are expected to rise, along with the need to significantly change the safety bases for many non-MAA storage facilities. Increased funding is required over the next several years to enable repackaging and/or processing HEU destined for storage in the new HEUMF. As was started in FY 2005, increased emphasis is being placed on planning in preparation for the transition into the new facility. After the new facility is fully operational, storage costs will scale down to a fairly stable level, barring any major changes in scope. Similarly, security requirements require a combination of enhanced storage, sanitization, and disposal of legacy classified items. Only by properly addressing these solutions can Y-12 achieve its goals of secure storage, footprint reduction, and increased operating efficiency.

Material Recycle and Recovery

Material recycle and recovery (MRR) activities include those necessary to recycle and recover EU from various forms of material generated from the production, dismantlement, or quality evaluation of weapons parts; to perform chemical conversion of various forms of lithium to lithium chloride; and to store in-process materials until they can be further processed for long-term reuse, storage, or disposition. All activities required for this mission, from maintaining its processing equipment to operating the equipment, is included in the MRR program.

The primary EU recycle and recovery tasks include the processing of salvage materials from the production areas into a measurable form, purification of uranyl nitrate and conversion of UO_3 to metal (if needed), processing of salvage materials in the EU recovery areas, cleaning of machining chips, and the breaking and shearing of scrap metal from the Life Extension Programs or Dismantlements.

MRR will operate wet chemistry, oxide conversion facility, and reduction to produce purified uranium metal in support of national security mission needs. Additional significant processing efforts will center on support of dismantlement initiatives, lithium processing, and backlog reduction.

Although backlogged HEU oxide and liquids can now begin to be processed, it should be noted the entire metal production system

produces salvage materials such as slag, ash, filters, and combustibles that require dispositioning through off-site disposal or on-site processing. An initiative to enable off-site discard of low quantities of HEU is underway to reduce the amount of salvage material awaiting chemical recovery.

There are two other independent projects within MRR that support the NNSA complex. They are the DOE Business Center for Precious Metals Sales and Recovery (BCPMS&R) and the Central Scrap Management Office (CSMO).

BWXT Y-12 staffs and manages the DOE Business Center for Precious Metals Sales and Recovery (BCPMS&R). The Business Center recovers precious metals from uncontaminated and Resource Conservation and Recovery Act scrap metal and excess equipment, making this metal available to DOE and its prime contractors at no cost. The Business Center also places contracts with private sector companies to refine precious metals to commercial grade. The Business Center maintains its business office and a repository for staging precious metals scrap at Y-12.

The CSMO provides operations and technical support for centralized management for DOE owned HEU scrap, including receipts, processing and, packaging and disposition activities. This function is essential to ensure that HEU scrap is controlled, used and reused only for authorized and intended purposes and dispositioned in accordance with NNSA policy, priorities, and plans.

Program Readiness

Program Readiness at Y-12 is limited to the Chronic Beryllium Disease Prevention Program (CBDPP). The CBDPP takes beryllium samples at Y-12 including facilities swipes, swipes of equipment and material, and air monitoring. It also provides for the analysis and tracking of beryllium data at Y-12, completion of related reports, and specific medical costs associated with the CBDPP.

Campaigns

Campaigns are multiyear, multifunctional programs designed to develop and maintain critical capabilities needed to achieve confidence in the certification of the weapons stockpile without nuclear testing and to support Stockpile LEPs. Campaigns will provide key resources and support the responsive infrastructure and the Reliable Replacement Warhead (RRW) programs. The Y-12 campaigns are Readiness Campaign [which includes Stockpile Readiness (SR) and Advanced Design and Production Technologies (ADAPT)], Dynamic Materials Properties (DMP), Enhanced Surveillance (ES), and Advanced Simulation and Computing (ASC). Also included under Campaigns' organizational structure is the Plant-Directed Research, Development, and Demonstration (PDRD) activity.

Although each campaign has specific focus areas, they are fully integrated. New technology development may begin in PDRD, DMP, ASC, or ES; mature through ADAPT; and finally reach deployment through SR. Microwave and agile manufacturing are examples of projects being developed and deployed through multiple campaigns.

Stockpile Readiness

Stockpile Readiness examines modern and emerging technologies and applies them to the development of new or replacement design and production capabilities in those cases for which modern technology would lead to cost-effective, lean processes; shortened cycle times; built-in quality and acceptance; closer integration of activities across the NWC; a more productive workforce; and agile processes that enhance responsiveness to future national security needs. These activities support NNSA strategic planning goals 1, 4, and 5. The fruits of these efforts will revitalize Y-12's ability to meet its mission requirements in a more efficient and cost-effective manner and provide new or enhanced capabilities to meet the future needs of the NWC.

Advanced Design and Production Technologies

ADAPT continues and accelerates the development of advanced, cost-effective, and environmentally acceptable nuclear weapons production technologies and design processes required to maintain an affordable and reliable nuclear weapons stockpile. Many processes used in the NWC will be either improved or eliminated as new technologies become available. At Y-12, major program drivers will be the responsive infrastructure initiatives and the RRW NNSA Production and Planning Directive and other emerging DOE ADAPT goals, such as reducing response time by 50%, exhibiting ten times fewer defects than in the past in stockpile hardware, and evaluating safety enhancements such as enclosed operations and other engineered controls. The ADAPT technologies will result in reduced operating costs, improved responsiveness, improved manufacturing flexibility, and improved quality.

Dynamic Materials Properties

This Y-12 research and development (R&D) program funds basic investigative or exploratory work relating to materials of interest. Current emphasis is on chemical and metallurgical studies of uranium, lithium, and other special materials, as well as the interactions of these materials when placed in close proximity to one another. In the absence of an underground testing program and with the implementation of a science-based Stockpile Stewardship Program, physical parameters and materials performance data are needed to validate computational models and to compare proposed process changes with historical processes.

Enhanced Surveillance

ES activities provide lifetime-prediction and improved-surveillance diagnostics for canned subassemblies, cases, and nonnuclear components. Lifetime-prediction efforts include work to improve knowledge of weapon materials, materials interactions, and aging phenomena. ES efforts also include development of tools to predict the future condition of the stockpile with enough lead-time to enable preventive maintenance of the stockpile. Diagnostic activities include full deployment of new quality-evaluation technologies focused on evaluating the condition and aging behavior of canned subassemblies, cases, and nonnuclear components. The behavior of materials and components as they age beyond past experience must be defined in terms that can facilitate preventive maintenance of the stockpile and/or provide data that can be used to model weapon behavior and link it to historical nuclear weapons performance tests. Several technologies developed as part of the ES have already been deployed at Y-12. Baseline characterization of materials and assemblies is being improved under ES to provide input to models used to link production data and conventional surveillance data to the existing underground test envelope.

Advanced Simulation and Computing

ASC is a key component of science-based stockpile stewardship and is providing computational power far beyond present capabilities to enable scientists to simulate the aging of U.S. nuclear weapons and to predict their performance. (The ASC program continues to be referred to as the Accelerated Strategic Computing Initiative.) The major Y-12 ASC thrust area is the Distance Computing (DISCOM) subproject of the Simulation and Computer Science major technical effort (MTE). DISCOM will assist in the development of an integrated information, simulation, and modeling capability to support the design, analysis, manufacturing, and certification functions of the DP Complex.

Plant-Directed Research, Development, and Demonstration

The PDRD program was initially established in 2001 by the Energy and Water Appropriations Act and the Defense Authorization Act. These acts establish the use of up to 2% of Y-12's NNSA funding on PDRD projects as an allowable cost. The PDRD program is analogous to the Laboratory-Directed Research and Development program with appropriate differences to ensure that the program is focused on innovative or high-risk manufacturing concepts, technologies, and skills enhancements. The PDRD program is

designed to strengthen the Y-12 technology development cycle by providing a program to perform exploratory or feasibility R&D activities and by funding projects with the potential for high payoff at Y-12 and within the NWC. It also plays an important role in preparation for other campaigns since PDRD is a key element in the beginning of the technology maturation process. The current position is to continue to target funding projects up to the full 2% of the legislatively determined Y-12 baseline budget authority.

Focus Areas

Y-12 Campaigns is aligned with the *Y-12 Technology Roadmap Integrated Program Plan 2006,* Y/AMT-690, Rev. 1, dated August 29, 2005. This revision of the Technology Roadmap has been aligned with the original technology focus areas. The nine new focus areas are described in the following sections.

Material Science and Engineering

Y-12 produces an array of metallic-, ceramic-, and polymer-based components using a variety of processing techniques. In the past, underground testing provided verification of the functional performance of these components.

A more comprehensive materials characterization capability and database are needed if Y-12 is to be able to (1) answer questions regarding the continued effectiveness of materials in the aging stockpile; (2) provide increasingly specific data to support performance predictions; (3) assess the impact of changes in materials, material suppliers, and processing operations; (4) provide information to support relaxation of certification requirements; and (5) weaponize new materials to support reliable replacement design concepts. Of particular interest are nanostructured materials that will provide significant performance enhancements due to superior material properties.

The Material Science and Engineering focus area helps to address these needs. It contains the necessary tasks to provide both the required characterization capability and the database. It characterizes the materials in the stockpile, the materials tested, new materials, and those materials being produced to provide the database necessary to ensure manufacturability and performance.

Material Recycle and Recovery

Many of the materials that Y-12 processes are chemically or radiologically hazardous and have become increasingly problematic and costly. Chemical and metallurgical product specifications are becoming more difficult to meet as criticality and ES&H requirements for handling hazardous, radiological materials drive changes in operating parameters and procedures and limit the amount of materials that can be on the floor. As a result, Y-12 must maintain the ability to recover and recycle a number of materials.

Machining

The current Y-12 machine tool inventory includes an array of aging, single-function machines such as lathes, mills, and grinders. Numerical control (NC) programming, machine set-up, in-process dimensional checks, and chip management are constrained by many manual operations and operator interactions. State-of-the-art machine tools and programming techniques have the potential to decrease product turnaround time, increase safety, and improve product quality. Of particular interest is the Agile Machine Tool that combines the functionality of lathes and mills onto a single platform.

Complex agile machine tools, multifunction tooling, and operating in the confines of gloveboxes will make process modeling and machine simulation a critical tool. Machine simulation will allow more thorough testing of NC programs before running the programs on the machine, reducing the chance of collisions or other incidents. Process models will also allow operators to be trained using virtual machines as well as planning for factory machining requirements.

Machining requirements for dismantlement operations differ considerably from product fabrication requirements. Technology such as lasers or chipless cutter techniques may be applied to the relatively low accuracy and high throughput needs of dismantlement.

The deployment of state-of-the-art machining technology is critical to improving Y-12's agility, flexibility, productivity, and the connectivity of product and process data across the NWC.

Metal Processing

The ability to process metals and to provide products for weapon programs and reactor customers is a unique Y-12 capability and mission. Y-12 uses a variety of traditional processing operations, including casting, rolling, forming, heat treating, machining, chemical recovery, and special chemical operations that have been used by the commercial metals industry for decades in the high-volume processing of common metals and alloys. Although these technologies have been used at Y-12 for many years, their continued use is becoming increasingly problematic and costly, especially for the more specialized, low-volume processing used for enriched uranium. Y-12 is focusing on new technologies that offer higher processing yields and better control of chemistry (microwave processing, radiant heating, flexible pressing, etc.), and metal purification technologies that do minimize chemical processing.

Engineering Controls and Automation

Although gloveboxes, hoods, walk-in enclosures, and other controlled environments are used to house and provide control of many of Y-12's existing operations, extensive use of administrative controls is still required. Since the Y-12 processes and equipment were first designed and deployed, design drivers have changed, and expectations for protecting worker and public health, product quality, and security have increased. Also, the throughput has decreased from large volume runs to small-lot, batch mode operations. To meet manufacturing and refurbishment needs on this basis, technology gaps in this area must be addressed as well as the need to replace manual manufacturing with enclosed, automated operations more amenable to today's ES&H requirements.

Testing, Inspection, and Validation

Through the Stockpile Stewardship Program, where stockpile certification is based on validated models rather than actual performance testing, Y-12 must respond to the need for more data with greater precision to support analysts' needs. Technologies to meet these needs include nondestructive examination techniques, improved data analysis, and requirements-based testing. The Testing, Inspection, and Validation focus area lays out a strategy to ensure Y-12's ability to measure and analyze a large variety of quantitative and qualitative testing.

Science- and Model-Based Manufacturing

The Science- and Model-Based Manufacturing focus area includes product and process realization models, such as casting and forming advisors, that can interact directly with Pro/E part models to create the tooling and fixture designs needed for specific materials and components automatically. Science-based models are needed to expand our understanding of fundamental processing and certification phenomena. In order to realize the end state of an electronic design-to-part strategy, systems are required to implement electronic procedures, multimedia work instructions, and an electronic bomb book for certification.

Computing and Information Technology

Y-12's technology initiatives have created an increased demand for secure and automated information and greater infrastructure requirements and computer/network power. The Computing and Information Technology focus area responds to the need for the overarching integration of all computing and information system initiatives and activities. The scope includes applications that provide crosscutting support.

Integrated computing applications and knowledge management will support the Y-12 vision of a connected factory by delivering

timely information and applications to workers and by becoming a fully integrated partner with the NWC. Information systems for manufacturing—from the engineering design to the factory floor—will be implemented with closed-loop feedback and integrated business systems. The factory floor will connect to the design labs. Emerging knowledge management technologies such as collaboration, data mining, data warehousing, and intelligent advisors will enable retrieval and information use and sharing both within Y-12 and with the NWC. Cyber security requirements will be met.

Safeguards and Security

The thrust of the Safeguards and Security focus area is increased security and safeguards at reduced cost through the use of new technology and engineered solutions. The tasks focus on three key areas: physical security, NMC&A, and cyber security.

Physical Security. The goal of safe, secure, and efficient operation is embedded in the use of technology to

- meet current and future design based threats,
- leverage effectiveness via engineered controls to achieve both more robust defenses while avoiding recurring costs (e.g., passive barriers and activated dispersals),
- increase protective force effectiveness by incorporation of state-of-the-art equipment, and
- remove obstacles to increased productivity by allowing operators greater freedom in the amount of material and how they are allowed to handle that material.

The envisioned end state is one where physical security is robust and transparent to the operator. As a joint effort with Operations and Project Management, these effectiveness and efficiency improvements will be designed into new facilities (HEUMF and UPF) as well as improved processes (enclosed processing/improved containment designs).

Nuclear Materials Control and Accountability. Significant efforts are being expended in the design and development of the NMC&A of the future. This area includes enhanced material surveillance and automated detection of material parts flowing out of or into processing areas by improved sensor detection feeding automated tracking and database updating. With an improved materials-management system, operators will be able to move product through the manufacturing process with reduced administrative tasks. Sensors on the material, in-process measurements, and identification of production operators will optimize tracking of the material and update databases as required. Additionally, these efforts will reduce the inventory and accountability cycle, decreasing downtime and improving overall efficiency.

Cyber Security. Efforts are under way to harden the Y-12 computing environment while continuing to provide the requisite functionality to the site. The Intrusion Detection System (IDS) is being expanded into monitoring of encrypted network traffic and implementation of host-based IDS. This expansion will further monitoring and alerting capabilities in the current Y-12 Information Technology (IT) infrastructure and provide greater protection of Y-12 vital information as well as enhanced notification of attempted attacks.

Subject to available funding, other cyber security actions include the following:

- Provide for central IT logging and correlation.
- Provide for secure wireless communications within Y-12.
- Continue to replace and upgrade the current IT network infrastructure components and configurations to the latest industry-proven technology.
- Migrate the current unclassified user desktop and server environment to an unclassified national security related (UNSR) desktop and server environment.

- Further utilize and deploy diskless technologies such as thin and thick clients to address issues with Accountable Classified Removable Electronic Media.

National Security Programs

National Security and Development Programs (NS&DP) is a program management organization managing all mission work that is "complementary" to the Defense Programs missions. The Complex 2030 vision document has identified this work as "essential." This mission work is inherently important to the United States but vital to the health of Y-12 for several reasons. It will provide other significant mission work that will help reduce overhead costs. In addition, it will enhance Y-12's ability to attract and retain personnel with critical skills and provide a more qualified staff and will enhance products and services.

NS&DP is a program management organization, and, therefore, most of the mission work will be performed by personnel throughout Y-12. **Program management activities** have been organized into the following market segments, based on Y-12's core and enabling capabilities:

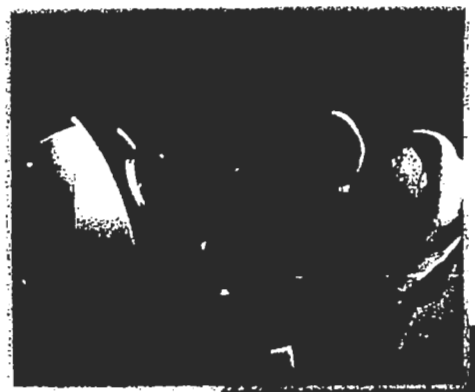
- International and Homeland Security
- Nuclear Technology and Nonproliferation
- Manufacturing and Technology
- Highly Enriched Uranium (HEU) Disposition and Uranium Supply

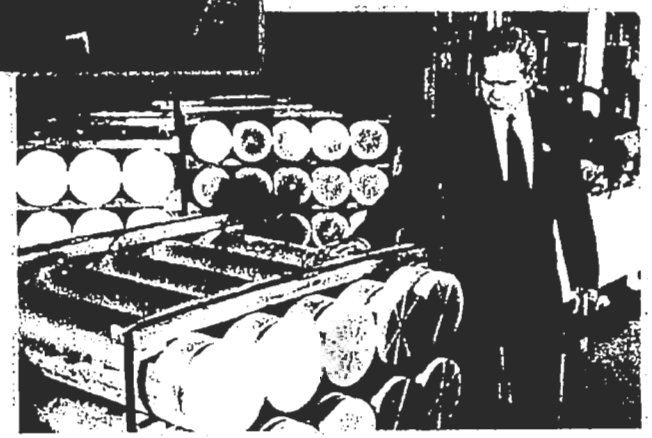
International & Homeland Security (IHS)

The Y-12 NSC Safeguards and Security (S&S) Program has a long history of excellence in the S&S field and has excelled in most programmatic aspects to become a model program for DOE. Other federal government organizations will have the ability to access Y-12's comprehensive and rigorous S&S program. By supporting the outside organizations, synergies will be realized as lessons learned are reintegrated into the site program. IHS will target domestic and foreign organizations related to Homeland Security, Homeland Defense and Nonproliferation (Fig. 18).

Nuclear Technology & Nonproliferation (NTN)

NTN focuses on Y-12's core competencies related to nuclear expertise and technologies to address emerging market needs (Fig. 19). The NTN programs cover activities associated with the nuclear power industry and its renaissance, including the Global Nuclear Energy Partnership (GNEP); Office of Civilian Radioactive Waste Management (OCRWM); Global Threat Reduction; NNSA Office of Nonproliferation & International Security and Office of Nonproliferation Technology R&D; and special projects for intelligence work.





(left) **Fig. 18. Performance testing of optical scanning security technology.**

(below) **Fig. 19. Interdicting and securing proliferation technologies.**

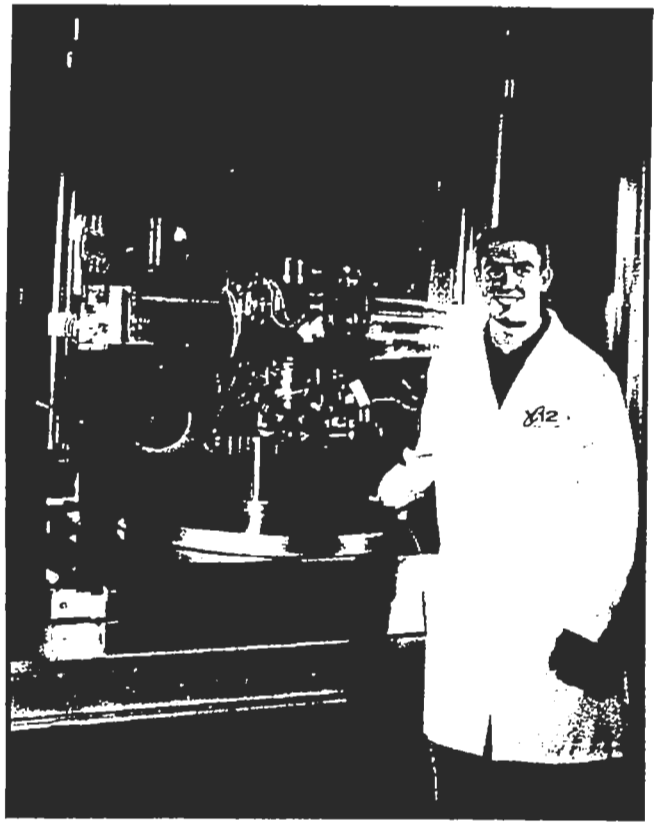


Fig. 20. Large-Chamber Scanning Electron Microscope.

Manufacturing & Technology

This business area focuses on tasks related to machining, fabrication and inspection. Y-12 has been designated as The National Prototype Center, and this organization focuses efforts to use Y-12's manufacturing and prototyping skills to address opportunities to grow this center. The Large-Chamber Scanning Electron Microscope (LC-SEM) (Fig. 20) is nearing completion of test and checkout. This piece of equipment gives Y-12 a "one-of-a-kind" capability that is not available anywhere else in the nation. Y-12 has more than 75 technologies available for licensure. Only a handful of these technologies have resulted in royalty revenues. Funds from royalties are flexible and may be used to buy equipment or materials to further technology development. Y-12's Information Technology focus, managed by this group, is to provide expertise related to Cyber Security, custom applications development and e-Government-based initiatives.

HEU Disposition & Uranium Supply

This business area is responsible for disposition of the domestic surplus HEU and for supplying uranium and other nuclear materials to NNSA-approved customers. The HEU Disposition Program Office (HDPO) is responsible for making surplus HEU unusable for weapons and for disposing of it in a safe, secure and environmentally acceptable manner. HDPO develops disposition plans and provides project management and technical integration services for the disposition of the domestic surplus HEU. The Uranium Supply Program manages projects that provide feedstock to Naval Reactors and domestic and foreign research reactors and supplies other nuclear materials when requested.

Facilities

NSP personnel interact with DOE Headquarters (DOE-HQ) program offices, other national laboratories and production sites, and Y-12 organizations. The project manager, principal investigator, or project members for many activities are often matrixed from other Y-12 organizations, ORNL, or subcontractor companies. Participation on projects also includes translation and interpretation services, as well as technical, planning, and integration activities. NSP uses on- and off-site facilities as summarized below.

- The HEU Disposition and GNSS programs require storage, processing, and shipping support from Y-12 operational areas, primarily for enriched uranium. (b)(2)High (b)(2)High

(b)(2)High The Y-12 Analytical Laboratory performs analytical chemistry work in support of HDPO and GNSS activities.

- Some work requires the use of a Sensitive Compartmented Information Facility (SCIF), (b)(2)High Since all program activities have interrelationships and occasionally share personnel, co-location of some NSP personnel (b)(2)High will provide substantial programmatic benefits and significant growth opportunities.
- The Transparency Technology Demonstration Complex (b)(2)High (b)(2)High was developed to fulfill a need within the arms control community for a user facility to demonstrate technologies that may prove useful in current or future arms control agreements. As a working facility collocated within an industrial environment, the facility provides a more realistic approach to the evaluation of potential technologies.
- The International and Homeland Security organization will conduct nuclear and radiological training, and performance testing of security technologies in facilities throughout Y-12. (b)(2)High (b)(2)High As facilities are being vacated to consolidate and downsize DP activities, these facilities should be carefully considered for this type of work or other NS&DP work.
- Manufacturing and material science projects make use of manufacturing and development facilities throughout Y-12 (b)(2)High (b)(2)High

Challenges

Challenges that face NSP require careful integration with other workload activities at Y-12. The HEU Disposition and GNSS programs require firm commitments of Y-12 operational facilities and personnel. Careful and detailed planning and scheduling are necessary to prevent this valuable NNSA mission work from being compromised as DP mission requirements compete for the same resources.

Naval Reactors

The primary mission of the NNSA Office of Naval Reactors is to provide the U.S. Navy with safe, militarily effective nuclear propulsion plants and to ensure their continued safe and reliable operation.

In supporting this critical NNSA mission, Y-12 acts as the supplier of SNM feedstock for the Naval Nuclear Propulsion Program. Specifically, Y-12 supplies HEU feedstock and conducts limited developmental work for naval reactors. Examples of this work include the following:

- validating processes used to fabricate feedstock material,
- conducting analysis on processed uranium to ascertain chemical purity, and
- developing packaging methods for shipping HEU feedstock material.

Facilities

To support the Naval Reactors program, NSP requires storage, processing, and shipping support from several Y-12 operational areas, primarily for enriched uranium. (b)(2)High (b)(2)High

The Y-12 Analytical Laboratory also performs analytical chemistry work in support of these activities.

Challenges

The Naval Reactors work requires firm commitments of Y-12 operational facilities and personnel. Careful and detailed planning and scheduling are necessary to prevent this valuable NNSA mission work from being compromised as DP mission requirements compete for the same resources.

(b)(2)High

Non-NNSA Programs

Oak Ridge National Laboratory Relocation Plans

UT-Battelle continues to execute its plan to relocate all active ORNL programs currently residing in their assigned facilities located on the Y-12 site to ORNL's main campus in Bethel Valley. BWXT Y-12 is actively supporting UT-Battelle in their efforts because a number of facility and program-related actions require an integrated relocation plan.

Y-12 and ORNL share technical resources in pursuit of advancing technology and building important industry and government partnerships. One of BWXT Y-12's strategic goals is to increase its non-DP and Complementary Work. This work must be integrated with ORNL's relocation plans to ensure a seamless transition and commitment to this goal.

Y-12 provides utilities to the ORNL assigned facilities located here. In some cases the utilities for other Y-12 buildings "pass through" these buildings based on the original design of the Y-12 Complex. Mutually agreeable actions will be required to ensure that these utilities and services are maintained or relocated as cost effective building shutdown options are evaluated.

Many of the large buildings that ORNL occupied at Y-12 were originally constructed for the enrichment of uranium during the Manhattan Project. For all facilities that are assigned to ORNL, UT-Battelle is responsible for the surveillance and maintenance (S&M) until their programmatic transfer or ultimate disposition. In some cases, Y-12 has assumed ownership of several DOE-SC buildings. BWXT Y-12 also currently has operational responsibility [redacted] which is primarily used for office, maintenance and storage space. While DOE-SC retains ownership, NNSA is paying for the operation and maintenance of this facility until the space is no longer required to support NNSA needs—projected to be around FY 2009. At that time BWXT Y-12 will vacate the facility and DOE-SC will evaluate options for facility shutdown.

DOE-SC is responsible for the S&M of all their facilities until funding is identified for their D&D. During the next 10 years, DOE-SC does not anticipate any significant funding for any D&D activities and does not plan to make any capital investments in their assigned facilities located on the Y-12 site. Over 500,000 ft^2 of the DOE-SC Biology Complex at Y-12 is shut down today. These facilities are located adjacent to Y-12's new administrative and technical support facilities and will continue to deteriorate and detract from Y-12's new vision for this area of the site. NNSA and DOE-SC are working together with DOE-EM to obtain funding for their demolition.

Environmental Management Program Operations at Y-12

BWXT Y-12 formally initiated the transition of the previous Environmental Management Waste Management scope back to NNSA effective November 2005. Congress authorized this action in finalizing the budget process, and BWXT Y-12 accelerated the execution of their previously approved Transition Plan. As a result the Newly Generated Waste Scope was effectively managed by BWXT Y-12 with continued execution by BJC via a Memorandum Purchase Order. This allowed continuity of operations during FY 2006 and initiation of required actions to fully bring this scope under the management of BWXT Y-12. Ownership and responsibility of the appropriate facilities was clarified by BWXT Y-12, with final approval of the official list being offered by YSO, and concurrence was gained from the DOE Oak Ridge Operations Office. Over 193,478 ft^2 of space was transitioned back to NNSA. Planning for these facilities, including their long-term maintenance requirements, recapitalization, and replacement, will now be integrated with ongoing real property management planning of NNSA's other assets.

A significant undertaking occurred for all technical areas inclined to support this scope, and this was led by the Environmental Health and Safety Division, with specific support and direction being provided by the Waste Management Department and RTBF acting as Program Lead. This effort allowed due diligence determinations in the area of Environmental Compliance, Industrial Hygiene, Radiological Control, Facility Safety, Software Quality Assurance, Computer Resources, Security, Property Management, and various other disciplines to ensure that the program parameters will allow full integration into the BWXT Y-12 established process and protocols.

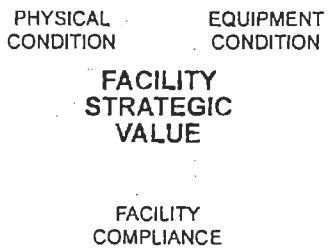
During the FY 2006 BWXT Y-12 initiated two internal procurements to allow for competitive bid for solid waste management services and liquid waste management services. This subcontract process resulted in the award of the solid waste management services to Navarro-Gem Joint Venture, a current Mentor Protégé to BWXT Y-12. The liquid waste management subcontract is in the recommendation for award phase, requiring formal submittal to the NNSA Headquarters Board of Award and their final approval before actual award can be granted.

3.2 Mission Critical Facilities and Infrastructure/Linkages Between Facilities and Infrastructure and Mission Needs

Figure 21 is a map that identifies the 13 mission critical facilities on Y-12 NSC. The 13 mission critical facilities conform to recent NNSA mission dependency guidance promulgated to all federal agencies by the Federal Real Property Council. The principle objective of the new guidance is to improve linkages between program deliverables and infrastructure requirements as NNSA moves forward with Complex 2030 implementation. Figure 22 shows a breakdown of NNSA mission dependency square footage on Y-12 NSC. Mission Critical facilities accounts for 2,741,287 ft^2, Mission Dependent, Not Critical for 1,596,113ft^2, and Not Mission Dependent for 921,841 ft^2. NNSA validation of Mission Dependent, Not Critical and Not Mission Dependent facilities and infrastructure is planned for FY 2007.

The 13 Mission Critical facilities—albeit some underutilized as described earlier—support the principal Defense Programs missions assigned to Y-12. To sustain these facilities until they are replaced or modernized, adequate funding must be allocated to NNSA's FIRP and the RTBF program. Figure 23 shows the value of the DM for each of the 13 mission critical facilities, a total of over $120 million. The FY 2006 and FY 2007 cuts in the RTBF and FIRP programs are impacting Y-12's ability to sustain a reduction of DM, and if funding constraints continue, DM will increase over the next 5 years and beyond. As Y-12 NSC implements its modernization and consolidation projects over the next 5 years, two mission critical facilities will become excess to NNSA's needs and should be removed from the list. These buildings, (b)(2)High will still require significant surveillance and maintenance until they can be decommissioned and possibly demolished. A sound risk-based decision process will be employed to manage NNSA investment in these facilities. However, capital investment in buildings (b)(2)High (b)(2)High (b)(2)High, and others will continue to be required for at least the next 10–15 years.

