National Nuclear Security Administration

Consolidated Nuclear Security (CNS), LLC

Fiscal Year 2015 Performance Evaluation Report (PER)

NNSA NPO Field Office

Performance Period:
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September 30, 2015

November 18-19, 2015

APPROVED FOR PUBLIC RELEASE

This document has been approved for release to the public by:

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Date: 12/09/15

Executive Summary

This Performance Evaluation Report (PER) provides the assessment of Consolidated Nuclear Security, LLC (CNS) performance for the period of October 1, 2014, through September 30, 2015, as evaluated against the objectives defined in the Fiscal Year (FY) 2015 Strategic Performance Evaluation Plan (PEP). The National Nuclear Security Administration (NNSA) took into consideration and consolidated all input provided (e.g., Contractor Assurance System (CAS), Program Reviews, etc.) from NNSA Program and Functional Offices both at Headquarters and in the field. The Performance Objectives (POs) in the PEP were graded using adjectival ratings as described in the Federal Acquisition Regulation. The POs were then considered in the aggregate to provide an overall adjectival rating and percentage of fee earned for the contract. Comments on the performance of each Contributing Factor (CF) and Site Specific Outcome (SSO) under each PO identified in the PEP are provided as well.

CNS submitted a Performance Self-Assessment Report that covered the rating period. CNS is to be commended for the thoroughness of their report, although it did not embrace the expectation of being self-critical. NNSA reviewed the self-assessment report and considered it in conducting our evaluation. In most cases NNSA did not agree with the overall assessment of Very Good.

PO-1: Manage the Nuclear Weapons Mission (35% of At-risk fee) was rated as SATISFACTORY. Overall, CNS did not meet many of the expectations in management of the Nuclear Weapons Mission. CNS was below expectations in demonstrated performance of the Implementation Plan work scope (Level 2 milestones) funded. Key factors impacting mission accomplishment throughout the year included quality issues, conduct of operations issues, timely coordination and receipt of weapons response from the Design Agencies, and work stoppage related to collective bargaining agreement negotiations.

PO-2: Reduce Global Nuclear Security Threats Mission (10% of At-risk fee) was rated as VERY GOOD. Overall, CNS performed above expectations in management of the Global Nuclear Security Threats Mission. CNS exceeded expectations in demonstrated performance of the funded work scope. Significant accomplishments included continued highly enriched uranium (HEU) removal initiatives around the globe; providing excellent Alarm Response Training (ART); successfully completing the Warhead Measurement Campaign (WMC) at Y-12 and partnering with the National Laboratories for commencing similar activities at Pantex; and providing outstanding support for NNSA's Reactor Conversion Programs.

PO-3: The Department of Energy (DOE) and Strategic Partnership Project (SPP) Mission Objectives (5% of At-risk fee) were rated as VERY GOOD. Overall, CNS performed above expectations in the management of the DOE and SPP Mission Objectives. CNS exceeded expectations in demonstrated performance of the work scope funded. The SPP program executed the majority of its 130 specific deliverables for over 30 different customers. Certain project deliverables were delayed due to work pauses and equipment issues including Li-7 and TerraPower. CNS's efforts to expand SPP work resulted in approximately 165 proposals sent to various Federal and non-Federal SPP customers and other NNSA M&O contractors in direct support of the NNSA mission capabilities including engineering, high explosives, hands-on weapons training, weapons electronics testing, nuclear/radiological training, nuclear forensics, nuclear and non-nuclear fabrication, security

analysis, nuclear detection, uranium processing and supply, lithium processing and isotope supply, and national security information technology solutions. CNS received approximately 265 agreements and new funding for approximately $57M from Strategic Partners and other DOE sites.

PO-4: Science, Technology, and Engineering (ST&E) (5% of At-risk fee) was rated as VERY GOOD. Overall, CNS performed above expectations in managing the Science, Technology, and Engineering. CNS exceeded expectations in funded work scope by effectively managing the Plant Directed Research and Development (PDRD) and Technology Transfer programs and successfully implementing a broad spectrum of research and development projects that supported national security missions in the areas of Stockpile Surveillance and Enhanced Surveillance, Advanced Manufacturing, High Explosives, Nuclear Nonproliferation, and Material Synthesis and Processing. CNS initiatives within the PDRD program have taken advantage of partnerships with universities and other facilities to obtain both cost and technical expertise resulting from these interactions. CNS substantially contributed to completion of the NNSA Uranium Mission Strategy and the NNSA Uranium Mission Requirements documents and initiated significant effort to begin implementation of this strategy. To assist NNSA in establishing a Lithium Strategy similar to the Uranium Strategy, CNS developed and delivered planning documents reviewing Lithium Production Capabilities strategy and implemented and a technology roadmap.

PO-5: Operations and Infrastructure (35% of At-risk fee) was rated as GOOD. Overall, CNS met expectations by ensuring Site Operations and Infrastructure were maintained and available for assigned DOE/NNSA missions. CNS continued to have challenges in effectively and efficiently managing work throughout the rating period. Several issues compromised safety, security and quality assurance principles. While some areas for improvement were identified and an overarching plan for Performance Excellence was developed, abnormal events and security incidents continued to occur. CNS leadership demonstrated commitment to "raise the bar" to meet NNSA expectations, but significantly more work is required to achieve performance excellence in every aspect of work and a reduction of abnormal events, security incidents and other issues.

