

TEN-YEAR
SITE PLAN
FY2014 - FY2023

**SERVICES
BLDG.**

**FACILITY
16-12**

JULY 2, 2013

PanTEX

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FY14–FY23
Ten-Year Site Plan (TYSP)

Approved by:

A handwritten signature in black ink, reading "John D. Woolery", positioned above a horizontal line.

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Section 1-Executive Summary

The Pantex Ten-Year Site Plan (TYSP) is aligned with the 2014 Stockpile Stewardship and Management Plan (SSMP), 2010 Nuclear Posture Review (NPR), and the Complex Transformation Supplemental Programmatic Environmental Impact Statement (SPEIS) Record of Decision (RoD). As noted in the SSMP, key elements of the nuclear weapon infrastructure established during the Cold War are now 50-60 years old and exceeding their original design lifetimes. The infrastructure must be recapitalized to maintain functionality, efficiency, and be correctly-sized to provide the capabilities required to execute life extension activities, dismantlement of surplus weapons, surplus fissile materials management, explosives components manufacturing, and other nuclear security-related programs. In addition, Babcock & Wilcox Technical Services Pantex, LLC (B&W Pantex) recognizes the importance of safety culture and is aggressively pursuing the goals established in the joint Safety Culture Plan established in response to safety culture surveys conducted by Texas Tech University and the DOE Office of Health, Safety and Security (HSS). These surveys were designed to evaluate those cultural traits (organizational behaviors) that are the foundation of a strong and healthy nuclear safety culture and Safety Conscious Work Environment (SCWE). These surveys indicated working environments were an important component of strong and healthy Nuclear Safety Culture. B&W Pantex committed maintenance and project resources and \$2M of FY13 funding to refurbish general workplace improvements and additional focus will be placed on general workplace improvements to support a strong and healthy nuclear safety culture in the future.

A Note about the FY14 TYSP

The contents of the new TYSP have been revised to reflect the needs of the Nuclear Security Enterprise (NSE). The TYSP provides a condensed “snapshot” projection for the mission and the infrastructure required to sustain the capability. There are two time horizons - a tactical horizon extending to five years past the next FYNSP (10 years) and a strategic horizon that extends 15 years beyond the tactical horizon (25 years). The FY14 TYSP focuses on the tactical horizon with broader descriptions out to the 25 year strategic horizon.

1.1 Current State

B&W Pantex activities ultimately support the core mission of nuclear weapons stockpile stewardship. The Pantex Plant mission includes manufacture of specialty explosives; fabrication and testing of High Explosive (HE) components; assembly, disassembly, refurbishments, maintenance, and surveillance of stockpile nuclear weapons and weapon components; dismantlement of retired stockpile nuclear weapons; sanitization and disposal of components from dismantled weapons; interim staging and storage of nuclear components from dismantled weapons; pit requalification; pit surveillance; and pit packaging (including container surveillances and re-certifications). These activities are directed through the Production and Planning Directive (P&PD), Program Control Document (PCD), and the Development and Production Manual. Pantex supports Stockpile Systems by performing disassembly, inspection and rebuild of weapon evaluation cycle units, stockpile refurbishment i.e., Life Extension Programs (LEPs); assembly of Joint Test Assemblies (JTAs) and post mortem analysis, assembly, disassembly, and analysis of testbed units; Limited Life Component Exchange; programmatic alterations (usually defined as Alts or Mods); weapon repairs; weapon and component radiography and non-destructive evaluation; HE testing and explosive component evaluation; pit and non-nuclear evaluations; electrical and mechanical tests; and surveillance/evaluation testing in support of Quality Evaluation Reports. Infrastructure that is viable, efficient, and right sized is essential for obtaining the capacities required to meet the directed nuclear weapons stockpile stewardship activities.

The risk of continued decline in infrastructure is magnified with the conclusion of the Facilities and Infrastructure Recapitalization Program (FIRP) in FY13 after final funding appropriation in FY12. FIRP contributed a total of \$246M for infrastructure improvements, facility dispositions, and utility line item (LI) projects from FY02 to FY12 at Pantex. The investment by FIRP significantly increased production throughput with the most contribution coming from roof replacements. B&W Pantex supports the NNSA vision for the Capability Based Investments (CBI) Program to sustain an aging infrastructure and replace end-of-life equipment.

1.2 Future State

This TYSP defines an overall path for modernizing the National Nuclear Security Administration (NNSA) Pantex Plant over the 25-year planning horizon. Pantex supports NNSA's long-term vision to provide the nation a modern infrastructure ready to accomplish the NSE mission within a strong and healthy nuclear safety culture. This plan features infrastructure investments necessary to implement the strategies directed by the guiding documents noted above and supporting a strong and healthy nuclear safety culture.

The future state includes:

Upgrade of Production Bays/Cells

Systematic lifecycle replacements in nuclear production bays/cells reduce risk to operability and ensure the capacities exist to meet projected workload schedules. Initial focus will be placed on the replacement of the Flame Detection System, the Radiation Alarm Monitoring System (RAMS), and the Fire Protection Lead-ins. The Flame Detection System and RAMS are safety class and radiological safety systems, respectively, and due to obsolescence, failures of those systems continue to impact production. Eventually, failure to address end-of-life systems and equipment will render the nuclear production bays/cells inoperable.

Balance of Plant Initiatives

The Balance of Plant infrastructure supports a healthy, well-maintained work environment that is conducive to the principles of a strong and healthy nuclear safety culture as well as supporting Mission Critical (MC) facilities. Mature renewable energy systems take advantage of the geographical attributes and incorporate facility sustainability strategies that have responsible, enduring Plant environmental and energy management policies for long-term viability. The safety and environmental compliance endeavors have the established maturity, external oversight confidence, and status to maintain the NSE benchmark. Additionally, facility reutilization strategies have consolidated function/operations in a manner that sustains a modern infrastructure while minimizing costs and operating footprint.

High Explosives Center of Excellence

The HE Center of Excellence (CoE) is managed and operated in a manner consistent with NNSA needs. A modern infrastructure maximizes productivity while minimizing operating costs. Essential capabilities are maintained in a continuous state of readiness to meet projected HE production demands. Mature productivity modeling facilitates matching operational ready capacities with manufacturing demands.

Special Nuclear Material (SNM) Testing and Storage

Category I SNM storage, as well as weapon staging, is consolidated and adjoined with the weapon assembly area thus achieving more modern, efficient, secure, and effective operations at a lower overall cost.

SNM component environmental testing capabilities (relocated from Lawrence Livermore National Laboratory as directed by the Complex Transformation SPEIS RoD) are fully functional and competently staffed to meet corresponding surveillance and LEP requirements.

Comprehensive non-destructive diagnostics for weapon and weapon components' evaluation, as well as reacceptance and refurbishment, are mature and responsive thus minimizing overall Enterprise costs and more effectively supporting increased surveillance demands.

Enterprise Wide Planning

Pantex serves as an integrated hub for the Production Planning & Scheduling System which coordinates Enterprise-wide planning, provisioning, and inventory management. As an element of provisioning and inventory management effort, Pantex also serves as an integrated Container Logistics Center to effectively coordinate NSE packaging, shipping, and related stewardship activities. This hub thus optimizes application of critical NSE assets, enhancing Enterprise productivity and minimizing operating costs.

1.3 Accomplishments

FY13 has been a year of challenges and commitment to improving the Nuclear Safety Culture at the Pantex Plant. The challenges experienced can be categorized as: 1) aging and failing infrastructure, 2) technical issues, 3) acts of nature, and 4) impacts from inter-site dependencies. Some of these challenges remain outside the control of B&W Pantex and have had an effect on plant operations. B&W Pantex has balanced the impacts of each issue encountered while maintaining a level of production with an appropriate level of risk. B&W Pantex has prioritized work based on the fiscal and program guidance provided by NNSA, while maintaining safety, security, and quality.

The B&W Pantex reputation for safely and securely delivering on commitments with a high level of quality was sustained in FY12. B&W Pantex exceeded deliverables with the completion of 109 percent of the baseline weapon deliverables consisting of 112 percent of baseline dismantlements, 107 percent of base surveillances, and above 100 percent of baseline W76-1 LEP deliveries to the Navy. Despite technical and facility-related issues that have impacted production in FY13, B&W Pantex has met a majority of the significant deliverables. The deliverables (as of April 30, 2013) include the year-to-date completion of 84 percent of the planned weapon deliverables. B&W Pantex is implementing recovery plans to recover the baseline workload.

In FY12, NNSA recognized B&W Pantex's outstanding support of Defense Program (DP) goals with nine DP Awards of Excellence. Accomplishments were recognized for weapon dismantlement and disposition, the B53 dismantlement, the W76 LEP assembly, lightning protection upgrades, the H1700 container project, sanitization and disposition of weapon components, a temporary air conditioning unit for a site building, and HE high performance liquid chromatography. The variety of functional areas recognized by the DP awards demonstrates that high performance exists throughout Plant operations.

B&W Pantex safety performance continues at a world-class level, making Pantex one of the safest places to work in the NSE. In FY12, B&W Pantex had a Total Recordable Case (TRC) rate of 0.37 and a Lost Time Case (LTC) rate of 0.00. As of April 30, 2013, the Plant has a TRC rate of 0.27 and a LTC rate of 0.11. Since B&W Pantex assumed the contract in February 2001, the TRC rate decreased by 88 percent and the LTC rate decreased by 100 percent. Over these years, B&W Pantex collaborated with employees on many safety initiatives to achieve these reductions. These initiatives include Behavior Based Safety, Integrated Safety Management, and the Voluntary Protection Program Star status. B&W Pantex implemented a variety of changes across the Quality Policy and Procedures process, which reduced procedure processing time by more than 20 percent and the Requirements Management System backlog by more than 40 percent from the March 2011 levels.

B&W Pantex continues to exceed expectations and receive national recognition for its High Reliability Organization (HRO) initiatives. Plant subject-matter experts continued to assist other NSE sites and federal and commercial agencies in understanding and initiating their own HRO journey.

Pantex is leading the NNSA by pursuing the Energy Savings Performance Contract for construction of the Pantex Renewable Energy Project (PREP), the first wind farm in the NNSA enterprise, consisting of five 2.3 megawatt turbines located on 1,500 acres of government-owned property east of the Pantex Plant. Additionally, Pantex is on track to meet or exceed the FY15 goals to reduce energy intensity by 24 percent and use of potable water by 2.6 percent, as compared to established 2007 baselines. As part of the Pantex Energy Modernization and Investment Program project, meters are being installed in 24 buildings. This project will allow the Plant to meter the buildings necessary to achieve *Energy Investment and Security Act, 2007* goals and make progress toward *Energy Policy Act, 2005* compliance.

The High Explosive Pressing Facility (HEPF) project, currently under construction, is 56 percent complete as of April 2013 and is scheduled to be operational September 2016. The project is on schedule and under budget. The HEPF, as a cornerstone of the HE CoE, is instrumental in sustaining HE component manufacturing essential for stockpile stewardship mission requirements.

Pantex executed an effective reimbursable Work for Others (WFO) Program fully supporting NSE HE initiatives and increasing FY12 total WFO Program new income by 12 percent over FY11.

These Pantex accomplishments were the result of the support received from the NNSA Production Office (NPO) and the Plant’s shared philosophy of, *"One Plant, One Mission, One Team-Different Roles, Same Goals"* and our partners at the national laboratories and other production sites working together under the theme *"One NNSA, working together."*

1.4 Changes, Issues, and Concerns

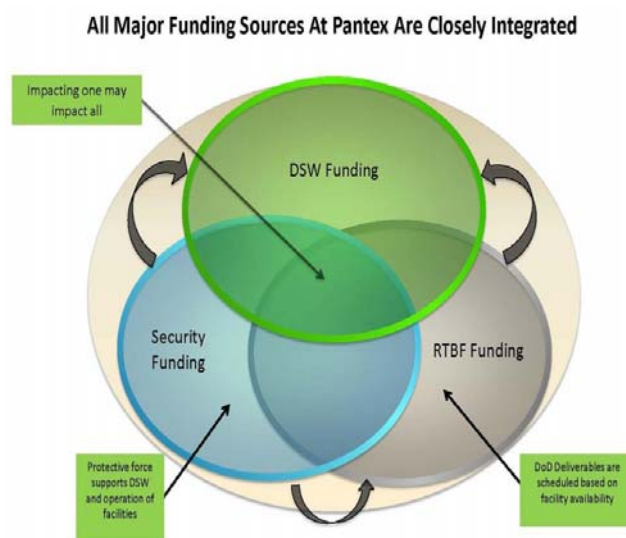
In support of NNSA, B&W Pantex has identified facility and infrastructure gaps that require resolution to ensure implementation of NNSA’s Strategic Plan. These gaps will continue to be refined, communicated, and collectively resolved to support continued progress, and ultimately, the modernization of Pantex.