It is important to recognize that physical condition is only one component of a mission critical facility's ability to perform its defense program missions. Over the past 5 years, Y-12 has successfully invested millions of dollars through FIRP in traditional mission critical facility and infrastructure projects. There has not been a similar infusion of funding into the process, and other manufacturing equipment maintenance, repair, and replacement. In fact, DSW production support funding and Campaigns funding have actually declined. Another component of mission critical facility performance is compliance—whether it is DBT Policy or ES&H. These three elements—physical condition, equipment condition, and facility compliance—work in tandem to determine the strategic importance and performance of any mission critical facility. These factors are driving the modernization strategy for consolidation of enriched uranium operations and other modernization projects. However, funding must be sufficient within RTBF, DSW, Campaigns, and FIRP to ensure that Y-12 can bridge the gap to the new facilities supported by NNSA. In the September 2005 TYSP, Y-12 identified the need for approximately $20 million in additional maintenance funding for FY 2006. Given this funding did not materialize, growth and escalation equate to a deficiency of approximately $27 million in maintenance funding in FY 2008.



A spreadsheet taken directly from the Facilities Information Management System Mission Dependency Report that shows mission critical facilities and infrastructure (Attachment G of the TYSP Guidance) is presented in Appendix I.

(b)(2)High

Fig. 21. Mission critical facilities on Y-12 NSC as defined by NNSA guidance, 2,741,287 ft^2.

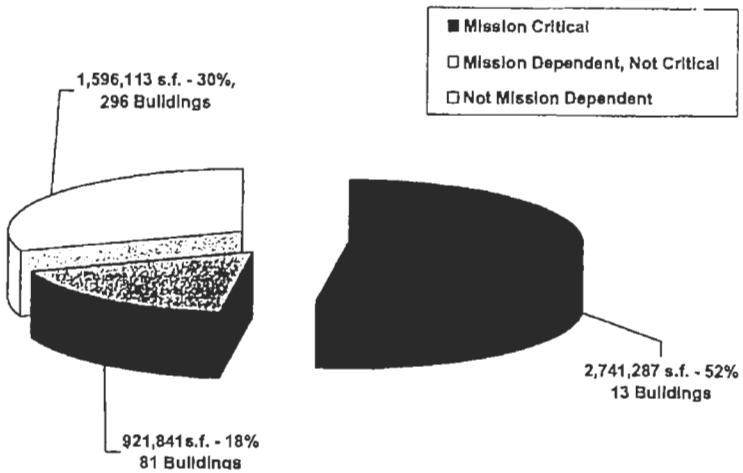


Fig. 22. NNSA mission dependency square footage on Y-12 NSC.

(b)(2)High

(b)(2)High

Fig. 23. Mission critical facility deferred maintenance on Y-12 NSC.

3.3 Future NNSA Mission, Programs, Workload, and Impacts

As described in various Complex 2030 reports, the Y-12 existing missions for uranium, secondary, and case fabrication are not proposed to change as a result of Complex 2030. Also described is that Y-12 Plant will considered as a potential site for the consolidated plutonium center and the storage of weapons program Category I/II nuclear materials. The outcome of this decision could affect workload, facilities and infrastructure on the Y-12 site—the extent of which are not understood at this time.

Y-12 does anticipate the incorporation of enriched uranium R&D into its mission. This assignment is a part of the Complex 2030 plan to upgrade Y-12 facilities to serve as the Category I/II Uranium Center of Excellence. While it is premature to suggest any facility an infrastructure needs associated with this mission, there could be some laboratory space requirements as this activity is explored in more detail over the next couple of years.

Tables 2 and 3 provides a qualitative assessment of future work scope around which Y-12 must plan its future technologies, workforce, and facilities and infrastructure characteristics. Given the uncertainty of changing requirements and fiscal constraints, BWXT Y-12 does not foresee any additional future direct-mission, program or workload impacts on its facilities and infrastructure requirements at this time.

Table 2. Workload Projections for Y-12 National Security Complex (2008–2017)

Defense Programs	NNSA Non-DP Programs	Complementary Work
Completion of the Life Extension Program for the B61	HEU storage of designated material for Naval Reactors	Support to Department of Homeland Security initiatives
Initiation of the Life Extension Program for the W76	Routine supply schedule of HEU to fuel fabricators for NR	Support to Department of Defense increases
Initiation of RRW-1	Supply of EU to Canadian Reactor Program	Emphasis in areas of test beds for selected integrated systems application
Decrease in production of high-fidelity flight test units for systems in new enduring stockpile	Prototyping of nuclear propulsion fuel for space travel (NR support to NASA)	Prototype manufacturing increases
Dismantlement schedules will be sustained at a high rate	Storage of materials and equipment from GTRI program	Established flexible facility for support to both classified and unclassified projects employing both radiological and nonradiological materials
Quality Evaluation rates are expected to be sustained at the current rates	Down blending of excess enriched uranium continues plus programmatic support to HQs	Designated prototype center for at least one of the Armed Services and/or Department of Homeland Security
Consolidation and storage of HEU materials and components into HEUMF for long-term storage	Teaming member for the recovery, characterization, storage and/or disposition of materials at risk internationally	
Realignment of production capabilities to support threat-specific small lot production including pre-production of certified blanks	Processing, packaging and shipment of surplus HEU for downblending or discard	
Initial D&D work for excess facilities		

Table 3. Workload Projections for Y-12 National Security Complex (2018–2027)

Defense Programs	NNSA Non-DP Programs	Complementary Work
Completion of the Life Extension Program for the W76	HEU storage of designated material for NR	Y-12 is major center for support to Department of Defense for nonnuclear fabrication needs
Production of threat-specific weapon components	Supply of HEU to fuel fabricators for NR program	Serves as test bed for development/prototyping in support of black programs
Continue with high-fidelity flight test units	Production of fuel for nuclear propulsion for space travel initiates	
Traditional Quality Evaluation dismantlements will likely decrease; surveillance will become more nondestructive; embedded sensors will provide analytical data used to determine weapon quality	Limited teaming for the purpose of de-inventorying materials at risk internationally	
Dismantlement activities continue	Storage of materials and equipment obtained through GTRI until disposition paths identified	
Storage/monitoring of HEU for long-term D&D continues on excess facilities in former footprint	Limited down blending of excess fissile materials	
Execute the Life Extension Program for the W78	Limited supply of HEU to foreign reactors program	
Initiate the Life Extension Program for the B61 Mods 3, 4, and 10 and W88 (Although still on the books at the time of this writing, DSW considers LEPs for the W78, B61 Mods 3, 4, and 10, and the W88 unlikely)		

3.4 Future Non-NNSA Mission, Programs, Workload, and Impacts

As described in the BWXT Y-12 Strategic Plan, Strategic Objective 6 seeks to "Broaden the role of the Y-12 National Security Complex in providing solutions to national security challenges." Contained in Complex 2030 documentation, is recognition that Work for Others (WFO) plays an essential role in maintaining capabilities required for NNSA missions. Complex 2030 encourages stronger WFO in key mission areas and recognizes that establishing synergies with other government agencies and customers supports the retention of a technically competent and skilled workforce and helps to maintain critical infrastructure that supports today's stockpile and the Complex 2030 stockpile

It is BWXT Y-12's strategic view that as we transform Y-12 NSC to a smaller, more efficient business, the overall workforce associated with the Defense Program mission will decline. Given Y-12's distinction as the Uranium Center of Excellence and the strategic objective to broaden its role, the BWXT Y-12 goal is to maintain relatively stable employment. It is recognized that the skill mix at Y-12 will change as Complex 2030 is implemented and that the current and future human resource requirements to ensure success must be defined. The impacts of any future non-NNSA mission on the facilities and infrastructure are difficult to predict, so new facilities and infrastructure should be designed (where practical) to provide maximum flexibility to enable support of new missions within existing space and infrastructure.

The huge legacy materials and facility footprint, if funded by non-NNSA budgets, could have some minor impacts on the facilities and infrastructure of the site. As the planning for this legacy materials and facility footprint is very immature, impacts on waste management facilities, office space needs or other supporting infrastructure is not understood. Future TYSP updates will address these impacts as they become known.

3.5 Impacts of Non-NNSA Programs on Weapons Activities Mission Accomplishment

As BWXT Y-12 seeks to create partnerships to expand its mission areas, consistent with the Complex 2030 vision, it must clearly demonstrate the benefits of complementary work to all its stakeholders—DOE/NNSA customers, employees, and the community. Complementary work will not adversely impact the Stockpile Stewardship Program, not place the Site in direct competition with private industry, and will not place any additional burden on NNSA resources.

As stated, WFO is beneficial to NNSA and to Complex 2030 implementation. In many cases WFO is being executed in aging facilities, using some of the old equipment or processes used by the Stockpile Stewardship Program, and therefore should not be burdened by the life cycle costs. In some cases encouraging other customers to make investments in Y-12 will help NNSA achieve its facility and infrastructure goals. BWXT Y-12 envisions using the existing and proposed facilities with minimal to no impact to any stated goals or objectives of NNSA or DOE. There is currently no belief that any major new facilities outside of what is defined in this TYSP will require funding by NNSA to support WFO.

3.6 Facilities and Infrastructure Impact in Support of Information Technology

Facility revisions resulting from construction of new buildings, the destruction of old buildings (i.e., Infrastructure Reduction), and the resulting migration of both mission activities and staff require revisions to the information technology infrastructure. Information Technology infrastructure enhancements or new technology introductions required to meet facility missions include: introduction of high-volume data networks (either physical cable or wireless) within buildings and campus-wide, data center enhancements (and resulting utilities revisions) to meet new and more efficient multi-user computer (i.e., server) technologies such as "blade" or virtual

servers, revisions to campus computing support methods to reflect changing staff locations and concentrations, and planning for new production facility construction.

The increasing automation of the Y-12 work environment, and resulting evolution of the information technology environment, requires continual review and updating/upgrading of information technology support utilities. New technologies in multi-user computer technologies concentrate equipment into small footprints, which affect HVAC, UPS sizing and electrical feeds, continuity of operations power support (backup generators or other approaches), general electrical availability and reliability in data centers, and a need for electrical reliability when facility infrastructure improvements—not associated with information technology—are underway.

4

The Plan

4.1 Planning Process

Overall strategic and modernization direction of the BWXT Y-12 enterprise is provided by the President and General Manager.

As the management contractor for Y-12, BWXT Y-12 realizes the vital importance of a strategically and tactically integrated long-range program for infrastructure planning. Effective customer-driven, integrated planning is fundamental to effectively and efficiently achieving a responsive infrastructure to meet the assigned missions. To help facilitate this integration, the responsibilities for strategic planning, modernization, master planning, and 10-year site plan are consolidated under the Strategic Planning and Modernization Manager [who is part of the Executive Staff (Fig. 24)]. The SP&M manager is also the Complex 2030 site champion for transformation and integration of Y-12 and NNSA plans.

All Y-12 senior managers have a direct responsibility for the development and execution of the company's strategies and plans to achieve the vision. Each manager is responsible for ensuring that the development and execution of these plans are carried out in day-to-day activities and coordinated with operations in each program and functional area. The Deputy General Managers for Operations and Programs and the Strategic Planning and Modernization Manager work together to ensure that short-term decisions keep long-term facility and infrastructure ramifications in mind.

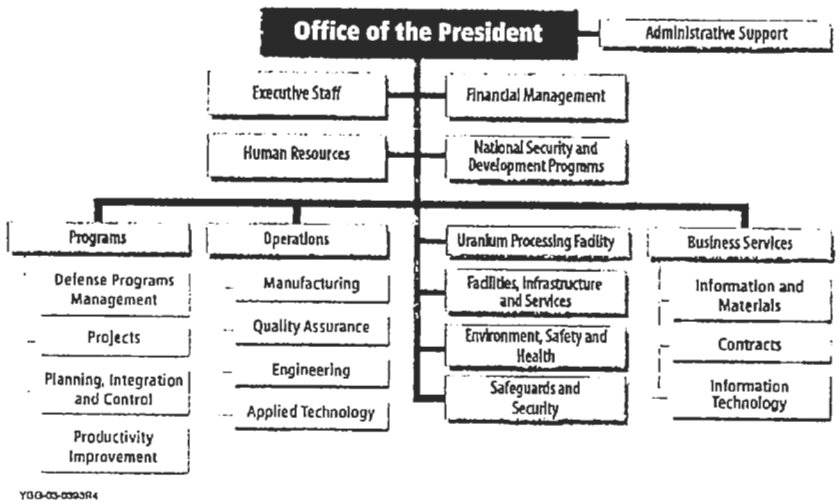


Fig. 24. BWXT Y-12 organization.

Strategic planning is the company's highest level of planning activities and is consistent with the NNSA Strategic Plan. The BWXT Y-12 **Strategic Plan** is a key element in Y-12's becoming a premier national security enterprise. From this plan, the missions and vision are established, and the strategies, goals, and tactics are developed to support the achievement of the vision, which ensures long-term mission performance.

Master planning is the continuous process of analyzing and determining the long-range physical site improvements necessary to meet the Y-12 mission, work scope, technology, and workforce needs. The **Master Site Plan**, which typically covers a 20- to 25-year horizon, translates the Strategic Plan into a vision for the site, its facilities, and its infrastructure. The master site plan is incorporated in the NNSA annually required TYSP.

The **Integrated Modernization Plan** provides a detailed description of Y-12 modernization activities and plans, including the projects required to modernize the site.

The **Technology Roadmap** describes the approach, consistent with the Strategic Plan, to modernizing Y-12's technology base in support of mission requirements and Complex 2030.

The **Directed Stockpile Work Weapons Schedule** provides long-range workload requirements generated from annual updates to the NNSA P&PD. This information is used to determine the readiness of processes, facilities, and workforce to perform the work.

The **Nuclear Nonproliferation/Naval Reactor/ Complementary Work Forecast** reflects all elements of work outside the DP mission. The Nuclear Nonproliferation and Naval Reactor programs support NNSA missions. Complementary Work supports NNSA missions by utilizing available capacity and leveraging technology.

The **Ten-Year Site Plan** presents a rolling 10-year plan of the missions, programs, and facility and infrastructure investments necessary to ensure that Y-12 meets its missions and implements Complex 2030. The TYSP is the documented and approved version of the site development path forward for implementing customer requirements and the long-range master site plan.

1.1.1 Facilities and Infrastructure Overview

The industrialized area of the Y-12 site covers approximately 800 acres, nearly 600 acres of which are enclosed by perimeter fences. The main site, which has restricted access, is roughly 2.5 miles in length and 0.5 mile wide. Private development exists on the northern and eastern boundaries of the site. As of February 2007, a BWXT Y-12 workforce of approximately 4500 people supports NNSA-related activities. The total site population, which includes the NNSA Y-12 Site Office and several other subcontractors, can vary between 6000 and 6500 people.

At the end of January 2007, real property on Y-12 NSC includes over 440 buildings with a floor area of approximately 7.1 million square feet. NNSA currently leases approximately 157,000 ft^2 of office and site support space in six facilities located off Y-12 NSC. There are 84 trailers on site, which adds an additional 46,631 ft^2. While NNSA is responsible for 74% of the floor space (5.3 million square feet), other DOE program offices have responsibility for the remaining 26%. DOE-SC/NE owns approximately 1.2 million square feet, and DOE-EM owns approximately 0.6 million square feet. The DOE-SC/NE facilities are currently vacated, or will be vacated by UT-Battelle and will be placed in long-term S&M. Over 60% of the DOE-EM space is contained in four buildings scheduled for demolition starting in the next 10 years. As defined by DOE Order 430.1B, *Real Property Asset Management,* and the subsequent DOE guidance, the Asset Utilization Index (AUI) for the NNSA-controlled space is currently 88.45%. The AUI for Y-12 NSC, which includes NNSA, DOE-SC/NE and DOE-EM facilities located at Y-12, is 76.87%.

Over 50% of the NNSA space is categorized as Industrial/Production Process under FIMS. There are 13 NNSA buildings that meet the NNSA definition of mission critical facilities.

BWTX Y-12 has demolished 1,001,429 ft^2 of floor space to date and will demolish another 374,337 ft^2 by the end of FY 2009. Between FY 2008 and FY 2017, over 630,000 ft^2 of new, modernized facilities will be constructed and private-sector owned space on Y-12 NSC will be approximately 550,000 ft^2.

4.1.2 Real Property Asset Management

BWXT Y-12 fully recognizes the need for prudent asset management practices that serve the purposes of NNSA's stewardship obligations to Congress and the taxpayers of the United States. An integrated approach, driven at the highest level by strategic planning, is further refined through the analysis of condition, utilization, and land-use planning to ensure that effective and efficient plans are in place for existing and future facility and infrastructure needs. In the case of Cold War sites like Y-12, the primary driver for real property asset management plans is based on the underutilization of Cold War–era facilities; their inefficient functionality; the inability to cost-effectively meet safety, health, and security requirements; and their physical condition. As Y-12 NSC transitions to the Complex 2030 site of the future, the condition and utilization of existing assets will continue to be assessed when evaluating alternatives for meeting space needs on Y-12 NSC.

4.1.2.1 Condition

Figure 25 shows the current physical condition of the NNSA facilities by FIMS category. The conditions shown were derived from completed CASs and correspond to the facility condition index (FCI) for each facility. The FCI is derived through dividing the estimated cost to correct the identified deficiencies by the replacement plant value (RPV). The FCI does not, by definition, take into consideration other significant cost drivers that can determine the strategic value of a facility. These other drivers can include the cost to achieve ES&H and security compliance.

The condition descriptions and their associated square footage are described as follows:

- **Excellent—1,301,210 ft^2.** Facility performs to original specifications as measured using nonstandard tests; easily restorable to "like new" condition. Only minimal routine maintenance is required at a cost <2% RPV.
- **Good—1,267,221 ft^2.** Facility performs to original specifications as measured using historical data and nonstandard tests. Routine maintenance or minor repair is required at a cost <5% RPV.
- **Adequate—2,277,955 ft^2.** Facility performance meets requirements. Some corrective and preventive maintenance is required at a cost <10% RPV.
- **Fair—271,942 ft^2.** Facility performance fails to meet code or functional requirement in some cases. Failure(s) are inconvenient. Extensive corrective maintenance and repair are required at a cost <25% RPV.
- **Poor—55,177 ft^2.** Facility performance is consistently substandard. Failures are disruptive and costly. Performance fails most code and functional requirements. Facility requires constant attention, renovation, or replacement. Repairs are required at a cost <60% RPV.
- **Fail—4,632 ft^2.** Facility is non-operational or performance is significantly substandard. Replacement is required because the repair cost is >60% of the replacement cost.
- **Not Applicable—81,104 ft^2.** The FIMS database does not assign a condition code to buildings that are in the D&D in Progress or Shutdown Pending D&D status codes.

Figure 26 provides a summary of the top 85% of DM deficiencies associated with Y-12 NSC facilities. The deficiencies are categorized by systems. As illustrated, HVAC and electrical building system components constitute over 40% of the Y-12 buildings DM, with Sitework and Utilities at 38% of the total DM. FIRP funding continues to be utilized in addressing this DM, especially in Mission Critical buildings.

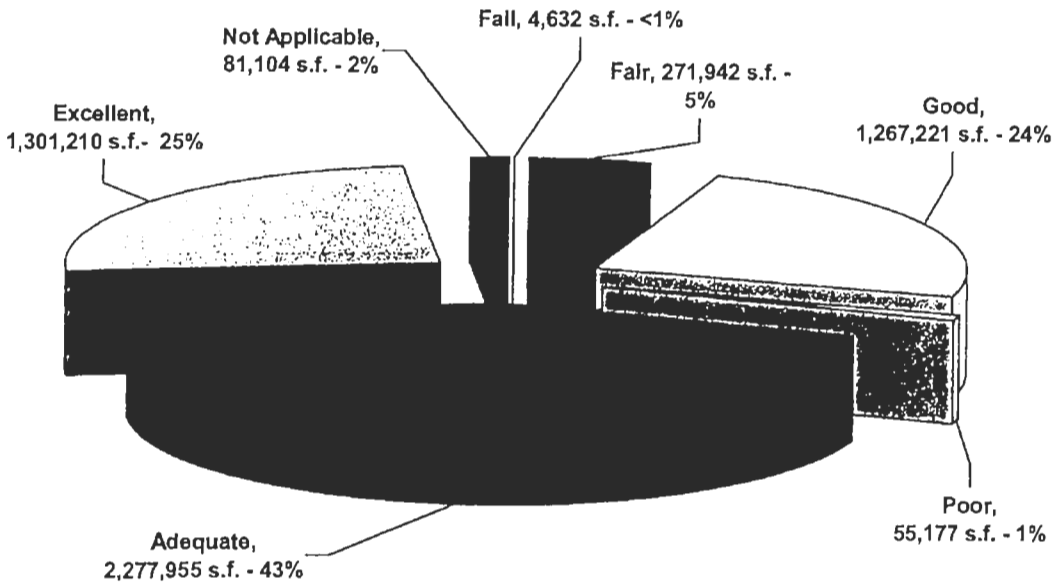


Fig. 25. Current NNSA facility condition on Y-12 NSC.

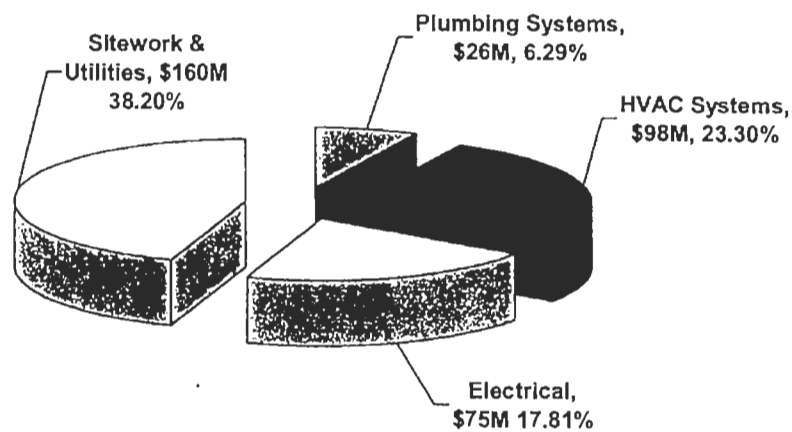


Fig. 26. Summary of the top 85% of deferred maintenance deficiencies in NNSA facilities on Y-12 NSC.

The current sitewide FCI for the NNSA-controlled space is 8%, an improvement from the FY 2003 baseline FCI and almost entirely attributable to the FIRP. While progress has been made at reducing DM and improving facility condition, other physical improvement requirements can drive the need to replace a facility. These include upgrades such as security, seismic, or ES&H requirements driven by DOE Orders or other compliance documents that must be included in the overall decision to invest in DM reduction for a particular building. Such is the case for some of Y-12's Mission Critical facilities that house production operations. Some of these facilities meet the FCI determination of good to adequate, but the other requirements are driving up the cost to operate and maintain these facilities as long-term Mission Critical assets. Hence, it is the other and more significant investments which drive the need to replace facilities that appear to be "adequate" from a condition standpoint.

The NNSA continues to utilize the Facility Condition Index as the measure to report on facility condition, where the FCI is the deferred maintenance divided by the replacement plant value. Table 4 provides the current FCI for the Y-12 NNSA assets.

To date, Y-12 has reduced DM by $205 million from the FY 2003 baseline. Reductions have been monitored and tracked in CAIS to ensure accountability. The success of the effort to reduce DM is attributable to the efforts of RTBF and FIRP. However, as described in this TYSP, continued success in the area of DM reduction requires allocation of the appropriate level of maintenance resources to sustain this DM reduction and avoid new DM growth. Equally important is allocation of resources to sustain these assets in the post-FIRP era. The FY 2006 FCI for Y-12's mission critical facilities and infrastructure stands at 5.48%, and the mission dependent, not critical at 10.03%—a strong indication that progress has been made at achieving DM reduction from the FY 2003 baseline.

The utility infrastructure is a major cause of concern when describing and reporting the condition of the plant. The OSF category of assets, which is predominately utility infrastructure, has a current FCI of 14.4%. The majority of utility systems require line item funding and are of such magnitude that funding for repairs is ineffectual in refurbishing the systems. A strategic analysis of the entire Y-12 utility systems needs to be performed to determine which systems will serve the modernized Y-12 of the future. Once the analysis is complete, line item funding proposals can be submitted, and the remaining systems should be retired.

Consistent with DOE Order 430.1B, the CAS program and the Facility Information Management System (FIMS) have been institutionalized and are a part of Y-12's real property management culture. The CAS program is designed to support the requirements of DOE O 430.1B. Inspections are performed on a 3-year cycle. Y-12 has accelerated the inspection cycle in order to accomplish three full

Table 4. Current NNSA Facility Condition Index

Mission Essentiality	RPV (000s)	DM (000s)	FCI (%)
Totals			
NNSA Site Total	5,332,924	427,745	8.0
Mission Critical	2,218,162	121,528	5.5
Mission Dependent, Not Critical	1,815,567	182,041	10.0
Not Mission Dependent	1,299,195	124,177	9.6
Buildings			
NNSA Building Totals	3,736,348	193,995	5.2
Mission Critical	2,218,162	121,528	5.5
Mission Dependent, Not Critical	811,147	37,420	4.6
Not Mission Dependent	707,039	35,048	5.0
OSFs			
NNSA OSF Totals	1,596,576	233,750	14.6
Mission Critical	0	0	N/A
Mission Dependent, Not Critical	1,004,420	144,621	14.4
Not Mission Dependent	592,156	89,129	15.1

inspections prior to FY 2009. The accelerated timeline has provided an increased awareness of the DM reduction requirements and also provides much needed validation of reported closure of deficiencies.

During FY 2006, the CAS team performed inspections on >2,000,000 ft^2 of buildings and approximately one-third of Y-12's infrastructure, including electrical distribution, roads and grounds, and utility poles. The inspections identified an additional $7 million in new deferred maintenance and captured $5 million in deficiency repairs. The trend in identifying new deficiencies continues to decline with each year. Monthly monitoring of the DM data indicated that over $42 million in DM was corrected during FY 2006, with line item, FIRP, and demolition projects being the primary drivers behind the reduction. The CAS program continues to operate effectively at Y-12. The site adopted the DOE system in 2001, and it has proven to be an asset to the FIRP program and the DM reduction goals. The program aligned itself with FIRP in 2003, when the CAS deficiencies were incorporated into the FIRP projects. The congressional tables were formed in 2004, and the recapitalization projects continue to utilize the tables as a resource tool for planning and execution. The CAS program is fully staffed with four full-time inspectors, a program manager, and a system administrator. Y-12 has been very successful at integrating the CAS and FIMS programs mainly because both systems share a single administrator and are managed within the same department. This single point of contact for information has been very effective in monitoring DM reduction, FRPC requirements, and the annual reporting criteria. The Y-12 administrator also serves on the FIMS advisory committee, and both the administrator and program manager are very active in the complex-wide meetings and workshops. This networking has provided an excellent resource for lessons learned, knowledge base, and tool/resource sharing.

Decision making for FIRP planning, asset management, and site planning rely heavily on the CAS/FIMS program. An integrated team composed of RTBF, Strategic Planning & Modernization, Facilities, Infrastructure and Services, and the FIRP Manager meet on a routine basis to discuss maintenance needs, infrastructure reduction, and TYSP requirements. New reporting requirements, including the FRPC, FIMS, and mission dependency criteria, are discussed in the meetings as well as any issues that affect current site planning, TYSP development, or Complex 2030 implementation objectives.

4.1.2.2 Utilization

As required by DOE Order 430.1B, *Real Property Asset Management,* an Asset Utilization Index (AUI) will be used to reflect the outcome of DOE and NNSA real property acquisitions and disposal policy, planning, and resource decisions. In essence, the AUI gages how well DOE, NNSA, and their contractors are consolidating operations to increase space utilization and eliminate excess facilities. The AUI is the ratio of the net square footage area of operating facilities confirmed through utilization surveys (numerator) to the net square footage area of all operational and excess facilities without a *funded disposition plan* (denominator). Table 5, which is Attachment B in the TYSP Guidance, provides the AUI for the five building types (and an All Others category) consistent with Federal Real Property Council (FRPC) guidance.

Table 5. NNSA Asset Utilization Index (AUI = 88.45%) for Each of Five Types of Facilities (FRPC)*

Measures	AUI	FRPC Guidelines	OECM Guidelines	Operating GSF	No. of Buildings Operating
Office	98.04%	70–95%	95%	849,722	32
Laboratory	88.80%	60–85%	90%	354,302	6
Warehouse	93.34%	50–85%	89%	451,834	52
Medical	100.00%	70–95%	90%	27,475	1
All other categories	85.12%	N/A	N/A	3,471,718	236
				5,155,051	**327**

* AUI calculation does not include "D&D in Progress" status code or trailers. This accounts for the differences in total square footage found in other figures and tables in the TYSP.
The NNSA AUI graph has been modified from the FIMS generated report 093 to exclude the NNSA-OST facilities that are managed by Albuquerque Operations.

Y-12 currently exceeds all of the performance targets as outlined by the FRPC, and is only slightly below the OECM guideline for laboratory space.

Y-12 NSC does not use any form of "charge back" system, and does not have any plans to implement one. With respect to promoting full utilization of existing assets, Y-12 NSC always includes existing space reuse as an alternative when addressing a new space requirement. Generally speaking, the reuse of 60-year-old facilities, not designed for the intended use of the new requirement, are always more costly. While this may not be true for non-Federal installation, it routinely proves true for facilities that NNSA has used for over 60 years.

Table 6 shows the sitewide AUI for Y-12 NSC. This AUI represent the NNSA, DOE-SC/NE and DOE-EM facilities located on Y-12 NSC. The Y-12 NSC sitewide AUI is 76.87%, indicating a significant amount of floor space is not being utilized—and for good reason—the space is currently excess to DOE and/or NNSA needs. BWXT Y-12, Bechtel Jacobs Company and UT-Battelle have no plans to reuse this excess space and plans for its disposition while under development, are not supported in any current budget scenario for Y-12 NSC. A discussion of this excess space is included on Sect. 4.1.3.

Table 6. Sitewide Asset Utilization Index (AUI = 76.87%) for Y-12 NSC

Measures	AUI	FRPC Guidelines	OECM Guidelines	Operating GSF	No. of Buildings Operating
Office	97.08%	70–95%	95%	854,690	33
Laboratory	42.20%	60–85%	90%	889,241	8
Warehouse	93.86%	50–85%	89%	485,219	59
Medical	100.00%	70–95%	90%	27,475	1
All Other Categories	79.72%	N/A	N/A	3,746,110	243
				6,002,735	344

4.1.2.3 Land-Use Planning

The Y-12 NSC complies with the land use planning requirements of DOE 430.1B, *Real Property Asset Management*, by having a sitewide environmental impact statement. The required 5-year update to the SWEIS is currently underway, with a Record of Decision projected for October, 2007. Land-use planning is further enhanced by additional controls described below.

The primary land-use planning document for Y-12 is the TYSP. The plan is written and updated in accordance with and on a schedule provided by NNSA guidance. All Modernization (including Infrastructure Reduction) and related projects, including changes in land-use defined by the TYSP, are first reviewed for management concurrence with the Y-12 Site Planning Council (SPC). The SPC is comprised of ten senior level managers.

Proposed projects and changes in land-use are also reviewed with the Y-12 Environmental Compliance Organization (ECO). This step ensures that site operations are conducted in a manner that is (1) protective of workers, the public, and the environment; (2) in compliance with applicable federal, state, and local environmental laws and regulations; (3) in compliance with applicable DOE orders and standards related to protection of the environment; and (4) consistent with Y-12 environmental policies, standards, and procedures. The ECO serves as theY-12 interpretive authority for environmental compliance requirements and as the primary point of contact between Y-12 and external environmental compliance regulatory agencies [e.g., state of Tennessee and Environmental Protection Agency (EPA)].