PO-6: Leadership (10% of At-risk fee) was rated as SATISFACTORY. Overall, CNS performance did not meet expectations in ensuring Leadership effectively managed programmatic concerns. CNS leadership continued the challenging work to merge and consolidate processes and procedures. CNS also continued to maintain day-to-day operations and maintain plant output of acceptable levels for two sites but had difficulty effectively addressing weaknesses in operational discipline that could threaten safe, secure, high quality mission accomplishment. CNS has initiated meetings between the Chief Operating Officer and Supervisors to enhance communication of priorities and expectations. The President and the Chief Executive Officer met monthly with random employees to improve accessibility and communication between employees and the CNS President's Office.

Specific observations for each of the PO are provided in the following pages.

Performance Objective 1: Manage the Nuclear Weapons Mission

Summary

Manage the Nuclear Weapons Mission (35% of At-risk fee) was rated as Satisfactory. Overall, CNS did not meet many of the expectations for the full year in their ability to manage the Nuclear Weapons Mission. Key factors impacting mission accomplishment throughout the year included quality issues, conduct of operations issues, timely coordination and receipt of weapons response from the Design Agencies, and work stoppage related to collective bargaining agreement negotiations. The following table summarizes CNS' performance in addressing Directed Stockpile Work (DSW) deliverables. NNSA approved Change Control Requests to production baselines submitted by CNS for factors beyond CNS' control. The CF and SSO provide the details.

DSW Deliverable Summary Matrix (FY15)	
W76-1	CNS achieved 101% of the secondary schedule, met the military shipments, and achieved 85% of the total NNSA commitment to the Department of Defense. CNS worked extensive overtime during the course of the year, which drove an increase in program costs.
Base Surveillance	CNS achieved 100% of the secondary and 70% of the base surveillance. CNS did not meet base surveillance of the stockpile due largely to factors within their control including: Joint Test Assembly (JTA) Test Bed (TB) pause and associated corrective actions, Mass Properties procedural issues; inadequate coordination in addressing technical/process anomalies on multiple programs, and task exhaust combustible issues.
Dismantlement	CNS achieved 101% of dismantlements related to secondaries and 66% of the revised Production Control Document (PCD) baseline schedule. The low performance against the revised PCD baseline schedule resulted in NNSA falling below the trajectory to achieve the 2022 dismantlement goal.
W87 LLCE	CNS achieved 77% of the baseline schedule driven principally by a CNS shipping problem and inadequate coordination in addressing technical challenges during operations.

The balance of work in this Performance Objective includes support of Campaigns, Stockpile Services, management of containers and storage activities, Uranium Sustainment Program, and Materials Recycle and Recovery (MRR). Key points in these areas for the rating period include continued shortfalls in achieving container program expectations (SSO-1.1) and solid performance

related to the first year of the Uranium Sustainment Program with CNS exceeding expectations in several of the initiatives (SSO-1.4). In relation to MRR, CNS supported DSW schedules and other mission work by recycling production materials and by-products and accommodating interim in-process material storage, but fell short in Enriched Uranium (EU) metal production, production microwave, and consolidation castings. In the performance area of Storage, CNS met or exceeded Area 5 de-inventory milestones. Related to the B61-12 Life Extension Project (LEP), CNS is behind in readiness projects.

CF-1.1: Quality Issues: CNS did not meet many of the expectations in achieving work at the expected level of quality. CNS experienced quality issues throughout the year that negatively impacted CNS's ability to deliver products consistent with design specification. In the First Quarter, Mass properties operations were not performed correctly per design agency requirements. Lack of procedural adherence led to variation in executing the reference standard. Step-by-step execution in all related procedures was not followed. As a result, NNSA programs experienced schedule delays of approximately five weeks and incurred additional costs to repeat tests that were not performed correctly. CNS developed and executed a recovery plan that resulted in schedule recovery by the end of the Third Quarter.

A February NNSA Quality Assurance Survey evaluated the Hold Point and Inspection process used by CNS as a part of Stamping Delegation authorities. Findings and Performance Problems included Control of Processes, Document Control, Assessments, Instructions, Procedures, and Drawings, Training, Planning, and Prevention versus Detection. This survey included Process Engineering, Explosive Technology, Mission Engineering, and Weapon Quality personnel and their activities.

CNS experienced several issues with the builds of the new B61 JTA Modernization configurations. CNS experienced quality issues on five of the six First Production Units. The most severe of which was the installation of an incorrect tail case on the JTA S/N 602 that was delivered to Department of Defense (DoD). The DoD chose not to proceed with the flight test and returned the unit to Pantex. CNS corrected the quality deviations or issued a Specification Exception Release (SXR) on the remaining four JTAs. These quality issues prompted a pause in JTA/TB processing to allow an overall system assessment of design agency requirement implementation, and complete review of parent-unit part traceability. In April, JTA/TB work was paused for approximately 6 weeks as a part of this effort. Record review revealed a development part used for a W80 JTA build. Random selection of War Reserve (WR) records revealed an instance of improper O-ring use in a B61. Despite generation of numerous corrective actions to address vulnerabilities, the JTA/TB processes continue to require more robust execution to facilitate surveillance and stockpile certification. It is necessary to sustain improvements in communication and implementation of Design Agency requirements to ensure building of product to current specifications.