Integrated Funding to Sustain Peak Operations

Integrated funding of Directed Stockpile Work (DSW), Readiness in Technical Base and Facilities (RTBF), and Safeguards & Security is needed to accomplish the overall mission-related work scope.

The current Office of Nuclear Weapon Stockpile (NA-122) DSW targets for FY13 provide adequate funding to sustain operations. Targets for FY14-FY19 are sufficient to accomplish the overall mission-related work scope, although specific funding sources are not yet finalized. The current Office of Technology Maturation & Stockpile Assessment (NA-124) Component Manufacturing Development Readiness Campaign targets for FY14-FY18 provide adequate funding to support projects critical to the B61 LEP.

Funding profiles for Pantex show the Site Stewardship (formerly RTBF) and Security budget(s) are not adequate to sustain current mission capability in FY15-FY19. The budgets do not fully sustain the capability, arrest the growth of Deferred Maintenance (DM), or address security requirements necessary to support operations.



Mission Operations

Based on FY13 funding, B&W Pantex is proceeding in accordance with the workload as defined by NA-12. Future workload projections suggest enhanced testing and corresponding support activities will be necessary to satisfy basic stockpile stewardship and LEP activities. Depending on requirements for each program, this would include increased non-destructive and destructive evaluation, explosive component manufacturing, and pit requalification/reuse processes, as well as Canned Sub Assembly (CSA) surveillance. The increase in surveillance work will be addressed through the construction of a new Weapon Surveillance Facility (WSF), existing facility modifications, and installation and qualification of essential diagnostic and support equipment.

High Explosives Center of Excellence (HE CoE)

The cornerstones of the HE CoE are the HE Pressing, HE Science, Technology & Engineering (ST&E), HE Packaging and Staging (P&S), HE Development Machining Center, HE Formulation, Inert Machining, and the HE Component Fabrication and Qualification facilities. These facilities support elements of the HE mission including Research and Development (R&D). As noted earlier, HEPF construction continues. All of the HE CoE projects are supported by the NNSA Construction Working Group (CWG). The HE ST&E Critical Decision (CD)-0 was approved in November 2011 and B&W Pantex is pursuing LI underruns to fund the HE P&S. The remaining facilities will require continued programmatic support to fully complete the transformation to a modern HE CoE capable of reliably producing and performing surveillance activities in support of the Stockpile Stewardship Program.

Facilities and Infrastructure Sustainment/Modernization

B&W Pantex has identified the anticipated near-term, intermediate, and long-term needs at Pantex to sustain and recapitalize the infrastructure required to support the NNSA mission. The common themes of these needs are that the infrastructure requires sustainment and recapitalization of the capabilities. Infrastructure includes real property, installed equipment, and related real property that is supporting multiple program missions at a single program site. Of concern are the systems and equipment that are reaching the end of their useful life or the manufacturer no longer supports. The End-of-Life table lists a few of the critical systems and equipment that will require replacement over the planning period.

Systems at End-of-Life or Technologically Obsolete	
Flame Detection System	Thermal Monitoring
High Pressure Fire Loop (HPFL) Lead-Ins	On-site Transportation Trailers
Radiation Alarm Monitoring System	Water Distribution System
Building Systems (HVAC/Chillers/Electrical)	Sewer Collection System
High Mast Lighting	Process equipment: Linear Accelerators/Manipulators Leak Check Manifolds Computer systems MRP II manufacturing control system-(currently being replaced by the Integrated Production Planning and Execution System)
Fire Alarm Control Panels	
Blast Door Interlocks	
Boiler Controls	
Emergency Vehicles	

Commercial application of technology is accelerating the need for replacement due to “technical obsolescence.” The lack of availability of replacement parts and supported software is decreasing system maintainability and reliability. As examples, manufacturers of the Ultraviolet Flame Detection System and the RAMS equipment have notified Pantex that the systems are or soon will be no longer supported.

Pantex has met mission deliverables with an aging infrastructure; however, risks are increasing due to system failures and constrained and inconsistent budgets limiting recapitalization and modernization initiatives. The Future Years Nuclear Security Program (FYNSP) is not adequate to support end-of-life and technical obsolescent equipment replacement of essential systems and infrastructure.

Material Staging Facility

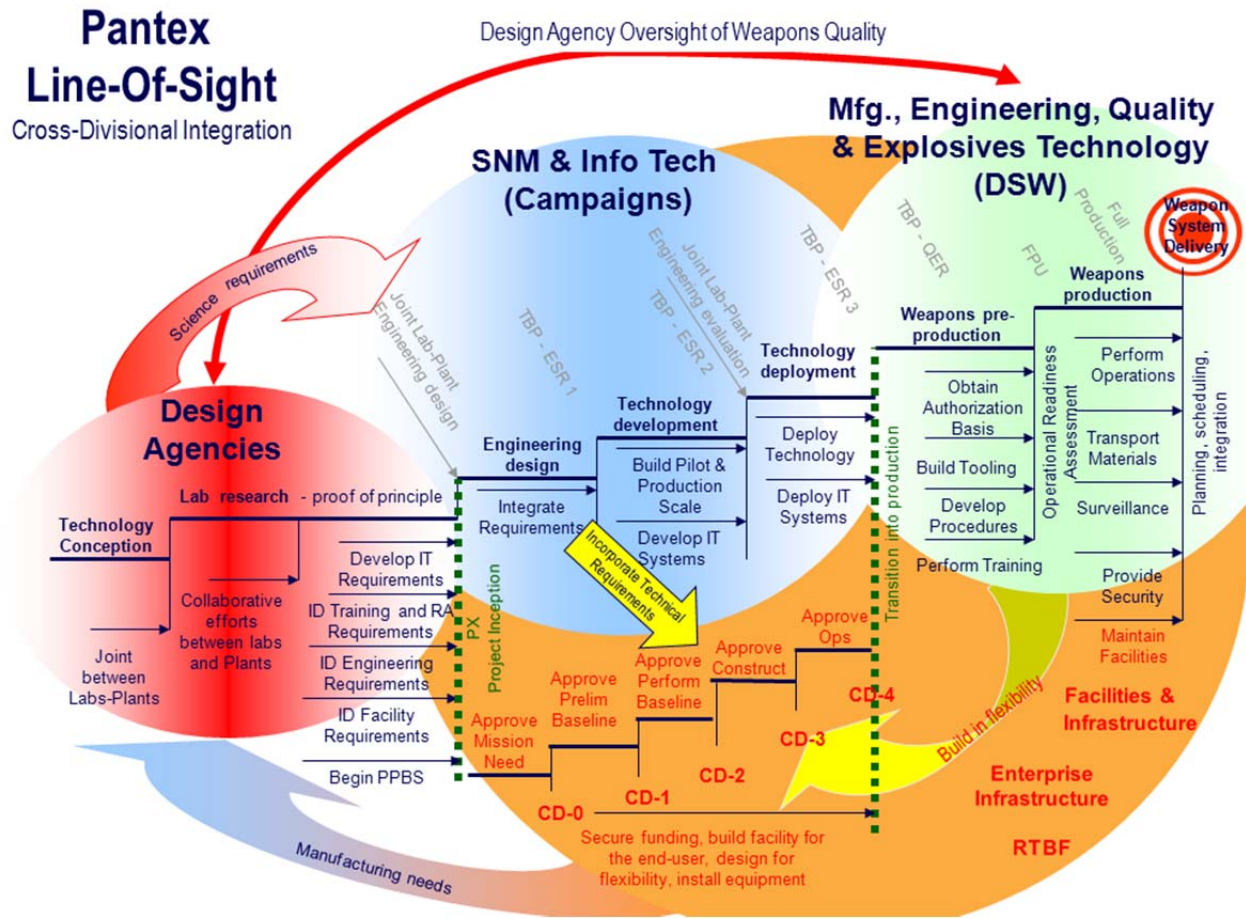
A new underground facility will provide the capability and capacity for safe and efficient staging of weapons and nuclear weapon components while enhancing the site’s security posture at a reduced infrastructure cost. The facility supports the consolidation of the Pantex site and reduces the future recapitalization mortgage related to Zone 4 West and the associated Perimeter Intruder Detection and Assessment System (PIDAS) replacements. Pantex representatives were key members of a team assembled to study potential options for deactivating Zone 4 West as a weapons and weapon component area. The outcome of the study recommended construction of a more secure, efficient facility to replace Zone 4 West. Pantex prepared and submitted the Material Staging Facility Mission Need documentation which was the second highest rated project of those submitted for prioritization this year to the CWG.



Classified Material Disposition (MD)

As of April 2013, there are approximately 202,600 “scrap” components stored at Pantex and of these approximately 41,000 are classified. The most cost effective disposition of classified nuclear weapon components with radiologic concerns is shipment to the Nevada National Security Site. This approach aids in overcoming severely limited available storage capacity for radiological items at Pantex. Impacts to short term (FY13-FY14) storage capacity and production schedules that involve both on-site and outsourced disposition have been identified and corrective actions have been planned. At present, outsourced disposition actions will be funded on a case-by-case basis.





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Section 2-Site Overview and Snapshot

Location: Amarillo, Texas

Contract Operator: B&W Pantex, LLC

Type: Single-Program Site

Responsible Field Office: NNSA Production Office

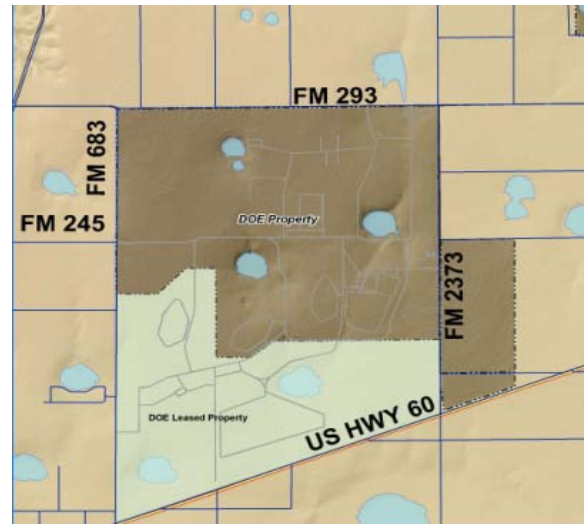
Web site: <http://www.pantex.com>

NPO Manager: S. Erhart

Site Overview

The Pantex Plant is operated by the M&O contractor, B&W Pantex under the direction of NNSA/NPO. Pantex sustains core capabilities in HE production, development, synthesis, formulation, pressing, machining, and analytical/performance testing (C5); weapon assembly/disassembly (C7); category I SNM storage (C9); and the key infrastructure supporting these capabilities (C10). Additionally, Pantex is instrumental in providing capabilities for other mission/program requirements including surveillance of weapon components used for certifying weapons and in providing scientific, technical, engineering, and safety basis for HE, as well as surveillance and requalification capabilities for pits. These supporting capabilities are further defined in Appendix B, NNSA Core Capabilities.