When a project or land-use change is proposed, ECO initiates activities required by the National Environmental Policy Act (NEPA) of 1969. NEPA provides a means to evaluate the potential environmental impact of proposed federal activities and to examine alternatives to those actions. The NEPA review process results in the preparation of NEPA documents in which all environmental laws, regulations, orders applicable to the environmental resource areas

must be considered. These environmental resource areas include air, surface water, groundwater, terrestrial and aquatic ecology threatened and/or endangered species, land use, and environmentally sensitive areas. Environmentally sensitive areas include floodplains, wetlands, farmland, habitats for threatened and/or endangered species, historic properties, and archaeological sites.

A Comprehensive Environmental Response, Compensation, and Liabilities Act (CERCLA) screen is conducted as part of the NEPA review process on demolition and construction projects. This screen evaluates whether a project will interfere with existing or planned environmental remediation action at Y-12.

Y-12 operates under a 1999 "Memorandum of Understanding (MOU) for Implementation of a Land Use Control Assurance Plan (LUCAP) for the U.S. DOE Oak Ridge Reservation." This document was approved and signed by senior representatives from DOE, the EPA, and the Tennessee Department of Environment and Conservation (TDEC). The purpose of the document is to facilitate accomplishment of the environmental objective shared by these organizations. The environmental objective is to ensure development of LUCAPs and Land Use Control Implementation Plans (LUCIPs) for federal facilities that utilize Land Use Controls (LUCs) as components of remedial actions implemented at those facilities. The result of the MOU is a "living LUCAP" that is periodically revisited by appropriate technical and managerial councils to ensure compliance with latest amendments to environmental remediation regulations and guidance. The councils are composed of NNSA and DOE-EM members and their contractors who interface with the EPA and TDEC as necessary.

Y-12 Land and Boundaries

Y-12 requires certain boundaries for physical property protection and emergency response. Figure 27 shows the configurations of the 229 Boundary and the Emergency Response Boundary. The 229 Boundary is surveyed, fenced, and appropriately signed. It is called the 229 because it was created as a result of Sect. 229 of the Atomic Energy Act of 1954. The 229 essentially provides for legal

Fig. 27. The configuration of the 229 Boundary *(yellow line)*, the Emergency Response Boundary *(green line)*, and the Y-12 Area of Responsibility *(red line)*.

punishment of trespassers. Punishment can range from fines up to $1000 for persons trespassing on posted land to imprisonment and a $5000 fine for any trespasser who crosses the boundary that is both posted and fenced. Also punishable is the "...carrying, transporting, or otherwise introducing, or causing to be introduced, any dangerous weapon, explosive, or other dangerous instrument or material likely to produce substantial injury or damage to persons or property, into or upon such facility, installation, or real property is likewise prohibited."

The Emergency Response Boundary (ERB) is a signed boundary that is used as the site boundary for the purpose of safety analysis and emergency class definition. The ERB identifies the area that can be evacuated and access control established within 1 hour of any emergency declaration.

Y-12 recently reconfigured its ERB and 229 Boundary. Appropriate signage has been installed around both boundaries, and new fencing delineates the reconfigured 229. The Y-12 Area of Responsibility (AOR) serves as a buffer zone against unwanted encroachment. The total land area within the AOR is about 5,400 acres. The 229 and ERB comprise about 3,000 acres.

1.1.3 Site Footprint Management

BWXT Y-12 has been implementing an aggressive footprint reduction plan since becoming the M&O contractor in FY 2000. The direct success of this program is attributed to the Company's strong commitment to reduce the site's footprint and NNSA's commitment to provide the necessary funding. Through FY 2006, using FIRP and non-FIRP funding, the Y-12 footprint reduced, through demolition, by 1,001,429 ft^2. Currently, FIRP funding for the demolition of excess facilities is expected to end in FY 2009 with FY 2010 as carryover for project closeout activities. Prior to FIRP demolition funding ending, between FY 2007 and FY 2009, Y-12 will have demolished an additional 374,337 ft^2 of NNSA floor space in 20 buildings.

The vast majority of the footprint reduction progress to date can be attributed to improved facility utilization and the excessing of material to render facilities excess to NNSA's needs. While this activity will continue to result in a number of facilities becoming excess, the modernization plan for Y-12 includes a number of new facilities that will render a significant amount of existing floor space excess to NNSA over the next 10 years. Additionally, there are a number of DOE-SC/NE facilities located on the Y-12 site that are, and will become, excess and require D&D funding. This funding is currently not identified in any DOE or NNSA budget at this time. There are also four excess facilities that are the responsibility of DOE-EM. The DOE-EM Baseline for the Oak Ridge Reservation includes a budget for the demolition of these four buildings that total 562,569 ft^2. To facilitate an understanding of the overall integrated excess facilities disposition plan for the Y-12 site, this section of the TYSP has been organized into two parts. FIRP-related excess facilities planning, new construction, and site footprint reduction tracking as required by the TYSP Guidance are presented in the first part. The second part provides information on Y-12's current activities in support of planning for increasing D&D budgets for the Oak Ridge Reservation, which includes Y-12 NSC. This later planning is intended to support process-contaminated excess facilities D&D that FIRP currently does not address.

FIRP Excess Facilities Planning

FIRP funding has been utilized to achieve a "banked" square footage of 792,643 ft^2 through FY 2006. Banked square footage is the NNSA term used to equate to the congressional budget language to "offset" all new construction by transferring, selling, or demolishing facilities to achieve a "no net growth at the site." As specified in the TYSP Guidance, the banked square footage does not include Other Structures and Facilities (OSFs). Not including OSFs distorts the overall BWXT Y-12 footprint reduction efforts funded through FIRP and non-FIRP means. Table 7 provides a summary by fiscal year of the progress through FY 2006 and includes the banked and total (OSFs included) square footage demolished.

Table 7. Footprint reduction through FY 2006

Fiscal Year	Banked Square Footage Eliminated*	OSF Square Footage Eliminated*	Total Square Footage Eliminated*
2001	0	22,676	22,676
2002	250,404	131,522	381,926
2003	117,838	24,938	142,776
2004	108,065	21,603	129,668
2005	207,830	6,594	214,424
2006	108,506	1,453	109,959
Total	**792,643**	**208,788**	**1,001,429**

*Footage eliminated equates to buildings demolished on the Y-12 site only.

Excess facility candidates for FY 2007–2009 have been identified through ongoing modernization and infrastructure reduction planning efforts. Currently, 20 structures with a total area of 374,337 ft^2 are projected to become excess to NNSA prior to the end of FIRP. Table 8 provides a summary of the FY 2007–2009 demolition and includes the banked and total (OSFs included) square footage to be demolished.

Table 8. Footprint reduction, FY 2007–2009

Fiscal Year	Banked Square Footage Eliminated*	OSF Square Footage Eliminated	Total Square Footage Eliminated	Number of Facilities
2007	103,210	3,380	106,581	7
2008	131,533	0	131,533	7
2009	136,223	0	136,223	6
Total	**370,957**	**3,380**	**374,337**	**20**

*FIRP funding for demolition ends in FY 2009. FY 2008 and FY 2009 banked square footage could change based on FY 2007 planning and budgeting activities. The changes are not expected to affect the overall totals shown.

Appendix B, which is Attachment E-1, Facilities Disposition Plan of the TYSP Guidance, provides a detailed summary of the excess facilities disposition plan from FY 2008 through FY 2017. This plan also includes previously disposition actions data back to FY 2001.

Schedule and Estimate

The schedules and estimates for the FIRP facilities reduction plan are based on a thorough review of the facilities, data from work accomplished in FY 2001–2006, and experience with similar projects at other DOE sites. As facility reduction proceeds and knowledge of schedule durations and costs increases, the scheduling and estimating processes will be continually refined.

The basis for the facilities reduction plan is the facilities reduction schedule that was developed from a detailed review of work scope, plant requirements, historical information, types of buildings, the 10-year baseline, and key mission-related milestones. Cost estimates are based on these factors. This approach emphasizes an overall reduction in the number of facilities at Y-12 and schedules the work to ensure that modernization is a main priority.

Facility reduction scheduling and estimating are integrated to ensure consistency between planned work scope and associated costs. Together, the resulting schedules and cost estimates highlight the necessary path forward. The following two sections discuss

(1) the scheduling methods and assumptions used in planning and (2) the estimating methods and assumptions used in determining associated costs.

Schedule Basis and Assumptions

Facility removal scheduling typically includes the following sequence of activities:

- planning,
- termination/relocation/upgrading,
- utility isolation,
- deactivation,
- decontamination,
- demolition/removal, and
- site restoration.

Schedule durations for these major activities in future removal actions are based on actual data obtained from demolition of site structures in FY 2001–2006. Applicable experience from this type of work at other DOE sites was also used, along with the expertise of personnel with extensive related experience, to help determine realistic activity durations.

Y-12 structures can generally be classified into four categories: (1) trailers, (2) cooling towers, (3) guard posts, and (4) buildings (e.g., offices, material storage areas, change houses, and shops). This classification scheme is adequate for current scheduling needs; however, it may be expanded later if necessary.

Many factors were brought together to derive the schedules for the facility reduction initiatives. First, a list of facilities identified for reduction with their relative priority was compiled. Then the major activities involved in facility reduction were examined along with applicable experience from FY 2001–2006 projects and BWXT Y-12 employee knowledge to determine the duration required for each activity.

Estimate Basis and Assumptions

The same work activities used to establish facility reduction schedules also provided the basis for developing cost estimates. Unit rates for facility reduction activities were developed from two sources. First, the actual costs of work performed from FY 2001 to FY 2006 on trailers, guard posts, and buildings that were demolished were used. Second, a detailed estimate prepared for a cooling tower and other unique structures was used. Such detailed estimates are more accurate than typical commercial rates, which are not applicable to operations at Y-12. As facility reduction efforts proceed, they will provide additional information that will allow refined estimates to be developed for the work still to be accomplished.

As the Infrastructure Reduction program progresses and cost data per building are collected, this knowledge can be used to better refine estimates for the different types and sizes of structures. Additionally, as the program matures, operators will become more efficient, which may aid in decreasing the overall cost associated with D&D activities. The BWXT Y-12 goal is to refine budgets and develop the most accurate estimates possible by continually revising and updating costs obtained through demolition experience.

New Construction Footprint

Through FY 2006, new construction on the Y-12 site totaled 65,754 ft^2. This includes 62,254 ft^2 of NNSA space and 3,500 ft^2 of non-NNSA space (see Appendix C). The most significant new construction on the Y-12 site between FY 2008 and FY 2017 will be the completion of the HEUMF, the UPF, and the Consolidated Manufacturing Complex. The projected new space constructed-total for the NNSA footprint on Y-12 NSC between FY 2008 and FY 2017 is 648,600 ft^2. Several projects like the UPF and the CMC are in their early planning stages and their square footage could change. At this juncture, the amount new space constructed is projected to be less than the amount of space demolished before FIRP demolition funding ends in FY 2009. It should be noted that Y-12 will have a

significant amount of floor space ***(over one million square feet of NNSA space)*** that will be excess with no funding currently being supported by DOE/NNSA to disposition this space.

Integrated Facility Disposition Project for the Oak Ridge Reservation

The Y-12 site currently uses FIRP as the principal source of funding for the demolition of non–process contaminated excess facilities. FIRP is projected to end in FY 2009. The RTBF program provides limited funding for the D&D activities (b)(2)High the only NNSA process-contaminated building currently undergoing D&D. In addition, the DOE-EM Environmental Baseline Plan for Oak Ridge includes a budget for the disposition of four buildings located on the Y-12 site that were previously transferred to DOE EM and are process contaminated.

BWXT Y-12 and NNSA are pursuing a number of consolidation and modernization projects over the next 10 years that will result in an approximately 2.8 million square feet of NNSA process-contaminated floor space becoming excess to mission needs. In addition, DOE-SC/NE missions at Y-12 will cease, rendering approximately 1.2 million square feet excess to their needs. **Other than FIRP and the DOE-EM current baseline, funding for the D&D of this roughly 4.0 million square feet of NNSA and DOE-SC/NE process-contaminated footprint is not supported by any current DOE/NNSA budget.**

DOE-ORO, NNSA, BWXT Y-12, and UT-Battelle have developed a proposal to increase funding for the disposition of process-contaminated excess facilities at Y-12 and ORNL. This proposal, referred to as the Integrated Facility Disposition Project (IFDP) for the Oak Ridge Reservation, seeks to increase funding for DOE-EM activities in Oak Ridge. Specifically for Y-12, the proposal requests funding, originally as early as FY 2008, to begin the D&D of NNSA and DOE-SC/NE facilities that are excess to program needs. Without long-term funding, 4.0 million square feet of process-contaminated floor space at Y-12 will remain within a modernized Y-12 site. Figure 28 identifies the facilities that are proposed for DOE-EM funding in the disposition plan referenced above. Also shown are the facilities that will be demolished using NNSA funds (FIRP) and the assumed current DOE-EM funding in the EM Baseline Plan.

The impacts of not addressing this increasing legacy facility footprint will be significant. A summary of these impacts is provided below.

- An increasing short-term likelihood of life safety concerns, environmental insults, or other releases due to facility degradation. Evidence of building degradation is already present (b)(2)High and the Biology Complex. (b)(2)High a current Mission Critical Facility that will be excess to NNSA within the next 2 to 3 years, and the Biology Complex is a group of empty, deteriorating buildings which total over 0.4 million square feet belonging to DOE-SC.
- An increasing surveillance and maintenance budget that will drain resources and impact NNSA's ability to achieve Complex 2030. Addressing some of the high priority D&D actions would help reduce NNSA's liabilities now and avoid the increasing risk of higher cost actions later. A good example of this (b)(2)High Over $5 million in S&M cost per year could be saved by completing the D&D of this facility. The preconceptual estimate to complete the D&D (b)(2)High and demolish the structure is approximately $40 million.

Regardless of DOE or NNSA programmatic responsibility for funding D&D, the legacy materials and facility footprint on the Y-12 site must be begin to receive some level of priority in the PPBE process.

Fig. 28. Facilities included in the IFDP *(red)*, FIRP *(green)*, and DOE-EM baseline *(yellow)*.

4.1.3.1 Future Space Needs

Future space needs are largely a function of Y-12's strategic planning and modernization objectives to replace assets, although some growth in office and storage space is anticipated. Strategically, the overall facility and infrastructure objective is to reduce the Complex's square footage by eliminating excess materials, equipment, and facilities and by replacing the required assets with modern facilities designed for their intended use. In this context, future space needs are summarized below.

- **Administrative.** With the construction of the Jack Case and New Hope centers, Y-12 will correct most of the long-standing space capacity and functionality conditions that have plagued the site for over 20 years. The remaining challenges will be to address the space needs for the UPF Project Team and the needs of the program and operations components located inside the Protected Area (PA) of Y-12. The UPF Team will need approximately 200–300 office spaces to achieve the efficiency necessary to design and construct this crucial facility over the next 10 years. Options to lease space are being explored as there is no on-site capability that meets the Team requirements. The space needs inside the PA are not as large but are equally significant in their justification. Options to address these office space needs will be explored in FY 2007.
- **Research and Development.** The Technology Service Organization is currently housed in 60-year-old facilities. Options are being explored to replace these facilities under a line item or using private-sector funding similar to the Jack Case Center project. The design objective would be to achieve a square footage reduction in the overall space of current operations by consolidating and providing a facility designed for its intended use. Y-12 is also assuming that Enriched Uranium R&D missions currently located at other national laboratories will be relocated to Y-12, consistent with NNSA's Complex 2030 objectives. This could increase the need for additional R&D laboratory space.

- **Industrial, Production, Process.** Assuming the completion of the UPF and the CMC, Y-12 does not anticipate the need for additional space in this category. This assumption can change based on NNSA decisions as to workload or mission changes.
- **Service.** Space needs in this category are also related to providing modern facilities to replace the aging infrastructure while reducing the overall need for the amount of space required today. Three projects have been included in the ICPP under "Proposed Projects." These include a new maintenance facility, fire station, and laboratory upgrades.
- **Warehouse.** With the completion of HEUMF, Y-12 will have addressed its HEU material needs. What must be addressed are the non-SNM needs. NNSA and BWXT Y-12 first need to address the disposition of all non-SNM material not required for retention on the Y-12 site. This material should be removed from Y-12 and the remaining material housed in modern non-SNM facilities instead of being scattered across the site in WWII-era facilities. A non-SNM facility will not require the level of protection and cost associated with HEUMF. A project has been included in the ICPP under "Proposed Projects" to address this need. Given that proposed projects have a lesser priority for line item funding, Y-12 will evaluate the use of private-sector funding to provide a leased facility.

4.1.3.2 Leased Space

Leased space has historically been used to provide housing for technical, administrative, and support operations as a result of constrained capital budgets or higher priority, direct-mission related capital requirements. Short-term needs can also be satisfied by using leased space, and this alternative is always evaluated. The current portfolio of leased space includes six off-site facilities that total approximately 150,000 ft^2. While these leases have been long-term in nature, they are an insignificant percentage of the overall Y-12 NSC square footage. A summary of the leased space information is provided in Appendix G, which is Attachment E-6 of the TYSP Guidance.

Leased space is becoming a key element of the Y-12 NSC modernization plan to achieve the Complex 2030 footprint. To achieve this footprint, BWXT Y-12 has pursued the use of private sector funding to construct over 500,000 ft^2 of technical and administrative space. The Jack Case and New Hope centers will be completed by the summer of 2007 (Fig. 29). These buildings are

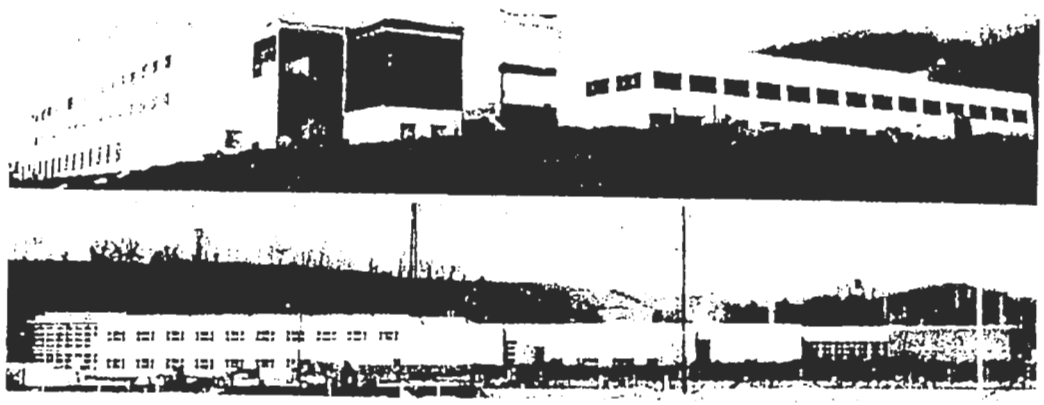


Fig. 29. Jack Case Center *(upper)* and New Hope Center *(lower)*.

replacing 60-year-old facilities that are extremely costly to maintain and not representative of a modern, cost effective and responsive enterprise. Over 290,000 ft^2 of existing space can be demolished, 100,000 ft^2 of off-site leased space can be eliminated, and another 200,000 ft^2 of other space will become surplus. Productivity will be significantly enhanced by consolidation of like functions and by providing a work environment that meets the expectations of the professional caliber of the current and projected workforce.

BWXT Y-12 will pursue additional site support facilities using this alternative financing approach. Several support facilities will be considered including a new Emergency Command Center, a Maintenance Operations Center, a Materials Management Complex, and a Development Operations Center. These types of needs have been historically included in the ICPP process as proposed line items, and they will continue to be shown in Attachment A-2 for NNSA line item funding consideration. The use of alternative financing approaches will be explored as an alternative to accelerate construction and reduce costs of these support facility needs by encouraging private-sector investment in Y-12.

4.1.4 Deferred Maintenance Reduction/Facility Condition Index

NNSA formally promulgated corporate goals for DM reduction in May 2003. These included:

- By the end of FY 2005, NNSA will stabilize its deferred maintenance.
- By the end of FY 2009, NNSA will
  - aggressively reduce DM to within industry standards;
  - return facility conditions, for our mission essential facilities and infrastructure, to an assessment level of good to excellent (DM/RPV < 5%); and
  - have institutionalized responsible and accountable facility management processes, including budgetary ones, so that the condition of NNSA facilities and infrastructure is maintained equal to or better than industry standards.

The Y-12 NSC achieved stabilization of its DM for all facilities and infrastructure, and was making progress at approaching the industry standards for FY2009. During FY 2006 NNSA "realigned" its mission essentiality definition and facilities based on Federal Real Property Council (FRPC) mission dependency recommendations. These included categories for Mission Critical, Mission Dependent, Not Critical, and Not Mission Dependent. During FY 2007, NNSA will reevaluate its corporate goals in light of the extension of FIRP to FY 2013, the recast of mission dependencies, and the over-arching corporate goals and targets for facility condition, utilization, and Complex 2030 planning.

The material presented in Sects. 4.1.4 and 4.1.5 provides the Y-12 NSC perspective on:

- the plan for improving the overall condition of NNSA's facilities on Y-12 NSC;
- analysis on reducing the Site's deferred maintenance to acceptable levels;
- reduction efforts in support of the overall FIRP $1.2 billion DM reduction goal;
- facility management processes and practices that are in place or the Site plans to implement to assure the efficient and effective maintenance of the Site's facilities and infrastructure in the long-term; and
- description of how the Site determines projected out-year DM growth, RPV, and validation of existing deferred maintenance.

FYNSP funding for FIRP and RTBF continues to be a primary driver behind how much reduction in DM can be accomplished. Y-12 has reduced DM by over $200 million from the original FY 2003 baseline. This could not have been possible without the FIRP, and to

replacing 60-year-old facilities that are extremely costly to maintain and not representative of a modern, cost effective and responsive enterprise. Over 290,000 ft^2 of existing space can be demolished, 100,000 ft^2 of off-site leased space can be eliminated, and another 200,000 ft^2 of other space will become surplus. Productivity will be significantly enhanced by consolidation of like functions and by providing a work environment that meets the expectations of the professional caliber of the current and projected workforce.

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- description of how the Site determines projected out-year DM growth, RPV, and validation of existing deferred maintenance.

FYNSP funding for FIRP and RTBF continues to be a primary driver behind how much reduction in DM can be accomplished. Y-12 has reduced DM by over $200 million from the original FY 2003 baseline. This could not have been possible without the FIRP, and to

some extent, the RTBF program. The results of the reduction are evident sitewide, as the physical condition of facilities is improving and the site is looking significantly better due to facility demolition; which further reduces DM. With FIRP now extended through FY 2013, Y-12 projects the NNSA sitewide FCI to be 5.7% in 2013, with a DM dollar value of approximately $387 million.

In addition to FIRP funding, DM stabilization is the result of numerous initiatives that have been instituted to identify, measure, track, project, and retire DM. Some of these activities include maturation of the CAS program, development of more accurate cost estimating for DM, development of a Y-12–specific mathematical model for projecting DM into the future, development of a DM prioritization methodology, and assigning a dedicated DM Project Manager.

Deferred Maintenance Reduction Projection

Y-12 utilizes a modified version of the model that was developed by LLNL in 2002. The model accounts for an increase in DM due to additional CAS deficiencies and also inflation. As provided in the TYSP Guidance, Y-12 uses the DOE escalation value for out-year inflation planning for both DM and RPV. Existing DM is monitored monthly based on increases and reductions in the CAIS system. Y-12 has strived to attain a good rapport with the building managers and the FIRP program to account for correction of deficiencies at the time of repair. With minor variance, this provides the site with a valid DM value at any time.

Growth in deferred maintenance is based on two primary functions. The first is growth in deficiency-based deferred maintenance. This is calculated based on an average of prior year's actual additions to the CAIS database. Currently, Y-12 is noting a reduction in new growth with each new year. This could be a reasonable indicator that corrective maintenance items are being repaired as they happen, rather than deferring the repairs. The second element in DM growth is attributed to standard inflation.

FY 2003 Deferred Maintenance Baseline Reduction

Table 9 is Attachment F-1 of the TYSP Guidance and reflects the DM reduction associated with the FY 2003 baseline as reported in the August 2003 Final FY 2004–2013 TYSCP. Per NNSA Headquarters guidance, no growth in DM or escalation of DM costs is associated with the FY 2003–2013 baseline values.

NNSA Total Deferred Maintenance and Projected Deferred Maintenance Reduction

Table 10 is Attachment F-2 of the TYSP Guidance and was generated from various sources. All values in this table reflect fully burdened values for project planning and execution. DM growth and escalation are included in Attachment F-2. Data for Annual Required Maintenance has incorporated the Y-12 assessment of maintenance as a percentage of RPV as described further in this TYSP. The Annual Planned Maintenance data reflects Y-12's assessment of work scope that should be included as maintenance costs and also ensure consistency of maintenance reporting with other NNSA sites.

Table 9
Attachment F-1
FIRP FY 2003 Deferred Maintenance Baseline and Projected Deferred Maintenance Reduction from Baseline for the Y-12 National Security Complex ($000s)

Category of Maintenance	FY 2003 (Baseline)	FY 2004 (Actual)	FY 2005 (Actual)	FY 2006 (Actual)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
1. FIRP DEFERRED MAINTENANCE (DM) BASELINE (Excludes Programmatic Real Property or Equipment)	569,300	408,084	345,035	319,434	284,201	253,821	221,595	198,881	174,132	149,453	148,041	146,597	145,119	143,607	142,060
2. DEFERRED MAINTENANCE (DM) BASELINE REDUCTION TOTAL		160,216	63,049	25,601	35,233	30,380	32,226	22,714	24,749	24,678	1,412	1,445	1,478	1,512	1,547
A. Reduction in DM Baseline (total due to FIRP ONLY) for all F&I		17,524	29,051	23,247	28,728	29,354	30,882	21,395	23,400	23,288					
i. Reduction in DM for Mission-Critical F&I (due to FIRP ONLY)				7,043	11,845	2,929	3,940	7,126	8,825	8,550					
ii. Reduction in DM for Mission Dependent, Not Critical F&I (due to FIRP ONLY)				10,735	18,618	18,786	21,327	14,270	14,775	14,748					
iii. Reduction in DM for Not Mission Dependent F&I (due to FIRP ONLY)				5,469	2,820	4,121	5,515								
3. REPLACEMENT PLANT VALUE (RPV) FOR NNSA FACILITIES & INFRASTRUCTURE															

Table 10

Attachment F-2

NNSA Total Deferred Maintenance and Projected Deferred Maintenance Reduction

for the Y-12 National Security Complex ($000s)

Category of Maintenance	FY 2003 (Baseline)	FY 2004 (Actual)	FY 2005 (Actual)	FY 2006 (Actual)	FY 2007*	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
1. NNSA ANNUAL REQUIRED MAINTENANCE	31,493	111,408	70,088	72,046	79,504	80,744	84,817	86,768	88,764	90,806	92,894	95,031	106,989	109,450	111,967
1A. NNSA ANNUAL REQUIRED REPLACEMENT-IN-KIND		2,116	6,757	3,056		11,730					3,913				
[redacted]															
2. NNSA ANNUAL PLANNED MAINTENANCE TOTAL	30,780	48,202	60,866	52,449	51,247	52,426	53,632	54,865	56,127	57,418	58,739	60,089	61,472	62,885	62,885
A. Direct	18,605	19,935	21,542	22,976	51,247	52,426	53,632	54,865	56,127	57,418	58,739	60,089	61,472	62,885	62,885
B. Indirect	12,175	28,267	39,323	29,473											
2A. NNSA ANNUAL PLANNED REPLACEMENT-IN-KIND		45,400	55,800	19,600	19,594	29,372	22,452	19,049	19,067	21,509	17,999	16,023	15,752	17,447	20,969
[redacted]															
3. NNSA DEFERRED MAINTENANCE (DM) TOTAL (Excludes Programmatic Real Property or Equipment) = *Inflation Prior Year DM Total + DM New - Prior Year DM Reduction*	568,300	460,679	418,803	427,745	428,533	418,654	406,095	400,409	390,455	379,243	369,936	400,736	411,843	422,855	433,772
i. Backlog Inflation Rate (%)		2.3%	7.6%	6.5%	9.1%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
ii. DM Inflation		13,071	34,174	27,148	38,825	8,856	8,629	8,340	9,209	8,880	8,723	8,969	9,217	9,468	8,721
iii. DM new		10,000	11,515	17,188	16,000	15,000	14,000	12,000	10,000	9,000	8,000	8,000	8,000	8,000	8,000
A. DM, Mission Critical F&I ONLY				121,628	118,285	120,780	123,520	86,892	90,783	60,176	61,070	61,925	62,737	63,505	32,637
B. DM, Mission Dependent, Not Critical F&I ONLY				182,041	171,253	157,594	142,531	134,332	124,610	113,960	117,373	120,837	124,342	127,887	131,473
C. DM, Not Mission Dependent F&I ONLY				124,177	128,552	127,716	127,299	168,264	172,030	181,777	187,919	204,153	210,483	216,808	255,020
[redacted]															
4. DEFERRED MAINTENANCE (DM) REDUCTION TOTAL for NNSA Facilities and Infrastructure (F&I)	111,296	27,270	84,028	41,132	37,066	34,736	36,188	27,027	29,162	29,192	6,030	6,189	6,310	6,456	6,604
i. Reduction total attributed to FIRP ONLY		21,770	46,270	23,247	28,726	29,354	30,682	21,385	23,400	23,298					
A. Reduction in DM for Mission Critical F&I				12,830	10,462	4,551	4,219	43,274	10,361	24,420	1,817	1,859	33,491	1,845	33,579
1. Reduction attributed to FIRP ONLY				7,043	7,281	2,929	2,560	7,125	8,625	8,550					
B. Reduction in DM for Mission Dependent, Not Critical F&I				10,735	12,238	8,246	8,633	15,868	16,411	16,421	1,712	1,751	1,791	1,833	1,875
1. Reduction attributed to FIRP ONLY				10,735	18,616	22,304	22,607	14,270	14,775	14,748					
C. Reduction in DM for Not Mission Dependent F&I				8,280	5,002	6,353	7,799	(32,116)	2,390	(11,649)	2,601	2,658	(28,972)	2,678	(28,850)
1. Reduction attributed to FIRP ONLY				5,469	2,820	4,121	5,515								

*FY 2007 costs have been revised based on the application of the 2007 RS Means rates to FIMS and CAIS. The DOE-provided escalation rate has been overridden for this fiscal year.