During data entry for completed W76-1 units, it was identified that a subassembly serial number had been duplicated. The unit containing the duplicated Serial Number (S/N) was present on site, and was selected as a Retrofit Evaluation System Test (REST) to prevent the escape. An extent of condition revealed that multiple S/Ns had been duplicated for W88 subassemblies. Root cause analysis revealed that the assignment of S/Ns was not cross-referenced with the Sandia Record of Assembly (ROA) database. Corrective actions resulted in the ROA database being cross-referenced prior to assignment of S/Ns.

In relation to the Y-12 Plant, the CNS Weapons Quality Program experienced several quality issues and concerns during the performance evaluation period. Numerical control programming errors

caused delay in qualifying products and re-inspection of parts for the Engineering Evaluation. In addition, numerical control programming errors resulted in external escapes and required rework and/or deviations in certain mission deliverables. The CNS Weapons Quality Program identified multiple inconsistencies between Non-Destructive Laser Gas Sampling (NDLSG) Gas Cart drawings during the Factory Acceptance Testing (FAT) on Gas Cart 2. The use of red-line changes and the Request for Waiver or Deviation (RFWD) process was required to perform the FAT. At the end of the period, Gas Cart 2 had not passed FAT at the vendor since the start of this testing in mid-August. NNSA noted repeated issues with flow down of requirements. CNS partially lined through the markings on two products resulting from an error on the revision of a dimensional inspection flow sheet that required re-marking the products before they could be diamond stamped. Multiple quality issues occurred with procuring critical characteristics: graphite density, container foam outgassing and density, Celotex source for Drum Type (DT-99) containers, and rackable can storage boxes (RCSB) components. CNS has not established alignment of QA metrics. While CNS has completed two independent quality assessments in the 3rd quarter of FY15 in an attempt to understand and address the significant quality incidents, the NNSA led Quality Assurance Survey (QAS 1) at Pantex in the 4th Quarter FY15 identified numerous Weapon Quality staffing, oversight, and configuration management findings, indicating that additional efforts are warranted to ensure CNS improvements are completed, adequate and sustainable.

Stockpile Services: CNS met expectations with respect to cost, scope, and schedule for Stockpile Services by supporting stockpile program mission deliverables for the highest priority critical repairs. Maintenance work on other key pieces of equipment on the factory floor continued to enable mission support. Within the Product Realization Integrated Digital Enterprise (PRIDE), CNS completed the generation of legacy bomb book document functionality and placed it into service. Also within PRIDE, CNS deployed nine new virtual servers to support Product Data Manager (PDMLink) operations replacing a set of eight-year-old physical servers. CNS delivered a new version of weapon information system (WIS), which provides additional reporting capabilities based on need-to-know (NTK) requirements. This allows NNSA to respond to ad-hoc data inquiries from weapon engineers, weapons data analysts, and other subject matter experts across the NSE. CNS continued to support the Material Consolidation activities to include the start-up of specific Depleted Uranium operations following a 10-year outage. The Y-12 project to "Install Controllers" successfully completed the baselined FY15 work scope. CNS continued to experience delays in the "South 6 Ovens and 3 Manifolds" and the "Backfill Station 217" projects which will result in the slippage in Production First Use at Y-12 from FY15 to FY16.

Material Recycle and Recovery: CNS met DSW and Naval Reactors (NR) metal production mission requirements and completed initial actions to re-establish a commercial supply of high-purity depleted uranium feedstock capabilities (DU derby). CNS achieved milestones associated with reduction of EU salvage inventory, dissolution of HEU uranyl nitrate hexahydrate (UNH) crystals, direct chip casting of DU, upgrading the process condensate line, processing organic safe bottles, draining of 4210 Wet Chemistry and other equipment, installing an Oxide Conversion Facility trailer, submitting of electro refiner (ER) Critical Decision (CD) 1/3A documentation, increasing the criticality safety limits in 9212, and shipping of U-Zr. CNS issued the "Lithium Material Production Transition Implementation Plan", involving the MRR, DSW, and NA-50 programs that established a strategy to meet a future need for lithium materials. CNS developed a well-coordinated Lithium Strategy Plan with a goal to sustain the NNSA weapons program lithium supply. CNS did not meet Level 3 performance milestones associated with EU metal production, consolidation casting, briquette processing, and production microwave castings.

Storage: CNS met the storage and surveillance performance milestones. Specific accomplishments included--Procured 39 RCSBs; Maintained compliance with DOE Order 410.2 by delivering key planning and reporting documents; Reduced the combustible loading in Building 9720-5; Initiated development of the technical basis for DOE Manual 441.1-1 compliant containers; Completed several facility renovation projects; Exceeded the FY15 Level 2 Milestone for Area 5 de-inventory by more than 4 metric ton unit (MTU); Removed 5 metric ton (MT) of material from Area 5 using direct canning; Transferred CSAs to Highly Enriched Uranium Manufacturing Facility (HEUMF); Increased number of DT2000s on a Special Nuclear Material Vehicle;; Completed and received approval on the H-Gear Rack Reconfiguration project facilities and operational readiness which will allow a processing area's inventory to get down to a "Just-In-Time" level. Failed to achieve the FY15 Level 3 Milestone to recontainerize 100 carbon steel cans into stainless steel cans; however, 24 were completed, and there is no impact to the overall schedule for completion by 2019.