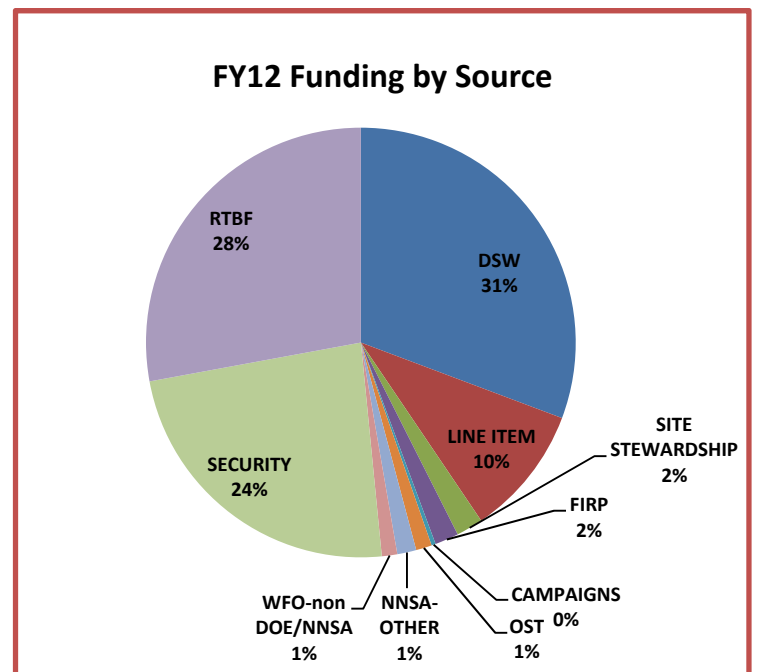
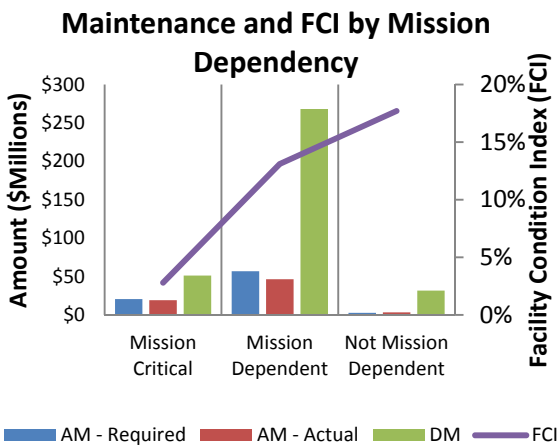
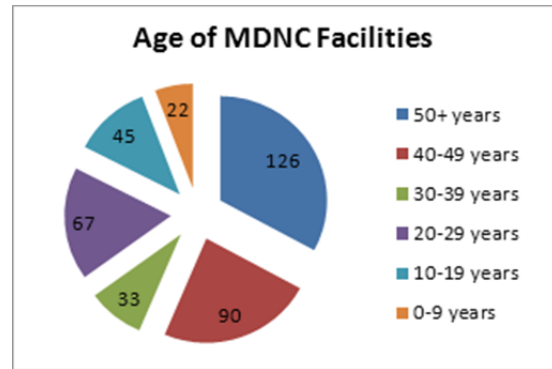
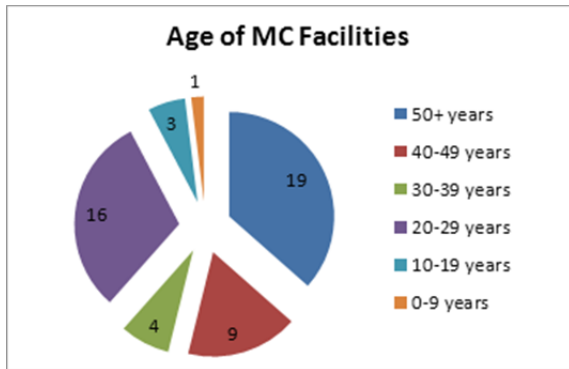
The Pantex Plant, located 17 miles northeast of Amarillo, Texas, resides on 11,703 acres owned by the Department of Energy (DOE) including the land acquired just east of Farm to Market 2373. Pantex operations near the southern boundary require DOE to lease approximately 5,800 acres of land between the Plant and U.S. Highway 60 from Texas Tech University (TTU), primarily for safety and security buffer areas. An additional 9 acres are leased for support functions. Approximately 2,500 acres of Pantex Plant proper are used for industrial operations, the burning grounds, and firing sites. Approximately 8,070 acres of agricultural land within the combined main Plant area and the Pantex Lake property are managed by TTU through a service agreement with DOE for farming and ranching use.



Pantex consists of approximately 619 buildings/trailers containing 3,119,943 gross square feet (gsf). There are 52 enduring Mission Critical (MC) facilities, 383 Mission Dependent Not Critical (MDNC) facilities, and 184 Not Mission Dependent facilities. Of the 383 MDNC facilities, there are 230 Production Support facilities directly sustaining the capabilities and mission operations in the MC facilities.

REAL PROPERTY	
<ul style="list-style-type: none"> ▪ 17,512 Acres (Leased/Owned) 	<ul style="list-style-type: none"> ▪ Deferred Maintenance: \$351M
<ul style="list-style-type: none"> ▪ Buildings/Trailers <ul style="list-style-type: none"> ○ 3,000,023 gsf Active & Operational ○ 35,166 gsf Non-Operational ○ 84,754 gsf Leased 	<ul style="list-style-type: none"> ▪ Facility Condition Index: <ul style="list-style-type: none"> ○ MC: 2.8% ○ MDNC: 13.1% ▪ Site Wide Facility Condition Index: 8.6%
<ul style="list-style-type: none"> ▪ Replacement Plant Value: \$4.08B 	<ul style="list-style-type: none"> ▪ Asset Utilization Index (Overall): 97.6%

Approximately 54 percent of the MC and 56 percent of the MDNC Facilities are over 40 years old and will require some type of refurbishment or replacement in the planning horizon. The initial Corporate Physical Infrastructure Business Plan (CPIBP), published March 2011, identified those anticipated recapitalization infrastructure needs over the next 30 years.



Future plans for Pantex include reinvestments to be smaller and more responsive to the country's needs in accordance with the strategies delineated in the Complex Transformation SPEIS ROD and the nation's nuclear posture. Those initiatives include developing and refining the HE CoE, consolidating category I SNM, providing non-destructive testing evaluation, developing the regions attribute for wind generation renewal energy, and consolidating laboratory destructive surveillance operations.

FY12 Funding by Source:

FY12 Total NNSA/DOE Funding: \$642.4M

FY12 Total Non-NNSA Work: \$7.8M

FY12 Total Site Operating Funding: \$650.2M

Staffing

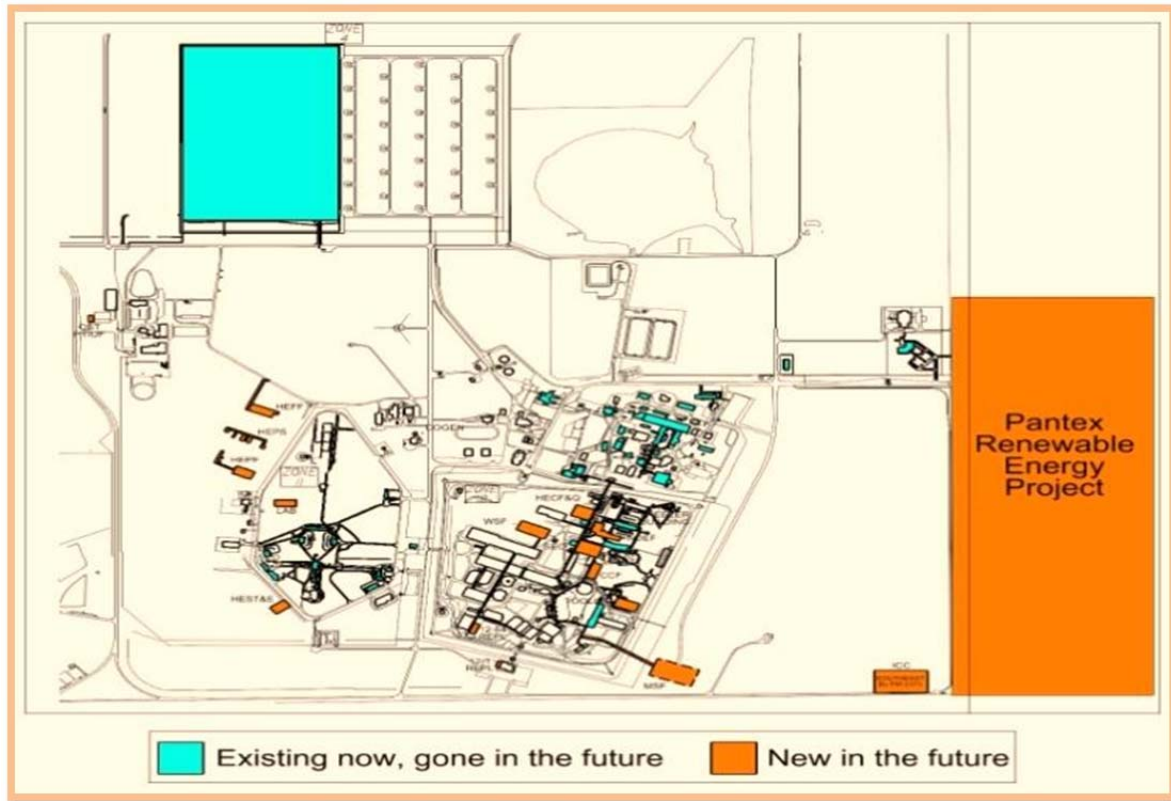
As of March 2013 approximately 3,405 people are employed at the Pantex Plant. This population consists of NPO-Pantex, B&W Pantex, Office of Secure Transportation (OST), Sandia National Laboratory’s (SNL) Weapons Evaluation Testing Laboratory, and the Tri-Lab Project Office personnel. Several organizations also have a presence at Pantex including the Defense Nuclear Facilities Safety Board, the State of Texas Division of Emergency Management. Other major groups on-site include technical subcontractors and construction personnel. The number of construction personnel increased with the award of the HEPF in May 2011. Both NPO and the B&W Pantex organizations are utilizing attrition management to reduce headcount and realign personnel into critical vacancies.

Organization (March 2013)	Number of Employees
B&W Pantex	3,169
DOE/NPO-Pantex	62
OST	140
SNL	20
Tri-Labs	14
Subtotal	3,405
Other (excludes construction)	350
Construction Personnel	704
Total	4,459

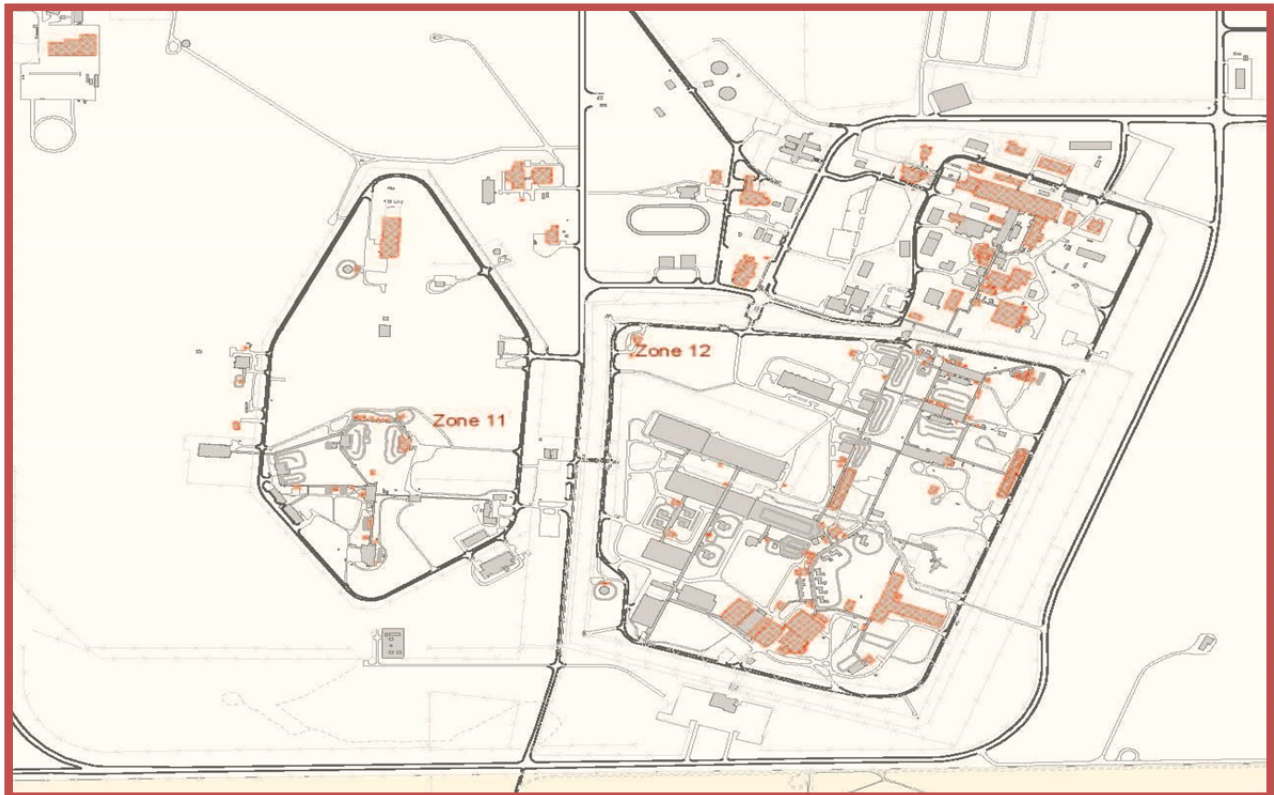
Pantex provides ongoing workforce planning to insure the needed skills are available as workload changes occur. This planning provides a map to workforce restructuring, realignment, staffing, and employee development. Pantex skill mix continues to adjust to the needs of mission work. Forecasts and plans are developed based on the NNSA weapons workload for FY14 to FY39 provided by the P&PD and PCDs. Essential/Critical skills staffing requirements for FY13-22 have been identified at 1,425 with a staffing focus on engineers and technicians. Pantex continues to partner with regional universities to provide a pipeline for the critical skill needs for future missions. Compensation and benefits are monitored to stay competitive in a lean technical market. Attrition has increased from 3 percent in FY10 to 6 percent in FY13 due to market/economy improvements easing concerns for those ready to retire.