Table 10 (cont.)
Attachment F-2 (cont.)
NNSA Total Deferred Maintenance and Projected Deferred Maintenance Reduction
for the Y-12 National Security Complex ($000s)

Category of Maintenance	FY 2003 (Baseline)	FY 2004 (Actual)	FY 2005 (Actual)	FY 2006 (Actual)	FY 2007*	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
5. REPLACEMENT PLANT VALUE (RPV) for NNSA Facilities and Infrastructure (F&I) = *Inflation of PY RPV + Increase or Decrease due to other causes*	4,608,871	4,708,336	4,814,176	5,332,924	5,791,466	5,892,749	5,982,215	6,324,346	6,469,806	6,618,612	6,770,840	6,926,569	7,085,880	7,994,855	8,178,737
A. RPV for NNSA Mission Critical F&I ONLY				2,218,162	2,463,334	2,609,780	2,587,485	2,351,595	2,405,682	2,205,378	2,258,103	2,307,993	2,361,077	3,181,382	2,873,733
B. RPV for NNSA Mission Dependent, Not Critical F&I				1,815,567	1,872,929	2,018,306	2,058,044	2,105,379	2,153,803	2,203,340	2,254,017	2,305,858	2,358,894	2,413,149	2,468,851
C. RPV for NNSA Not Mission Dependent F&I				1,299,195	1,365,204	1,354,683	1,336,688	1,867,372	1,910,322	2,208,892	2,260,720	2,312,716	2,365,909	2,420,326	2,836,353
D. RPV increase from prior year attributed to inflation				85,398	485,298	133,204	135,303	137,131	145,460	148,806	152,228	155,729	159,311	162,975	183,882
E. RPV increase/decrease attributed to causes other than inflation (provide separate supporting narrative behind F-2 exhibit)*				(36,795)	(28,754)	(41,921)	(55,837)	225,000						748,000	
FCI Analysis	**FY 2003 (Baseline)**	**FY 2004 (Actual)**	**FY 2005 (Actual)**	**FY 2006 (Actual)**	**FY 2007**	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
FCI TOTAL	12.3%	9.8%	8.5%	8.0%	7.4%	7.1%	6.9%	6.3%	6.0%	5.7%	5.8%	5.8%	5.8%	5.3%	5.3%
FCI Mission Critical				5.5%	4.8%	4.8%	4.8%	3.7%	3.4%	2.7%	2.7%	2.7%	2.7%	2.0%	1.1%
FCI Mission Dependent, Not Critical				10.0%	8.7%	7.8%	6.9%	6.4%	5.8%	5.2%	5.2%	5.2%	5.3%	5.3%	5.3%
FCI Not Mission Dependent				9.6%	9.3%	8.4%	9.5%	8.8%	8.0%	8.7%	8.8%	8.8%	8.9%	9.0%	9.0%

*FY 2007 costs have been revised based on the application of the 2007 RS Means rates to FIMS and CAIS. The DOE-provided escalation rate has been overridden for this fiscal year.

Deferred Maintenance Profile for NNSA Facilities and Infrastructure on Y-12 NSC

Figure 30, which is Attachment F-3 of the TYSP Guidance, represents the projected DM profile for Y-12 NSC facilities and infrastructure through FY 2017. From FY 2006 through FY 2017 the totals represent all three categories of mission dependency. The first 3 years represent the total DM, rather than separate values for each category due to the recent changes in mission dependency categories initiated in 2006. The trend is a continued reduction in the value of DM through FY 2012—a trend almost entirely attributable to FIRP. As can be seen, or at least projected at this time, Y-12 believes the DM value will begin to grow, based on the assumptions for RTBF funding post FIRP. Projecting what "might be" funded, what facilities "might be dispositioned," and what facilities "might be constructed"—all of which impact the value of DM in the future—is extremely suspect given the enormity of funding required to implement Complex 2030 and meet all Stockpile commitments. While the overall value of DM in the next decade is much reduced and equivalent to an NNSA sitewide FCI of 5.3% in FY 2017, the likelihood of DM continuing to grow after FIRP ends is high, and the magnitude remains uncertain.

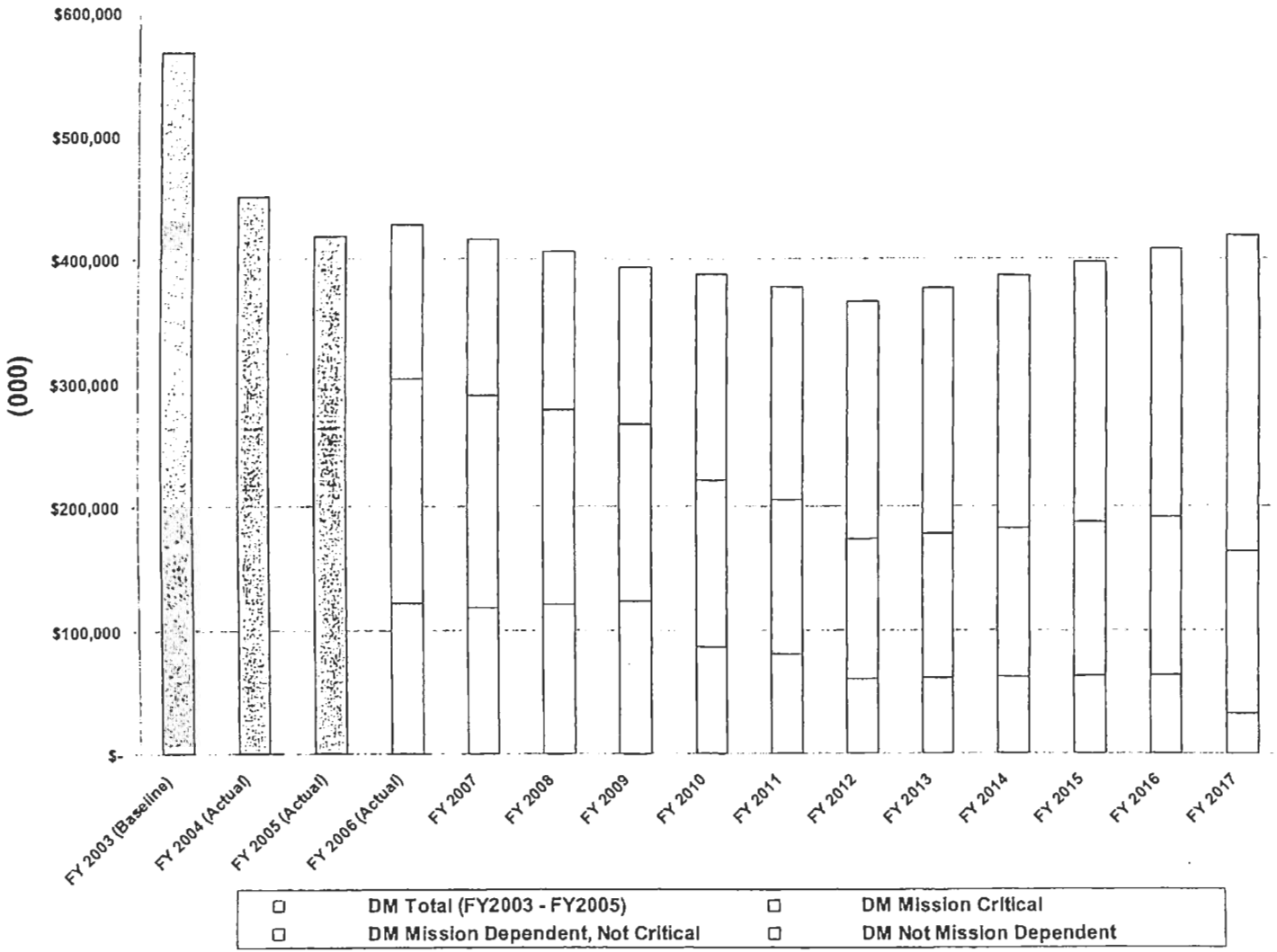

Fig. 30. Y-12 NSC's deferred maintenance profile for NNSA F&I ($000s) (Attachment F-3).

Facility Condition Index Trends for NNSA Facilities and Infrastructure on Y-12 NSC

Figure 31, which is Attachment F-4 in the TYSP Guidance, is a series of graphs that show the trends for the Total FCI, Mission Critical FCI, Mission Dependent, Not Critical FCI, and Not Mission Dependent FCI through FY 2017. These graphs reflect the results of the analysis and plan for improving the overall condition of NNSA's facilities on Y-12 NSC, reducing the site's deferred maintenance to acceptable levels, and support the overall FIRP goal to reduce DM (NWC-wide) by $1.2 billion.

Total FCI for Y-12, attributable to FIRP (with some RTBF investment), has been on a steady downward trend since the FY 2003 baseline. The trend is expected to continue through FY 2013, and remain at less than 6% through FY 2017. This is a strong indication that Y-12's overall modernization, footprint reduction, recapitalization, and DM reduction plans have produced an integrated success story.

For the 13 facilities that comprise the Mission Critical category, the FCI at the end of FY 2006 was 5.5%. A downward trend is expected based on FIRP FYNSP levels and a "constrained" investment from RTBF. By FY 2013, Y-12 is projecting the MC FCI to be at 2.7%. Again this can be attributed to nearly 100% of FIRP recapitalization and DM reduction funding being used on MC facilities. Other reduction can be attributed to transitioning several facilities from the MC list to the Not Mission Dependent group as they will no longer be supporting mission critical needs. (b)(2)High The timing of this MC change is of course based on funding approval for several line item construction projects currently in the ICPP, and well as other ongoing modernization efforts of Y-12. It should be noted that Buildings (b)(2)High will still have DM that may require investment. These legacy facilities will need D&D funding to reduce the S&M costs of these facilities so that risk-based decisions can be made on any future DM needs. (b)(2)High

At the end of FY 2006 the Mission Dependent, Not Critical FCI was 10%. Approximately 80 facilities and over 15 utility systems comprise this category. The trend for this group of assets is downward through FY 2013, and then a slight increase is evident, albeit less than 6% after 2013. Still, this is an indication that RTBF funding after FIRP must be adequate to keep the condition of these facilities in check, ideally at a level between 5 and 10%.

The Not Mission Dependent group of assets (over 290 buildings) had an FCI of 9.6% at the end of FY 2006. A stable trend is projected and will hover in the 8–9% range. While categorized as Not Mission Dependent, these assets are nonetheless very important to Y-12. While currently NNSA has not set an FCI goal for this group, Y-12 believes continued investment in these assets will be required for many facilities to ensure their availability to meet overall Site needs.

BWXT Y-12 will continue to strive for improvement in the overall condition of its facilities and infrastructure in support Complex 2030. At this juncture, the condition of the site's enduring facilities has continued to improve since the implementation of FIRP funding in FY 2002. The site is well on its way to a smaller, more efficient footprint with a mix of new modernized facilities and a set of recapitalized assets that will support mission requirements. As is currently planned, nonenduring facilities will be placed into a surveillance and maintenance program and monitored until D&D funding becomes available.

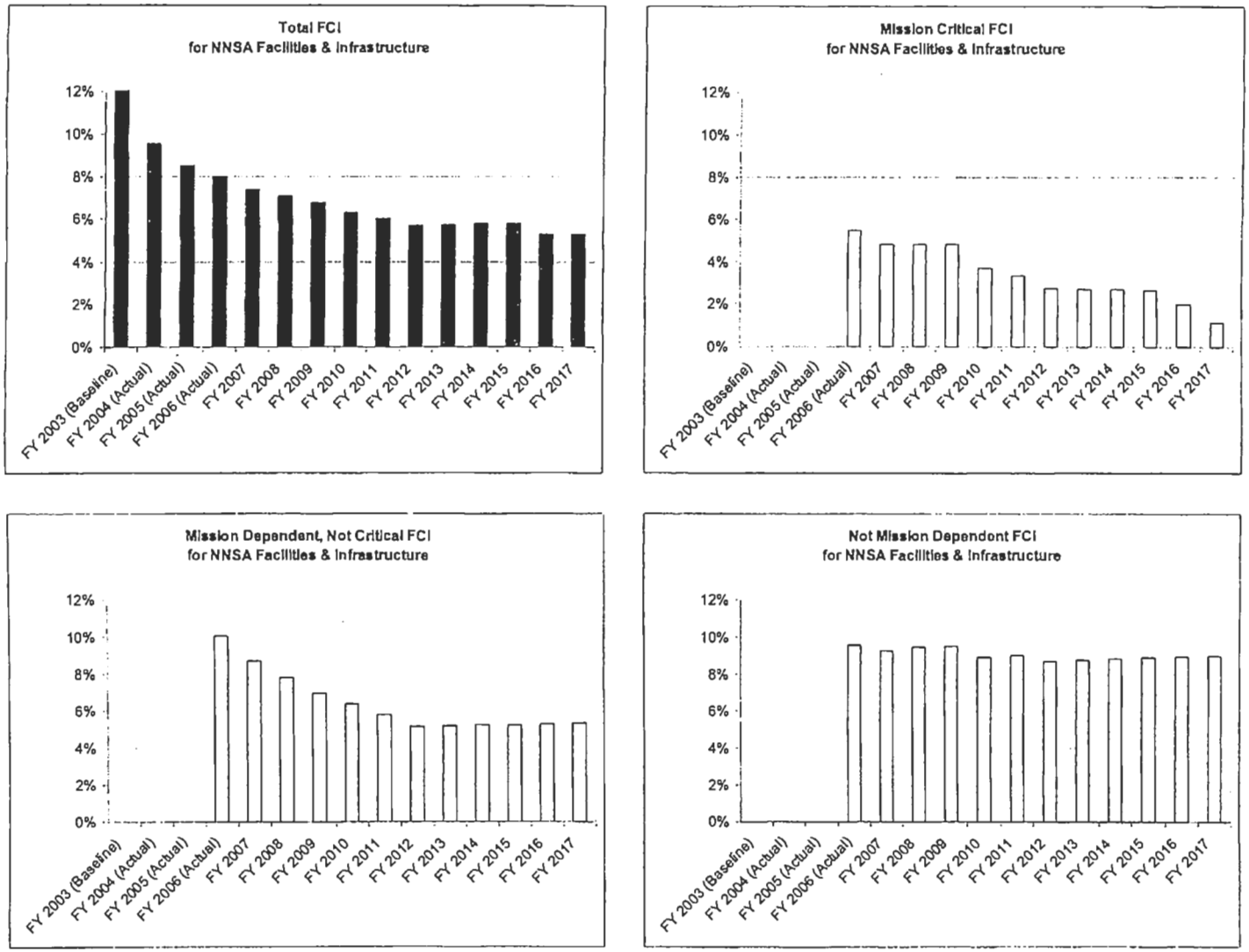

Fig. 31. Y-12 NSC's Facility Condition Index (FCI) for NNSA F&I (Attachment F-4).

4.1.5 Maintenance

The primary responsibility for providing maintenance services resides in the Facilities, Infrastructure, and Services (FI&S) Division. The Y-12 Maintenance organization and administration within FI&S provides effective implementation and control of the maintenance program through the working relationship between the Division Managers of FI&S, Manufacturing, Engineering, and Quality Assurance.

The FI&S departments that provide maintenance activities and services for Y-12 perform corrective, preventive, and predictive maintenance on government-owned equipment and facilities. The following are major maintenance functions of these departments:

- **Plant Maintenance.** Plant Maintenance provides corrective, preventive, and predictive maintenance activities on structures, systems, or components (SSCs) of all facilities at the Y-12 NSC. The department consists of four sections: Special Clean Up Programs, Systems Maintenance, Balance of Plant Maintenance, and General Services. Special Clean Up Programs perform clean up of shop-type areas and perform large-scale maintenance jobs. Systems Maintenance provides maintenance to the Plant Shift Superintendent electronic equipment, Plant Emergency Notification System, Criticality Accident Alarm Systems, and security systems. It also provides maintenance to the stand-by power generators throughout the plant; services all refrigeration and air conditioning units; manages and maintains the portable and mobile radio systems; and provides maintenance support for the classified and unclassified data communication systems, as well as all personal computers. The Balance of Plant Maintenance section provides site electrical and mechanical maintenance; fabrication and shop work; elevator, cranes, and hoist maintenance; ironworker and rigger support; filter change outs; insulator support; Fire Protection maintenance support; and special project support for Deferred Maintenance, Infrastructure Reduction, and the Purification Prototype Facility. The General Services section provides general maintenance to organizations, including carpentry, painting, electrical, mechanical craft support, pump and gearbox, sign and key, x-ray, security barriers, and gates.
- **Manufacturing Maintenance.** Manufacturing Maintenance provides corrective, preventive and predictive maintenance services for the equipment and systems in the manufacturing facilities, except general manufacturing in (b)(2)High The department provides technical services for equipment and machines in Y-12, provides preventive and predictive technology expertise, and provides subject matter experts in fields such as lubrication, hydraulics, etc. It coordinates the maintenance and support resources to accomplish equipment installations and machine upgrades in manufacturing facilities. It performs Equipment, Testing and Inspection services for lifting equipment and fixtures, pressure relief valves, etc. The department also provides direct support for the Y-12 Scheduled Outage Program, which utilizes outage periods in nuclear facilities to perform preventive/planned maintenance, testing, and calibration activities.
- **Plant Services.** The Plant Services Department provides maintenance activities and services with regard to vehicles and heavy equipment; roads and grounds; laundry and buildings custodial services. The department consists of four principal core services: oversight of the Y-12 Cafeteria; heavy equipment and vehicle maintenance; building and laundry services; and upkeep and management of roads and grounds including furniture/excess moves, transportation, waste handling, and clean sweep.
- **Utilities Management.** The Utilities Management Department provides maintenance activities and services on the Oak Ridge Reservation Power Supply System; Y-12 Electrical Distribution System; High-Voltage Equipment; circuit breakers; Steam Plant and Steam Distribution System; Industrial and Natural Gases systems; Water Supply System; Compressed Air System; Chilled Water System; Demineralized Water System; Sanitary Sewer

System; Storm Sewer System; East Fork Popular Creek; High-Efficiency Particulate Air Filter Systems; Utility Monitoring System; etc. The department is comprised of five sections: Utilities Coordination, Power Operations, Utilities Maintenance, Utilities Operations and Utilities Engineering, and Steam Plant Operations.

- **Infrastructure and Compliance Management.** The Infrastructure and Compliance Management Department provides support for Issues Management, Maintenance Training, Facility Condition Assessment Survey (FCAS), Procedures, Compliance, Infrastructure Projects (i.e., painting), and the Y-12 Building Managers (Facility Specialists). The Building Managers Program and the FCAS Program support the implementation of facility and equipment inspection, feedback and improvement, and weather condition damage prevention.
- **Maintenance Program Support.** The Maintenance Program Support Department is managed by the Maintenance Functional Area Manager and includes Maintenance Planning and Processes Sections, and Support Staff. Maintenance Planning Section provides planning and estimating support for the execution of corrective and proactive maintenance, fabrication, modification, and outage planning for all four of the other Maintenance departments. Maintenance Processes Section provides centralized programmatic support for all the maintenance departments. It is responsible for the creation/revision of the maintenance program procedures; coordination and oversight of special maintenance projects; and provision for computerized maintenance information systems in support of maintenance work management functions. Support Staff responsibilities include the development and implementation of a reliability centered maintenance program, project integration and coordination.

Improving Facility Management Processes

Three Work Management Centers (WMCs) have been implemented at the site. These WMCs are responsible for work prioritization, coordination, scheduling, and closeout. Presently, the WMCs are focused primarily on scheduling of maintenance activities; however, in the future all work within a facility will be planned via the WMCs.

Y-12 is continuing the implementation of a reliability-centered maintenance (RCM) approach to improving life cycle and equipment availability and reliability to optimize equipment performance and maintain safe, reliable operations. This program is titled Physical Asset Management Solution (PAMS), a life-cycle management process. All of the processes embodied in PAMS are based on RCM principles. The five steps necessary for implementation are to: establish a master equipment list, conduct PAMS analyses to determine and establish proactive maintenance strategies, execute maintenance work, analyze and trend historical data, and collect feedback for overall process management and improvement. This program will be significantly impacted by budget reductions. At best, incremental implementation may be possible. To help implement the proactive maintenance strategy for sustained operability of Manufacturing and Facility Critical Equipment, an Operational Performance and Reliability Improvement Team (OPRITe), a multi-organizational group of Y-12 personnel, has been formed and is dedicated to improving the Y-12 Plant understanding of PAMS and integrated work control. This team will conduct workshops and support the production management team in the execution of their roles and responsibilities and the implementation of procedure requirements.

BWXT Y-12 continues to improve its facility management processes. In FY 2006, BWXT Y-12 focused on identifying applicable systems and components that benefit from PAMS analysis and developing and implementing PM activities focusing on improving availability and reliability.

Physical Asset Management Solution (PAMS)

The Physical Asset Management Solution (PAMS) process improves life cycle and equipment availability and reliability by developing and implementing technically appropriate proactive maintenance and/or other default strategies that manage the consequences of failure to ensure an asset meets its mission requirements in its operational environment in a safe and cost effective manner. It is important to note that PAMS is not a "quick-fix" solution to Y-12's maintenance issues. It is a long-term solution that plays an integral role in ensuring optimal plant operation that requires a shift in the way physical asset management is approached. The gradual introduction and adoption of PAMS is outlined in Table 11. The process is based on moving away from a subcontracted-supported PAMS process toward a Y-12 self-sustaining, in-house staff as soon as reasonably practical.

Table 11. Introduction and Adoption of the Physical Asset Management Solution Process

FY 2005	FY 2006	FY 2007	FY 2008–2010
RCM analyses and audits RCM training AMP revision Subcontracted RCM SMEs	Performed PAMS analyses and audits Senior management awareness sessions Began populating failure modes into SAP Started developing In-house RCM capabilities Performed facilitator training	Perform PAMS analyses and audits Institute PPS Ongoing development of in-house RCM capabilities Continue with facilitator training Initiate practitioner training	N^3 and PPS: Complete analyses and audits Establish self-sufficient RCM and PPS capabilities Plant-wide RCM training as required

PAMS Accomplishments In Fiscal Year (FY) 2006

The *Physical Asset Management Solution (PAMS)* manual was written; reviewed, issued and became effective on June 26 2006. The following PAMS based actions have been completed, implemented or performed:

- Completed 12 PAMS Analyses of critical equipment:
- Implemented the proactive maintenance recommendations resulting from the 8 PAMS analyses performed in FY 2005.
- Performed PAMS Analyses on Facilities, Infrastructure and Services (FI&S) Shop Equipment.

PAMS Plans

- Continue the process to institutionalize the PAMS process in the Complex.
- Perform the scheduled PAMS analyses.
- Add RCM Facilitators to FI&S Work Control Department, in line with need and funding.
- Continue the implementation activities of the Operational Performance and Reliability Improvement Team (OPRITe).

Operational Performance and Reliability Improvement Team

The Operational Performance and Reliability Improvement Team (OPRITe) is a multi-organizational group of BWXT Y-12 personnel dedicated to improving the Y-12 Plant understanding of physical asset management and integrated work control. This team will take the lead in the following areas:

- Conduct training workshops to facilitate a clear understanding of employee roles and responsibilities for PAMS.
- Support the production/facilities management team in the execution of their roles and responsibilities through a pilot phase to properly implement the procedural requirements.

These actions will lead to greater production throughput, improved efficiency of facility operations, and complete utilization of the work control process. Work integration and control will be enhanced through development of realistic and executable Plans of the Week and Plans of the Day for all Manufacturing Facilities.

The OPRITe will spend 3–4 weeks in each of the manufacturing facilities doing training and hands-on assistance with the intent of having each facility coming into compliance with the two procedures listed above. If there are continuing actions to be completed after the team's assist visit to a facility, a corrective action plan will be used to track incomplete issues. Also, a set of metrics will be used to trend and manage the continuing effort in each facility.

Integrated Work Management System (IWMS)

BWXT Y-12 performed an evaluation of the maintenance program to identify gaps in compliance, to track integration issues with site programs, and to modernize business practices that has improved the partnership between the PI&C, FI&S and Manufacturing divisions. From this evaluation, it was determined issues surrounding the incompletion of maintenance work appear to be consistent with issues associated with any other work performed on the site. A parallel study was also undertaken to determine the most appropriate Computerized Maintenance Management System (CMMS) for Y-12. The study recommended that the site migrate to the corporate SAP maintenance module for planning and scheduling maintenance activities and to use the SAP maintenance module for all other maintenance related activities such as the use of the MEL. This recommendation incorporates the maintenance system modernization project and the SAP migration into a single, integrated process for all work at Y-12, known as IWMS.

IWMS defines the processes and tools that manage service work in Y-12 facilities. It integrates Manufacturing, Engineering, Planning, Integration & Control, and other division programs into business processes that support the ultimate goal of maximizing equipment availability and improving the material condition of the complex. As the foundation for IWMS, Maintenance has a major role in ensuring safe and reliable operations of NNSA facilities. Facilities with excellent performance in safety and reliability have well-defined, effectively administered policies to govern maintenance activities. To carry out this role, a strong maintenance philosophy and culture must exist based on sound and established principles. Achievement of excellence in maintenance requires a team effort between Manufacturing, FI&S, PI&C and other supporting divisions, as well as a dedicated commitment to high standards.

IWMS is a 5- to 7-year initiative being undertaken to implement Y-12's vision of ensuring long-term stewardship of facilities and equipment (Table 12). The focus of this initiative is to initiate industry-best practices; integrate supporting processes; incorporate efficiency and cost effectiveness; improve Manufacturing's leadership role in maintaining nuclear facilities and equipment; and continue to maintain compliance with NNSA requirements. Incremental change to the current maintenance capabilities would not effectively support the future direction of Y-12, the significant investments in facilities and infrastructure, or the planned approach to modernize the facility management system.

Table 12. Five-Year Vision for Integrated Work Management System

	Completed	2006 Completed	2007	2008	2009	2010
Process Improvement	New work control manual 3 work management centers Integrated Maintenance schedules	Procedure flowdown Engineering, Quality Management, ES&H One schedule for work management centers	Project schedules Maintenance engineering Optimize preventative maintenance Work Management Center integration	Production schedules	Full Reliability-Centered Maintenance	
Master Equipment List Management	About half of equipment under configuration control Calibration/inspection data under control	Other half of site equipment Equipment networks	Reliability-Centered Maintenance data Engineering drawings	Technical basis documents attached to equipment	Equipment standardized and simplification	One-stop shopping for ALL work and MEL data and engineering technical basis/safety bases
ERP	Basic PM/QM functionality in unclassified SAP	PM/QM functionality in classified SAP	Scheduling in PS mode	Scheduling in PP module	Scheduling in PP module	

IWMS SAP Implementation

A phased implementation of the SAP portion of IWMS began in January 2005. The requirement to create a classified instance of IWMS in SAP brought about additional project scope that extended the project length into 2006 (the initial project plan called for project completion by January 2005). In order to make the SAP IWMS functionality available to users who did not operate in the production areas, SAP was implemented in three phases, which were completed in February 2006.

Ongoing Production Mode-The SAP Plant Maintenance/Quality Management (PM/QM) functionality that supports IWMS is now in a production mode and any enhancements to the production system are brought before the PM/QM SAP Operational Review Board as dictated by the overall SAP Change Management Document for functionality that has moved to a production environment. The Review Board is comprised of representatives from Maintenance Planning, Metrology, Work Control, ET&I, and the Fire Department.

Within the last few years, BWXT Y-12 has seen the beginning of what will become significant improvements in managing maintenance services for all equipment and systems located on Y-12 NSC. A change in the personnel culture and philosophy is occurring at Y-12 where "Maintenance will take care of it" beliefs are being replaced by true ownership and responsibility manifesting actions taken by the equipment owners. From this shift in philosophy, it appears the Maintenance organization will no longer be the sole entity responsible for maintenance "failures," particularly when it does not control the budget for performing maintenance. Efforts to fix equipment problems are no longer an initiative given only within the Maintenance organizations.

The Integrated Work Management System (IWMS) initiative is a sitewide effort underway to improve the management of all work on the site with an emphasis on integrated planning, scheduling and work prioritization. This initiative has made strides over the past year to improve the work control process, clarify roles and responsibilities and bring attention to the tools that exist to improve the overall efficiency of maintenance operations. With initial emphasis on maintenance work and supporting services, the IWMS is now focusing on implementation of SAP, Master Equipment List (MEL), and improvements in scheduling, resource loading, and feedback metrics. The IWMS initiative involves four major focus areas, all of which are interrelated:

1. improvements with the maintenance work flow processes,
2. improvements with Scheduled Work Integration,
3. implementation of RCM concepts in the PdM program, and
4. implementation and improvements of the SAP Plant Maintenance module.

In addition to basic maintenance activities, BWXT Y-12 continues to reduce the excess building inventory, upgrade facilities, and reduce DM backlog funded through FIRP. The IWMS initiative, along with these programs, is essential to meet NNSA's goals of reduction and stabilization of DM and is critical to sustaining viable infrastructure and facilities in support of Y-12's long-term mission.

Finally, maintenance costs will always be a significant part of almost any enterprise's budget, but with the initiatives and improvements being implemented at Y-12 today, maintenance costs will be in balance with the benefit received.

Additional information regarding maintenance activities is identified in greater detail in *FY 2007 Annual Maintenance Plan*, Y/IA-412, Rev. 2, September 2006. BWXT Y-12 continues to improve its facility management processes. The activities and actions described above ensure the institutionalization of facility management excellence at Y-12.

Maintenance as a Percentage of Replacement Plant Value

BWXT Y-12 has assessed its maintenance requirements as a percentage of replacement plant value for real property. This arithmetical calculation and analysis results in the need for an additional $27 million beginning in FY 2008. There are some anomalies when using the 2–4% industry standard for a site like Y-12 which has a significant amount of excess and underutilized assets, and is undergoing a major modernization program. It is possible to overstate maintenance requirements, while attempting to achieve modernization objectives. Given the expectation that real property maintenance requirements be funded from within already constrained site budgets, the site could unnecessarily attempt to prioritize overstated maintenance requirements at the expense other high site priorities. Whether it is $27 million or the $20 million first reported in FY 2005, there is indeed a maintenance funding shortfall. The shortfall more directly affects Y-12's ability to fully implement institutionalized maintenance programs such as preventive, predictive and reliability centered maintenance programs. To support Complex 2030, these programs need to be the "industry standard," as Y-12 NSC appears to be on a good path to reduce the overall DM and FCI of its mission critical facilities and infrastructure.

Funding Maintenance Requirements

Given an increasing number of requirements facing Y-12, the expectation to fund all maintenance requirements within the site's allocated FYNSP budget is not realistic. In addition to a maintenance requirement delta of $27 million, there are also a number of DSW, Campaigns and other RTBF unfunded needs that must be taken into consideration and prioritized. This prioritization has already taken place for the much reduced RTBF and FIRP FY 2007 budget and the projected FY 2008 budget. Without sufficient funding, Y-12 cannot support all of NNSA's mandates, including fully funding maintenance at the 2–4% of RPV level. The following alternatives, including revisiting other NWC Site or Program cuts, will need to be explored.

- **Increase Y-12's allocation of the RTBF FYNSP.** Given that Y-12 has the largest RTBF footprint to maintain while it is modernizing and reducing this same footprint, NNSA, Y-12, and the other NWC sites should reassess the overall RTBF, DSW, Campaigns, and other funding programs to better determine priorities within a fully integrated and interdependent NWC.
- **Extend the FIRP program to fund additional utility Line Items.** As described, the utility infrastructure requires an infusion of capital to reduce the large amount of DM and restore these assets to industry standards. Y-12 originally proposed five utility-related line item projects to recapitalize various utility systems. Only three of these remain due to FIRP funding constraints. A strong case can be made for extending the program to cover the massive utility infrastructure at Y-12 (and other sites).
- **Fund the Replacement-in-Kind (RIK) Program.** NNSA is proposing a RIK program, but has not secured the adequate funding for its implementation. RIK has been envisioned as the follow-on to FIRP to ensure that facilities and infrastructure do not deteriorate again. Although FIRP will now be extended through FY 2013, funding RIK prior to the end of FIRP should be pursued to augment the improvements needed to Y-12's utility infrastructure.

Y-12 continues to move from a corrective maintenance effort to a more institutionalized program and will continue to support NNSA in its facility and infrastructure goals. A maintenance shortfall does exist, and largely affects institutionalized maintenance programs. The deficit is likely in the range of $20 million to $27 million, when utilizing raw 2–4% calculations. Given the projected budget constraints on FIRP and RTBF in FY 2008, and possibly beyond, there appears to be little opportunity to address this delta from within current FYNSP allocations for Y-12.

C.1.6 Identification of Replacement-in-Kind Requirements

Replacement-in-kind (RIK) projects are major system replacements made up of building subsystems or site infrastructure components. RIK is envisioned as a post-FIRP initiative to support funding needed to ensure that facilities and infrastructure conditions do not deteriorate again.