Packaging & Transportation: CNS did not meet NNSA expectations with continued programmatic issues and events emerging during FY15 that demonstrate the CNS Packaging and Transportation efforts require significant improvement necessary to meet base expectations. This area continues to require extensive involvement by the NNSA in an effort to drive a more effective program that meets compliance requirements and enhances productivity. SSO-1.1 contains the details.

Reports: CNS delivered all monthly weapon system reports on time.

Office of Secure Transportation: Overall, CNS met expectations by completing three FY15 NA-15 Task Agreements at the Meets Expectations level.

CF-1.2: Stockpile Surveillance: CNS did not meet the majority of the expectations for scheduled surveillance activities, deliverables, and requirements as documented within each applicable weapons system approved Integrated Weapon Evaluation Team (IWET) Plans and associated directive documents. The table below summarizes the stockpile surveillance deliverable status.

Stockpile Surveillance Summary	
Pantex Base Surveillance	70%
W80	50%
B83	85%
W87	96%
W78	33%
B61	68%
W76	75%
W88	75%
Y-12 Base Surveillance	100%

At the Pantex Plant, CNS encountered numerous issues during the fiscal year that had negative impacts on surveillance work. NNSA approved Change Control Requests to revise the baseline for the issues that were out of CNS control; however, CNS did not achieve the revised baseline. As discussed in CF-1.1, CNS performance drove complications with the build of a series of B61 JTAs to

the new B61 Joint Test Assembly Modernization (JTAM) configuration. CNS experienced quality issues that impacted five (5) out of six (6) JTA builds resulting in a self-imposed pause to JTA and TB operations and a flight test being missed. CNS produced two JTAM units that did not meet design agency specification and delivered to the DoD. CNS did not meet W76-1 and W76-0 surveillance program deliverables and IWET requirements. The Jan 2015 - Present pause in W76-0/1 bay and cell operations is due to Anomalous Units (AU) and shear wire removal issue. The collective bargaining negotiations have also affected W76-1 Disassembly and Inspections (D&I) completions. W76-1 JTA builds have remained on schedule without impact to the DoD Flight Test schedule despite the JTA/TB Assembly pause in April 2015.

CNS successfully designed and fabricated two new Telemetry Testers in support of the new B61 JTAM configurations. The Tester Engineer and Program Manager did an exceptional job of working closely with NNSA and Sandia National Laboratory (SNL) to qualify the testers on schedule in support of programmatic deliverables. The project team received the CY2014 Defense Programs Award of Excellence for the B61 JTAM Project.

During FY15, CNS was instrumental in restarting the weapons evaluation testing laboratory centrifuge, resulting in benefit to the surveillance program for an extended period. CNS efforts will enable the required tests for continued certification of the stockpile.

At the Y-12 Plant, CNS met expectations for baseline surveillance requirements and deliverables as documented within each applicable weapons system approved IWET Plans and associated directive documents and CNS completed additional work not included within the baseline. CNS successfully completed the Level 2 milestone for the Non-Destructive Laser Gas Sampling (NDLGS) equipment for the W88 system. CNS leveraged engineering resources by sharing Y-12 resources to solve a Pantex engineering challenge resulting in saving significant schedule time and possible cost savings for implementation of NDLGS at Pantex. CNS fully supported the Design Agencies on Significant Finding Notifications (SFNs) on two systems. The SFNs were successfully resolved without advancing to the next stage of investigation. Although several months later than expected, CNS placed a third Low Temperature Thermal Decomposition (LTTD) Oven at Y-12 into service improving throughput capacity in support of component testing requirements.

Enhanced Surveillance: CNS met NNSA expectations for the Enhanced Surveillance (ES) program by completing activities, deliverables, and milestones within the scope, cost, and schedule provided. CNS continues to provide a status on PBX 9501 aging study and provide interim status of detonator aging study to Los Alamos National Laboratory (LANL) as well as document results of U-tube experiments on a quarterly basis to Lawrence Livermore National Laboratory (LLNL). CNS is developing a formal report on findings regarding accuracy and execution of LLNL aging models and is continuing a water absorption and effects study on PBX 9502 and LX-17. CNS continued work associated with updating and modernizing Hand-Held Diffuse Reflectance Infrared Fourier Transform instruments, Enhanced Low Temperature Thermal Decomposition (ELTTD), and Material Capability Modeling.

CF-1.3: Stockpile Systems: CNS met expectations for each of the stockpile weapon systems maintenance project deliverables and requirements and did so within site budget allotment and in accordance with directive documents. CNS met the B61 Legacy Upgrade Project deliverables and requirements through resolution of Weapon Response Summary Document Issue B, and Code Blue situations. Activities continue to progress to authorize implementation for W78 Weapon Repairs in FY16. CNS met regularly with SNL, LANL, NNSA National Security Campus located in Kansas and the

Air Force to understand requirements and associated analyses. Because of a second quarter drawing review, NNSA created new line-order numbers in the Program Control Document. CNS continues to engage SNL and LANL to refine the project plan. In addition, CNS Hazard Analysts engaged with LANL on polymer properties to clarify potential hazards within the final information engineering release in support of the W78 new tooling.