Essential/Critical Skills (March 2013)	Number of Employees
Crafts	53
Engineers	308
Laborers	7
Managers	214
Professionals	59
Radiography-Operators	325
Scientists	121
Technicians	300
Total	1,387

Future Graphical Representation of Pantex Plant



Production Support Facilities



Section 3-Assumptions

This document is based on various assumptions concerning projected budget targets, projected workload, regulatory environment, available facilities, technology, productivity, the work environment, and NNSA's transformation. In some cases, operating basis assumptions are interdependent, and one may affect another.

Noteworthy assumptions include:

- Prioritization will be driven by mission need and ability to continue safe and secure operations in support of the P&PD and PCD
- Budget data for Ops of Facilities is based on the FY14 President's Budget Request
- The final award of the Pantex/Y-12 contract had not been determined during the writing of this TYSP
- The HEPF and other facilities are key infrastructure components of the current and future LEPs. These facilities have been submitted for NNSA support through the CWG process and captured in the Nominal Schedule of Current and Proposed LI Construction Projects
- CBI and Site Stewardship funding is adequate to support Production Bays/Cells Upgrade project (~\$24M per year) for Flame Detection, RAMS, and HPFL Lead-in replacement starting in FY14
- Land use is expected to remain constant
- Pantex Plant's ability to meet the goals set forth by Executive Order for Energy Sustainability resides in the implementation of the PREP and execution of projects identified in the Pantex Site Sustainability Plan
- Reinvestment to address aged and limited life equipment and systems will be required. Modernization with new construction will provide for operational efficiencies and disposition of legacy facilities
- For major LI construction, facility demolition usually occurs after operations are started. In some cases, demolition of facilities occurs many years after operations are started and when funding becomes available
- Detailed planning data is provided by Facility Information Management System (FIMS)



Planning for the Enterprise of the future and the modernization that will occur over the next several decades will require constant revision to match changing missions, priorities, funding, and implementation impacts at the NSE sites.

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Section 4-Changes from Prior Year TYSP

Major changes from the FY13 TYSP include:

- The CBI Program mission is to support capability with the recapitalization, modernization, and refurbishment of facilities and infrastructure supporting planned mission workload. CBI projects include the planning of a series of upgrades to sustain facilities for planned mission workload. These projects include modernization of production facilities by replacing end-of-life systems (flame detection, RAMS, HPFL lead-in, etc.) and recapitalization projects executed over several years to address Pantex needs
- HE Development Machining Center was added as a key project supporting HE CoE production efforts

Project completions in FY13 include:

- 11-055 HPFL Lead-in Replacement
- Outdoor Warning System Replacement
- 12-041 Heating, Ventilation, and Air Conditioning (HVAC) Replacement
- 12-068 HVAC Coil Replacement
- 12-116 Chiller Replacement
- Design of the Flame Detection Prototype for Building 12-084
- Fiber Optic Cable installation to Support Bay/Cell Upgrades
- Irrigation System Upgrade
- Electrostatic Discharge (ESD) Floor Repairs in 4 areas and 3 new floors
- Narrow Band Radio System Upgrade
- Fire Penetration Seal Replacement
- High Mast Pole Replacement in Zone 4
- High Mast Replacement and Evaluation
- Operations Systems Development & Integration (OSD&I) Facility Modifications



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Section 5-Future Vision and Core Capabilities

5.1 High Explosive (HE) Production

(NNSA Missions: M1-Managing the Stockpile, M6-Recapitalizing Our Infrastructure)

Core Capability (C5-High Explosives)

Pantex HE synthesis operations are performed in an existing moderate-scale production facility. Pantex is currently the only national supplier of War Reserve (WR) quality Hexanitrostilbene, booster and detonator grade High Melting Explosive, Pentaerythritol Tetranitrate, and booster-grade ultra-fine Triamino Trinitrobenzene (TATB), Research Department Explosive, and LX-07 explosives.

Pantex formulates up to 200 pound batches and must blend the batches to reduce inconsistencies and variations. Quality testing is performed on each of the smaller batches. Pantex is the only producer of WR qualified extrudable HE XTX 8003 and 8004, LX-16, LX-07, and Mock 900-24 for test flights. Pantex provides the industry with support capability for Plastic Bonded Explosive-9501.

Pressing operations are being maintained in the current World War II facility until the HEPF, currently under construction, is completed in FY16.

Machining operations are performed in an existing facility. Pantex is the only producer of precision-machined parts for use in nuclear weapons assembly. Unique machining operations include producing HE test samples to support core and enhanced surveillance, fabricating components used in JTAs, performing required safety inspections on as-pressed HE parts, producing specially-fabricated HE parts for NNSA Labs and other off-schedule customers, and sanitizing HE main charges resulting from weapon disassembly.

Main charge explosive materials recovered from dismantled weapons are made available to the Department of Defense (DoD), for use in conventional munitions (after sanitization), transformed into commercially viable products, or destroyed by suitable means on-site.

Key projects supporting HE CoE production efforts include:

- HE Pressing Facility
- HE Science, Technology, and Engineering
- HE Packaging and Staging
- HE Development Machining Center
- Inert Machining
- HE Formulation
- Zone 11 HPFL Replacement
- HE Component Fabrication and Qualification Facility

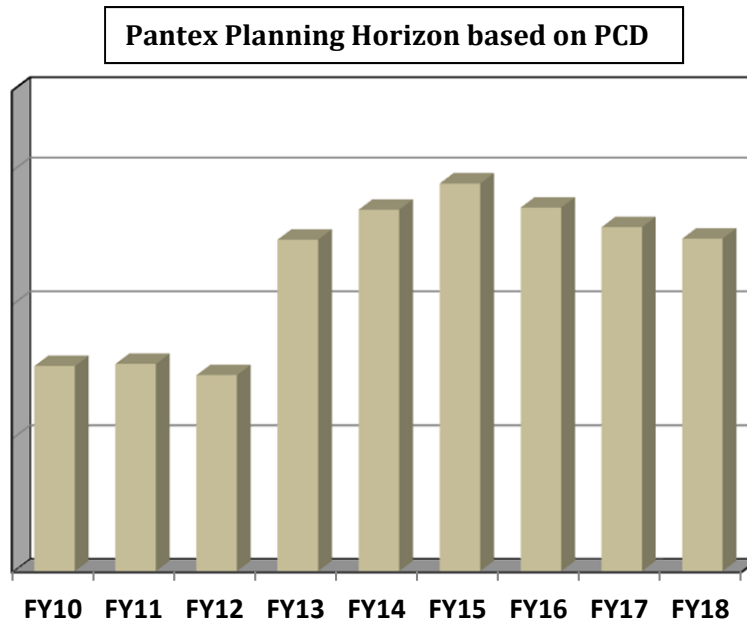
The HE R&D efforts are supported by the HE CoE. The HE ST&E CD-1 documentation is being finalized and should result in design efforts being started in FY15.

Future Vision

The RoD for the Complex Transformation SPEIS selected Pantex Plant as the CoE for HE production. The Pantex HE production mission is required to support nuclear weapons stockpile stewardship while continuously improving levels of safety and productivity. Major activities include:

- Manufacturing special stockpile chemical explosives
- Fabricating explosive components
- Performing comprehensive destructive/non-destructive testing of explosive products/components
- Providing explosives asset stewardship

When the HE CoE is fully implemented, Pantex will have the sustainable infrastructure in place to support the HE need for the foreseeable future. Production will be performed in modern sustainable buildings with efficient and effective processes to minimize costs and maximize operability. Pressing will be done with near net-shape precision and machining will be minimal, thus reducing fabrication and disposal costs. The following table shows the Pantex Planning Horizon based on the PCD requirements for HE surveillance and production. The production requirements will average slightly higher than the FY11 level through FY20 and surveillance requirements are expected to increase through FY15 and remain fairly steady through FY20.



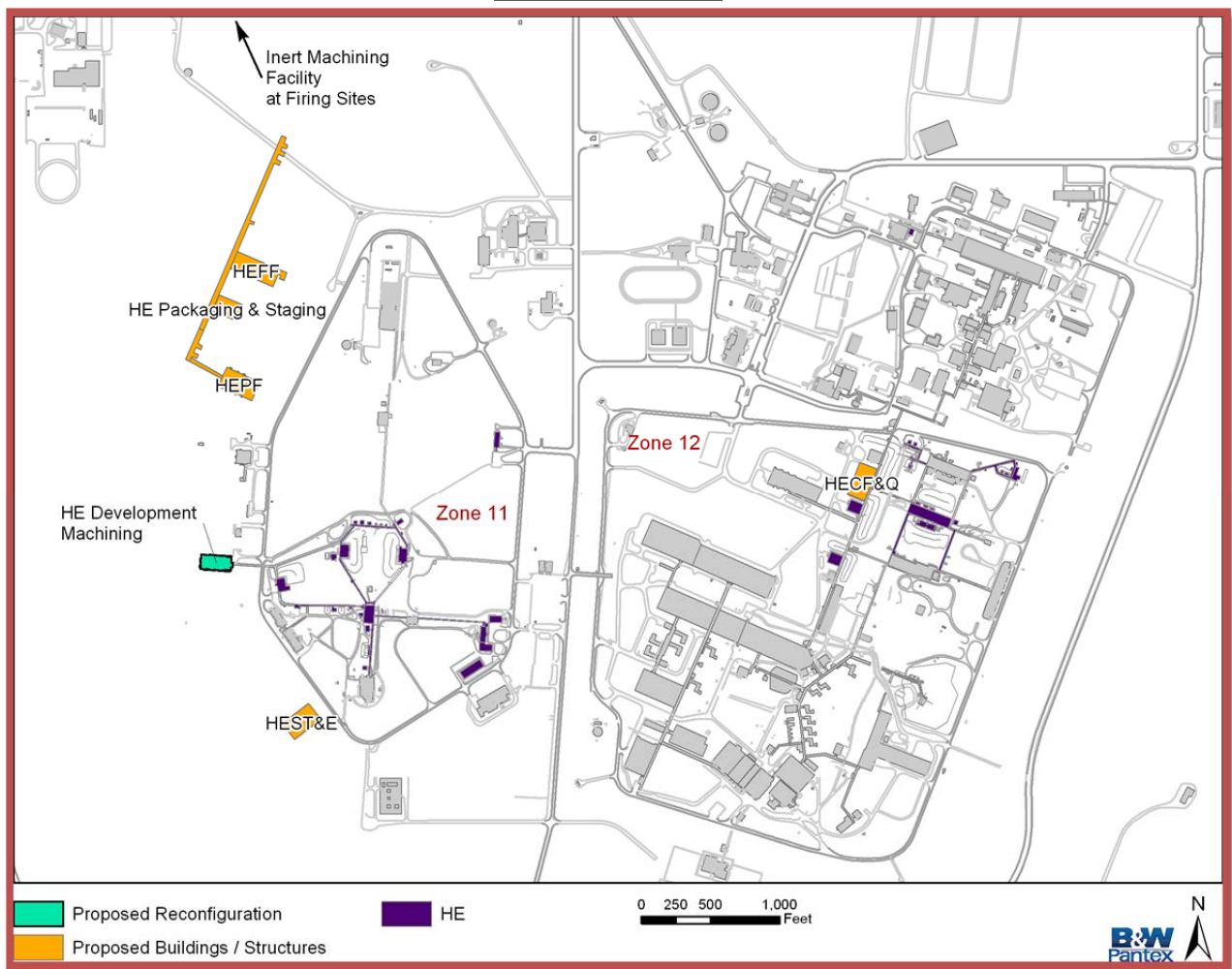
The Physics Laboratories will have validated aging models developed through the accumulation of surveillance and testing data that will allow historical materials to be minimized reducing the footprint currently required for long-term storage. Pantex will continuously manage its explosive inventory to ensure sufficient storage space to meet future stockpile stewardship requirements.