For FY 2006 and beyond, an analysis of the CAIS information for replacements greater than 500K resulted in potential RIK project categories. BWXT Y-12 and NNSA-YSO worked together to define the final list of project categories as included in Attachment F-6. For each of these categories, the total CAIS replacement value was calculated and a project burden rate applied (consistent with TYSP Guidance). Given that CAIS primarily is a "snapshot in time" that identified replacements that should occur within the next 1 to 5 years, our basic approach was to develop a projection of similar RIK requirements for the remaining enduring mission critical and mission dependent, not critical facilities based on the CAIS data.

Funding RIK is critical to Y-12 utility infrastructure DM reduction and restoring these systems to a condition that sustains Y-12's mission capabilities. While envisioned as a post-FIRP funding program, achieving funding before FIRP ends will provide a smoother transition and better ensure that facility and infrastructure conditions remain at or near industry standards.

Appendix H, which is Attachment F-5 of the TYSP Guidance, provides the list of RIK projects for Y-12 NSC. At this juncture of the planning process, the list of Y-12's RIK requirements are based on credible Condition Assessment Information System (CAIS) data. Appendix H credibly portrays the magnitude of unfunded RIK requirements at reasonable planned fiscal year levels. As the probability of RIK funding becomes clearer, detailed project planning actions will be undertaken to prioritize projects based on risk to mission requirements and Complex 2030 implementation.

1.1.7 Utilities

Y-12 has numerous distribution systems ranging from industrial gases to classical water, sewer, storm drainage, and electrical systems. There are two substations, one steam plant, and several smaller industrial gas plants. In the late 1980s and early 1990s, Y-12 upgraded several utility systems with line projects under the Utility System Restoration and Facility Capability Assurance Program. These programs did not restore all of Y-12's distribution systems and utility plants, and given the life cycle of some systems, the previous upgrades are reaching the end of their useful life.

The current level of deferred maintenance associated with 13 of Y-12's utility systems is shown in Fig. 32. The total DM is approximately $219 million. The inability to reduce this DM will affect Y-12's objectives to meet NNSA Corporate goals for improving the overall condition of NNSA's facilities and infrastructure.

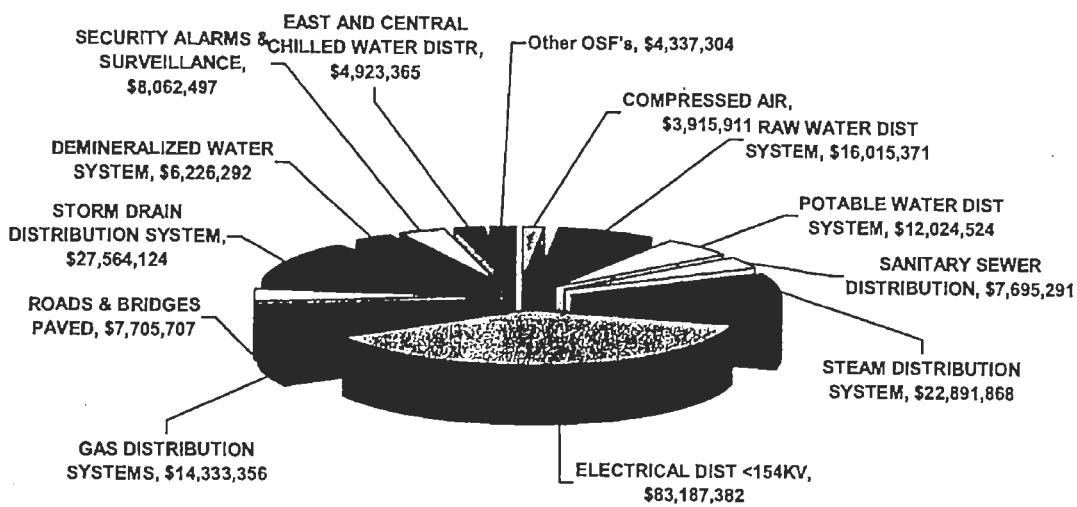

Fig. 32. Utility system deferred maintenance on the Y-12 NSC.

To support the early FIRP planning, Y-12 conducted a utility systems assessment to appraise, identify deficiencies, and provide recommended actions for future maintenance and recapitalization needs. FIRP funding has supported the reduction of utility system DM through funding the three Line Items listed below.

- Compressed Air Upgrade Project
- Steam Plant Life Extension
- Potable Water System Upgrades and Improvements

With the extension of FIRP to FY 2013, Y-12 would support NNSA consideration to add one or two utility line items that would address the highest priority needs. Based on analysis to date, this would appear to be related to electrical distribution and the storm water system.

As expressed throughout this TYSP, the Y-12 NSC is undergoing a major modernization, consolidation, and footprint reduction program. While there is a significant amount of utility DM reduction that must occur, the long-term configuration of some utility distribution systems will be impacted by Y-12's overall modernization plan. An Integrated Utility System Modernization Plan is needed. This plan would address the transition to a smaller Y-12 and the associated short-, mid-, and long-term investment needs necessary to ensure that Y-12's utility systems are appropriately sized, configured, and modernized to meet the needs of the Complex 2030 footprint. Efforts to begin this Integrated Utility System Modernization Plan will begin in FY 2007, with completion planned in FY 2008. The absence of this plan does not negate the need to address DM and/or recapitalization of the utility system within the next 5 years.

4.2 Security

Figure 33 shows the current security zoning for Y-12. BWXT Y-12 must provide effective protection for nuclear materials, classified information, employees, visitors, and government property. BWXT Y-12 employs a security strategy based on establishing concentric layers of increasing protective measures. Each layer is more restrictive than the preceding one, providing the most stringent protective measures for the most sensitive assets. Moving from outside the plant inward are site perimeter (229 Boundary), the Property Protection Areas, the Protected Area, and MAAs. Limited Areas and a single Exclusion Area have been established to protect classified matter. Implementation of this layered protection methodology continues within the MAAs, where additional physical and other access control barriers provide protection for the most sensitive assets.

Armed security police officers patrol all areas within Y-12 NSC. This security configuration protects property by controlling access to the site, protects information by controlling access to the Limited and Exclusion areas, and protects SNM through numerous, sophisticated access controls and physical barriers, including PIDAS, which delineates the Protected Area.

The Design Basis Threat Policy of 2005 has placed greater emphasis on each concentric protective layer to provide an increased detection and delay function, with a requirement for compliance with the Policy by the end of FY 2008. However, to avoid unnecessary expenditure of funds for temporary upgrades, the Secretary of Energy has authorized an extension in the Policy with compliance to occur by the end of FY 2011. This will allow Y-12 to consolidate material into the HEUMF instead of making substantial upgrades to protect the material long-term in current storage locations. Material consolidation offers the greatest avoidance of capital expenditures as (b)(2)High. This action alone is projected to avoid expenditure of over $150 million. The long-range plan for Y-12 is to consolidate all nuclear operations into two "design denial" facilities, the HEUMF and the UPF. To provide appropriate protection in the interim, Y-12 has adopted a concept of "layered engagement," where each layer provides detection and delay to allow interruption of malevolent acts. Improvements to the overall security of Y-12's facilities and infrastructure are described Sects. 2.2 and 5.

A significant portion of the Y-12 physical security infrastructure was designed and built during an era when expectations for security were less demanding than they are today. The facilities designed and constructed at that time did not include the kind of provisions needed today to help provide a robust level of security. Lacking these provisions, Y-12 has implemented a number of upgrades over the years to accommodate increasing security requirements. Historically, the security architecture for these upgrades emphasized only two primary themes: (1) detection using engineered systems and (2) intervention using the Protective Force.

Subsequent to the terrorist events of September 11, 2001, DOE/NNSA issued a revision to the DBT policy in May 2003 and indicated that compliance with the new guidance will be required after a defined implementation period. Subsequently, in April 2004, DOE/NNSA issued an additional policy, *Results of Design Basis Threat Annex Special Evaluation Team (U)*, which completely changed the protection requirements, placing great emphasis on implementing a "denial of access" philosophy. Additionally, DOE/NNSA provided an update to the DBT in October 2004 and November 2005. Based on an evaluation of the DBT policy requirements, Y-12 has determined that it is necessary and cost effective to adopt more robust security architecture. The revised security architecture will emphasize four primary themes:

1. consolidation of enriched uranium operations,
2. improved and expanded detection using engineered systems,
3. delay or denial using engineered systems, and
4. intervention using the Protective Force.

(b)(2)High

Fig. 33. Y-12 security zoning, determined by the security requirements of processes, materials, and information used and stored.

Prior to the release of the 2004 Policies, BWXT Y-12 proposed and implemented a series of steps to address the May 2003 DBT policy and by February 2004 was in compliance with the Policy:

1. BWXT Y-12 implemented a new Protective Force deployment strategy, with some immediate physical security modifications, to provide "triage" action necessary to address the 2003 Policy. These immediate actions were not intended to be long-term corrective measures.
2. BWXT Y-12 requested funding for near-term upgrades, selected to optimize confidence in the "triage" security measures. This funding was eventually provided in June 2004 through a congressional reprogramming effort.
3. Based on the 2003 Threat Policy, BWXT Y-12 requested a line item project to install a perimeter detection, delay, and engagement system to replace the existing PIDAS. Approval of CD-0 was received in January 2004. The proposed project would replace the existing PIDAS and incorporate additional delay capabilities in the PIDAS function. PIDAS would be constructed in phases based on need and the timing of other changes in the protected area. This project would eliminate the need to replace PIDAS for life cycle reasons.

However, the proposed new PIDAS would not be effective in addressing all the requirements contained in the 2004 policies or subsequent updates in the DBT. Therefore, the revised approach was developed with the most important aspect being consolidation of all enriched uranium operations into a new designed-denial facility, similar to the HEUMF. BWXT Y-12 modified its line-item plans to focus on construction of the UPF with a second security line-item to address life-cycle concerns with the existing PIDAS and provide necessary infrastructure upgrades to integrate the security systems for HEUMF, UPF, and balance of plant. Until UPF is operational, intermediate security upgrades are required. The scope of work to be executed with the funding previously requested for near-term upgrades was modified. Funding from the congressional reprogramming effort in FY 2004 and a congressional "plus up" in FY 2005 and FY 2006 provided a series of enhancements to improve detection, delay, and engagement capabilities. Additionally, plans call for expediting consolidation of material into the HEUMF when construction is completed in FY 2008. BWXT Y-12 gained approval from the Secretary of Energy to extend the compliance date for the 2004 Design Basis Threat Policy. This action will avoid costly upgrades that would only be utilized until the HEUMF is complete. As noted in Chapter 2, BWXT Y-12 was successful in relocating QE which generated a cost avoidance of over $150 million. To provide intermediate protective measures until the HEUMF and UPF are complete, Y-12 has already [redacted] relocated most QE, extended perimeter detection, and increased Protective Force capabilities. Plans continue to [redacted] and provide additional security upgrades to improve the delay and engagement capabilities.

Today, the Protected Area is approximately 150 acres and houses the majority of manufacturing and process operations (Fig. 34). The need for a Protected Area and resultant PIDAS is based on the requirements to protect enriched uranium operations and materials that today are decentralized within the Protected Area. The remaining non-HEU facilities in the Protected Area do not require the level of protection provided by a PIDAS, although some must be protected as a Limited Area. To support Complex 2030, Y-12 is consolidating all HEU operations into the HEUMF and UPF, which negates the need to upgrade and maintain the current 2.5-mile-long PIDAS in the future. A much smaller Protected Area, approximately 15 acres, with modern technology will provide effective perimeter detection at lower initial capital cost and overall life cycle cost. What is now the Protected Area perimeter will later become a Limited Area, resulting in much efficiency. Some additional efficiency may be achievable by consolidating the classified processes in a smaller, discrete Limited Area.

(b)(2)High

Fig. 34. Reduction in high-security area attributed to enriched uranium consolidation.

4.2.1 Security Infrastructure

There are 59 security-related facilities located on Y-12 NSC. Fifty-eight of these fall into the general category of guard portals/towers.

The primary security-related facility on Y-12 NSC is the guard headquarters, a facility constructed in the mid-1980s—by NNSA standards, a relatively new facility. Through FIRP and other limited funding, the DM in this facility is being addressed based on overall DM prioritization policy. Implementation of the DBT is causing capacity issues in the existing guard headquarters. To address this need and meet DBT guidance for the protection of enriched uranium, Y-12 is proposing to change the use of the existing Fire Station, (b)(2)High is located inside the PA and its reuse to support the increased number of guards being hired to meet the DBT would negate the need to construct a new facility. The (b)(2)High location is ideal and its functionality makes it very suitable for the PA guard force and their related vehicles. BWXT Y-12 is proposing an Emergency Command Center that would incorporate the fire station into the design and construction. An Alternative Financing approach that utilizes private-sector funding to construct and lease this facility is being evaluated to support implementation of the DBT by FY 2011, (b)(2)High

The need to address the hardware and software issues of aging security systems must also be addressed. A structured and fiscally supportable plan is essential to ensure these systems remain acceptable until the new UPF is constructed and operational. BWXT Y-12 identified upgrades and a replacement strategy for achieving this assurance in a CD-0 submission for the Security Improvements Project.

The projects in Table 20 (see Chapter 5), which is Attachment A-6a of the TYSP Guidance, will allow NNSA to integrate its corporate requirements for security infrastructure. This attachment identifies the Security Infrastructure (bricks and mortar) required to support the safeguards and security mission at Y-12. With the relaxation of the compliance date for implementing the DBT, some of the projects previously shown in earlier TYSP submittals have been deferred to a later implementation date and do not appear in this revision of the TYSP. Analysis continues to identify the most cost-effective means of addressing the security challenges and the scope of some projects will be modified to maintain a balanced security posture.

Security infrastructure located off Y-12 NSC includes the Central Training Facility and the Wackenhut Services headquarters. The later is a leased facility housing the DOE/NNSA prime contractor (Wackenhut) for security services on the Oak Ridge Reservation.

5

Facilities and Infrastructure Projects/Activities and Cost Profile

Included here is BWXT Y-12's forecast for the facility and infrastructure funding requirements necessary to implement Complex 2030 over the next 10-year period of this TYSP. While these forecasts are mandated to be FYNSP constrained, ***the next 5 years are extremely important to Complex 2030 at Y-12.*** Delaying critical projects like the UPF will have huge ramifications on future costs and enriched uranium capability. FIRP must continue to address recapitalization and DM reduction. While currently not in any approved budget scenario, the disposition of huge legacy footprint must ultimately be addressed.

5.1 Overview of Site Project Prioritization and Cost Profile

Project prioritization is an integral part of Y-12's baseline planning process, as shown in Fig. 35. Program managers are the primary sources for customer communications and coordination of priorities. BWXT Y-12 has defined the organization to be program management centered, with all responsibility and accountability for cost performance, schedule performance, work scope definition, and customer relations resting with the program managers for DSW, RTBF, Campaigns, Security, and Complementary Work.

Planning and Integration supports the program manager in the facilitation of this effort. Prioritization is critical to the success of the system. Justification and documentation for the customer's understanding are crucial to making the correct decision related to those projects that will be executed and the large number of important projects that require delay due to funding constraints. The Capital Asset Management Process (CAMP) method, along with supplemental FIRP prioritization guidance provided by NNSA, is used to prioritize projects. This risk-based process, established in accordance with NNSA policy, uses two elements of risk—consequence and probability—to express a severity rating score.

The process itself does not establish priorities; rather, it expresses the severity of problems in terms of risk categories. Projects are created to address problems. Final project priority is ultimately established by interactions between BWXT Y-12 and NNSA program managers and senior management using CAMP as the basis for acceptance or change to priority based on other quantitative and qualitative factors.

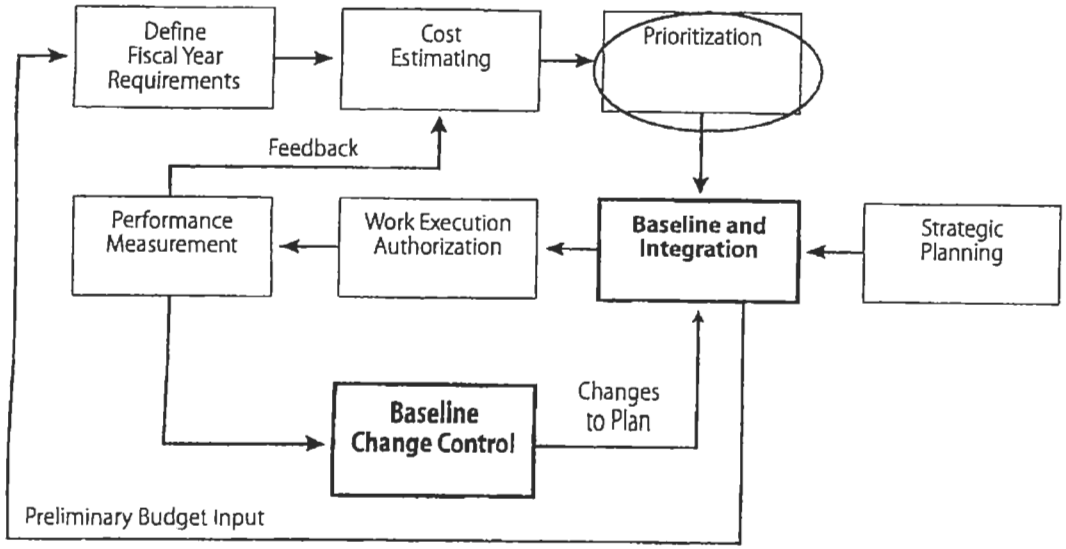

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Fig. 35. Project prioritization, an integral part of the BWXT Y-12 baseline planning process.

5.2 Significant Project Deletions and Additions

Significant project deletions and additions from the March 2006 TYSP include the following:

- Y-12 continues to provide information related to needed line items funding levels above the approved ICPP (see Table 14).
- UPF project information in Table 14 reflects the CD-1 submission to NNSA in March 2006. While this information needs to be updated, there is no firm basis for establishing a new baseline. It is recognized that current funding levels in FY 2007, FY 2008, and the current ICPP will not support completion of UPF on the current CD-1 schedule. This information will be updated following CD-1 approval and establishment of an approved project funding profile.
- The ICPP replaced the DU/Binary Consolidation Line Item with the Consolidated Manufacturing Complex. The funding profile shown in the ICPP (see Table 13) does not match the requirements that BWXT Y-12 envisions necessary to support the project (see Table 14).
- Attachment A-4 of the TYSP Guidance (see Table 17) has been changed to incorporate the extension of FIRP through FY 2013. Attachment A-4 also reflects the assumption that FIRP demolition funding will end in FY 2009.

5.3 Facilities and Infrastructure Cost Projection Spreadsheets

The attachments that follow include:

- **Attachment A-1, Line Item Cost Projection Spreadsheet** (Table 13)—Cost projections based on the November 7, 2006, version of the ICPP provided by NNSA-HQ. The ICCP does not accurately reflect the needs of several projects.
- **Attachment A-1A, BWXT Y-12 Input to Future ICPP Planning** (Table 14)—This attachment provides the BWXT Y-12 recommendations for funding the projects shown in the ICCP (A-1) and thereby implementing Complex 2030 projects. This attachment is provided to support the NNSA PPBE and ICPP process, enabling NNSA to consider trade-offs in developing future ICPPs.
- **Attachment A-2, Proposed Line Item Cost Projection Spreadsheet** (Table 15)—BWXT Y-12 cost projections for additional line items to support the overall long-range modernization of the facilities and infrastructure necessary to meet NNSA missions for Y-12. Several of these projects will be considered for Alternative Financing.
- **Attachment A-3, RTBF/Operations of Facilities Cost Projection Spreadsheet** (Table 16)—Cost projections for discrete facility projects in RTBF buildings provided by the RTBF Facilities Program Manager.
- **Attachment A-4a, Facilities and Infrastructure Recapitalization Program Cost Projection Spreadsheet** (Table 17)—Cost projections provided by the FIRP Program Manager, consistent with FYNSP and in recognition of FIRP completion in FY 2013.
- **Attachment A-4b, Other Facilities and Infrastructure Recapitalization Program Projects** (Table 18)—An unconstrained list of projects selected from the approved DM lists.
- **Attachment A-5, Other Facilities and Infrastructure Cost Projection Spreadsheet** (Table 19)—Cost projections for other facility or infrastructure projects at Y-12.
- **Attachment A-6a, Currently Funded Security Infrastructure** (Table 20)—Cost projections for funded security infrastructure projects at Y-12.
- **Attachment A-6b, Unfunded Security Infrastructure** (Table 21)—Cost projections for unfunded security infrastructure projects at Y-12.

Table 13
Attachment A-1
Facilities and Infrastructure Cost Projection Spreadsheet
Line Item Projects for Y-12 National Security Complex ($000s)

Priority	Project Name	Project Number	Deferred Maintenance Identifier(s)	Mission Dependency	Mission Dependency Program	Deferred Maintenance Reduction	GSF Added or Eliminated	Funding Type	Total	Prior Years Funding	FY 2006	FY 2007	FY 2008 FYNSP	FY 2009 FYNSP	FY 2010 FYNSP	FY 2011 FYNSP	FY 2012 FYNSP	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
A. Readiness in Technical Base and Facilities (RTBF) Line Items																						
1	HEU Materials Facility	01-D-124	NA	MC	RTBF	0	110,000	OPC	51,551	25,051	6,497	11,432	8,571									
								PE&D														
								LI	378,487	199,684	80,536	21,267	77,000									
								Total (TPC)	430,038	224,735	87,033	32,699	85,571									
2	Be Capability	05-D-402 02-D-103.8	NA	MC	DSW	0	0	OPC	7,445	2,280	941	2,154	2,070									
								PE&D	7,700	7,700												
								LI	16,305	3,598	7,623	5,084										
								Total (TPC)	31,450	13,578	8,564	7,238	2,070									
3	Uranium Processing Facility	10-D-XXX 06-D-140	NA	MC	DSW	28,000	388,000	OPC	131,000	12,000	7,000	8,000	11,000	11,000	11,000	21,000	25,000	25,000				
								PE&D	160,523		5,000	40,000	19,362	96,161								
								LI	850,124						100,000	146,277	203,847	100,000	100,000			
								Total (TPC)	941,847	12,000	12,000	48,000	30,362	107,161	111,000	167,277	228,847	125,000	100,000			
4	Consolidated Manufacturing Complex (previously DU/Binary)	11-D-140	NA	MC	DSW		100,000	OPC														
								PE&D	32,200							10,000	22,200					
								LI	63,000									18,000	35,000	10,000		
								Total (TPC)	95,200							10,000	22,200	18,000	35,000	10,000		
5	Complex Command Center	11-D-XXX 10-D-140	NA	MD	RTBF	250	300,000	OPC	7,300					1,800	1,500	1,500	1,000	1,500				
								PE&D	12,080						4,000	4,000	4,080					
								LI	41,200							10,000	21,200	10,000				
								Total (TPC)	60,580					1,800	5,500	15,500	26,280	11,500				
B. Facilities and Infrastructure Recapitalization Program (FIRP) Line Items																						
1	Compressed Air Upgrade Project	05-D-601 04-D-203.2	NA	MD	RTBF	12,630	0	OPC	3,240	1,280	1,106	854										
								PE&D	3,970	3,870												
								LI	14,711	4,385	9,644	702										
								Total (TPC)	21,921	9,615	10,750	1,556										
2	Steam Plant Life Extension	06-D-603 05-D180.2	NA	MD	RTBF	21,250	0	OPC	5,358	2,300	365	728	1,045	600	320							
								PE&D	11,268	2,976	7,644	648										
								LI	44,831		722	17,811	16,020	11,278								
								Total (TPC)	61,457	5,276	8,731	19,187	16,065	11,878	320							

Note: These A-1 funding profiles were taken from the November 7, 2006, ICPP as directed by TYSP Guidance.

Table 13 (cont.)
Attachment A-1 (cont.)
Facilities and Infrastructure Cost Projection Spreadsheet
Line Item Projects for Y-12 National Security Complex ($000s)

Priority	Project Name	Project Number	Deferred Maintenance Identifier(s)	Mission Dependency	Mission Dependency Program	Deferred Maintenance Reduction	GSF Added or Eliminated	Funding Type	Total	Prior Years Funding	FY 2006	FY 2007	FY 2008 FYNSP	FY 2009 FYNSP	FY 2010 FYNSP	FY 2011 FYNSP	FY 2012 FYNSP	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
3	Potable Water System Upgrades and Improvements	08-D-802 06-D160.4	NA	MD	RTBF	25,000	1600	OPC	5,625	2,000	1,525	400	400	600	700							
								PE&D	8,787		4,087	2,700										
								LI	50,166				22,600	27,866								
								Total (TPC)	62,558	2,000	5,612	3,100	22,000	28,266	700							
C. Safeguards & Security (S&S) Line Items																						
1	Security Improvement Project	08-D-XXX 06-D-170.2	NA	MD	RTBF	0	0	OPC	16,700	3,000	1,700	2,000	2,000	8,000								
								PE&D	30,000	6,866	7,496		15,638									
								LI	43,866					38,866	7,000							
								Total (TPC)	99,566	9,866	9,196	2,000	17,638	44,866	7,000							
D. Other Defense Programs Line Items (for example, Campaigns;Directed Stockpile Work (DSW))																						
								OPC														
								PE&D														
								LI														
								Total (TPC)														
E. Nuclear Nonproliferation (NN) Line Items																						
								OPC														
								PE&D														
								LI														
								Total (TPC)														
Total Costs for All NNSA Site Line Items									4,705,417	277,070	141,866	113,780	174,606	193,971	124,520	192,777	277,327	154,500	135,000	10,000		
F. Non-NNSA Line Items Program A																						
								OPC														
								PE&D														
								LI														
								Total (TPC)														
Total Costs for Program A																						
G. Non-NNSA Line Items Program B																						
								OPC														
								PE&D														
								LI														
								Total (TPC)														
Total Costs for Program B																						
Total Site Costs									4,705,417	277,070	141,866	113,780	174,606	193,971	124,520	192,777	277,327	154,500	135,000	10,000		

Note: These A-1 funding profiles were taken from the November 7, 2006, ICPP as directed by TYSP Guidance.

Table 14
Attachment A-1a
Facilities and Infrastructure Cost Projection Spreadsheet
BWXT Y-12 Proposed Revisions to Line Item Projects for Y-12 National Security Complex ($000s)

Priority	Project Name	Project Number	Deferred Maintenance Identifier(s)	Mission Dependency	Mission Dependency Program	Deferred Maintenance Reduction	GSF Added or Eliminated	Funding Type	Total	Prior Years Funding	FY 2006	FY 2007	FY 2008 FYNSP	FY 2009 FYNSP	FY 2010 FYNSP	FY 2011 FYNSP	FY 2012 FYNSP	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
A. Readiness in Technical Base and Facilities (RTBF) Line Items																						
1	HEU Materials Facility (see Note 1)	01-D-124	NA	MC	RTBF	0	110,000	OPC	86,880	25,067	2,928	9,059	23,767	28,512	9,347							
								PE&D														
								LI	467,402	199,693	80,537	91,267	80,354	16,661								
								Total (TPC)	564,082	224,760	83,465	100,326	104,121	42,073	9,347							
2	Be Capability (see Note 1)	05-D-402 02-D-103.8	NA	MC	DSW	0	0	OPC	7,512	2,280	604	579	1,097	1,857	1,205							
								PE&D	5,278	7,700		(2,421)										
								LI	23,730	3,598	7,823	7,505		5,004								
								Total (TPC)	36,521	13,578	8,127	5,663	1,097	6,861	1,205							
3	Uranium Processing Facility (see Note 2)	10-D-XXX 06-D-140	NA	MC	DSW	28,000	388,000	OPC	233,000	12,000	8,000	12,000	12,000	19,000	37,000	48,000	50,000	32,000	7,000			
								PE&D	247,000		5,000	65,000	92,000	73,000	12,000							
								LI	1,020,000				42,000	77,000	277,000	338,000	185,000	96,000	5,000			
								Total (TPC)	1,500,000	12,008	11,000	77,000	146,000	169,000	326,000	384,000	235,000	128,000	12,000			
4	Consolidated Manufacturing Complex (previously DU/Binary)	11-D-140	NA	MC	DSW		100,000	OPC	75,000						2,000	8,000	10,000	12,000	12,000	12,000	12,000	7,000
								PE&D	60,000								25,000	35,000				
								LI	400,000									50,000	96,000	95,000	85,000	85,000
								Total (TPC)	535,000						2,000	8,000	35,000	97,000	107,000	97,000	97,000	92,000
5	Complex Command Center	11-D-XXX 10-D-140	NA	MD	RTBF	250	300,000	OPC	7,300					1,800	1,500	1,500	1,000	1,500				
								PE&D	8,000						4,000	4,000						
								LI	35,000							10,000	15,000	10,000				
								Total (TPC)	50,300					1,800	5,500	15,500	16,000	11,500				
B. Facilities and Infrastructure Recapitalization Program (FIRP) Line Items																						
1	Compressed Air Upgrade Project	05-D-801 04-D-203.2	NA	MD	RTBF	12,830	0	OPC	3,240	1,280	1,106	854										
								PE&D	3,970	3,970												
								LI	14,711	4,365	9,644	702										
								Total (TPC)	21,921	9,615	10,750	1,556										
2	Steam Plant Life Extension (see Note 1)	06-D-803 05-D160.2	NA	MD	RTBF	21,250	15,000	OPC	5,558	2,300	365	728	1,045	900	320							
								PE&D	11,268	2,976	7,644	648										
								LI	44,931		722	17,811	16,020	11,278								
								Total (TPC)	61,657	5,276	8,731	19,187	18,065	12,078	320							

Notes:

1. Non-project expense funding has been incorporated into the OPC for the HEU Materials Facility Project (14,965), Be Capability Project (400), Steam Plant Life Extension (200), Potable Water System Upgrades & Improvements (50) and the Security Improvement Project (400), to indicate the Total Project Costs for these line items.
2. Uranium Processing Facility project information in this TYSP reflects the CD-1 submission to NNSA in March 2006. While this information needs to be updated, there is no firm basis for establishing a new baseline. It is recognized that current funding levels in FY 2007, FY 2008, and the current ICPP will not support completion of UPF on the current CD-1 schedule. This information will be updated following CD-1 approval and establishment of an approved project funding profile.