Limited Life Component Exchange: CNS did not meet expectations due primarily to a Pantex shipment of Neutron Generators to SNL in a condition that required retesting. CNS inadequately secured the shipment load resulting in a complete reacceptance effort by the NNSA and delays in W87 War Reserve operations at Pantex.

CNS remains on schedule for the W80 Alt 369 authorization basis project; however, the Vacuum Chamber project has recently slipped several months and has required compressed scheduling and greater NNSA engagement.

Dismantlement: CNS did not meet all expectations for the dismantlement program resulting in NNSA falling below the trajectory to achieve the 2022 dismantlement goal. A summary of the Dismantlement rates is included in the table below:

	Dismantlement Summary (FY15)
Dismantlement	66%
W76-0	50%
W80-1	68%
B83	100%
B61	100%
Y-12	101%

CNS faced numerous dismantlement challenges throughout the year, namely three anomalous units. Change Controls were coordinated with CNS to re-baseline the schedule with consideration to scenarios out of CNS' control. CNS paused operations, declaring a Potential Inadequate Safety Analysis (PISA), during the First Quarter due to an Electrostatic discharge hazard associated with Army/Navy containers. While CNS and the Design Agencies worked to create hazard mitigations ensuring safe operations, CNS must continue to play a greater leadership role in resolving Design Agency Weapon Response concerns to prevent schedule delays.

The three anomalous units limited facility availability for dismantlements as of January 2015. CNS did not recover the schedule despite the appropriate actions taken by CNS to utilize other available facilities to increase throughput. Delays resulting from gaps in CNS' implementation of Commercial Grade Dedication practices associated with task exhaust hoses negatively impacted the schedule. A crack in a vacuum fixture's safety latch paused that operation for approximately 3 weeks.

CNS completed 101% of the secondary dismantlement PCD baseline and completed 105% of the disposition scope well ahead of schedule. CNS exceeded the secondary dismantlement work even though an unexpected spill event resulted in an operational pause for several weeks. CNS achieved the disposition of components to the Nevada Nuclear Security Site months ahead of baseline.

CF-1.4: CNS met expectations for managing the Enhanced Surveillance program at both sites, completing all Level 2 milestones as planned. Specifically, CNS completed the deployment of the Susan Test capability to support insensitive high explosives (IHE) qualification and the baseline

work scope on multiple projects as planned (e.g., Hand Held DRIFT, Enhanced Low-Temperature Thermal Decomposition, and Special Materials Research & Development (R&D). CoLoSSIS II and pit surveillance are progressing and CNS accomplished additional Onionskin surveillance. Additionally, CNS initiated the execution of the "Lithium Material Production Transition Implementation Plan" to sustain material and facility availability in support of future mission requirements.

CF-1.5: Overall, CNS met expectations in strengthening and sustaining capabilities to support future mission requirements. However, a lack of engineering resources has been a limiting factor in several areas, and CNS is actively working to improve in the hiring and retention of these critical skills. In the area of facilities, both sites exceeded the NNSA performance goal of 85% mission critical facility availability in support of DSW and a number of new facilities are in various planning stages. With respect to research and development activities, CNS supported PDRD (PDRD discussed further in PO 4) efforts at both sites, and collaborated with various universities in Texas and Tennessee to maintain competencies in emerging capabilities that would benefit DSW.

CF-1.6: W76-1 LEP: CNS achieved 101% of the secondary production schedule, met the military shipment schedule, but only achieved 85% of the total FY15 delivery commitment to the Department of Defense. Negative impacts to operations resulted from issues that were within CNS' control including lack of Mass Properties (MP) procedural adherence, cracked tooling safety latches, assignment of duplicate serial numbers, and Task Exhaust combustible loading problems. CNS worked extensive overtime during the course of the year to address schedule slippage, which drove an increase in program costs. NNSA began to fall behind the FY15 PCD build schedule in December 2014 through February 2015 due to Pantex MP testing and tooling issues. To date, three PISA (isolator, task exhaust filters, MP tooling) declarations have set Pantex behind the FY15 LEP production schedule.

In April and May 2015, a greater than planned for number of lightning warnings due to inclement weather caused a large number of production pauses. In May 2015, a duplicative Nuclear Explosive Package (NEP) S/N was assigned to a unit in the assembly process. In June 2015, weapon response issues with MC3347 Isolators during assembly and disassembly operations were identified resulting from testing on MC3347 United Kingdom (UK) assets. In July 2015, during an SNL independent review of the PT3746 Preset tester specification SNL found a resistor within a safety circuit of the tester to be under the required power-rating for use in the tester. NNSA considers the isolator and PT3746 tester issues as issues outside of CNS' control. In August/September 2015, the Pantex MTC rejected their contract resulting in a workforce strike. NNSA considers the strike an issue partially within CNS' control. Despite all of these issues, there have been no immediate impacts to deliveries of warheads to the Navy.

CNS navigated several facility and Weapons Response challenges throughout the year. Three anomalous units limited facility availability for large portions of the fiscal year. Each of these anomalous units required extensive Design Agency coordination and collaboration to include Hazard Analysis Task Team walk downs, procedure development, and Justification for Continued Operations. While these issues were outside of CNS control, the timeliness of the resolution and leadership provided by CNS must improve to ensure NNSA meets its mission requirements and does not adversely impact commitments to the Navy.