Tactical Horizon (FY14-FY23) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Stockpile LEP Support
 - Commence and sustain two-shift operations for main charge fabrication (pressing and machining) to satisfy W76-1 and B61-12 LEP schedule demands
 - Develop and implement appropriate Insensitive High Explosives main charge fabrication processes
 - Modernize extrudable HE loading and testing capability
- Implement tracking and inventory system to enhance productivity and to prevent potential HE overload and incompatibility issues in operations
- Implement 900 17/LM Mock HE capability for production setups and JTA applications
- Develop and implement virtual training methods
- Implement Design to Manufacture (D2M) explosives fabrication and acceptance processes
- Deploy Non-Destructive Density determination production system for main charge hemispheres pending completion of prove-in and Design Agency (DA) approval

- Actively pursue replacement of experienced personnel lost to retirement with talented scientists and engineers willing to commit to the NSE. Invest in employees' future through education and training including a formalized mentoring process
- Modernize HE pressing and machining capabilities to maintain WR production levels and support national laboratory off-schedule requests related to stockpile stewardship, LEP, and national hydrodynamic testing programs
- Capitalize on existing Pantex Plant core HE competencies to expand and improve the HE production and testing work for NNSA, other government agencies, and non-governmental organizations
- Establish project management discipline for explosives operations to ensure production, project, and development deliverables are provided on time, safely, securely, and with a high degree of quality
- Complete the next phase of the HE CoE transformation with the construction and startup of the HE ST&E, HE P&S facilities, and HE Development Machining Center
- Evaluate options for environmentally contained explosives testing and disposition

Future HE CoE



Strategic Horizon (FY24-FY38) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Sustain and recapitalize the infrastructure to support development and production demands related to the Interoperable Warhead Initiative. This may also require support of individual production requirements for a W-78 and/or a W-88 LEP
- Align resources and infrastructure required to support future Alts and/or Mods to the existing stockpile
- Implement environmentally contained testing and disposition of explosives, if necessary and feasible
- Complete the HE CoE transformation with the construction and startup of the Inert Machining, HE Formulation, and HE Component Fabrication and Qualification facilities



Inert Component HEM SAW

5.2 High Explosives Research & Development (R&D)

(NNSA Missions: M1-Managing the Stockpile, M6-Recapitalizing Our Infrastructure)

Core Capability (C5-High Explosives)

Explosive production and associated development is concentrated within the elements of the programmatic explosives mission categories of synthesis, formulation, pressing, precision explosives machining and assembly, component fabrication and assembly, mechanical testing, chemical materials characterization, and performance testing. Much of this work supports production qualification, stockpile-related surveillance, or process improvement initiatives.

Future Vision

Pantex, as the HE CoE for explosives production for the NSE, ensures that essential mission capabilities are sustained, including the ability to support HE R&D initiatives by the national laboratories and other federal commercial customers. In the future, development information will be communicated in near real-time via appropriately secure data transmission systems. Results of simulations and actual test data are shared, validated, and used to facilitate weapon improvements in order to maintain a high confidence in the nuclear stockpile. Planned consolidation of HE functions will reduce the Plant footprint. The newer facilities will reduce maintenance and operating costs as well as substantially improve operating efficiencies. In most cases, the capabilities that are most in demand as related to R&D are synthesis, formulation, and testing (both destructive and non-destructive).

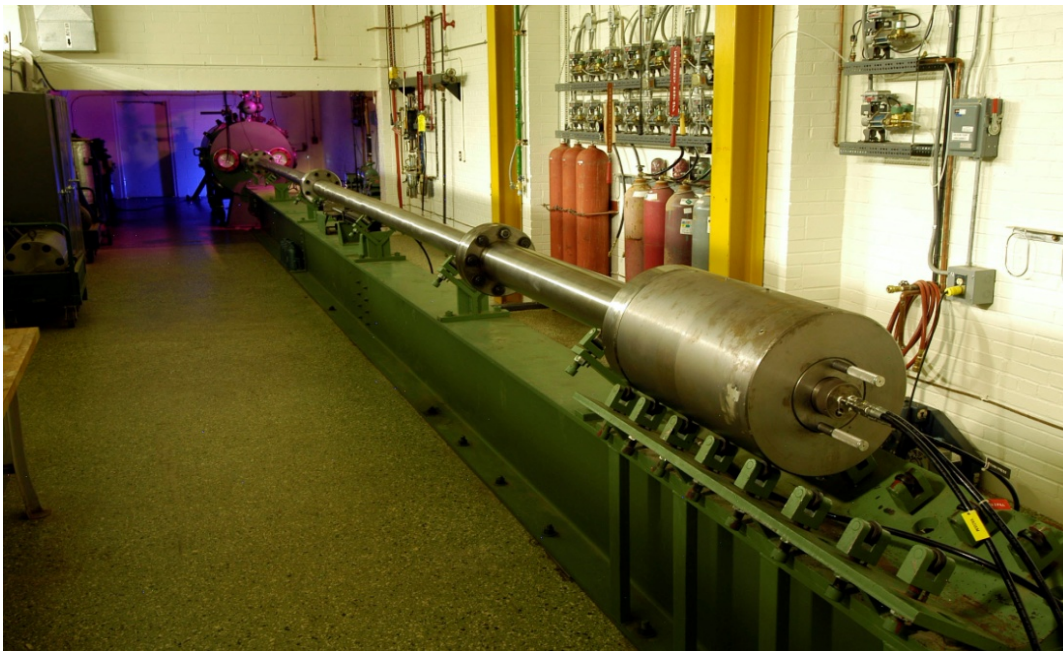
Tactical Horizon (FY14-FY23) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Capitalize on existing Pantex Plant HE core competencies to expand and improve the HE-related work for NNSA, other government agencies, and non-governmental organizations
- Integrate HE R&D work with hydro-testing, detonation systems, and surveillance of the legacy stockpile through the updating of test diagnostics for characterizing chemical, physical, and performance parameters
- Maintain the capability to functionally test programmatic HE systems for acceptance and surveillance activities
- Actively pursue replacement of experienced personnel lost to retirement with talented scientists and engineers willing to commit to the NSE. Invest in employees' future through education and training including a formalized mentoring process
- Build on work for other federal agencies and commercial opportunities to maintain the intellectual vitality of personnel and to exercise HE processes and stockpile stewardship by being the low-cost, high quality provider of materials and services
- Continue the HE CoE transformation with the construction and startup of the HE ST&E, HE P&S, and the HE Development Machining Center
- Replace individual machine tools with "lean manufacturing" machines which combine process now performed by 2-3 separate cutting and machine tools

Strategic Horizon (FY24-FY38) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Develop and sustain HE expertise necessary to support essential HE mission through annually directed stockpile work. This expertise spans the range of synthesis, formulation, fabrication and production, surveillance, analysis, shock physics, materials characterization, experimentation, modeling, and simulation

- Be the provider of choice to appropriate customers for HE material and related intellectual services through the effective leveraging of available resources as realized by overall reduction in product cycle time and reduced direct costs to the customer
- Provide sufficient HE capacities and capabilities to efficiently support current and proposed NSE demands
- Position the Pantex Plant to be the NSE preferred site for HE analysis and programmatic HE performance testing
- Increase WFO contributions to the site budget by maintaining a reputation as HE experts and customer-service oriented partners, and in doing so defray the cost of sustaining associated critical competencies
- Establish a responsive infrastructure and work processes that enable quick reactions to DOE/NNSA mission changes or new developments in the HE manufacturing business environment
- Increase collaboration with Universities, DAs, NNSA plants, and the Atomic Weapon Enterprise to facilitate technical exchange and research opportunities
- Manage and operate the HE CoE in a manner consistent with NNSA and other national needs. Modern infrastructure maximizes productivity, while minimizing operating costs. Projected HE production demands are continually assessed and addressed while maintaining essential capabilities in a continuous state of readiness to meet existing needs responsively. Mature productivity modeling ensures available capacities always satisfy manufacturing requirements
- Complete the HE CoE transformation with the construction and startup of the Inert Machining, HE Formulation, HE Component Fabrication and Qualification facilities



Light Gas Gun

5.3 Weapons Assembly/Disassembly

(NNSA Missions: M1-Managing the Stockpile)

Core Capability (C7-Weapons Assembly/Disassembly)

Under the Complex Transformation SPEIS ROD, Pantex remains the Weapons Assembly/Disassembly CoE with the following capabilities:

- Performing stockpile surveillance, retrofitting, and repairing weapons in support of both LEPs and certification of weapon systems safety and reliability
- Requalifying/refurbishing pits for use in LEPs
- Dismantling weapons surplus to enduring stockpile needs
- Sanitizing and disposing of components from dismantled weapons

Future Vision

Recognizing that the nuclear weapons stockpile is surpassing its original design life, the NNSA is undertaking new surveillance initiatives that increase the projected Pantex workload. This includes augmented sampling, increased testing, and deployment of new diagnostics to meet enhanced testing requirements. More diagnostic tests are being conducted on components than ever before. As the Enhanced Surveillance Initiative establishes new capabilities and a more predictive approach to stockpile evaluation is applied, many of these new testing techniques are incorporated into the Core Surveillance Program.

In addition, potential options to perform non-destructive surveillance on CSAs at Pantex are possibilities to be considered by NNSA and the NSE. In cases where CSA disassembly is not required, this approach will yield timely, less expensive, more logistically efficient data acquisition for stockpile certification purposes.

Tactical Horizon (FY14-FY23) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

Planning is underway with regard to the B61 LEP scheduled for First Production Unit (FPU) at Pantex in FY19. In preparation for this LEP, the site will be required to refurbish/requalify pits used during the primary assembly. Although the effort will be similar to that performed for the W76 LEP, some degree of process development and formalized process implementation will be required at the site. When applying non-intrusive processes similar in nature to those used for W76-1 pit requalification, the option offers efficient component recovery and essentially eliminates inter-site transport of large quantities of CSAs during the term of the LEP.

As planning proceeds, the site stands ready to provide necessary cost and schedule estimates related to such activities upon request. The following mission-related challenges will be addressed over the next decade:

- Plan and secure resources and infrastructure required to support the FPU of the B61 LEP and sustain production schedule commitments
- Plan and apply pit pre-screening and refurbishment capabilities as necessary to support B61 LEP requirements



- Sustain multi-shift operations on Plant Linear Accelerator Radiography systems to maintain existing surveillance schedule
- Dispose of backlogged legacy components resulting from previous dismantlement operations
- Support NNSA commitments to Congress for dismantling retired warheads
- Apply automated tracking and inventory systems as appropriate
- Plan, secure, and apply resources and capabilities required to support the FPU of the Inter-operable Warhead Initiative and prepare to sustain production schedule commitments
- Plan and apply pit pre-screening and refurbishment capabilities, as necessary, to support LEP requirements
- Upgrade Vacuum Chambers to provide additional capacity and backup capabilities
- Production Bays/Cells Upgrade projects to support nuclear explosive operations
- Complete the transformation and modernization with the LI construction and startup of the Non-destructive Evaluation Facility, Bay & Cell Fire Suppression Lead-ins, Production Support Fire Protection Lead-ins, and Material Staging Facility projects
- Upgrade current facilities to support lower ESD environments
- Implement the CBI program and execute the required infrastructure reinvestment to address limited life equipment and systems

***Strategic Horizon (FY24-FY38)
Capability/Needs to Achieve NNSA
Strategic Goals and Objectives***

- Plan and align resources and infrastructure required to support the Inter-operable Warhead Initiative
- Plan and apply pit pre-screening and refurbishment capabilities, as necessary, to support additional LEP requirements
- Maintain, sustain, and recapitalize the infrastructure to support production commitments related to additional LEPs
- Complete the production modernization with the construction and startup of the WSF LI project
- Continue CBI program execution by recapitalizing and sustaining the infrastructure



B83 Workstation

5.4 Campaigns

(NNSA Missions: M1-Managing the Stockpile, M6-Recapitalizing Our Infrastructure)

Core Capability (C7-Weapons Assembly/Disassembly)

The Campaigns and the Plant Directed Research, Development, and Demonstration (PDRD) Program will develop and implement new capabilities for weapon-related production and surveillance.

Future Vision

Enhanced Surveillance continues to provide new or improved diagnostic techniques for detection and quantification of age-related degradation and other potential defects in the stockpile. Enhanced Surveillance works with DSW core surveillance to develop and deploy new diagnostic tests that enable evaluations to be more sensitive to these concerns.