Table 14 (cont.)
Attachment A-1a (cont.)
Facilities and Infrastructure Cost Projection Spreadsheet
BWXT Y-12 Proposed Revisions to Line Item Projects for Y-12 National Security Complex ($000s)

Priority	Project Name	Project Number	Deferred Maintenance Identifier(s)	Mission Dependency	Mission Dependency Program	Deferred Maintenance Reduction	GSF Added or Eliminated	Funding Type	Total	Prior Years Funding	FY 2006	FY 2007	FY 2008 FYNSP	FY 2009 FYNSP	FY 2010 FYNSP	FY 2011 FYNSP	FY 2012 FYNSP	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
3	Potable Water System Upgrades and Improvements (see Note 1)	08-D-602 06-D160.4	NA	MD	RTBF	25,000	1,600	OPC	6,676	2,000	1,525	400	400	600	750							
								PE&D	6,767		4,067	2,700										
								LI	50,166				22,500	27,666								
								Total (TPC)	62,609	2,000	5,592	3,100	22,900	28,266	780							
C. Safeguards & Security (S&S) Line Items																						
1	Security Improvement Project (see Note 1)	09-D-XXX 05-D-170.2	NA	MD	RTBF	0	0	OPC	17,113	3,000	1,700	918	980	750	2,692	3,380	3,524	279				
								PE&D	10,103			1,496	8,607									
								LI	50,784					36,966	12,610	1,409						
								Total (TPC)	78,000	3,000	1,700	2,414	9,587	37,616	15,082	4,789	3,524	279				
D. Other Defense Programs Line Items (for example, Campaigns/Directed Stockpile Work (DSW))																						
								OPC														
								PE&D														
								LI														
								Total (TPC)														
E. Nuclear Nonproliferation (NN) Line Items																						
								OPC														
								PE&D														
								LI														
								Total (TPC)														
Total Costs for All NNSA Site Line Items									2,910,089	270,219	129,385	209,246	299,760	297,694	300,214	412,288	289,524	236,779	119,000	97,000	97,000	92,000
								OPC														
								PE&D														
								LI														
								Total (TPC)														
Total Costs for Program A																						
G. Non-NNSA Line Items Program B																						
								OPC														
								PE&D														
								LI														
								Total (TPC)														
Total Costs for Program B																						
Total Site Costs									2,910,089	270,219	129,385	209,246	299,760	297,694	300,214	412,288	289,524	236,779	119,000	97,000	97,000	92,000

Notes:

1. Non-project expense funding has been incorporated into the OPC for the HEU Materials Facility Project (14,985), Be Capability Project (400), Steam Plant Life Extension (200), Potable Water System Upgrades & Improvements (50) and the Security Improvement Project (400), to indicate the Total Project Costs for these line items.
2. Uranium Processing Facility project information in this TYSP reflects the CD-1 submission to NNSA in March 2006. While this information needs to be updated, there is no firm basis for establishing a new baseline. It is recognized that current funding levels in FY 2007, FY 2008, and the current ICPP will not support completion of UPF on the current CD-1 schedule. This information will be updated following CD-1 approval and establishment of an approved project funding profile.

Table 15
Attachment A-2
Facilities and Infrastructure Cost Projection Spreadsheet
Proposed Line Item Projects for the Y-12 National Security Complex ($000s)

Priority	Project Name	Project Number	Deferred Maintenance Identifier(s)	Mission Dependency	Mission Dependency Program	Deferred Maintenance Reduction	GSF Added or Eliminated	Funding Type	Total	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
A. Readiness in Technical Base and Facilities (RTBF) Line Items																					
1	New Fire Station	10-P-001	NA	NMD	RTBF		25,000	OPC	3,000				900	600	500	300	900				
								PE&D	3,000						2,000	1,000					
								LI	8,000							5,000	3,000				
								Total (TPC)	14,000				900	600	2,500	6,300	3,900				
2	Plant Laboratory/ Development Upgrades	10-P-002	NA	NMD	RTBF/SCI	14,200	100,000	OPC	22,000					3,500	4,500	4,000	3,000	3,000	4,000		
								PE&D	31,000						7,000	14,000	10,000				
								LI	110,000							15,000	30,000	45,000	20,000		
								Total (TPC)	163,000					3,500	11,500	33,000	43,000	48,000	24,000		
3	Utility System Modernization	10-P-003	NA	NMD	RTBF	100,000	0	OPC	8,000					1,500	1,500	1,000	1,000	1,000	1,000	1,000	
								PE&D	11,000						4,000	4,000	3,000				
								LI	71,000								10,000	30,000	25,000	6,000	
								Total (TPC)	90,000					1,500	5,500	5,000	14,000	31,000	26,000	7,000	
4	Materials Handling / Maintenance Facilities Modernization	10-P-004	NA	NMD	RTBF	4,200	100,000	OPC	8,000					2,000	2,000	1,500	1,500	1,000			
								PE&D	10,000						6,000	4,000					
								LI	47,000							15,000	25,000	7,000			
								Total (TPC)	65,000					2,000	8,000	20,500	26,500	8,000			
B. Facilities and Infrastructure Recapitalization Program (FIRP) Line Items																					
NA	NA							OPC													
								PE&D													
								LI													
								Total (TPC)													
C. Safeguards & Security (S&S) Line Items																					
1	PIDAS Reduction Project (see Note)	10-P-005	NA	NMD	RTBF	300,000	0	OPC	44,662				2,000	2,300	3,912	4,087	4,179	4,284	4,395	9,140	10,365
								PE&D	50,781						14,409	19,193	17,179				
								LI	237,666									102,931	45,074	49,900	39,761
								Total (TPC)	333,109				2,000	2,300	18,321	23,280	21,358	107,215	49,469	59,040	50,126

Note: Non-project expense funding has been incorporated into the OPC for the PIDAS Reduction Project ($1,000K in FY 2017) to indicate the Total Project Costs for these line items.

Table 15 (cont.)
Attachment A-2 (cont.)
Facilities and Infrastructure Cost Projection Spreadsheet
Proposed Line Item Projects for the Y-12 National Security Complex ($000s)

Priority	Project Name	Project Number	Deferred Maintenance Identifier(s)	Mission Dependency	Mission Dependency Program	Deferred Maintenance Reduction	GSF Added or Eliminated	Funding Type	Total	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
D. Other Defense Programs Line Items (for example, Campaigns/Directed Stockpile Work (DSW))																					
NA	NA							OPC													
								PE&D													
								LI													
								Total (TPC)													
E. Nuclear Nonproliferation (NN) Line Items																					
NA	NA							OPC													
								PE&D													
								LI													
								Total (TPC)													
Total Costs for All NNSA Site Line Items									665,109				2,800	9,900	45,821	88,080	108,658	194,215	89,469	66,040	50,126
F. Non-NNSA Line Items Program A																					
NA	NA							OPC													
								PE&D													
								LI													
								Total (TPC)													
Total Costs for Program A																					
G. Non-NNSA Line Items Program B																					
NA	NA							OPC													
								PE&D													
								LI													
								Total (TPC)	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Costs for Program B																					
Total Site Costs									665,109				2,800	9,900	45,821	88,080	108,658	194,215	89,469	66,040	50,126

Table 16
Attachment A-3
NNSA Facilities and Infrastructure Cost Projection Spreadsheet
RTBF/Operations of Facilities for the Y-12 National Security Complex ($000s)

Priority	Project Name	Project Number	Mission Dependency	Mission Dependency Program	Deferred Maintenance Reduction	GSF Added or Eliminated	Funding Type	Total	Prior Years' Funding	FY 2006	FY 2007	FY 2008 FYNSP	FY 2009 FYNSP	FY 2010 FYNSP	FY 2011 FYNSP	FY 2012 FYNSP	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
1	Meteorological Tower	P88Y2868	MDNC	RTBF			GPP	800		800		Based on FYNSP projections for the Operations of Facilities budgets from FY 2008 through FY 2012, there are no additional projects planned after FY 2007 at this time. Emergent issues will be addressed as required.									
2	Seismic Upgrades in 9212	P88Y2864	MC	RTBF			GPP	600		600											
3	K1650 Air Compressor	P88Y2870	MDNC	RTBF			CE	200		200											
4	Kathabar Refurbishment	PA05Y031	MC	DSW			E	600	300	300											
5	Packing & Shipping Improvement	P88Y2867 FC060008	MDNC	DSW			GPP/E	1,182		1,182											
6	9204-2 Draft Curtain	FC070008	MC	DSW			E	400			400										
7	NMC&A Upgrades	TBD	MC	RTBF			GPP	712			712										
8	9737 Dust Collection System	P88Y2848	MDNC	RTBF			GPE	322			322										
9	9737 Carpenter Shed	P88Y2854	MDNC	RTBF			GPP	72			72										
10	Telecom Networking Equipment - Jack Case Center	P88Y2949	MDNC	RTBF			GPE	1,960			1,960										
11	Telecom Networking Equipment - New Hope Center	P88Y2950	MDNC	RTBF			GPE	740			740										
	TOTAL RTBF/Operations of Facilities (Facilities & Infrastructure reported under this category)							7,588	300	3,082	4,206										

Table 17
Attachment A-4a
NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Facilities and Infrastructure Recapitalization Program (FIRP) for the Y-12 National Security Complex ($000s)

(b)(2)High

Y/MOD-012, Rev. 8
March 2007

Table 17 (cont.)
Attachment A-4a (cont.)
NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Facilities and Infrastructure Recapitalization Program (FIRP) for the Y-12 National Security Complex ($000s)

FIRRS Priority	Project Name	FIRRS Score	Project Number	Deferred Maintenance Identifier	Mission Dependency	Mission Dependency Program	FY03 Baseline Deferred Maintenance Reduction	GSF Added or Eliminated	Funding Type	Total	Prior Years' Funding	FY 2006	FY 2007	FY 2008 FYNSP	FY 2009 FYNSP	FY 2010 FYNSP	FY 2011 FYNSP	FY 2012 FYNSP	FY 2013 FYNSP
5	FY10 COE/SBI DM Reduction	65	Multiple	Multiple	MDNC	RTBF	2,376	0	EXP	9,500						9,500			
7	ELZA II Switchyard Refurbishment	65	Y12-DM-10-72	Y12-DM-10-72	MDNC	RTBF	1,500	0	EXP	6,000						6,000			
8	FY10 Utility Distr./Infrastructure DM	65	Multiple	Multiple	MDNC	RTBF	2,250	0	EXP	9,000						9,000			
9	161 KV Line Refurbishment	65	Y12-DM-10-68	Y12-DM-10-68	MDNC	RTBF	1,000	0	EXP	4,000						4,000			
10	FY10 Roofing Replacements	55	Multiple	Multiple	MDNC	RTBF	2,395	0	EXP	9,580						9,580			
N/A	Project Planning for FY11 Recap Projects	N/A	Multiple	N/A	N/A		-	0	EXP	9,000						9,000			
							21,395			94,580						94,580			
1	FY11 HVAC DM Reduction	65	Multiple	Multiple	MC	RTBF	2,875	0	EXP	11,500							11,500		
2	FY11 Electrical DM Reduction	65	Multiple	Multiple	MC	RTBF	2,875	0	EXP	11,500							11,500		
3	FY11 Structural DM Reduction	65	Multiple	Multiple	MC	RTBF	2,875	0	EXP	11,500							11,500		
4	FY11 Mechanical DM Reduction	65	Multiple	Multiple	MDNC	RTBF	2,875	0	EXP	11,500							11,500		
5	FY11 Utility DM Reduction	65	Multiple	Multiple	MDNC	RTBF	2,875	0	EXP	11,500							11,500		
6	FY11 COE/SBI DM Reduction	65	Multiple	Multiple	MDNC	RTBF	2,875	0	EXP	11,500							11,500		
7	FY11 Utility Distr./Infrastructure DM	65	Multiple	Multiple	MDNC	RTBF	2,750	0	EXP	11,000							11,000		
8	FY11 Roofing Replacements	55	Multiple	Multiple	MDNC	RTBF	3,400	0	EXP	13,600							13,600		
N/A	Project Planning for FY12 Recap Projects	N/A	Multiple	N/A	N/A	RTBF	-	0	EXP	10,000							10,000		
							23,400			103,600							103,600		
1	FY12 HVAC DM Reduction	65	Multiple	Multiple	MC	RTBF	2,850	0	EXP	12,750								12,750	
2	FY12 Electrical DM Reduction	65	Multiple	Multiple	MC	RTBF	2,850	0	EXP	12,750								12,750	
3	FY12 Structural DM Reduction	65	Multiple	Multiple	MC	RTBF	2,850	0	EXP	12,750								12,750	
4	FY12 Mechanical DM Reduction	65	Multiple	Multiple	MDNC	RTBF	2,850	0	EXP	12,750								12,750	
5	FY12 Utility DM Reduction	65	Multiple	Multiple	MDNC	RTBF	2,850	0	EXP	12,750								12,750	
6	FY12 COE/SBI DM Reduction	65	Multiple	Multiple	MDNC	RTBF	2,850	0	EXP	12,750								12,750	
7	FY12 Utility Distr./Infrastructure DM	65	Multiple	Multiple	MDNC	RTBF	2,850	0	EXP	12,750								12,750	
8	FY12 Roofing Replacements	55	Multiple	Multiple	MDNC	RTBF	3,348	0	EXP	12,750								12,750	
N/A	FY12 Program Support	N/A	Multiple	N/A	N/A		-	0	EXP	3,100								3,100	
							23,298			105,100								105,100	
	TOTAL (FIRP)									460,905		22,059	47,618	40,469	37,278	94,580	103,600	105,100	

Table 18
Attachment A-4b
NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Other Facilities and Infrastructure Recapitalization Program (FIRP) Projects for Y-12 National Security Complex ($000s)

(b)(2)High

Table 19
Attachment A-5
Other Facilities and Infrastructure Cost Projection Spreadsheet
for the Y-12 National Security Complex ($000s)

(b)(2)High

Table 20
Attachment A-6a — FY 2007–2009
NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Currently Funded Security Infrastructure Projects for Y-12 National Security Complex ($000s)

(b)(2)High

Table 21
Attachment A-6b — FY 2008 and FY 2009 Unfunded
NNSA Facilities and Infrastructure Cost Projection Spreadsheet
Security Infrastructure Projects for Y-12 National Security Complex ($000s)

(b)(2)High

Appendix

A

Attachment B, Asset Utilization Index by FRPC Categories

(FIMS 093)

U. S. Department of Energy
Facilities Information Management System
Asset Utilization Index by FRPC Categories

Program Office: NNSA

Site: Y-12 Site Office

Site Wide AUI: 88.59% **

Measures	AUI	FRPC Guidelines	OECM Guidelines	Operating Gross Sqft*	Operating No of Bldgs*
Office	98.06%	70 - 95%	95%	861,354	33
Laboratory	88.72%	60 - 85%	90%	354,600	7
Warehouse	93.34%	50 - 85%	89%	452,064	53
Medical	100.00%	70 - 95%	90%	27,475	1
All Other Categories	85.33%	N/A	N/A	3,513,206	239
			Y-12 Site Office Site Totals*	5,208,699	333
			NNSA Program Totals*	5,208,699	333

* These numbers do not reflect the total gross square footage and number of buildings. They represent operating buildings only.

** Site Wide AUI includes all DOE Owned Building assets

Appendix

B

Attachment E-1, Facility Disposition Plan for Y-12 NSC

Attachment E-1

Facility Disposition Plan for the Y-12 National Security Complex

Funding Source	Facility Identification Number (FIMS)	Facility Name	Mission Dependency Program	Priority Score	Priority Rank	Gross Square Footage (gsf)	FIMS Excess Indicator	Excess Year	Planned Disposition Year	TEC to Disposition ($000s)	FY 2003 (baseline) Deferred Maintenance Reduction (for FIRP Demolition Only) ($000s)	Yearly S&M Costs ($000s)	Candidate for Transfer	Contaminated (Y or N)	Notes
FIRP	(b)(2)High	Storage Warehouse	RTBF	Completed	Completed	14,574	None	2002	2002	NA	$0	NA	NA	NA	(b)(2)High
FIRP		Laboratory	SCI	Completed	Completed	3,443	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Office	RTBF	Completed	Completed	27,000	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Storage	SC	Completed	Completed	5,500	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Storage	RTBF	Completed	Completed	3,000	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Storage	RTBF	Completed	Completed	3,000	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Other Industrial Facilities	SC	Completed	Completed	1,350	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Utility Building	RTBF	Completed	Completed	400	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Utility Building	RTBF	Completed	Completed	400	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Utility Building	RTBF	Completed	Completed	400	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Utility Building	RTBF	Completed	Completed	400	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Pumphouse	RTBF	Completed	Completed	1,000	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Warehouse	DSW	Completed	Completed	43,000	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Warehouse	DSW	Completed	Completed	61,860	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Warehouse	DSW	Completed	Completed	2,400	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Maintenance	RTBF	Completed	Completed	10,700	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Utilities Offices	RTBF	Completed	Completed	11,025	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Change House	RTBF	Completed	Completed	15,900	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Laundry	RTBF	Completed	Completed	13,600	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Office	RTBF	Completed	Completed	11,450	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Shop	RTBF	Completed	Completed	15,000	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Guard Post	RTBF	Completed	Completed	400	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Guard Post 31	RTBF	Completed	Completed	38	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Trailer - Office	RTBF	Completed	Completed	2,404	None	2002	2002	NA	$0	NA	NA	NA	
FIRP		Trailer - Office - East End Trailer Park	RTBF	Completed	Completed	2,160	None	2002	2002	NA	$0	NA	NA	NA	
						250,404									

(b)(2)High

Notes:

1. Two Other Structures and Facilities (OSFs) are not shown in FY 2007 but will be included in the Y-12 Project Data Sheets (PDSs) and Y-12 Prioritized Project Lists (PPLs).
2. TYCSP Guidance stated that OSFs should not be included in Attachment E-1.
3. Based on current master plans at this juncture, Y-12 does not propose any facility demolitions in 2016 or 2017.

Attachment E-1 (cont.)

Facility Disposition Plan for the Y-12 National Security Complex

Funding Source	Facility Identification Number (FIMS)	Facility Name	Mission Dependency Program	Priority Score	Priority Rank	Gross Square Footage (gsf)	FIMS Excess Indicator	Excess Year	Planned Disposition Year	TEC to Disposition ($000s)	FY 2003 (baseline) Deferred Maintenance Reduction (for FIRP Demolition Only) ($000s)	Yearly S&M Costs ($000s)	Candidate for Transfer	Contaminated (Y or N)	Notes
FIRP	(b)(2)High	Stores	RTBF	Completed	Completed	4,860	None	2003	2003	NA	$0	NA	NA	NA	(b)(2)High
FIRP		Pump House	RTBF	Completed	Completed	800	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Pump House	RTBF	Completed	Completed	1,900	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Utilities	RTBF	Completed	Completed	72	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		CT Controls	RTBF	Completed	Completed	230	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Pump House	RTBF	Completed	Completed	300	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Utilities	DSW	Completed	Completed	300	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Utilities	RTBF	Completed	Completed	50	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Utilities	RTBF	Completed	Completed	64	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Utilities	RTBF	Completed	Completed	1,000	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Tankroom	SCI	Completed	Completed	388	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Warehouse	SC	Completed	Completed	770	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Forestry Barn	RTBF	Completed	Completed	18,000	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Forestry Barn	RTBF	Completed	Completed	16,000	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Change House	RTBF	Completed	Completed	18,849	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Change House	RTBF	Completed	Completed	7,703	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Change House	RTBF	Completed	Completed	9,185	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Service Station	RTBF	Completed	Completed	276	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Car Wash Building	RTBF	Completed	Completed	100	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Addition to Car Wash Building	RTBF	Completed	Completed	1,250	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Compressor	SC	Completed	Completed	1,300	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Fire Department Training	RTBF	Completed	Completed	2,700	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Explosive Forming	DSW	Completed	Completed	120	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Explosive Forming	DSW	Completed	Completed	63	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Explosive Forming	DSW	Completed	Completed	1,565	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Explosive Forming	DSW	Completed	Completed	192	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Explosive Forming	DSW	Completed	Completed	224	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Explosive Forming	DSW	Completed	Completed	224	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Old Coal Sampling Station	RTBF	Completed	Completed	400	None	2003	2003	NA	$0	NA	NA	NA	

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Attachment E-1 (cont.)

Facility Disposition Plan for the Y-12 National Security Complex

Funding Source	Facility Identification Number (FIMS)	Facility Name	Mission Dependency Program	Priority Score	Priority Rank	Gross Square Footage (gsf)	FIMS Excess Indicator	Excess Year	Planned Disposition Year	TEC to Disposition ($000s)	FY 2003 (baseline) Deferred Maintenance Reduction (for FIRP Demolition Only) ($000s)	Yearly S&M Costs ($000s)	Candidate for Transfer	Contaminated (Y or N)	Notes
FIRP	(b)(2)High	Test Cell	DSW	Completed	Completed	800	None	2003	2003	NA	$0	NA	NA	NA	(b)(2)High
FIRP		Test Cell	DSW	Completed	Completed	300	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Bunker	DSW	Completed	Completed	198	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Autoclave	DSW	Completed	Completed	1,381	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Truck Scales	RTBF	Completed	Completed	63	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Propane Facility	RTBF	Completed	Completed	210	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Post 6 (Pedestrian Entrance)	RTBF	Completed	Completed	30	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Storage	SCI	Completed	Completed	49	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		ModWest Modular Office	RTBF	Completed	Completed	3,600	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		ModWest Modular Office	RTBF	Completed	Completed	3,600	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		ModWest Modular Office	RTBF	Completed	Completed	3,600	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		ModWest Modular Office	RTBF	Completed	Completed	3,600	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		ModWest Modular Office	RTBF	Completed	Completed	3,600	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		ModWest Modular Office	RTBF	Completed	Completed	3,600	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Trailer	RTBF	Completed	Completed	4,320	None	2003	2003	NA	$0	NA	NA	NA	
FIRP		Radio Communications	RTBF	Completed	Completed	54	None	2003	2003	NA	$0	NA	NA	NA	
Other		Trailer	RTBF	Completed	Completed	2,160	None	2003	2003	NA	$0	NA	NA	NA	
[redacted]						117,938									
FIRP		Pumphouse,	RTBF	Completed	Completed	3,226	None	2004	2004	NA	$257	$38	No	No	
FIRP		Water Treatment-Utilities	SCI	Completed	Completed	51	None	2004	2004	NA	$6	$1	No	No	
FIRP		Water Treatment-Utilities	SCI	Completed	Completed	51	None	2004	2004	NA	$7	$1	No	No	
FIRP		Waste Heater Building	RTBF	Completed	Completed	336	None	2004	2004	NA	$1	$4	No	No	
FIRP		Chemical Services	RTBF	Completed	Completed	167	None	2004	2004	NA	$13	$2	No	No	
FIRP		Office	RTBF	Completed	Completed	44,864	None	2004	2004	NA	$261	$499	No	No	
FIRP		Stores (East End only)	RTBF	Completed	Completed	23,040	None	2004	2004	NA	$1,554	$256	No	No	
FIRP		Explosive Storage Magazine	DSW	Completed	Completed	116	None	2004	2004	NA	$0	$1	No	No	
FIRP		Ice House	RTBF	Completed	Completed	3,748	None	2004	2004	NA	$97	NA	NA	NA	
FIRP		Utilities	RTBF	Completed	Completed	3,738	None	2004	2004	NA	$70	NA	NA	NA	
FIRP		Compressor Building	RTBF	Completed	Completed	1,233	None	2004	2004	NA	$176	$14	No	No	
FIRP		Utilities	SCI	Completed	Completed	9,481	None	2004	2004	NA	$206	$105	No	No	

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Facility Disposition Plan for the Y-12 National Security Complex

Funding Source	Facility Identification Number (FIMS)	Facility Name	Mission Dependency Program	Priority Score	Priority Rank	Gross Square Footage (gsf)	FIMS Excess Indicator	Excess Year	Planned Disposition Year	TEC to Disposition ($000s)	FY 2003 (baseline) Deferred Maintenance Reduction (for FIRP Demolition Only) ($000s)	Yearly S&M Costs ($000s)	Candidate for Transfer	Contaminated (Y or N)	Notes
FIRP	(b)(2)High	Plant Laboratory Addition	RTBF	Completed	Completed	11,114	None	2004	2004	NA	$38	$124	No	No	(b)(2)High
FIRP		Post 24	RTBF	Completed	Completed	28	None	2004	2004	NA	$11	$0	No	No	
FIRP		Trailer, Office	RTBF	Completed	Completed	2,160	None	2004	2004	NA	$202	$24	No	No	
FIRP		Trailer	RTBF	Completed	Completed	1,440	None	2004	2004	NA	$0	$16	No	No	
FIRP		HF Scrubber	RTBF	Completed	Completed	1,512	None	2004	2004	NA	$0	$17	No	No	
Other		Hot Water Heater Bldg. (Not FIRP)	RTBF	Completed	Completed	320	None	2004	2004	NA	$0	NA	NA	NA	
Other		Trailer (Not FIRP)	RTBF	Completed	Completed	1,440	None	2004	2004	NA	$0	NA	NA	NA	
						108,065					$2,897	$1,099			
FIRP		Battery Room	RTBF	Completed	Completed	1,997	None	2005	2005	NA	$128	$22	No	No	
FIRP		Production (Room 20)	RTBF	Completed	Completed	5,962	None	2005	2005	NA	$754	$68	No	No	
FIRP		Oil And Paint Storage	RTBF	Completed	Completed	2,185	None	2005	2005	NA	$60	$24	No	No	
FIRP		Chemical Unloading Station	SCI	Completed	Completed	1,537	None	2005	2005	NA	$105	$17	No	No	
FIRP		Office Bldg	RTBF	Completed	Completed	5,093	None	2005	2005	NA	$114	$57	No	No	
FIRP		Office Bldg	RTBF	Completed	Completed	6,268	None	2005	2005	NA	$202	$70	No	No	
FIRP		Stores	RTBF	Completed	Completed	28,660	None	2005	2005	NA	$363	$319	No	No	
FIRP		Stores / Receiving & Delivery (Remaining)	RTBF	Completed	Completed	121,824	None	2005	2005	NA	$1,129	$1,355	No	No	
FIRP		Warehouse	RTBF	Completed	Completed	2,829	None	2005	2005	NA	$30	$33	No	No	
FIRP		Warehouse	RTBF	Completed	Completed	2,802	None	2005	2005	NA	$84	$31	No	No	
FIRP		Warehouse	RTBF	Completed	Completed	800	None	2005	2005	NA	$57	$9	No	No	
FIRP		Chocker Barn Attached CY02 Shed	RTBF	Completed	Completed	1,080	None	2005	2005	NA	$117	$12	No	No	
FIRP		Office	RTBF	Completed	Completed	7,840	None	2005	2005	NA	$188	$87	No	No	
FIRP		Offices	RTBF	Completed	Completed	4,498	None	2005	2005	NA	$239	$50	No	No	
FIRP		Waste Monitor Station	SCI	Completed	Completed	75	None	2005	2005	NA	$22	$1	No	No	
FIRP		Storage	SCI	Completed	Completed	1,302	None	2005	2005	NA	$32	$14	No	No	
FIRP		Offices	SCI	Completed	Completed	889	None	2005	2005	NA	$16	$10	No	No	
FIRP		Construction Building	RTBF	Completed	Completed	1,442	None	2005	2005	NA	$82	$16	No	No	

(b)(2)High

(b)(2)High

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FIRP		Post 14 Central Portal	RTBF	Completed	Completed	723	None	2005	2005	NA	$42	$8	No	No	
FIRP		Post 44 on Tower	RTBF	Completed	Completed	116	None	2005	2005	NA	$3	$1	No	No	
FIRP		Guard Booth Post 27	RTBF	Completed	Completed	17	None	2005	2005	NA	$7	$0	No	No	
FIRP		Storage	RTBF	Completed	Completed	4,590	None	2005	2005	NA	$75	$61	No	No	
FIRP		Storage	RTBF	Completed	Completed	2,250	None	2005	2005	NA	$49	$25	No	No	
FIRP		Storage	RTBF	Completed	Completed	1,568	None	2005	2005	NA	$35	$17	No	No	
FIRP		Gas Pressure Reducing Station	RTBF	Completed	Completed	184	None	2005	2005	NA	$21	$2	No	No	
FIRP		HP Trailer	RTBF	Completed	Completed	1,230	None	2005	2005	NA	$170	$14	No	No	
						207,830					$4,104	$2,311			
FIRP		Office Building	RTBF	Completed	Completed	8,713	None	2008	2008	NA	$367	$75	No	No	
FIRP		Office Building	RTBF	Completed	Completed	5,905	None	2008	2008	NA	$7	$56	No	No	
FIRP		Production (Rooms 21, 21A, 22, 23)	RTBF	Completed	Completed	4,522	None	2005	2008	NA	$579	$60	No	Yes	
FIRP		Disposal Pit	RTBF	Completed	Completed	787	None	2005	2008	NA	$0	$9	No	No	
FIRP		Office	RTBF	Completed	Completed	8,324	None	2008	2008	NA	$143	$104	No	No	
FIRP		Library & Office (Partial Building Demolition)	RTBF	Completed	Completed	22,865	None	2008	2008	NA	$1,893	$252	No	No	
FIRP		Garage & Stores	RTBF	Completed	Completed	33,444	None	2008	2008	NA	$258	$372	No	No	
FIRP		Storage & Maintenance	RTBF	Completed	Completed	13,330	None	2008	2008	NA	$57	$148	No	No	
FIRP		General Shops	DSW	Completed	Completed	8,277	None	2008	2008	NA	$413	$92	No	No	
FIRP		Old Mail Building	RTBF	Completed	Completed	2,241	None	2008	2008	NA	$97	$25	No	No	
FIRP		Radon Facility	RTBF	Completed	Completed	1,225	None	2008	2008	NA	$109	$14	No	No	
FIRP		Fire Alarm Monitor Sta.	RTBF	Completed	Completed	73	None	2008	2008	NA	$10	$1	No	No	
						108,508					$4,031	$1,207			
FIRP		Maintenance & Lab	RTBF	In Progress	In Progress	74,555	None	2007	2007	$4,100	$565	$828	No	No	
FIRP		Offices	RTBF	In Progress	In Progress	5,378	None	2007	2007	$450	$83	$80	No	No	
FIRP		Offices	RTBF	In Progress	In Progress	5,378	None	2007	2007	$450	$21	$60	No	No	

(b)(2)High

(b)(2)High

(b)(2)High

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FIRP	(b)(2)High	Offices	RTBF	In Progress	In Progress	5,378	None	2007	2007	$450	$129	$60	No	No	(b)(2)High
FIRP		Packing and Shipping	RTBF	In Progress	In Progress	12,512	None	2007	2007	$2,200	$389	$139	No	No	
						103,201				$7,650	$1,186	$1,148			
FIRP		Training & Warehouse	RTBF	88	1	63,767	None	2008	2008	$2,688	$2,423	$598	No	No	
FIRP		Offices	RTBF	84	2	14,841	None	2008	2008	$742	$195	$185	No	No	
FIRP		Offices	RTBF	84	2	15,004	None	2008	2008	$760	$523	$167	No	No	
FIRP		Offices	RTBF	84	2	11,775	None	2008	2008	$589	$221	$131	No	No	
FIRP		Offices & Labs.	RTBF	84	2	11,748	None	2008	2008	$587	$501	$131	No	No	
FIRP		Reproduction & Offices	RTBF	84	2	24,279	None	2008	2008	$1,214	$258	$270	No	No	
FIRP		Storm Sewer Sampling Station	RTBF	58	3	129	None	2008	2008	$12	$51	$1	No	No	
						131,533				$8,582	$4,172	$1,463			
FIRP		Medical & Office (Medical Portion only)	RTBF	92	1	20,000	None	2009	2009	$2,000	$239	$222	No	Yes	
FIRP		Offices	RTBF	88	2	38,846	None	2009	2009	$4,237	$1,590	$410	No	Yes	
FIRP		Office	RTBF	84	3	6,950	None	2009	2009	$348	$391	$77	No	No	
FIRP		Office	RTBF	84	3	8,378	None	2009	2009	$418	$705	$93	No	No	
FIRP		Cafeteria, Plant Records	RTBF	84	2	58,382	None	2009	2009	$4,229	$593	$827	No	Yes	
FIRP		Fusion Eng Office Bldg	RTBF	90	4	7,667	None	2009	2009	$383	$346	$85	No	No	