In relation to W76-1 sub-assemblies, CNS overcame significant challenges (e.g., production shortfalls in several special material streams, a material spill in a key facility, weather-related plant

delays and closings, material shipping event, and a quality issue with a vendor supplied item) throughout the performance evaluation period. CNS sufficiently developed and executed the Recovery Plans enabling CNS to exceed FY15 baseline requirements.

B61-12 LEP: Overall, CNS met expectations for the B61-12 LEP. CNS supported all joint tests without affecting test dates except for material compatibility testing (JTMAC-SC-CC), which is late due to infrastructure issues and the recent strike. CNS is working to resolve the delays and expects a restart by November 2015. CNS is working with LANL to resolve PBX 9502 batch formulation issues at the IHE vendor. This is a critical activity for the program. CNS is behind schedule on pit recertification projects and is working on recovery plans. The CNS delays have not adversely impacted the B61-12 schedule. However, if delays continue the impacts to the B61-12 schedule are certain. CNS completed the Trainer Type 5B prototype build August 4-6 using 614 tooling. Finally, after completing the first B61-12 LEP Disassembly LEP (DISLEP) in November 2014 then pausing due to a weapon response issue, B61-12 DISLEPs have resumed, but CNS will not be able to recovere DISLEP schedules until FY16.

CNS at Y-12 was able to re-establish key B61 processes, unused in over a decade to support early developmental hardware deliverables (Test & Evaluation Unit #1). This action also supported a better position to achieve First Production Unit (FPU) for the future. However, recent major equipment failures have put FY16 hardware deliverables at risk (Test & Evaluation Unit #2). CNS management needs to ensure recovery schedules support critical system. Y-12 is behind on completing other readiness projects that support CSA FPU. Currently, these delays are not impacting schedule but further delays are unacceptable. Y-12 also delivered two hydro-test assemblies to LANL in accordance with (IAW) the NNSA Information Management System Baseline Schedule. CNS is also developing a material reuse strategy at Y-12 that will avoid schedule impacts to the B61-12. CNS also provided an informative Site Review in April 2015 at Pantex in conjunction with Design Agencies for Nuclear Components.

W80-4 LEP: CNS initiated work scope on the W80-4 LEP in mid-June and included excellent support of all meetings and FY16 planning with NNSA and the Design Agencies and providing financial expenditure reports as required.

W88 ALT 370: CNS met expectations for W88 Alt 370/CHE-R, by providing Weapon Design and Cost Reports (WDCRs) and monthly reports, preliminary scheduling information and readiness/capability-based project needs, and active participation in Product Realization Teams (PRTs) meetings. CNS provided their updated schedules on time each month, and the quality of the data met the requirements for NNSA to generate an NNSA Integrated Master Schedule (NIMS). CNS delivered flight and ground test/qualification hardware provisions on schedule to meet flight and ground test/qualification activities and therefore meet the Alteration Management Team (AMT)-approved level 1 and 2 milestones. CNS developed the JTA, Seamless Safety for the 21st Century (SS-21), and WR schedules and initiated the discussions with the laboratories and plants to identify deliverables/requirements need dates and re-align sites' schedules to meet the FPU date. CNS adequately provided input as requested on Conventional High Explosive (CHE) Refresh extended production scenarios, cost estimation, risks and production strategies. CNS also adequately met the added CHE Refresh scope activities by providing production planning information and cost estimate information to NNSA on time, as requested.

SSO 1.1: CNS did not meet the milestone for delivering the revised DPP-2/Subcritical Experiment (SCE) Safety Analysis Report for Packaging (SARP) incorporating the approved stress-based

structural analysis to the Office of Packaging and Transportation (OPT) for recertification review. CNS does not have an approved stress based structural analysis, and the inability to submit this SARP could impact scheduled shipments of SCEs in mid-FY16. Despite accomplishing 120% of the container baseline, CNS failed to deliver a Corrective Action Plan for restarting DPP-2 modeling work to resolve comments provided by the NNSA.

Numerous quality, procedural and DOE Order compliance, security, and safety issues and events emerged during FY15 that illustrate the need for significant improvement in order to meet basic NNSA expectations. Examples include: 1) Over Shipment of Material, 2) Shipment of hazardous material without 49CFR required labeling, 3) Inability to address customer/regulator (NA-50) critical comments on DPP-2 Container development activities in a systematic and timely way, 4) Suspension of DPP-2 Modeling, 5) Negative Impact to the Office of Packaging and Transportation Program Implementation Plan FY15 Container Development Activities/Deliverables, and 6) Inability to provide to the customer a clear outline of CNS recommendations and initiatives to optimize/improve the CNS operations.

During the latter part of FY15, CNS began taking several steps to enhance performance in this area including addressing recommendations identified by a Process Improvement Team that included a NNSA team member; conducing an independent assessment of how performance can be increased from an efficiency and effectiveness standpoint; greater emphasis being placed on improving communications with the NNSA; and evaluating opportunities for greater container management synergy between the Y-12 and Pantex Plants as well as the balance of the NNSA.