Implementation of many of the new diagnostic tools does not require new facilities; however, diagnostic tools such as neutron or high-energy radiography will require new facilities. A new WSF will provide the needed infrastructure for these new diagnostic tools as well as agile surveillance facilities that can respond to a variety of unanticipated conditions.

The High Explosives & Weapon Operations (HEWO) Readiness Campaign is currently using carryover funds for FY13 and is not funded in the future. However, discussions are ongoing to identify FY14-FY19 funds to meet future process capability demands in support of current program LEP planning. HEWO is vital to Pantex for delivering these capabilities, as well as process improvements and for sustaining essential mission competencies that would otherwise become technologically obsolete. As a result of past HEWO sponsorship, capabilities that meet evolving stockpile demands, while substantially reducing production costs and delivery times within the Enterprise, have been planned and delivered in an integrated and cost-effective fashion.

PDRD remains an invaluable part of the Plant's process improvement effort by continuously evaluating new manufacturing-related approaches. The PDRD Program provides the feedstock for the Technology Maturation Process. With declining Campaign budgets, PDRD is essential to maintaining a minimal investment in technologies that may ultimately mature into fundamental production processes. Investments in technology will enable B&W Pantex to establish enhanced production capabilities, which are key to performing more work within constrained budgets.

Tactical Horizon (FY14-FY23) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Implement improved HE performance diagnostics
- Implement improved NonDestructive Evaluation (NDE) diagnostics to obtain the relevant data on more samples without costly destructive tests pending completion of prove-in and DA approval
- Implement new and expanded capabilities for thermal performance, sensitivity, and mechanical properties testing of explosive materials and components
- Establish sustainable provisions for TATB and TATB-based insensitive explosives supplies
- Implement enhancements to explosive component fabrication processes that ensure the enduring capability to support B61, W78, and W88 primary design requirements (i.e. Near net-shape pressing, E-fabrication, extrusion processes, etc.)
- Develop additional pit pre-screening and refurbishment capabilities in support of B61 LEP requirements
- Develop and implement sustainable manufacturing processes for specialty explosive and mock formulations
- Implement D2M explosives fabrication and acceptance processes
- Facilitate enterprise-wide interactive production planning and scheduling system

- Comprehensively implement automated tracking and inventory system
- Develop and implement comprehensive pit and explosives surveillance diagnostics
- Develop and implement additional pit pre-screening and refurbishment capabilities in support of the Inter-operable Warhead Initiative requirements based on NNSA decisions
- Implement new test apparatus for qualification of materials used to mitigate insults to explosives
- Design and implement new gas gun firing mechanism

Strategic Horizon (FY24-FY38) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Implement paperless manufacturing, assembly, and acceptance processes
- Implement contained testing and disposition of explosives
- Apply remote sensor technology for weapon/component surveillance based on NNSA decisions
- Deliver virtual training methods site-wide to improve efficiencies and reduce costs
- Develop and implement additional pit pre-screening and refurbishment capabilities in support of the Inter-operable Warhead Initiative requirements based on NNSA decisions
- Evaluate the potential to develop and implement pre-screening and reacceptance processes for CSAs in support of the W88 LEP based on NNSA decisions



High Resolution Pit Radiography

5.5 Special Nuclear Material (SNM) - Components

(NNSA Missions: M1-Managing the Stockpile)

Core Capability (C9-Special Nuclear Material Accountability, Storage, Protection, Handling, and Disposition)

This SNM program provides for receipt, storage, inventory, and surveillance of nuclear and weapon components from dismantled weapons and disposition of legacy components. Sub-elements conducted at Pantex are defined as follows:

- Storage of SNM includes provisions for the directed storage of nuclear components at the site. Activities include planning, developing, engineering, and start-up activities related to processing, packaging, and placing components in safe storage. Ancillary activities include thermal monitoring and periodic inventory of the population. In addition, out-year forecasts of nuclear component storage requirements at the site are provided to NNSA annually
- Pit inspection/surveillance that includes the inspection and various measurement activities associated with pits in storage. Activities include weight and leak testing, gas sampling, visual inspection, digital imaging, dimensional inspection, and radiography
- Disposition of legacy items including identification of legacy population, identification of currently available disposition processes, development of new disposition processes, and off-site shipment of items/material to ultimate disposition sites
- Execution of container surveillance programs (Type B and on-site storage containers)
- Pit pre-screening for LEP reacceptance and routine surveillance capabilities
- Environmental control and physical security for the pits
- Safety and reliability of nuclear components as specified in DA requirements documents
- Packaging and transportation of components, as required, to Los Alamos National Laboratory (LANL) for D-testing and material recovery

Future Vision

- Develop and implement process for Defense Programs Package (DPP)-1 container pit packaging for off-site shipment
- Execute container surveillance programs (Type B and on-site storage containers)
- Establish and Implement Type B container processes for packaging and shipping Radioisotopic Thermoelectric Generators (RTGs) to accommodate surveillance and disposition activities
- Establish a Type B Container logistics depot to provide NSE-wide stewardship capabilities for nuclear shipping containers
- Establish capability and capacity for dimensional inspection, laser gas sampling, and micro-focus computed tomography for non-destructive pit surveillances
- Utilize Zone 12 Material Staging Facility to improve operational efficiencies and reduce PIDAS maintenance and recapitalization costs that are currently planned



Tactical Horizon (FY14-FY23) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Implement SNM environmental testing capability at Pantex
- Provide environmental control and physical security for pits

- Initiate design of the Material Staging Facility in Zone 12 South for pit capacity established in the Complex Transformation SWEIS ROD
- Develop procedures utilizing a DPP-1 container as a breached pit contingency that contains the component locally and facilitates shipment to LANL
- Efficiently administer NSE Type B container logistics system
- Package and transport RTGs off-site for surveillance and disposition
- Ensure pit storage samples meet safety and reliability requirements as specified in DA requirements documents
- Establish DPP-2 and DPP-3 packaging lines for inter-site transport of uranium components
- Package and facilitate transport of components, as required, to LANL for D-testing and material recovery
- Modify facility as necessary to accept glove box for the B61 LEP pit refurbishment/re-qualification process(es)

Strategic Horizon (FY24-FY38) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Provide environmental control and physical security for pits
- Ensure pit storage samples meet safety and reliability requirements as specified in DA requirements document



Pump-down and Fill

5.6 Special Nuclear Material (SNM) - Pits

(NNSA Missions: M1-Managing the Stockpile)

Core Capability (C9-Special Nuclear Material Accountability, Storage, Protection, Handling, and Disposition)

Material Disposition (MD)

The Office of Fissile MD (NA-26) provides for the safe, secure, and environmentally sound storage of legacy fissile components, thermal monitoring, storage sampling surveillance, development of processes to utilize the new surplus pit shipping container (MD-2), special pit shipments, and the ultimate disposition of non-weapons grade unusable fissile materials declared surplus to national security needs.

Core Capability

Perform pit repackaging activities for surplus pit off-site shipment to the DA to support storage sample surveillance requirements and Advanced Recovery and Integrated Extraction System (ARIES) demonstrations and continuing disposition, as directed via appropriate scheduling and authorizations.

Monitor the thermal environments of pits in Zone 4 and Zone 12 interim storage. The project includes retrieval and reporting of thermal data, instrumentation of storage areas containing pits, and monitoring/characterization of storage facilities.

Inspect surplus pit storage samples, selected by the DA, to ensure they continue to meet safety and reliability requirements as specified in DA requirements.

Future Vision

Develop and implement process for MD-2 container pit packaging and off-site shipment. Implement enhanced pit thermal monitoring technology. Package and ship surplus pits to pre-stage items supporting pit disposition and conversion.

Tactical Horizon (FY14-FY23) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Develop and implement process for MD-2 container pit packaging. Package and ship surplus pits to pre-stage areas supporting the Pit Disposition and Conversion Project
- Package surplus pits for off-site shipment to the DA to support storage sample surveillance requirements
- Perform pit repackaging activities for surplus pit off-site shipment supporting ARIES demonstrations and disposition, as directed
- Implement enhanced thermal monitoring of pits in interim storage. The project includes retrieval and reporting of thermal data, instrumentation of storage areas containing pits, and monitoring/characterization of storage facilities
- Inspect surplus pit storage samples, selected by the DA, to ensure they continue to meet safety and reliability requirements as specified in DA requirements
- Support planning and design of a new Material Staging Facility

Strategic Horizon (FY24-FY38) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Continue pit storage, thermal monitoring, and surveillance activities as defined above
- Transition operations to the new Material Staging Facility
- Package and ship surplus pits supporting pit disposition and conversion

5.7 Infrastructure

(NNSA Missions: M6-Recapitalizing Our Infrastructure)

Core Capability (C10-Enabling Infrastructure)

Pantex infrastructure capabilities include weapons assembly/disassembly bays and cells, HE synthesis, pressing, machining, firing site facilities, and the Production Support infrastructure that directly sustain the capabilities and mission operations in the MC facilities.

Future Vision

A key aspect of the 2010 NPR is, “Modernization of the infrastructure, including major capital projects, needed to ensure safe, secure, sustainable and cost-effective operations in support of scientific and manufacturing activities.” Pantex, with the support of the NNSA, intends to sustain and recapitalize the infrastructure in order to perform the Pantex mission while supporting plant consolidation and energy and sustainability goals of NNSA.

Tactical Horizon (FY14-FY23) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

Modernization projects are required to ensure reliable facilities and infrastructure to sustain long-term benefits to NNSA. Near-term, HE CoE and NDE projects will require support. CBI projects will enable Pantex to sustain operations and minimize the disruptions to production by upgrading individual areas.

The PREP was approved as an Energy Savings Performance Contract. This project will play a key role in achieving the President’s National Objectives and the Secretary of Energy’s priorities and goals for energy conservation. As a result, reductions in the amount of Scope 2 Greenhouse Gases will be reported by Pantex. Energy generated and used by the Plant is expected to reduce the Plant’s electrical costs. Based on preliminary analysis, the five 2.3MW turbines will reduce the Plant’s annual cost by approximately 55 percent and generate 60 percent of the Pantex’s annual electricity requirements.

Initiatives from other NNSA programs include site-wide wireless initiatives, Homeland Security Presidential Directive-12 badge authentications into unclassified networks, and cyber security operations centers. These initiatives are being evaluated for potential future funding requests.

Several other LI projects such as Bay and Cell Fire Suppression Lead-ins, Cells Upgrade, Zone 11 HPFL, WSF, and other replacement/refurbishment projects will require support to ensure a safe, secure, and fully functional infrastructure is available to support the Plant mission.

Strategic Horizon (FY24-FY38) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

Long-term LI projects are required to address previously identified projects to recapitalize enduring facilities and ensure reliable facilities and infrastructure to sustain long-term benefits to NNSA.

The Infrastructure Consolidation Complex is proposed to consolidate administrative functions, improve operational efficiencies, reduce energy consumption, and eliminate obsolete deteriorated square footage at the site. When complete and the identified vacating facilities are demolished, the new facility is expected to reduce the Plant footprint by over 50,000 ft², and maintenance and utility costs by approximately \$1,400K per year.

5.8 Alternative - Mission Transition to New Work

(NNSA Missions: M2-Preventing Proliferation)

Core Capability (C12-Support of Other Mission/Program Capability)

Pantex provides unique DOE/NNSA contractor goods or services to Other Federal Agencies (OFAs) and the private sector through the Pantex External Mission Center (eXMC). The Pantex eXMC is made up of the WFO program, the Reimbursable Program, Nuclear Non-Proliferation (NA-20), Nuclear Incident Response (NA-40), and the Field Intelligence Element. Pantex provides direct support to NA-20, NA-40, and IN-1 with several projects involved in arms control, nonproliferation of nuclear warheads, materials, technologies, nuclear counterterrorism, and training and analysis.

WFO and Reimbursable Programs

WFO projects provide unique DOE/NNSA contractor goods or services to OFAs and the private sector. Reimbursable projects provide Pantex products and services to other facilities within the DOE. These projects are fully funded by the requesting organization and are performed on a non-interference basis with Plant mission work. Pantex's external mission work scope includes, but is not limited to: Nuclear nonproliferation, Intelligence, HE products and services, Nuclear Incident Response, consultation, and other specialized training. As NNSA funding continues to decline, Pantex will leverage the WFO program as an avenue to grow budgets, maintain headcount for weapons support, and cultivate critical skills.