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TBD	9731-00	Offices & Labs.	RTBF	88	1	0	None	2009	NA	$100	NA	$0	NA	NA	Deactivation Only / National Landmark Status
TBD	(b)(2)High	Pigeon Quarters (Biology)	SC	84	2	2,731	None	2009	2009	$410	NA	$30	No	No	(b)(2)High
TBD		Biology	SC	84	2	284,768	None	2009	2009	$39,715	NA	$2,944	No	No	
TBD		Mammalian Genetics (Biology)	SC	84	2	64,737	None	2009	2009	$9,711	NA	$720	No	No	
TBD		Virus Control Lab (Biology)	SC	84	2	22,211	None	2009	2009	$3,332	NA	$247	No	No	
TBD		Utilities (Biology)	SC	84	2	400	None	2009	2009	$60	NA	$4	No	No	
TBD		Radiation Source Bldg. (Biology)	SC	84	2	155	None	2009	2009	$23	NA	$2	No	No	
TBD		Co-Carcinogenesis (Biology)	SC	76	3	83,471	None	2009	2009	$12,521	NA	$828	No	No	
TBD		Cell Fractionation System (Biology)	SC	76	3	10,080	None	2009	2009	$1,512	NA	$112	No	No	
TBD	9204-03	Isotope Separations	OFO	68	4	0	None	2009	NA	$100	NA	$0			Deactivation Only / National Landmark Status
[redacted]						584,776				$79,099	$3,852	$6,503			
EM	(b)(2)High	Research Services	EM	88	1	16,043	None	2009	2010	$2,586	NA	$187	No	No	(b)(2)High
EM		Plating Shop & Maint.	EM	84	2	13,673	None	2009	2010	$2,352	NA	$152	No	No	
EM		Development/Offices	EM	84	2	23,635	None	2009	2010	$4,068	NA	$283	No	No	
TBD		Offices	RTBF	76	1	12,532	None	2009	2010	$1,880	$602	$139	No	No	
TBD		Machine Tool Storage	RTBF	76	1	6,435	None	2009	2010	$644	$14	$72	No	No	
TBD		Laboratory	RTBF	76	1	20,050	None	2005	2010	$4,550	NA	$0	No	Yes	
TBD		Eng Tech Div Ctr	RTBF	68	2	222,912	None	2009	2010	$48,000	NA	$2,479	No	No	
TBD		Fusion Energy-Eng Tech	SC	68	2	210,491	None	2008	2010	$62,600	NA	$2,341	No	No	
TBD		Storage	RTBF	60	3	2,527	None	2010	2010	$200	$27	$28	No	No	
TBD		Office-Engineering	RTBF	56	4	13,717	None	2009	2010	$2,057	$381	$153	No	No	
TBD		Office-Engineering	RTBF	56	4	11,804	None	2009	2010	$1,771	$705	$131	No	No	

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TBD		Storage, Fabrication & Offices	RTBF	58	4	13,050	None	2010	2010	$1,390	$313	$145	No	No	
TBD		Construction	RTBF	58	4	9,614	None	2010	2010	$950	$20	$107	No	No	
TBD		Office Space	RTBF	52	5	1,307	None	2010	2010	$196	NA	$15	No	No	
TBD		Office Space	RTBF	52	5	1,307	None	2010	2010	$196	NA	$15	No	No	
TBD		Office Space	RTBF	52	5	1,307	None	2010	2010	$196	NA	$15	No	No	
TBD		Office Space	RTBF	52	5	1,307	None	2010	2010	$196	NA	$15	No	No	
[redacted]		[redacted]				580,711				$131,822	$1,972	$6,235			
TBD		PSS (Remaining Portion)	RTBF	84	1	7,475	None	2011	2011	$1,121	NA	$83	No	No	
TBD		Warehouse/Industrial	RTBF	84	1	4,314	None	2011	2011	$647	NA	$48	No	No	
TBD		Annex Building for	RTBF	84	1	877	None	2011	2011	$147	NA	$11	No	No	
TBD		Utilities	RTBF	84	1	9,081	None	2011	2011	$1,362	NA	$101	No	No	
TBD		Utilities	RTBF	84	1	1,243	None	2011	2011	$186	NA	$14	No	No	
TBD		Fusion Energy Building	SC	76	2	324,448	None	2011	2011	$325,000	NA	$3,608	No	No	
TBD		Storm Drain Monitoring Station	RTBF	76	2	82	None	2011	2011	$9	NA	$1	No	No	
TBD		Utilities	RTBF	58	3	44	None	2011	2011	$7	NA	$0	No	No	
TBD		Material Storage	RTBF	58	3	3,028	None	2011	2011	$454	NA	$34	No	No	
[redacted]		[redacted]				350,670				$327,812		$3,810			
EM		Plant Maint.	EM	76	1	510,218	None	2010	2012	$61,600	NA	$5,674	No	No	
TBD		Production (Remaining Portion)	RTBF	80	1	64,487	None	2010	2012	$12,972	NA	$1,380	No	Yes	
TBD		Forming and Storage Operations	DSW	76	2	313,771	None	2010	2012	$183,800	NA	$3,489	No	Yes	
TBD		Rubber Shop	DSW	76	2	4,057	None	2012	2012	$609	NA	$45	No	Yes	
TBD		Rubber Shop	DSW	76	2	6,048	None	2012	2012	$907	NA	$67	No	Yes	
TBD		Rubber Shop	DSW	76	2	1,515	None	2012	2012	$227	NA	$17	No	Yes	
TBD		Rubber Shop	DSW	76	2	2,450	None	2012	2012	$368	NA	$27	No	Yes	
TBD		Shed - Sodium Hypochlorite	DSW	76	2	3,360	None	2012	2012	$504	NA	$37	No	No	

(b)(2)High

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3. Based on current master plans at this juncture, Y-12 does not propose any facility demolitions in 2016 or 2017.

Attachment E-1 (cont.)

Facility Disposition Plan for the Y-12 National Security Complex

Funding Source	Facility Identification Number (FIMS)	Facility Name	Mission Dependency Program	Priority Score	Priority Rank	Gross Square Footage (gsf)	FIMS Excess Indicator	Excess Year	Planned Disposition Year	TEC to Disposition ($000s)	FY 2003 (baseline) Deferred Maintenance Reduction (for FIRP Demolition Only) ($000s)	Yearly S&M Costs ($000s)	Candidate for Transfer	Contaminated (Y or N)	Notes
TBD		Gas House	DSW	76	2	5,800	None	2012	2012	$870	NA	$64	No	No	
TBD		Maintenance	DSW	76	2	7,540	None	2012	2012	$1,131	NA	$84	No	No	
TBD		Utilities	RTBF	76	2	2,797	None	2012	2012	$420	NA	$31	No	No	
TBD		Utility	RTBF	76	2	248	None	2012	2012	$37	NA	$3	No	No	
TBD		Sewer Ejection Station	RTBF	62	3	81	None	2012	2012	$12	NA	$1	No	Yes	
[redacted]						022,382				$283,558		$10,900			
TBD		TSD Parking Facility	RTBF	84	1	298	None	2013	2013	$45	NA	$3	No	No	
TBD		Training	RTBF	84	1	633	None	2013	2013	$95	NA	$7	No	No	
TBD		Training	RTBF	84	1	824	None	2013	2013	$124	NA	$9	No	No	
TBD		Fire & Drill Training Fac.	RTBF	84	1	617	None	2013	2013	$93	NA	$7	No	No	
TBD		Records Storage	RTBF	84	1	835	None	2013	2013	$125	NA	$9	No	No	
TBD		Pump House	DSW	76	2	2,751	None	2013	2013	$413	NA	$31	No	No	
TBD		Reactive Metal Storage	RTBF	76	2	1,299	None	2013	2013	$195	NA	$14	No	No	
TBD		Construction Shop	RTBF	56	3	27,341	None	2013	2013	$4,101	NA	$304	No	No	
TBD		Paint Shop	RTBF	56	3	5,085	None	2013	2013	$760	NA	$56	No	No	
[redacted]						39,863				$5,949		$441			
TBD		Emergency Power	RTBF	84	1	663	None	2014	2014	$99	NA	$7	No	No	
TBD		Maintenance Shop	RTBF	76	2	7,370	None	2014	2014	$1,106	NA	$82	No	No	
TBD		Plant & Instr. Air Comps.	RTBF	76	2	4,585	None	2014	2014	$688	NA	$51	No	No	
TBD		Pumphouse	RTBF	76	2	1,063	None	2014	2014	$159	NA	$12	No	No	
TBD		Pumphouse	RTBF	76	2	5,525	None	2014	2014	$829	NA	$61	No	No	
TBD		Utilities,	RTBF	76	2	50	None	2014	2014	$8	NA	$1	No	No	
TBD		Utilities,	RTBF	76	2	44	None	2014	2014	$7	NA	$0	No	No	
TBD		Dechlorination Fac, Monitor Sta	RTBF	76	2	100	None	2014	2014	$15	NA	$1	No	No	
TBD		General Shops	RTBF	76	2	754	None	2014	2014	$113	NA	$8	No	No	
TBD		Painter Facility	RTBF	76	2	2,447	None	2014	2014	$367	NA	$27	No	No	
TBD		So2 Monitor Station	RTBF	76	2	48	None	2014	2014	$7	NA	$1	No	No	
TBD		Cooling Tower	RTBF	60	3	0	None	2014	2014	$0	NA	$0	No	No	
TBD		Etza Switchyard Equip. Room	RTBF	56	4	2,755	None	2014	2014	$413	NA	$31	No	No	

(b)(2)High

(b)(2)High

(b)(2)High

Notes:

1. Two Other Structures and Facilities (OSFs) are not shown in FY 2007 but will be included in the Y-12 Project Data Sheets (PDSs) and Y-12 Prioritized Project Lists (PPLs).
2. TYCSP Guidance stated that OSFs should not be included in Attachment E-1.
3. Based on current master plans at this juncture, Y-12 does not propose any facility demolitions in 2016 or 2017.

Attachment E-1 (cont.)

Facility Disposition Plan for the Y-12 National Security Complex

Funding Source	Facility Identification Number (FIMS)	Facility Name	Mission Dependency Program	Priority Score	Priority Rank	Gross Square Footage (gsf)	FIMS Excess Indicator	Excess Year	Planned Disposition Year	TEC to Disposition ($000s)	FY 2003 (baseline) Deferred Maintenance Reduction (for FIRP Demolition Only) ($000s)	Yearly S&M Costs ($000s)	Candidate for Transfer	Contaminated (Y or N)	Notes
TBD	(b)(2)High	Paint Shop	RTBF	56	4	5,813	None	2014	2014	$972	NA	$65	No	No	(b)(2)High
TBD		Fire Water Pump House	RTBF	56	4	1,043	None	2014	2014	$168	NA	$12	No	No	
TBD		Waiting Rm., E. Portal	RTBF	56	4	640	None	2014	2014	$96	NA	$7	No	No	
TBD		Telephone & Telegraph	RTBF	56	4	1,860	None	2014	2014	$279	NA	$21	No	No	
TBD		Maint. Shops & Offices	RTBF	56	4	5,164	None	2014	2014	$775	NA	$57	No	No	
TBD		Utilities	RTBF	56	4	1,182	None	2014	2014	$177	NA	$13	No	No	
TBD		Transformer	RTBF	56	4	211	None	2014	2014	$32	NA	$2	No	No	
TBD		Truck Scales	RTBF	56	4	1,494	None	2014	2014	$224	NA	$17	No	No	
TBD		Computer Bldg. For Truck Scales	RTBF	56	4	90	None	2014	2014	$14	NA	$1	No	No	
TBD		Cold Storage Warehouse	RTBF	52	5	8,193	None	2014	2014	$1,229	NA	$91	No	No	
[redacted]						51,094				$7,664		$568			
TBD		Special Materials	DSW	76	1	613,642	None	2010	2015	$336,000	NA	$6,824	No	Yes	
TBD		Office Building	RTBF	76	1	7,544	None	2014	2015	$1,132	NA	$84	No	No	
[redacted]						621,186				$337,132		$6,908			

Notes:

1. Two Other Structures and Facilities (OSFs) are not shown in FY 2007 but will be included in the Y-12 Project Data Sheets (PDSs) and Y-12 Prioritized Project Lists (PPLs).
2. TYCSP Guidance stated that OSFs should not be included in Attachment E-1.
3. Based on current master plans at this juncture, Y-12 does not propose any facility demolitions in 2016 or 2017.

Appendix

C

Attachment E-2, New Construction Added to Y-12 NSC

Attachment E-2
New Construction Footprint Added to Y-12 National Security Complex

Funding Source	Project Number	Facility Name	Mission Dependency Program	Funding Type (LI, GPP, IGPP)	Project Area (GSF)	Year of Beneficial Occupancy	Notes
EM	Unknown	*Big Spring Water Treatment System, (b)(2)High	EM	Expense	3,500	2005	
FIRP	P88Y2528	Changehouse, (b)(2)High	RTBF	GPP	6,700	2004	
FIRP	PA03Y043	Garage Office, (b)(2)High	RTBF	GPP	4,500	2005	
FIRP	FI04Y009	TSF 1, (b)(2)High	RTBF	GPP	12,720	2006	
FIRP	FI04Y007	East End Records Facility, (b)(2)High	DSW	GPP	9,087	2006	
FIRP	FI04Y010	Vehicle Maintenance Bays, (b)(2)High	RTBF	GPP	19,971	2006	
FIRP	06-D-603	Steam Plant	RTBF	LI	15,000	2009	
FIRP	08-D-602	Potable Water Support Facility	RTBF	LI	1,600	2010	
FS-20	09-D-xxx /05-D-170.2	Security Improvement Project (b)(2)High	RTBF	LI	4,000	2012	
NNSA	Unknown	OST Changehouse,	STA	GPP	1,080	2006	
NNSA (See Note 1)	Unknown	CTF 1654 BB	OTHER	Expense	2,400	2005	
NNSA (See Note 1)	Unknown	CTF 1654 CC	OTHER	Expense	2,285	2005	
RTBF	Unknown	CEM #1, (b)(2)High	RTBF	Expense	106	2003	
RTBF	Unknown	CEM #2, (b)(2)High	RTBF	Expense	106	2003	
RTBF	P88Y2738	Post 33 Pedestrian Portal, (b)(2)High	RTBF	GPP	64	2003	
RTBF	03-D-122	Purification Facility (b)(2)High	DSW	LI	9,000	2005	
RTBF	06-D-124	HEUMF, (b)(2)High	RTBF	LI	110,000	2010	
RTBF	10-D-XXX/06-D-140	Uranium Processing Facility	DSW	LI	388,000	2016	
RTBF	11-D-XXX	Complex Command Center	RTBF	LI	30,000	2014	
RTBF	11-D-140	Consolidated Manufacturing Complex*	RTBF	LI	100,000	2017	
Total					720,119		

* Represents additions and/or changes from March 2007 TYSP.

Note 1. CTF 1654 BB and CC are DOE/NNSA reservation-wide facilities managed by Wackenhut Services, a prime contractor to DOE/NNSA. They are not part of the Y-12 Site and support all the DOE sites in Oak Ridge. Footprint offset should be covered in the Oak Ridge Operations TYSP for the Reservation. They are listed here to provide information only.

Appendix

D

Attachment E-3, Grandfathered Footprint Added to Y-12 NSC

Attachment E-3
Grandfathered Footprint Added to Y-12 National Security Complex

Funding Source	Project Number	Facility Name	Mission Dependency Program	Funding Type (LI, GPP, IGPP)	Project Area (GSF)	Year of Beneficial Occupancy	Notes
NNSA	Not Applicable	(b)(2)High		Not Applicable	6,713	FY 2002	See Note 1
NNSA	Not Applicable			Not Applicable	5,905	FY 2002	See Note 1
NNSA	Not Applicable			Not Applicable	7,544	FY 2002	See Note 1
NNSA	Not Applicable			Not Applicable	191,978	FY 2002	See Note 1
NNSA	Not Applicable			Not Applicable	656	FY 2002	See Note 1
NNSA	Not Applicable			Not Applicable	8,193	FY 2002	See Note 1
NNSA	Not Applicable			Not Applicable	111,592	FY 2003	See Note 2
NNSA	Not Applicable			Not Applicable	16,748	FY 2005	See Note 2
NNSA	Not Applicable			Not Applicable	193,478	FY 2006	See Note 3
Total					542,807		

Note: Y-12 uses this table to track changes to footprint not brought on by demolition or new space additions as detailed in the notes that follow:

1. Buildings listed were transferred from DOE Office of Science to NNSA on October 1, 2001. These are existing structures—not new construction—and will show in the FIMS database as part of the NNSA Y-12 site footprint when queried. They are grandfathered only to reflect the changes to Y-12 footprint via transfers.
2. The "grandfathered" 111,592 ft^2 is the impact of a validation of Y-12 square footage to correct previous measurement errors. The 16,748 ft^2 is the transfer of two buildings to NNSA from DOE-EM. Neither of these additions is defined as "new space" but must be accommodated in the formulas of NNSA tracking summaries in Attachment E-4.
3. Waste Management facilities associated with newly generated waste operations transferred from DOE-EM to NNSA in FY 2006. This additional footprint is now part of the NNSA Y-12 NSC FIMS database.

Appendix

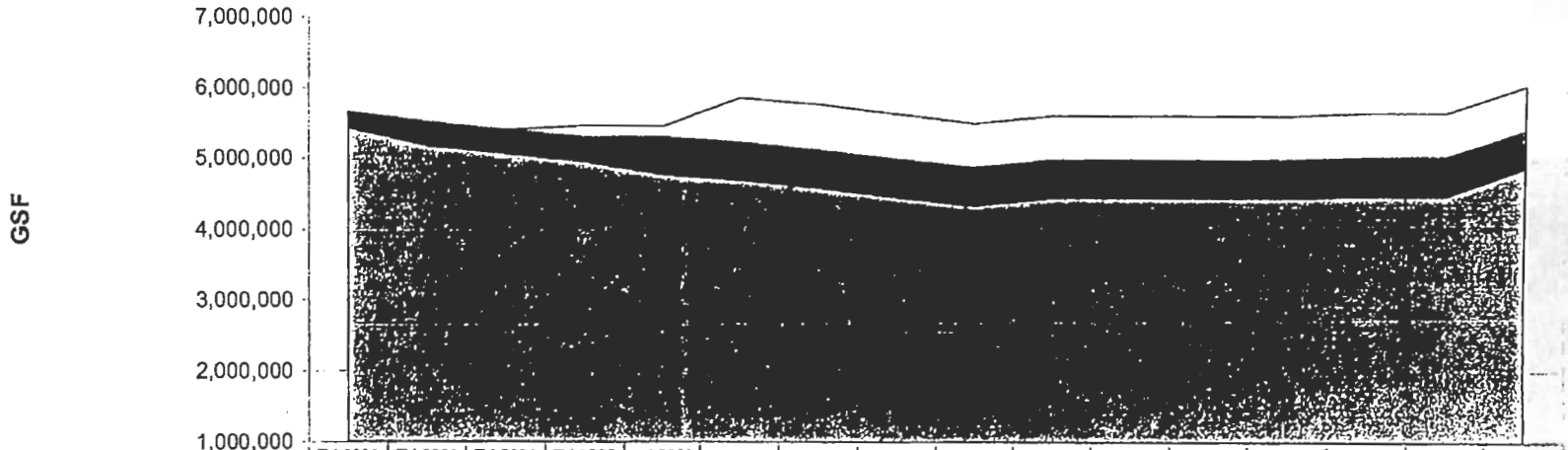
E

Attachment E-4, Footprint Tracking Summary for Y-12 NSC

Attachment E-4(a)
Footprint Tracking Summary (Gross Square Footage)
for the Y-12 National Security Complex — NNSA Only

Fiscal Year	Beginning Site Footprint	Excess Facilities Footprint Elimination	New Construction/ Footprint Added	Site Footprint Reduction by Fiscal Year	Footprint "Banked"	Waiver/Transfer	"Grandfathered" Footprint Added	Cumulative "Grandfathered" Footprint Added	NNSA Site Total Footprint	NNSA Leased Space
FY 2002 Actual	5,444,338	-250,404		5,193,934	-250,404		220,989	220,989	5,414,923	
FY 2003 Actual	5,193,934	-117,838	276	5,076,372	-367,966		111,592	332,581	5,408,953	
FY 2004 Actual	5,076,372	-108,065	6,700	4,975,007	-469,331			332,581	5,307,588	
FY 2005 Actual	4,975,007	-207,830	18,185	4,785,362	-658,976		16,748	349,329	5,134,691	155,553
FY 2006 Actual	4,785,362	-111,786	42,858	4,716,434	-727,904		193,478	542,807	5,259,241	155,553
FY 2007	4,716,434	-103,201		4,613,233	-831,105			542,807	5,156,040	629,780
FY 2008	4,613,233	-131,533		4,481,700	-962,638			542,807	5,024,507	629,780
FY 2009	4,481,700	-136,223	15,000	4,360,477	-1,083,861			542,807	4,903,284	629,780
FY 2010	4,360,477		111,600	4,472,077	-972,261			542,807	5,014,884	629,780
FY 2011	4,472,077			4,472,077	-972,261			542,807	5,014,884	629,780
FY 2012	4,472,077		4,000	4,476,077	-968,261			542,807	5,018,884	629,780
FY 2013	4,476,077			4,476,077	-968,261			542,807	5,018,884	629,780
FY 2014	4,476,077		30,000	4,506,077	-938,261			542,807	5,048,884	629,780
FY 2015	4,506,077			4,506,077	-938,261			542,807	5,048,884	629,780
FY 2016	4,506,077		388,000	4,894,077	-550,261			542,807	5,436,884	629,780
FY 2017	4,894,077		100,000	4,994,077	-450,261			542,807	5,536,884	629,780

ATTACHMENT E-4(a)
Y-12 NSC Space Tracking Summary - NNSA ONLY



	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Actual	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
□ NNSA Leased Space (10)				155,553	155,553	629,780	629,780	629,780	629,780	629,780	629,780	629,780	829,780	629,780	629,780	829,780
■ Cumulative "Grandfathered" Footprint Added (gsf) (8a)	220,989	332,581	332,581	349,329	542,807	542,807	542,807	542,807	542,807	542,807	542,807	542,807	542,807	542,807	542,807	542,807
□ Beginning Site Footprint (gsf) (2)	5,444,338	5,193,934	5,076,372	4,975,007	4,785,362	4,716,434	4,613,233	4,481,700	4,360,477	4,472,077	4,472,077	4,476,077	4,476,077	4,506,077	4,506,077	4,894,077

Attachment E-4(b)

Footprint Tracking Summary (Gross Square Footage)

for the Y-12 National Security Complex — Sitewide (Multi-Program)

Fiscal Year	Beginning Site Footprint	Excess Facilities Footprint Elimination	New Construction Footprint Added	Site Footprint Reduction by Fiscal Year	Footprint "Banked"	Waiver/Transfer	Grandfathered Footprint Added	Cumulative Grandfathered Footprint Added	Site Total Footprint (Multi-Program)	Leased Space
FY 2002 Actual	7,749,840	-250,404		7,499,436	-250,404				7,499,436	
FY 2003 Actual	7,499,436	-117,838	276	7,381,874	-367,966		111,592	111,592	7,493,466	
FY 2004 Actual	7,381,874	-108,065	6,700	7,280,509	-469,331			111,592	7,392,101	
FY 2005 Actual	7,280,509	-207,830	21,685	7,094,364	-655,476			111,592	7,205,956	
FY 2006 Actual	7,094,364	-111,786	42,858	7,025,436	-724,404			111,592	7,137,028	155,553
FY 2007	7,025,436	-103,201		6,922,235	-827,605			111,592	7,033,827	155,553
FY 2008	6,922,235	-131,533		6,790,702	-959,138			111,592	6,902,294	629,780
FY 2009	6,790,702	-136,223	15,000	6,669,479	-1,080,361			111,592	6,781,071	629,780
FY 2010	6,669,479		111,600	6,781,079	-968,761			111,592	6,892,671	629,780
FY 2011	6,781,079	-52,351		6,728,728	-1,021,112			111,592	6,840,320	629,780
FY 2012	6,728,728		4,000	6,732,728	-1,017,112			111,592	6,844,320	629,780
FY 2013	6,732,728	-510,218		6,222,510	-1,527,330			111,592	6,334,102	629,780
FY2014	6,222,510		30,000	6,252,510	-1,497,330			111,592	6,364,102	629,780
FY2015	6,252,510			6,252,510	-1,497,330			111,592	6,364,102	629,780
FY 2016	6,252,510		388,000	6,640,510	-1,109,330			111,592	6,752,102	629,780
FY 2017	6,640,510		100,000	6,740,510	-1,009,330			111,592	6,852,102	629,780

ATTACHMENT E-4(b)
Y-12 NSC Footprint Tracking Summary - SITEWIDE (Multi-Program)

	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Actual	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY2014	FY2015	FY 2016	FY 2017
□ Leased Space (10)					155,553	155,553	629,780	629,780	629,780	629,780	629,780	629,780	629,780	629,780	629,780	629,780
■ Cumulative Grandfathered Footprint Added (gsf) (8a)	0	111,592	111,592	111,592	111,592	111,592	111,592	111,592	111,592	111,592	111,592	111,592	111,592	111,592	111,592	111,592
□ Beginning Site Footprint (gsf) (2)	7,749,840	7,499,438	7,381,874	7,280,509	7,094,384	7,025,438	6,922,235	6,790,702	6,669,479	6,781,079	6,728,728	6,732,728	6,222,510	6,252,510	6,252,510	6,640,510

Appendix

F

Attachment E-5, Waiver/Transfer Log (Space Added or Eliminated) at Y-12 NSC

Attachment E-5
Waiver/Transfer Log (Space Added or Eliminated)
at Y-12 National Security Complex

Site or Program Donor	Site or Program Receiver	Waiver Banked (gsf)	Transfer Banked (gsf)	Request Submitted (Y or N)	Request Approved (Y or N)	Comments
Not applicable to Y-12 NSC at this time.						

Appendix

G

Attachment E-6, FY 2007 Leased Space Profile for Y-12 NSC

Attachment E-6
FY 2007 Leased Space Profile
for the Y-12 National Security Complex

Item	FIMS ID Number	Property Name	Mission Dependency Program	Mission Dependency	Number of Occupants	Gross Square Feet	Rental Rate per Rentable Square Foot ()	Annual Cost ()	Lease Type	Lease Term (Years)	Expiration Date	Renewal Options
1	104 Union Valley Road	Benefit Plans	NNSA	NMD	7	16,920	18.03	305,088	Full	5	9/30/2007	5
2	1099 Commerce Park	Commerce Park Drive	NNSA	NMD	186	50,078	9.41	942,500	Full	4	4/30/2007	3
3	113c Union Valley Road	Oak Ridge Research Institute	NNSA	NMD	48	28,253	27.59	779,408	Full	15	10/24/2010	5
4	115 Union Valley Road	Materials Shipping/Receiving	NNSA	NMD	35	28,800	10.04	289,263	Full	2	2/20/2007	3
5	200 Summit Place	Records Storage Facility	NNSA	NMD	25	24,585	23.36	574,363	Full	13	10/31/2017	5
6	701 Scarboro Road	Visitors Center	NNSA	NMD	12	8,775	17.66	155,000	Full	1	2/07/2007	2

Appendix

H

Attachment F-5, Replacement-in-Kind Projects Over $500,000 at Y-12 NSC

Attachment F-5
Replacement-In-Kind Projects Over $500,000 at the Y-12 National Security Complex

Optimum Year for Funding	Project Name	Facility ID (FIMS)	Mission Dependency	Description of Deficient Subsystems for Replacement-In-Kind	Funding Source	Planned Fiscal Year for Funding	Identified in 2003 Baseline (Y or N)	Within Current FYNSP Constraints (Y or N)	Projected Cost ($000)
2003	RIK-071	(b)(2)High	MC	D30 Mechanical - HVAC - Steam Distrib	RTBF	2007	Y	N	578
2003	RIK-072		MC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2007	Y	N	573
2003	RIK-073		MC	D30 Mechanical - HVAC - Fans	RTBF	2007	Y	N	500
2004	RIK-074		MC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2007	Y	N	500
2003	RIK-075		MDNC	G30 Site Mechanical Utilities	RTBF	2007	Y	N	1,000
2003	RIK-076		MDNC	G30 Site Mechanical Utilities	RTBF	2007	Y	N	1,000
2006	RIK-077		MDNC	G30 Site Mechanical Utilities	RTBF	2007	Y	N	1,000
2003	RIK-078		MDNC	G20 Sitework Improvements	RTBF	2007	Y	N	1,000
2004	RIK-079		MDNC	G40 Sitework Electrical Utilities	RTBF	2007	Y	N	1,000
2003	RIK-0710		MDNC	G30 Site Mechanical Utilities	RTBF	2007	Y	N	500
2004	RIK-0711		MDNC	G90 Sitework, Other	RTBF	2007	Y	N	1,000
2005	RIK-0712		MDNC	D30 Mechanical - HVAC	RTBF	2007	Y	N	655
2004	RIK-0713		MDNC	B30 Roofing	RTBF	2007	Y	N	2,179
2004	RIK-0714		MDNC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2007	Y	N	500
2004	RIK-0715		MDNC	G30 Site Mech;Heat+Vent;Steam Distr,Condens Return	RTBF	2007	Y	N	1,109
2003	RIK-0716		MDNC	G30 Site Mechanical Utilities	RTBF	2007	Y	N	2,000
2003	RIK-0717		MDNC	G30 Site Mechanical Utilities	RTBF	2007	Y	N	1,000
2006	RIK-0718		MDNC	G20 Sitework Improvements	RTBF	2007	Y	N	1,000
2003	RIK-0719		MDNC	G40 Sitework Electrical Utilities	RTBF	2007	Y	N	2,000
2003	RIK-0720		MDNC	G30 Site Mechanical Utilities	RTBF	2007	Y	N	500
								Total FY 2007	19,594
2004	RIK-081		MC	D30 Mechanical - HVAC - Cooling	RTBF	2008	Y	N	805
2004	RIK-082		MC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2008	Y	N	961
2008	RIK-083		NMD	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2008	Y	N	500
2008	RIK-084		NMD	D50 Elec;Serv+Distrib;Med Voltage Distrib	RTBF	2008	Y	N	570

Note: At this juncture of the planning process, the list of Y-12's RIK requirements are based on credible Condition Assessment Information System (CAIS) data. Appendix H credibly portrays the magnitude of unfunded RIK requirements at reasonable planned fiscal year levels. As the probability of funding becomes clearer, detailed project planning actions will be undertaken to prioritize projects based on risk to mission requirements and Complex 2030 implementation.