SSO 1.2: B61-12 LEP: CNS did not meet expectations for the implementation of the Project Controls Manual for the B61-12 LEP. During the Integrated Baseline Review (IBR) at Y-12, NNSA chose to pause the review in order to allow CNS to take corrective actions to update and revise their resource-loaded schedule and incorporate an adequate level of planning that integrated design agency handoffs, readiness projects and correctly flow logic into the NIMS. Additionally, it was still unclear what constituted the baseline program costs due to the implementation of the Cost Model/Annual Controlled Baseline. In response, CNS developed a formal and timely Corrective Action Plan to address the deficiencies. After the submittal and approval of a Baseline Change Request that addressed the project control deficiencies and other areas, the IBR team returned to Y-12 and resumed the review. This review confirmed that CNS established a valid Project Control System for the Y-12 work scope and made much progress since the pause, but improvements are still needed. The out brief documented twelve recommendations for further attention. CNS needs to improve the level of support for LEP risk management board activities including support in assessing and managing risks at the Y-12 Plant. CNS successfully completed the IBR in March 2015 at Pantex and has issued a formal and timely response to IBR recommendations including detailed plans for addressing each recommendation and a schedule for implementation. However, CNS is not actively tracking risks at Pantex. CNS supported cost management boards for the B61-12 LEP in October 2014 and April 2015 and have initiated unit cost tracking with PRTs at component reviews.

CNS also needs to verify all lower level handoffs between Design Agency (DA) and Production Agency (PA) schedules are aligned and correctly reflected in NIMS. Monthly reporting, processing, and updating of performance baselines, and risk management activities needs improvement ensuring status communication is consistent, accurate, and realistic. CNS has identified the need for additional Project Controls, Planning, and Scheduling staff, has submitted a staffing plan, and is in the process of hiring additional project controls and management staff.

W88 ALT 370: Overall, CNS met expectations for the W88 ALT 370. CNS provided NNSA with the requested monthly status reports on time and as required. CNS provided their updated schedules on time each month, and the quality of the data met the requirements for NNSA to generate an NIMS. CNS submitted a program baseline change for CHE Refresh work scope IAW the program baseline change request process approved by NNSA. The baseline change request needs to be broken into several requests and NNSA communicated this direction to CNS. CNS is actively managing the sites' program risks and are feeding their data to the complex-wide risk reporting database. CNS is implementing an Earned Value Management System (EVMS) at Pantex. CNS fully met their obligation for EVMS implementation based upon the limited funding and participation in the W88 ALT 370 program at Y-12.

SSO 1.3: B61-12: CNS supported all B61-12 LEP joint tests without affecting test dates except for material compatibility testing (JTMAC-SC-CC), which was late starting due to infrastructure issues. At Pantex, CNS worked with LANL to resolve PBX 9502 batch formulation issues at the IHE vendor; working plans to recover the schedule on pit recertification projects; and performed above expectations in meeting trainer assembly requirements with one exception. The B61-12 DISLEPs have resumed following a weapon response issue, but CNS did not recover in FY15.

CNS-Y-12 has delivered all required hardware in support of the Materials Requirements System and has done an excellent job being flexible to the changing needs for hardware including last minute request for alts/mods or additional hardware. CNS was able to re-establish, complete process operational readiness actions, and operate in a production mode utilizing processes unused in over a decade to support early developmental hardware deliverables. Several production issues arose during this period, and CNS was able to work through all the issues but equipment failures may delay the baseline Test and Evaluation (T&E) hardware. In some cases, the T&E hardware would not meet requirements and had to be re-built and re-processed. There were some cases in which CNS negotiated revised delivery dates with the federal program manager/LANL to support their needs. Additionally, CNS is supporting multiple equipment procurements and upgrades and other major projects necessary to support the B61-12 LEP First Production Unit and/or full rate production requirements. CNS did not complete the FY15 baseline work for the 5-Axis Machine Center and the Mold Loading Retrofit projects. These projects have been difficult to manage due primarily to uncertainties in available/approved funding sources.

W88 ALT 370: Overall, CNS met expectations for SSO 1.3. Although limited in scope, CNS performed advanced planning for implementation of Phase 6.4 activities. CNS delivered flight and ground test/qualification hardware provisions on schedule, as requested by NNSA, to meet flight and ground test/qualification activities and therefore meet the AMT-approved level 1 and 2 milestones.

SSO 1.4: CNS met the primary expectations for the uranium program and strategy. CNS provided excellent support to the Calciner, ER, 2MeV and Chip processing activities at the plant in support of ceasing EU programmatic activities in 9212 no later than 2025.

Overall, CNS met expectations in plant-wide efforts to reduce Material-At-Risk (MAR). Although CNS' initial proposed plan did not meet NNSA's expectation to 'expand and accelerate' the Area 5 De-inventory program, subsequent discussions resulted in agreement on a plan of action. CNS' execution resulted in a number of areas exceeding expectations which was balanced out by areas for improvement. CNS met and exceeded expectations to move an agreed upon quantity of material.

CNS met and exceeded expectations to complete three years' worth of planned CSA movements in a single year. CNS continued to meet and exceed expectations for dissolving crystals (the worst MAR contributor) by working ahead of schedule and on the programmatic goal of reducing MAR and hazards in the production facilities. CNS began delivering metrics to the NNSA to track the reduction of MAR by material type and facility over time. This is an area of emphasis and improvement to provide more consistent reporting. CNS failed to fully meet expectations to process briquettes (a major MAR contributor) and remove material from 9206. CNS failed to meet expectations to install a direct canner in building 9204-2E. Although initially tracking on or ahead of schedule, a schedule delay pushed the completion date that affected the effort to expand and accelerate the Area 5 de-inventory.