Nuclear Nonproliferation

Pantex has several NA-20 projects involved in arms control and the nonproliferation of nuclear warheads, materials, and technologies in the former Soviet Union, including the impact of future arms control treaties on Pantex and the prevention of the proliferation of nuclear warhead technologies. The current presidential administration is in advanced planning to determine the capability and technology to support the Bilateral Implementation Commission of the Strategic Offensive Reduction Treaty, Treaty of Moscow) for a verification regime. If a warhead elimination régime were to be negotiated and ratified, there exists the possibility that sometime in the future a Russian delegation could visit Pantex as part of verification régime.

Field Intelligence Element

The Pantex Field Intelligence Element interfaces and supports other government agencies as requested.

Counterintelligence

The Pantex Counterintelligence program's mission is to prevent foreign intelligence and international terrorist organizations from successfully targeting Pantex or other DOE/NNSA assets. Strong relationships are maintained with the NPO, the Federal Bureau of Investigation, the United States Intelligence Community partners, and local law enforcement to identify and mitigate foreign threats to the Pantex Plant.

HE Products and Services

B&W Pantex Explosives Technology Division provides HE support to NNSA's National Laboratories, as directed on a cost-reimbursable basis, and provides products and services to the DoD and private industry. As an added benefit the activities will assist in maintaining capabilities and threshold capacities for synthesis, formulation, pressing, machining, and analytical/performance testing of NNSA explosives, as necessary to meet stockpile acceptance, surveillance, rebuild, JTA, and LEP requirements. These activities also support related elements such as component development, component replacement, component aging studies, and sanitization.

Nuclear Incident Response Program

B&W Pantex provides qualified technical and professional personnel and equipment for Accident Response Group (ARG), ARG disposition, Joint Technical Operations Team (JTOT), and Radiological Assistance Program (RAP). These enhance DOE capability to respond to accidents and significant incidents involving nuclear weapons or components.

Secure Transportation Asset (STA) Program

B&W Pantex provides services to the OST. These services include performance of inspections, maintenance, and modifications of OST trucks/tractors, escort vehicles, Safe Secure Trailers (SSTs), Safeguard Transporters (SGTs), and associated electronics and communications equipment.

Environmental Management

The DOE Office of Environmental Management and Office of NNSA have initiated the closeout of the Pantex Plant Environmental Restoration program and transition to Long-Term Stewardship (LTS). In FY11, NNSA became responsible for Pantex LTS management. Pantex entered into an Interagency Agreement (IA) between the U.S. Environmental Protection Agency, Region 6, the U.S. DOE, and the Texas Commission on Environmental Quality in early 2008. The IA is pursuant to Section 120(e) of Comprehensive Environmental Response Compensation and Liability Act. The IA describes the process by which the DOE/NNSA will complete cleanup activities to address impacts from legacy operations at Pantex, and defines the roles and responsibilities of each party. NNSA will be responsible for continuing to meet the regulatory requirements as documented in the RoD and amended Compliance Plan.

Tactical Horizon (FY14-FY23) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Reimbursable systems and processes will continue to be developed and/or upgraded to ensure increased efficiencies and lower costs associated with the Pantex reimbursable work program

Examples include:

- Make the WFO program as seamless as possible such that the private sector wants and can do business with B&W Pantex without undue paperwork and bureaucracy
- Maintain a site-wide integrated project baseline management system to ensure project managers can properly monitor project costs against schedule, while enabling Pantex sponsors to access the same unclassified data
- Maintain an intellectual property function in which ideas from Plant-specific activities can be patented and actively marketed for licensing potential with the commercial sector
- Maintain the capability to support HE projects for other governmental agencies with respect to the fabrication and testing of HE assemblies and evaluation of HE issues
- Provide DOE/Headquarters with training and training aids for Other Governmental Agencies with respect to Weapons Incident Response

Strategic Horizon (FY24-FY38) Capability/Needs to Achieve NNSA Strategic Goals and Objectives

- Develop an external E-Business capability enabling potential Pantex reimbursable sponsors to:
 - Identify the Plant capabilities and services desired
 - Communicate with the responsible Plant management
 - Enter into appropriate contractual instruments electronically
 - Enable the sponsor to update project status and receive unclassified summary reports

Section 6-Real Property Asset Management

B&W Pantex has developed a long-range plan that balances new construction, energy conservation, and facilities disposition and is aligned with workload projections to ensure support of the mission. Based on the planning assumptions, Pantex square footage is anticipated to increase as shown in the TYSP timeframe.

Over the past several years, Pantex has been chronically underfunded to sustain facility and infrastructure requirements to support NNSA objectives. Due to these funding constraints, available resources were focused on ensuring MC facility availability. This was at the expense of the balance of Plant and is evidenced by the increased rate of degradation of facilities and equipment over the past several years.

The FY14 President’s Request and FYNSP funding profiles (April 2013) for Pantex show the Site Stewardship budget to be adequate to support operational capability levels in FY14. In FY15-FY19, the Site Stewardship budget does not meet operational capability. The current FY14 funding level supports the DSW mission deliverables. It also provides funding to support base program non-labor costs for utility services, regulatory compliance contracts, direct material, minimum unplanned expenditures and/or emerging issues, and onboard headcount. It does not fully maintain operations or arrest the growth of DM. The immediate challenge is to increase the site funding for critical infrastructure improvements and stabilize the growth of DM.

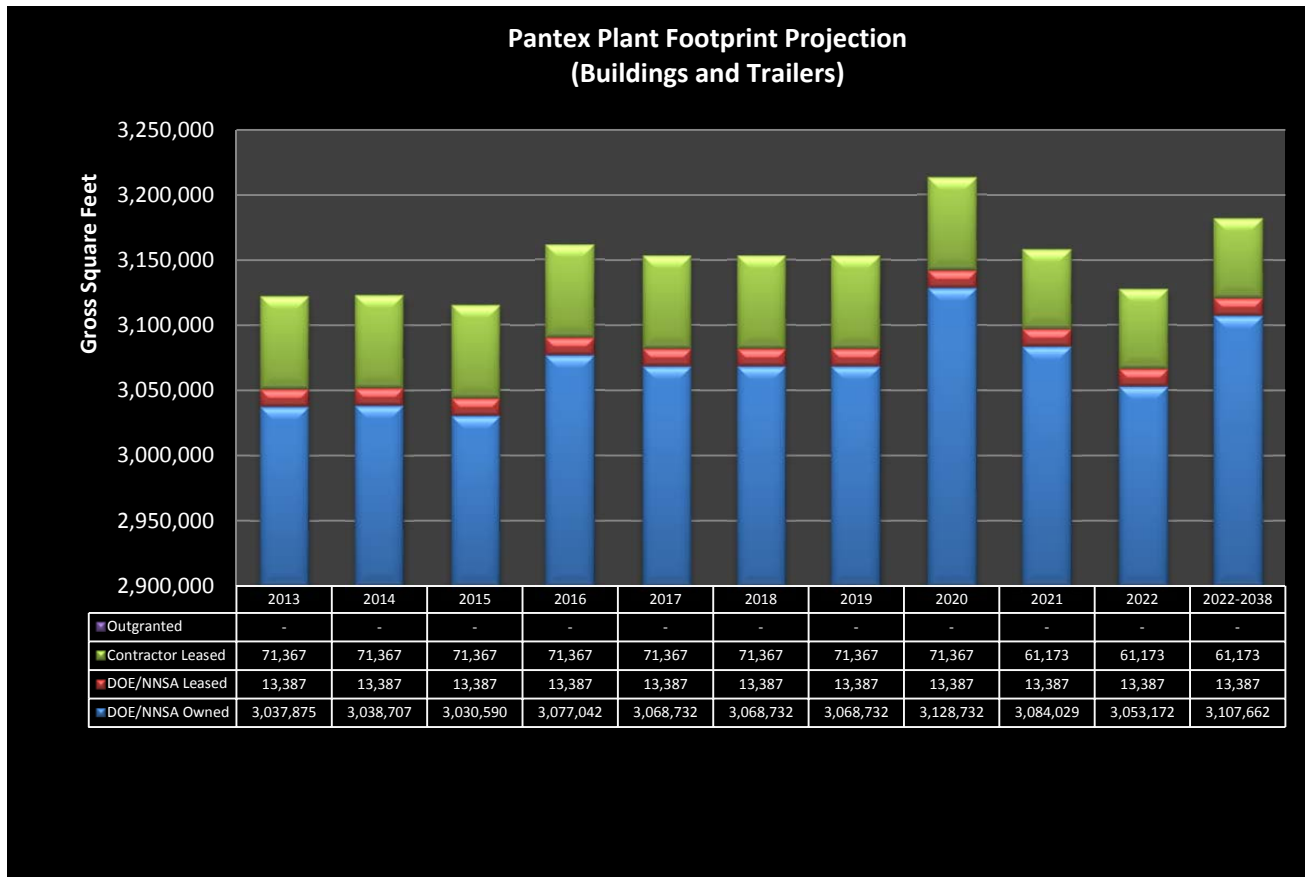
The funding target for FY15-FY19 is \$11M escalating to \$46.6M below the operational capability level between these years. This funding level is inadequate to support the projected onboard head count and the base operations. The DSW mission deliverables will be placed at high risk.

FY 2013*-2019 Site Stewardship Budget							
\$ in Millions							
	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Operational Capability	162.2	156.4	164.8	170.3	176.1	182.0	188.2
Bay/Cell Reinvestment (FY13-18), Vacuum Chamber (FY13 only), Addt'l OPC (FY14 only)	9.8	20.6	13.0	12.0	12.0	12.0	12.0
Target Funding	165.6	177.0	166.8	167.0	167.6	150.6	153.6
Unfunded Requirement	(6.4)	0.0	(11.0)	(15.3)	(20.5)	(43.4)	(46.6)
* 2013 Operations of Facilities							

6.1 Site Footprint (Current and Future)

Pantex has identified facility and infrastructure LI projects in support of the site mission. NNSA evaluates and selects LI construction projects to satisfy the program requirements and funding targets identified in the FYNSP. Planned major construction includes six new HE related facilities, a staging facility, an evaluation facility, a maintenance facility, a new administrative consolidation complex, and a backup computer facility.

Funding for General Plant expense and capital equipment projects come primarily from RTBF. The current RTBF budget does not allow for adequate recapitalization of Plant infrastructure nor does it allow for improvements related to environmental sustainability. Pantex Plant has historically been dependent on FIRP and Plus-Up funding for Plant recapitalization and without adequate Site Stewardship funding the Plant infrastructure will continue to deteriorate. Pantex has identified a backlog of unfunded General Plant, expense, and capital equipment projects. Some of the key projects in the backlog include RAMS, replacement of the deteriorated HPFL lead-in piping to production and production support buildings, classified wiring for HE areas, safety and efficiency related projects, and security capital improvements.



Assumption: Based on the guidance to include approved construction, only those projects currently funded or included on the CWG Nominal Schedule and demolition associated with those projects are included in the table.

6.2 Deferred Maintenance (DM) Reduction

The DM backlog at the end of FY12 was \$351M, which is \$34M more than the end of FY11. DM buy down in FY12 was \$3M, while new growth from CAS inspections was \$12M. A significant portion of the increase, \$25M, was due to inflation of the backlog to current year dollars. DM reduction since FY03 is approximately \$261M. The projected DM reduction for FY13 is approximately \$3M and a projected growth of \$9M assuming an inflation rate of 1.9 percent.

B&W Pantex DM estimates for deficiencies identified during Condition Assessment Survey inspections are derived from the Condition Assessment Information System database. Future DM backlog

projections are based on a mathematical model that includes factors for Plant deterioration, inflation, and Plant growth. The model is also used to estimate required maintenance based on funded and approved projects. Estimated required maintenance is based on maintaining a 2.7 percent Facility Condition Index (FCI) for MC facilities, and an FCI for MDNC facilities of 11.8 percent in FY10 and improving to 11 percent in FY21 for an average combined (MC/MDNC) FCI of 7 percent or below, and a stabilized total FCI of 7.5 percent or below through FY21.

Due to RTBF funding limitations, there is currently no funding available to arrest the growth of DM, which impacts the Plant’s ability to maintain an adequate condition for all facilities and infrastructure. The result of this is evident in the chart below which reflects the imbalance in the FCI for mission critical and mission dependent not critical facilities and infrastructure.



The FIRP Program was the primary funding source used to restore, rebuild, and revitalize the physical infrastructure at Pantex. As such, the Pantex FIRP Program was the primary funding source focused on reduction of DM that significantly increases operational efficiency and effectiveness of facilities and systems in support of stockpile stewardship mission.

With the sunset of the FIRP Program, the Operations of Facilities funding is not adequate to arrest the growth of backlog DM. The CBI program, currently being initiated, may allow Pantex to modernize/recapitalize and sustain the infrastructure for current and future weapon programs with secondary benefits of a reduction of DM.