Attachment F-5 (cont.)
Replacement-In-Kind Projects Over $500,000 at the Y-12 National Security Complex

Optimum Year for Funding	Project Name	Facility ID (FIMS)	Mission Dependency	Description of Deficient Subsystems for Replacement-In-Kind	Funding Source	Planned Fiscal Year for Funding	Identified in 2003 Baseline (Y or N)	Within Current FYNSP Constraints (Y or N)	Projected Cost ($000)
2008	RIK-085	(b)(2)High	MDNC	D50 Elec;Serv+Distrib;Med Voltage Distrib	RTBF	2008	Y	N	4,129
2004	RIK-086		MDNC	C30 Interior Finishes	RTBF	2008	Y	N	917
2003	RIK-087		MDNC	D30 Mechanical - HVAC	RTBF	2008	Y	N	1,263
2004	RIK-088		MDNC	C30 Interior Finishes	RTBF	2008	Y	N	539
2005	RIK-089		MC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2008	Y	N	4,653
2008	RIK-0810		MDNC	D50 Elec;Serv+Distrib;Med Voltage Distrib	RTBF	2008	Y	N	2,803
2008	RIK-0811		MDNC	D50 Elec;Serv+Distrib;Med Voltage Distrib	RTBF	2008	Y	N	3,228
2008	RIK-0812		MC	C10 Interior Doors	RTBF	2008	N	N	500
2003	RIK-0813		MDNC	G30 Site Ext;Paint,Finishes+Coatings;Conventional	RTBF	2008	Y	N	1,503
2003	RIK-0814		MDNC	G30 Site Storm Drains	RTBF	2008	Y	N	2,000
2006	RIK-0815		MDNC	G30 Site Mechanical Utilities	RTBF	2008	Y	N	1,000
2003	RIK-0816		MDNC	G20 Sitework Improvements	RTBF	2008	Y	N	1,000
2004	RIK-0817		MDNC	G40 Sitework Electrical Utilities	RTBF	2008	Y	N	2,000
2003	RIK-0818		MDNC	G30 Site Demin Water	RTBF	2008	Y	N	1,000
								Total FY 2008	29,372
2004	RIK-091		NMD	B30 Roofing	RTBF	2009	N	N	716
2004	RIK-092		NMD	D30 Mechanical - HVAC	RTBF	2009	N	N	1,278
2004	RIK-093		NMD	D20 Mechanical Plumbing	RTBF	2009	N	N	772
2004	RIK-094		NMD	D30 Mechanical - HVAC	RTBF	2009	N	N	914
2004	RIK-095		NMD	D30 Mechanical - HVAC	RTBF	2009	N	N	1,660
2004	RIK-096		NMD	D30 Mechanical - HVAC	RTBF	2009	N	N	934
2004	RIK-097		MDNC	D30 Mechanical - HVAC	RTBF	2009	N	N	5,678
2004	RIK-098		MDNC	D30 Mechanical - HVAC	RTBF	2009	N	N	3,000
2003	RIK-099		MDNC	G30 Site Mechanical Utilities	RTBF	2009	Y	N	2,000
2003	RIK-0910		MDNC	G30 Site Mechanical Utilities	RTBF	2009	Y	N	1,000

Note: At this juncture of the planning process, the list of Y-12's RIK requirements are based on credible Condition Assessment Information System (CAIS) data. Appendix H credibly portrays the magnitude of unfunded RIK requirements at reasonable planned fiscal year levels. As the probability of funding becomes clearer, detailed project planning actions will be undertaken to prioritize projects based on risk to mission requirements and Complex 2030 Implementation.

Attachment F-5 (cont.)
Replacement-In-Kind Projects Over $500,000
at the Y-12 National Security Complex

Optimum Year for Funding	Project Name	Facility ID (FIMS)	Mission Dependency	Description of Deficient Subsystems for Replacement-in-Kind	Funding Source	Planned Fiscal Year for Funding	Identified in 2003 Baseline (Y or N)	Within Current FYNSP Constraints (Y or N)	Projected Cost ($000)
2006	RIK-0911		MDNC	G20 Sitework Improvements	RTBF	2009	Y	N	1,000
2003	RIK-0912		MDNC	G40 Sitework Electrical Utilities	RTBF	2009	Y	N	2,000
2004	RIK-0913		NMD	B30 Roofing	RTBF	2009	N	N	500
2004	RIK-0914		NMD	D30 Mechanical - HVAC	RTBF	2009	N	N	1,000
[redacted]								Total FY 2009	22,452
2008	RIK-101		MC	B20 Exterior Closure	RTBF	2010	Y	N	644
2006	RIK-102		MC	D30 Mechanical - HVAC	RTBF	2010	Y	N	726
2005	RIK-103		MC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2010	Y	N	3,047
2003	RIK-104		MC	HVAC Dimensional Inspection Area	FIRP	2010	Y	Y	3,500
2003	RIK-105		MDNC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2010	Y	N	975
2004	RIK-106		MDNC	C30 Interior Finishes	RTBF	2010	Y	N	1,404
2006	RIK-107		MC	B30 Roofing	RTBF	2010	Y	N	753
2003	RIK-108	(b)(2)High	MDNC	G30 Site Mechanical Utilities	RTBF	2010	Y	N	2,000
2003	RIK-109		MDNC	G30 Site Mechanical Utilities	RTBF	2010	Y	N	1,000
2006	RIK-1010		MDNC	G20 Sitework Improvements	RTBF	2010	Y	N	1,000
2003	RIK-1011		MDNC	G40 Sitework Electrical Utilities	RTBF	2010	Y	N	2,000
2003	RIK-1012		MDNC	G30 Site Mechanical Utilities	RTBF	2010	Y	N	500
2006	RIK-1013		NMD	B30 Roofing	RTBF	2010	N	N	500
2006	RIK-1014		NMD	D30 Mechanical - HVAC	RTBF	2010	N	N	1,000
[redacted]								Total FY 2010	19,049
2003	RIK-111		MDNC	B30 Roofing	RTBF	2011	Y	N	1,025
2004	RIK-112		MDNC	D30 Mechanical - HVAC	RTBF	2011	Y	N	2,577
2004	RIK-113		MDNC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2011	Y	N	3,213
2006	RIK-114		MDNC	D50 Elec;Serv+Distrib;Med Voltage Distrib	RTBF	2011	N	N	1,323
2004	RIK-115		MDNC	D30 Mechanical - Boilers	RTBF	2011	Y	N	1,459
2004	RIK-116		NMD	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2011	Y	N	1,305

Note: At this juncture of the planning process, the list of Y-12's RIK requirements are based on credible Condition Assessment Information System (CAIS) data. Appendix H credibly portrays the magnitude of unfunded RIK requirements at reasonable planned fiscal year levels. As the probability of funding becomes clearer, detailed project planning actions will be undertaken to prioritize projects based on risk to mission requirements and Complex 2030 Implementation.

Attachment F-5 (cont.)
Replacement-in-Kind Projects Over $500,000
at the Y-12 National Security Complex

Optimum Year for Funding	Project Name	Facility ID (FIMS)	Mission Dependency	Description of Deficient Subsystems for Replacement-in-Kind	Funding Source	Planned Fiscal Year for Funding	Identified in 2003 Baseline (Y or N)	Within Current FYNSP Constraints (Y or N)	Projected Cost ($000)
2003	RIK-117	(b)(2)High	MDNC	G30 Site Mechanical Utilities	RTBF	2011	Y	N	2,000
2003	RIK-118		MDNC	G30 Site Mechanical Utilities	RTBF	2011	Y	N	1,000
2006	RIK-119		MDNC	G20 Sitework Improvements	RTBF	2011	Y	N	1,000
2003	RIK-1110		MDNC	G40 Sitework Electrical Utilities	RTBF	2011	Y	N	2,000
2003	RIK-1111		MDNC	G30 Site Mechanical Utilities Gas	RTBF	2011	Y	N	665
2007	RIK-1112		NMD	B30 Roofing	RTBF	2011	N	N	500
2007	RIK-1113		NMD	D30 Mechanical - HVAC	RTBF	2011	N	N	1,000
								Total FY 2011	**19,067**
2004	RIK-121		MC	B30 Roofing	RTBF	2012	Y	N	1,880
2004	RIK-122		MC	D30 Mechanical - HVAC	RTBF	2012	Y	N	981
2004	RIK-123		MC	D30 Mechanical - Kathabars	RTBF	2012	Y	N	3,444
2005	RIK-124		MC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2012	Y	N	1,952
2005	RIK-125		MC	D50 Elec;Serv+Distrib;Med Voltage Distrib	RTBF	2012	Y	N	1,152
2003	RIK-126		MDNC	G30 Site Mechanical Utilities	RTBF	2012	Y	N	2,000
2003	RIK-127		MDNC	G30 Site Mechanical Utilities	RTBF	2012	Y	N	1,000
2006	RIK-128		MDNC	G20 Sitework Improvements	RTBF	2012	Y	N	1,000
2003	RIK-129		MDNC	G40 Sitework Electrical Utilities	RTBF	2012	Y	N	2,000
2003	RIK-1210		MDNC	G30 Site Mechanical Utilities - Oxygen	RTBF	2012	Y	N	3,174
2003	RIK-1211		MDNC	G30 Site Painting	RTBF	2012	Y	N	1,078
2007	RIK-1212		NMD	B30 Roofing	RTBF	2012	N	N	542
2006	RIK-1213		NMD	D30 Mechanical - HVAC	RTBF	2012	N	N	1,305
								Total FY 2012	**21,508**
2005	RIK-131		MC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2013	Y	N	2,247
2005	RIK-132		MC	D30 Mechanical - HVAC	RTBF	2013	Y	N	1,174
2005	RIK-133		MC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2013	Y	N	2,357
2003	RIK-134		MC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2013	Y	N	1,308

Note: At this juncture of the planning process, the list of Y-12's RIK requirements are based on credible Condition Assessment Information System (CAIS) data. Appendix H credibly portrays the magnitude of unfunded RIK requirements at reasonable planned fiscal year levels. As the probability of funding becomes clearer, detailed project planning actions will be undertaken to prioritize projects based on risk to mission requirements and Complex 2030 implementation.

Attachment F-5 (cont.)
Replacement-in-Kind Projects Over $500,000
at the Y-12 National Security Complex

Optimum Year for Funding	Project Name	Facility ID (FIMS)	Mission Dependency	Description of Deficient Subsystems for Replacement-in-Kind	Funding Source	Planned Fiscal Year for Funding	Identified in 2003 Baseline (Y or N)	Within Current FYNSP Constraints (Y or N)	Projected Cost ($000)
2003	RIK-135		MDNC	G30 Site Mechanical Utilities	RTBF	2013	Y	N	1,000
2003	RIK-136		MDNC	G30 Site Mechanical Utilities	RTBF	2013	Y	N	2,000
2006	RIK-137		MDNC	G30 Site Mechanical Utilities	RTBF	2013	Y	N	1,000
2003	RIK-138		MDNC	G20 Sitework Improvements	RTBF	2013	Y	N	1,000
2006	RIK-139		MDNC	G40 Sitework Electrical Utilities	RTBF	2013	Y	N	2,000
2013	RIK-1310		MDNC	G30 Site Mechanical Utilities comp air	RTBF	2013	Y	N	3,913
								Total FY 2013	17,999
2003	RIK-141		MC	D30 Mechanical - Fans	RTBF	2014	Y	N	960
2005	RIK-142		MC	D30 Mechanical - HVAC	RTBF	2014	Y	N	6,512
2005	RIK-143		MC	D50 Elec;Serv+Distrib;Med Voltage Distrib	RTBF	2014	Y	N	1,551
2003	RIK-144		MDNC	G30 Site Mechanical Utilities	RTBF	2014	Y	N	1,000
2003	RIK-145	(b)(2)High	MDNC	G30 Site Mechanical Utilities	RTBF	2014	Y	N	2,000
2006	RIK-146		MDNC	G30 Site Mechanical Utilities	RTBF	2014	Y	N	1,000
2003	RIK-147		MDNC	G20 Sitework Improvements	RTBF	2014	Y	N	1,000
2006	RIK-148		MDNC	G40 Sitework Electrical Utilities	RTBF	2014	Y	N	2,000
								Total FY 2014	16,023
2004	RIK-151		MC	C30 Interior Finishes	RTBF	2015	Y	N	662
2004	RIK-152		MC	D20 Mechanical Plumbing	RTBF	2015	Y	N	1,034
2005	RIK-153		MC	D30 Mechanical - Kathabars	RTBF	2015	Y	N	2,523
2005	RIK-154		MC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2015	Y	N	2,714
2004	RIK-155		MC	D50 Elec;Serv+Distrib;Med Voltage Distrib	RTBF	2015	Y	N	1,818
2003	RIK-156		MDNC	G30 Site Mechanical Utilities	RTBF	2015	Y	N	1,000
2003	RIK-157		MDNC	G30 Site Mechanical Utilities	RTBF	2015	Y	N	2,000
2006	RIK-158		MDNC	G30 Site Mechanical Utilities	RTBF	2015	Y	N	1,000
2003	RIK-159		MDNC	G20 Sitework Improvements	RTBF	2015	Y	N	1,000

Note: At this juncture of the planning process, the list of Y-12's RIK requirements are based on credible Condition Assessment Information System (CAIS) data. Appendix H credibly portrays the magnitude of unfunded RIK requirements at reasonable planned fiscal year levels. As the probability of funding becomes clearer, detailed project planning actions will be undertaken to prioritize projects based on risk to mission requirements and Complex 2030 Implementation.

Attachment F-5 (cont.)
Replacement-In-Kind Projects Over $500,000
at the Y-12 National Security Complex

Optimum Year for Funding	Project Name	Facility ID (FIMS)	Mission Dependency	Description of Deficient Subsystems for Replacement-In-Kind	Funding Source	Planned Fiscal Year for Funding	Identified in 2003 Baseline (Y or N)	Within Current FYNSP Constraints (Y or N)	Projected Cost ($000)
2006	RIK-1510		MDNC	G40 Sitework Electrical Utilities	RTBF	2015	Y	N	2,000
								Total FY 2015	15,752
2009	RIK-161		NMD	C20 Interior Finishes	RTBF	2016	Y	N	500
2009	RIK-162		NMD	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2016	Y	N	500
2003	RIK-163		MDNC	D10 Conveying Systems	RTBF	2016	Y	N	832
2003	RIK-164		MDNC	D30 Mechanical - HVAC	RTBF	2016	Y	N	3,861
2006	RIK-165		MDNC	D20 Mechanical Plumbing	RTBF	2016	Y		4,017
2015	RIK-166		MDNC	D50 Elec;Serv+Distrib;Low Voltage Distrib	RTBF	2016	Y	N	737
2003	RIK-167		MDNC	G30 Site Mechanical Utilities	RTBF	2016	Y	N	1,000
2003	RIK-168		MDNC	G30 Site Mechanical Utilities	RTBF	2016	Y	N	2,000
2006	RIK-169		MDNC	G30 Site Mechanical Utilities	RTBF	2016	Y	N	1,000
2003	RIK-1610	(b)(2)High	MDNC	G20 Sitework Improvements	RTBF	2016	Y	N	1,000
2006	RIK-1611		MDNC	G40 Sitework Electrical Utilities	RTBF	2016	Y	N	2,000
								Total FY 2016	17,447
2009	RIK-171		MDNC	D30 Mechanical - HVAC	RTBF	2017	N	N	1,590
2009	RIK-172		MDNC	D30 Mechanical - HVAC	RTBF	2017	N	N	795
2009	RIK-173		MDNC	D30 Mechanical - HVAC	RTBF	2017	N	N	6,814
2009	RIK-174		MDNC	D30 Mechanical - HVAC	RTBF	2017	N	N	2,953
2009	RIK-175		MDNC	D30 Mechanical - HVAC	RTBF	2017	N	N	681
2009	RIK-176		MDNC	D30 Mechanical - HVAC	RTBF	2017	N	N	1,136
2003	RIK-177		MDNC	G30 Site Mechanical Utilities	RTBF	2017	Y	N	1,000
2003	RIK-178		MDNC	G30 Site Mechanical Utilities	RTBF	2017	Y	N	2,000
2006	RIK-179		MDNC	G30 Site Mechanical Utilities	RTBF	2017	Y	N	1,000
2003	RIK-1710		MDNC	G20 Sitework Improvements	RTBF	2017	Y	N	1,000
2006	RIK-1711		MDNC	G40 Sitework Electrical Utilities	RTBF	2017	Y	N	2,000
								Total FY 2017	20,969
								Total RIK 2007–2017	219,231

Note: At this juncture of the planning process, the list of Y-12's RIK requirements are based on credible Condition Assessment Information System (CAIS) data. Appendix H credibly portrays the magnitude of unfunded RIK requirements at reasonable planned fiscal year levels. As the probability of funding becomes clearer, detailed project planning actions will be undertaken to prioritize projects based on risk to mission requirements and Complex 2030 implementation.

Appendix

Attachment G, Mission Critical Facilities and Infrastructure

(b)(2)High

Appendix

J

Project Data Sheets

NNSA Integrated Construction Program
Proposed Line Item Construction Project Information Sheet

Project Title/Site: Materials Handling / Maintenance Facility Modernization

Federal and Contractor Program Manager(s) or Sponsor(s): Mark Livesay, Y-12 Site Office; Tom Smith, BWXT Y-12.

Federal and Contractor Project Manager(s): Project managers will be appointed prior to CD-0 request .

Project Description: This project will replace the multiple, aging facilities used for maintenance, shipping receiving and warehousing of non-MAA materials at the Y-12 Plant. The new facilities would be significantly smaller than the existing facilities and be located to more cost effectively serve the consolidated manufacturing footprint.

Current Proposed/Actual Project Schedule: CD-0 is proposed for FY 2009. The remainder of the schedule will be developed during conceptual design.

Project Justification (Program Requirements): Facilities housing maintenance, non-MAA materials, and shipping and receiving are aging and oversized. This supporting infrastructure must be downsized and relocated to enable Y-12 to reduce the cost of providing these services in support of its primary missions. The consolidation will result in less space through process efficiencies and excessing unwanted materials and equipment.

Alternatives Developed/Available to Meet Program Requirements: As pre-conceptual planning progresses, alternatives such as private-sector financing and outsourcing will be considered.

Proposed Funding Profile: The proposed funding profile can be found in Attachment A-2 and is also shown below.

		FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
OPC	8,000		2,000	2,000	1,500	1,500	1,000		
PE&D	10,000			6,000	4,000				
LI	47,000				15,000	25,000	7,000		
Total (TPC)	**65,000**		**2,000**	**8,000**	**20,500**	**26,500**	**8,000**		

Projected Annual Operating Costs: Based on the projected square footage of the new facility, operating costs should be significantly less than today (in today's dollars). At this juncture, pre-conceptual planning has not progressed to the stage of analyzing operating cost changes.

Project Site/Facility Space Utilization: The consolidation envisioned by this project will render ~300,000 square feet of existing space surplus to NNSA needs. Based on design efficiencies, excessing unwanted materials and equipment, workload, and technology improvements, the new facility will contain significantly less square footage than current exists.

NNSA Integrated Construction Program
Proposed Line Item Construction Project Information Sheet

Project Title/Site: New Fire Station

Federal and Contractor Program Manager(s) or Sponsor(s): Mark Livesay, Y-12 Site Office; Tom Smith, BWXT Y-12.

Federal and Contractor Project Manager(s): Project managers will be appointed prior to CD-0 request.

Project Description: This project will replace the existing fire station with a modern facility that is appropriately located to reflect the physical security, facility, and footprint consolidation changes that are occurring on the Y-12 site.

Current Proposed/Actual Project Schedule: CD-0 is proposed for FY 2008. The remainder of the schedule will be developed during conceptual design.

Project Justification (Program Requirements): The facility that houses the fire department operations has exceeded its useful life and is costly to maintain and operate. Its current location is not appropriate to support the changes being made to Y-12 facilities, security upgrades, and the downsized manufacturing footprint.

Alternatives Developed/Available to Meet Program Requirements: As pre-conceptual planning progresses, alternatives such as private-sector financing and outsourcing will be considered.

Proposed Funding Profile: The proposed funding profile can be found in Attachment A-2 and is also shown below.

		FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
OPC	3,000	800	600	500	300	800			
PE&D	3,000			2,000	1,000				
LI	8,000				5,000	3,000			
Total (TPC)	**14,000**	**800**	**600**	**2,500**	**6,300**	**3,800**			

Projected Annual Operating Costs: Based on the projected square footage of the new facility, operating costs should be significantly less than today. At this juncture, pre-conceptual planning has not progressed to the stage of analyzing operating cost changes.

Project Site/Facility Space Utilization: This project will render ~30,000 square feet of existing support space surplus to NNSA needs. This space has been identified as becoming surplus in the FY 2014 to 2015 timeframe based on completion of this project.

NNSA Integrated Construction Program
Proposed Line Item Construction Project Information Sheet

Project Title/Site: Plant Laboratory / Development Upgrades

Federal and Contractor Program Manager(s) or Sponsor(s): Mark Livesay, Y-12 Site Office; Tom Smith, BWXT Y-12.

Federal and Contractor Project Manager(s): Project managers will be appointed prior to CD-0 request.

Project Description: This project will provide upgrades or replacements to the facilities, processes and equipment for the Plant Laboratory and Technology Development. The project will incorporate advanced technologies to reduce footprint, minimize capital investment, and assure maximum flexibility for future missions.

Current Proposed/Actual Project Schedule: CD-0 is proposed for FY 2008. The remainder of the schedule will be developed during conceptual design.

Project Justification (Program Requirements): The facilities that house the main plant laboratory and the development operations will be almost 70 years old by the time the new facilities are constructed – far exceeding their useful life, in addition to being oversized for mission needs.

Alternatives Developed/Available to Meet Program Requirements: As pre-conceptual planning progresses, alternatives such as private-sector financing and outsourcing will be considered. The reuse of existing Y-12 buildings will also be explored.

Proposed Funding Profile: The proposed funding profile can be found in Attachment A-2 and is also shown below. Out-year funding of 7000K for OPC and 85000K for LI has been calculated into the TPC costs.

		FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
OPC	22,000		3,500	4,500	4,000	3,000	3,000	4,000	
PE&D	31,000			7,000	14,000	10,000			
LI	110,000				15,000	30,000	45,000	20,000	
Total (TPC)	**163,000**		**3,500**	**11,500**	**33,000**	**43,000**	**48,000**	**24,000**	

Projected Annual Operating Costs: Based on the projected square footage of the new facility, operating costs should be significantly less than today (in today's dollars). At this juncture, pre-conceptual planning has not progressed to the stage of analyzing operating cost changes.

Project Site/Facility Space Utilization: The consolidation envisioned by this project will render ~200,000 square feet of existing production, manufacturing and support space surplus to NNSA needs. This space has been identified as becoming surplus in the FY 2015 to 2016 timeframe. Based on design efficiencies, work load, and technology improvements, the new facilities will be about 50% less square footage than current exists.

NNSA Integrated Construction Program
Proposed Line Item Construction Project Information Sheet

Project Title/Site: Utility System Upgrades

Federal and Contractor Program Manager(s) or Sponsor(s): Mark Livesay, Y-12 Site Office; Tom Smith, BWXT Y-12.

Federal and Contractor Project Manager(s): Project managers will be appointed prior to CD-0 request .

Project Description: This project will provide upgrades / replacements for major Y-12 utility systems including electrical distribution, storm sewer, sanitary sewer, mechanical and other systems. The project will be tailored to meet the needs of the downsized Y-12 footprint.

Current Proposed/Actual Project Schedule: CD-0 is proposed for FY 2009. The remainder of the schedule will be developed during conceptual design.

Project Justification (Program Requirements): A significant amount of deferred maintenance (DM) exists in Y-12 vast array of utility systems. While FIRP line items have addressed some of this DM, these aging systems will continue to be problematic unless major upgrades are made. Parts of these systems will eventually fail as they have exceeded their useful lives. As Y-12 downsizes, the vast utility infrastructure will be greatly oversized. This project will be tailored to meet the needs of the downsized footprint and help reduce the overall cost of maintaining and operating the Y-12 Plant in support of NNSA missions.

Alternatives Developed/Available to Meet Program Requirements: As pre-conceptual planning progresses, alternatives such as private-sector financing and outsourcing will be considered.

Proposed Funding Profile: The proposed funding profile can be found in Attachment A-2 and is also shown below.

		FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
OPC	8,000		1,500	1,500	1,000	1,000	1,000	1,000	1,000
PE&D	11,000			4,000	4,000	3,000			
LI	71,000					10,000	30,000	25,000	6,000
Total (TPC)	**90,000**		**1,500**	**5,500**	**5,000**	**14,000**	**31,000**	**26,000**	**7,000**

Projected Annual Operating Costs: At this juncture, pre-conceptual planning has not progressed to the stage of analyzing operating cost changes. Indirectly, the major footprint consolidation proposed by Y-12 can have significant impact on utility system capacity and utilization. As Y-12 footprint shrinks, some corresponding reductions in utility life cycle costs will occur.

Project Site/Facility Space Utilization: This metric is not directly applicable to utility system upgrades / replacements. Indirectly, the major footprint consolidation proposed by Y-12 can have significant impact on utility system capacity and utilization. As Y-12 footprint "shrinks," some corresponding reductions in utility life cycle costs will occur.

NNSA Integrated Construction Program
Proposed Line Item Construction Project Information Sheet

Project Title/Site: PIDAS Reduction Project

Federal and Contractor Program Manager(s) or Sponsor(s): Kevin Leifheit, NA-70; Dexter Beard, BWXT Y-12.

Federal and Contractor Project Manager(s): Project Managers will be appointed prior to CD-0 request.

Project Description: This project will provide for a reduced protected area through reorientation and upgrade of PIDAS boundaries, provide modern detection and assessment technologies consistent with the Y-12 Enriched Uranium Modernization Plan, provide a Primary Entry Control Facility as well as a Materials Search Facility, install Argus systems in a new CAS facility, and implement Argus access control to the balance of plant.

Current Proposed/Actual Project Schedule: CD-0 is proposed for FY09. The remainder of the schedule will be developed during conceptual design.

Project Justification (Program Requirements): The Y-12 National Security Complex has developed a Modernization Plan that is required to execute the preferred scenario for the Complex 2030 Transformation. The plan includes a future EU complex that incorporates HEUMF, UPF, Security Improvements Project (SIP), and the PIDAS Reduction Project. Completion of all of these components is necessary to realize full benefit. In addition, the project provides the balance of compliance with the NNSA Administrator policy to provide an integrated, complex wide security information system at Y-12 in conjunction with the foundation provided through SIP.

Alternatives Developed/Available to Meet Program Requirements: As pre-conceptual planning progresses, alternatives such as private-sector financing and outsourcing will be considered.

Proposed Funding Profile: The proposed funding profile can be found in attachment A-2 and is also shown below.

		FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
OPC	44,661	2,000	2,300	3,912	4,087	4,179	4,284	4,395	9,140	9,465
PE&D	50,781			14,409	19,193	17,179				
LI	237,667						102,931	45,074	49,900	39,761
Total (TPC)	**333,109**	**2,000**	**2,300**	**18,321**	**23,279**	**21,358**	**107,215**	**49,469**	**59,040**	**51,126**

Projected Annual Operating Costs: At this juncture, pre-conceptual planning has not progressed to the stage of analyzing operating costs changes as a result of this project. However, this project is a key component of Y-12's EU consolidation, which has an overall projected annual cost savings of over $150M.

Project Site/Facility Space Utilization: This project is a key component of Y-12's EU consolidation, which has an estimated 90% projected reduction in the plant protected area.

Appendix

K

Abbreviations

ADAPT, Advanced Design and Production Technologies

AOEC, Agent Operations Eastern Command

AOR, area of responsibility

ASC, Advanced Simulation and Computing (Campaign)

AUI, asset utilization index

BCPMS&R, U.S. DOE Business Center for Precious Metals Sales and Recovery

BJC, Bechtel Jacobs Company

CAIS, Condition Assessment Information System

CAMP, Capital Asset Management Process

CAS, condition assessment survey

CBDPP, Chronic Beryllium Disease Prevention Program

CD, critical decision

CERCLA, Comprehensive Environmental Response, Compensation, and Liabilities Act

CFR, *Code of Federal Regulations*

CMC, Consolidated Manufacturing Complex

CSA, canned subassembly

D&D, decontamination and decommissioning

DBT, design basis threat

DISCOM, Distance Computing

DM, deferred maintenance

DMP, Dynamic Materials Properties (Campaign)

DNN, Office of Defense Nuclear Nonproliferation

DoD, U.S. Department of Defense

DOE, U.S. Department of Energy

DOE-EM, DOE Office of Environmental Management

DOE-HQ, DOE Headquarters

DOE-NE, DOE Office of Nuclear Energy

DOE-ORO, DOE Oak Ridge Operations Office

DOE-SC, DOE Office of Science

DP, Defense Programs

DP, DOE Office of Defense Programs

DSW, Directed Stockpile Work

DU, depleted uranium

EDL, economic discard limit

EI, Enterprise Integration

ERB, emergency response boundary

ES&H, environment, safety, and health

ES, Enhanced Surveillance (Campaign)

ETTP, East Tennessee Technology Park

EU, enriched uranium

EWGPP, Elimination of Weapons-Grade Plutonium Production

FCAS, Facility Condition Assessment Survey

FCI, facility condition index

FI&S, Facilities, Infrastructure, and Services

FIMS, Facility Information Management System

FIRP, Facilities and Infrastructure Recapitalization Program

FPU, first production unit

FRPC, Federal Real Property Council

FSU, Former Soviet Union

FY, fiscal year

FYNSP, Future Years National Security Plan

GNEP, Global Nuclear Energy Partnership

GNSS, Global Nuclear Security and Supply

GPE, general-purpose equipment

GPP, general plant project

GSF, gross square footage

GTRI, Global Threat Reduction Initiative

HDPO, HEU Disposition Program Office

HEU, highly enriched uranium

HEUMF, Highly Enriched Uranium Materials Facility

HPP, Historic Preservation Plan

HVAC, heating, ventilation, and air conditioning

IAEA, International Atomic Energy Agency

IAWG, Inactive Actinides Working Group

ICPP, Integrated Construction Program Plan

IDEM, Integrated Design, Engineering, and Manufacturing

IDS, Intrusion Detection System

IFDP, Integrated Facility Disposition Project

IHS, International & Homeland Security

IPP, Initiatives for Proliferation Prevention

ISMS, Integrated Safety Management System

ISSM, Integrated Safeguards and Security Management

IT, Information Technology

JTA, joint test assembly

LANL, Los Alamos National Laboratory

LC-SEM, large-chamber scanning electron microscope

LEP, Life Extension Program

LEU, low enriched uranium

LLCE, Life Component Exchange Program

LLNL, Lawrence Livermore National Laboratory

LTS, long-term stewardship

M&O, management and operating

MAA, material access area

MEMF, Mobile Electronic Maintenance Facility

MRR, material recycle and recovery

MT, metric ton

MTE, major technical effort

NASA, National Aeronautics and Space Administration

NC, numerical control

NCI, Nuclear Cities Initiative

NDE, nondestructive evaluation

NEPA, National Environmental Policy Act

NHPA, National Historic Preservation Act

NMC&A, nuclear materials control and accountability

NN, Office of Nuclear Nonproliferation

NNSA, National Nuclear Security Administration

NNSA-HQ, NNSA Headquarters

NNSA-YSO, NNSA Y-12 Site Office

NPDES, National Pollutant Discharge Elimination System

NPR, Nuclear Posture Review

NR, Office of Naval Reactors

NS&DP, National Security and Development Programs

NSP, National Security Programs

NTN, Nuclear Technology & Nonproliferation

NTS, Nevada Test Site

NWC, Nuclear Weapons Complex

OCRWM, Office of Civilian Radioactive Waste Management

OPC, other project costs

OPRITe, Operational Performance and Reliability Improvement Team

ORNL, Oak Ridge National Laboratory

ORR, Oak Ridge Reservation

OSF, other structure and facility

OST, Office of Secure Transportation

P&PD, Production and Planning Directive

PAMS, Physical Asset Management Solution

PDRD, Plant-Directed Research, Development, and Demonstration

PIDAS, Perimeter Intrusion Detection and Assessment System

QA, quality assurance

QE, quality evaluation

R&D, research and development

RADCON, Radiological Control

RCM, Reliability Centered Maintenance

REST, retrofit evaluation systems test

RIK, replacement-in-kind

ROM, rough order of magnitude

RPV, replacement plant value

RRW, Reliable Replacement Warhead

RTBF, Readiness in Technical Base and Facilities

S&M, surveillance and maintenance

SCIF, Special Compartmented Information Facility

SFT, stockpile flight test

SHPO, State Historic Preservation Office

SLT, stockpile laboratory test

SNM, special nuclear material

SR, Stockpile Readiness (Campaign)

SSC, structure, system, or component

TPC, total project cost

TYCSP, Ten-Year Comprehensive Site Plan

UNSR, unclassified national security related

UPF, Uranium Processing Facility

U.S., United States

VMF, Vehicle Maintenance Facility

VTR, vault-type room

WBS, work breakdown structure

WMC, Work Management Center

WWII, World War II

Y-12, Y-12 National Security Complex

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