The estimated FCI in the chart is based on planned projects. As shown on the previous page, the FCI for MC facilities goes from 2.9 percent in FY13 to 4.8 percent in FY23, and the FCI for MDNC facilities reduces from 12.8 percent in FY13 to 7.0 percent in FY23.

NNSA has provided Site-Wide Level 2 Milestones for MC and MDNC facilities for FCI at 5 percent and 8.45 percent respectively. Due to limited funding, Pantex funds maintenance on MC facilities to

maintain FCI below 5 percent. However, the 8.45 percent FCI goal for MDNC facilities is not being met. Pantex will not meet the goal until additional funding is provided.

Replacement Plant Value		\$4,081	Million			
Total Deferred Maintenance		\$351	Million			
Site Wide Facility Condition <i>Index</i>		8.6%				
		Facility Condition Index	Asset Condition Index	Asset Utilization Index	# of Assets	Gross Square Feet Buildings & Trailers (000s)
Mission Dependency	Mission Critical	2.8%	97.2%	97.9%	52	992
	Mission Dependent	13.1%	86.9%	99.4%	457	1,818
	Not Mission Dependent	17.7%	82.3%	85.5%	197	310
Facility Use	Office	7.7%	92.3%	98.4%	52	486
	Warehouse	6.3%	93.7%	97.4%	236	725
	Laboratory	6.5%	93.5%	100%	8	77
	Housing	N/A	N/A	N/A	0	0

Assumptions: Information in the table above is based on information as of September 30, 2012. The number of assets in Mission Dependency includes Other Structure and Facilities. Laboratory space at Pantex has a FIMS usage code of manufacturing/production related laboratories. The Warehouse category includes staging magazines and trailers (400 series FIMS usage codes).

6.3 Space Utilization and Consolidation

Space management encompasses all real property owned or leased by DOE. The RTBF Program is responsible for the overall management of space. However, to support the site mission, individual facilities are assigned to functional organizations based on space requirements and specialized construction. The functional organizations are responsible for the day-to-day utilization of their assigned buildings. Space utilization remains high at Pantex with space being 98 percent utilized in FY12. Because of this high utilization, site planning efforts are closely coordinated with Plant mission and support needs so that operations are in facilities appropriate for their use, and changes in facility requirements are coordinated and implemented in advance.

6.4 Sustainability

Pantex employs a whole building concept to consider all facets of environmental and energy sustainability. Actions and activities for sustainability encompass the many issues of environmental protection, pollution prevention, resource conservation, waste management, energy and water management, as well as the reduction of greenhouse gases resulting from Plant processes and the use of petroleum fuels. Any project can be properly developed to support sustainability, whether it is a specific project to upgrade the efficiency of a building’s heating, cooling, and ventilation units; construct a new building; replace a roof or even decommission and deconstruct retired buildings. Pantex is striving to replace finite energy sources with sustainable and renewable wind-generated energy and as practical, solar power. Sustainability is a growing concept that will drive improvements in Plant operations for years to come.

6.5 Freeze the Footprint

The “Freeze the Footprint” policy requires that agencies not increase the square footage of space predominately used for offices and warehouses compared to the FY12 baseline. New office or warehouse space must be offset with corresponding reductions in office or warehouse space to ensure there is no net increase in the size. Facilities used to store weapon, SNM, explosives, programmatic components, and general storage are included in the warehouse category. Pantex has already completed construction of a Zone 12 HE storage facility in FY13, and construction is underway on additional HE storage facilities associated with the HEPF which are to be completed in FY15. Pantex currently has office and warehouse facilities available to demolish that could be used to offset the new storage space, but the lack of a funding source for facility disposition will make it challenging to meet the “Freeze the Footprint” policy for the Pantex Plant.

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Section 7-Appendices

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Appendix A - NNSA Missions

NNSA is responsible for the management and security of the nation’s nuclear weapons, nuclear non-proliferation, and naval reactor programs. It also responds to nuclear and radiological emergencies in the U.S. and abroad. Additionally, NNSA federal agents provide safe and secure transportation of nuclear weapons and components and special nuclear materials along with other missions supporting the national security.

Code	Mission	Description
M1	Managing the Stockpile	<p>Maintaining the safety, security, and effectiveness of the nuclear deterrent without nuclear testing, especially at lower numbers, requires increased investments across the NSE.</p> <p>Program elements include the following:</p> <ul style="list-style-type: none"> • Design and build 21st Century uranium and plutonium processing facilities • Ensure the capabilities to complete ongoing LEPs • Strengthen science, technology, and engineering base • Reinvest in the scientists and engineers who perform the mission
M2	Preventing Proliferation	<p>Reducing the global nuclear threat by detecting, securing, safeguarding, disposing, and controlling nuclear and radiological material, as well as promoting the responsible application of nuclear technology and science. To accomplish this mission, the Office of Defense Nuclear Nonproliferation works closely with a wide range of international partners, key U.S. federal agencies, the U.S. national laboratories, and the private sector.</p> <p>Program elements include the following:</p> <ul style="list-style-type: none"> • Removing and securing dangerous nuclear and radiological material and encouraging indigenous capability • Research and development of technologies to detect proliferation and monitoring treaty obligations • Providing leadership nuclear safeguards and security, nuclear controls, nuclear verification, and nuclear nonproliferation policy • Working cooperatively with international partners to secure and eliminate potentially vulnerable nuclear weapons and weapons-usable material • Strengthen the capability of foreign governments to deter, detect, and interdict illicit trafficking in nuclear and other radioactive materials • Working to dispose of fissile materials
M3	Powering the Nuclear Navy	<p>Providing militarily effective nuclear propulsion plants and ensuring their safe, reliable, and long-lived operation.</p> <p>The Naval Nuclear Propulsion Program comprises the military and civilian personnel who design, build, operate, maintain, and manage the nuclear-powered ships and the many facilities that support the U.S. nuclear-powered naval fleet. The program has cradle-to-grave responsibility for all naval nuclear propulsion matters. Program responsibilities are delineated in Presidential Executive Order 12344 of February 1, 1982, and prescribed by Public Laws 98-525 of October 19, 1984 (42 USC 7158), and 106-65 of October 5, 1999 (50 USC 2406).</p> <p>Program elements include the following:</p> <ul style="list-style-type: none"> • Research, development, and support laboratories • Contractors responsible for designing, procuring, and building propulsion plant equipment • Shipyards that build, overhaul, and service the propulsion plants of nuclear-powered vessels • Navy support facilities and tenders • Nuclear power schools and Naval Reactors training facilities • Naval Nuclear Propulsion Program Headquarters and field offices

M4	Emergency Response	<p>Ensuring that capabilities are in place to respond to any NNSA and DOE facility emergency. It is also the nation's premier responder to any nuclear or radiological incident within the United States (U.S.) or abroad and provides operational planning and training to counter both domestic and international nuclear terrorism.</p> <p>Program elements include the following:</p> <ul style="list-style-type: none"> • Planning for Emergencies • Responding to Emergencies • Counterterrorism • International Programs • Emergency Communications • Operations Center • Emergency Operations Training • Continuity Program
M5	Continuing Management Reform	<p>Managing and securing the nation's nuclear weapons, nuclear non-proliferation, and naval reactor programs. It also responds to nuclear and radiological emergencies in the U.S. and abroad. Additionally, NNSA federal agents provide safe and secure transportation of nuclear weapons and components and special nuclear materials along with other missions supporting the national security.</p>
M6	Recapitalizing Our Infrastructure	<p>Investing in the transformation of the nuclear weapons complex into the nuclear security enterprise needed to meet future stockpile needs.</p>

Appendix B - NNSA Core Capabilities

Core Capability Code	Function	Pantex Plant
C1	Design, Certification, Experiments, Surveillance, and ST&E base	
C2	Plutonium	
C3	Uranium	
C4	Tritium	
C5	High Explosives	Yes
C6	Non-Nuclear	
C7	Weapons Assembly/Disassembly	Yes
C8	Transportation	
C9	Special Nuclear Material Accountability, Storage, Protection, Handling, and Disposition	Yes
C10	Enabling Infrastructure	Yes
C11	Counterterrorism and Counter Proliferation	
C12	Support of Other Mission / Program Capability	Yes
C13	Federal Management and Oversight	

Pantex Supporting Capabilities

The capability and capacity for synthesis, formulation, pressing, machining, and analytical and performance testing of all NNSA explosives to meet acceptance, surveillance, rebuild, JTA, and LEP requirements. These explosive materials also support activities such as development work, component work, component replacement, component aging studies, and sanitization activities.	C1, C5, C6, C12
Pantex has several programs involved in arms control and the nonproliferation of nuclear warheads, materials, and technologies in the former Soviet Union. These programs look at diverse issues such as the impact of future arms control treaties on Pantex and the prevention of the proliferation of nuclear warhead technologies.	C11
Pantex provides qualified technical and professional personnel and equipment for ARG, ARG disposition, JTOT, and RAP. These enhance DOE capability to respond to accidents and significant incidents involving nuclear weapons or components.	C11
Pantex provides services to the OST supporting the secure transportation of nuclear weapons, nuclear components, and other cargoes related to the maintenance of stockpiled weapons. These services include scheduling and performance of inspections, maintenance, and modifications of OST trucks/tractors, escort vehicles, SSTs, SGTs, and associated electronics and communications equipment.	C8, C12
Sanitizing and disposing of components from dismantled weapons.	C7

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Appendix C - Acronyms

ARG	Accident Response Group	M&O	Management and Operating
ARIES	Advanced Recovery and Integrated Extraction System	MC	Mission Critical
CBI	Capability Based Investments	MD	Material Disposition
CD	Critical Decision	MDNC	Mission Dependent, Not Critical
CI	Counterintelligence	NDE	Non Destructive Evaluation
CoE	Center of Excellence	NNSA	National Nuclear Security Administration
CPIBP	Corporate Physical Infrastructure Business Plan	NPO	NNSA Production Office
CSA	Canned Sub Assembly	NPR	Nuclear Posture Review
CWG	Construction Working Group	NSE	Nuclear Security Enterprise
D2M	Design to Manufacture	OFA	Other Federal Agencies
DA	Design Agency	OSD&I	Operations Systems Development & Integration
DM	Deferred Maintenance	OST	Office of Secure Transportation
DoD	Department of Defense	P&S	Packaging and Staging
DOE	Department of Energy	P&PD	Production and Planning Directive
DP	Defense Programs	PCD	Program Control Document
DPP	Defense Programs Package	PDRD	Plant Directed Research, Development and Demonstration
DSW	Directed Stockpile Work	PIDAS	Perimeter Intruder Detection and Assessment System
ESD	Electrostatic Discharge	PREP	Pantex Renewable Energy Project
eXMC	External Mission Center	R&D	Research and Development
FCI	Facility Condition Index	RAMS	Radiation Alarm Monitoring System
FIMS	Facility Information Management System	RAP	Radiological Assistance Program
FIRP	Facilities and Infrastructure Recapitalization Project	RoD	Record of Decision
FPU	First Production Unit	RTBF	Readiness in Technical Base and Facilities
FY	Fiscal Year	RTG	Radioisotopic Thermoelectric Generator
FYNISP	Future Years Nuclear Security Program	SGT	Safeguard Transporter
gsf	Gross Square Feet	SI	Sealed Insert
HE	High Explosives	SNL	Sandia National Laboratory
HEPF	High Explosive Pressing Facility	SNM	Special Nuclear Material
HEWO	High Explosives and Weapons Operations	SPEIS	Supplemental Programmatic Environmental Impact Statement
HPFL	High Pressure Fire Loop	SSMP	Stockpile Stewardship and Management Plan
HRO	High Reliability Organization	SST	Safe Secure Trailer
HVAC	Heating, Ventilation, and Air Conditioning	ST&E	Science, Technology & Engineering
IA	Interagency Agreement	TATB	Triamino Trinitrobenzene
JTA	Joint Test Assembly	TRC	Total Recordable Case
JTOT	Joint Technical Operations Team	TTU	Texas Tech University
LANL	Los Alamos National Laboratory	TYSP	Ten Year Site Plan
LEP	Life Extension Program	WFO	Work For Others
LI	Line Item	WR	War Reserve
LTC	Lost Time Case	WSF	Weapon Surveillance Facility
LTS	Long-Term Stewardship		

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TEN-YEAR
SITE PLAN

FY2014 - FY2023

**SERVICES
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JULY 2, 2013

PanTEX