CNS delivered a plan, consistent with NNSA expectations, to increase purified metal production. The plan provides a suite of maintenance priorities, staffing needs and a project list to sustain equipment availability and meet the annualized DSW requirement for purified metal production. MRR and Uranium Sustainment plan to provide additional FY15 funds for additional maintenance resources.

CNS did not fully meet expectations on the use of the production microwave caster in 9212. This is partially due to equipment issues including the stack 11 filter issues and a failure in the microwave's bottom lift assembly. Unfortunately, CNS was unable to recover the schedule. Running the microwave caster early and often is valuable since this technology represents the future Uranium Processing Facility (UPF) casting capability. There is positive movement with the development of a comprehensive, integrated microwave casting risk reduction plan to bring together the Y-12 plant and UPF project. This includes developing a qualification plan to produce WR parts using the production microwave. This is consistent with the SSO 1.4 expectation to optimize scope and performance between the plant and project.

CNS met expectations on the development of the Implementation Plan for the Highly Enriched Uranium Mission Strategy. Although some parts were well developed (e.g., MAR reduction through Area 5 De-inventory), the capability sustainment section (particularly casting sustainment) required several additional conversations to define work scope. The Facility Sustainment section was empty. The Extended Life Program is addressing this situation.

CNS met expectations (but needs continued emphasis) on Y-12/UPF security interfaces, specifically in the area of communications. Misunderstandings on the responsibilities for compensatory security measures required on the UPF haul road resulted in inefficiencies and increased costs.

CNS met expectations in design reviews and finalizing the implementation of the Special Casting Study.

Performance Objective 2: Reduce Global Nuclear Security Threats Mission

Summary

Reduce Global Nuclear Security Threats Mission (10% of At-risk fee) was rated as Very Good. Overall, CNS performance was above expectations in management of the Global Nuclear Security Threats Mission.

Overall, CNS exceeded expectations in their support to reduce global nuclear security threats. Significant accomplishment included continued HEU removal initiatives around the globe; providing excellent ART; successfully completing the WMC at Y-12 and partnering with the National Laboratories for commencing similar activities at Pantex; and providing outstanding support for NNSA's Reactor Conversion Programs.

CF-2.1: CNS exceeded expectations through its continued key role in HEU removal initiatives around the globe, including site visits and developing and executing plans for HEU transfer activities in Japan, China, Jamaica, France, and other locations. During the fiscal year, 2.9 kg of un-irradiated HEU was removed from Canada and CNS completed preparation work and loading of the Japanese Fast Critical Assembly HEU fuel for removal next year. Additionally, CNS also exceeded expectations in meeting the shipping schedule for the delivery of surplus HEU to the NNSA down-blending contractor. During the fiscal year, CNS blended, canned, and packaged over 3.5 MT of HEU oxides and shipped over 3.3 MTU. In addition, CNS processed HEU over and above the delivery schedule need in preparation for the next NNSA down-blending prime contract to be awarded in early FY16.

Further, CNS successfully completed milestones for the disposition of legacy U-Thorium (U-Th), including repacking 60 U-thorium tristructural-isotropic (TRISO) drums for disposition to the Nevada National Security Site (NNSS). The TRISO drum milestone was accomplished two months early. CNS also prepared numerous other materials for shipment to NNSS. In addition, CNS worked with the Idaho National Laboratory to plan characterization of un-irradiated alloyed reactor fuel plates samples to confirm whether or not the plates could be included in the future down-blending contract.

During the fiscal year, CNS completed reconciliation of the Nuclear Materials Inventory Assessment (NMIA) that included reconciling over 163,000 Low Enriched Uranium (LEU) & HEU items from across the complex. In addition, at Pantex, CNS completed the AT-400A cut-apart operations with 18 completed as scheduled. CNS also completed efforts to fabricate and deliver an LEU fuel core for conversion of the SLOWPOKE reactor in Jamaica. This included final export of the LEU from Canadian Nuclear Laboratories to Y-12 followed by re-transfer and delivery of the LEU from Y-12 to the SLOWPOKE facility in Jamaica. The Nuclear Regulatory Commission license was delivered one week early and Y-12 coordinated with the International Atomic Energy Agency (IAEA) Safeguards Division to unseal the transport containers in Jamaica.

Additional key accomplishments included: strong support to the DOE Uranium Inventory Working Group responsible for identifying enriched uranium inventory available for DOE missions; developed a more consolidated material allocation monthly report for the HEU down-blending program; proactively assisting NNSA in the development of the Uranium Lease and Takeback

program for Mo-99 production; and completed the casting campaign for LEU production with 680 kg of 19.75% metal cast to support the supply of Foreign Research Reactors.

Two areas for improvement include: (1) the effort to hold E05 LEU for future tritium production was well designed and met NNSA's expectations, however, the implementation and recordkeeping were delayed; and (2) CNS was late in submitting a final report on high density LEU foil target development for Mo-99 production and required substantial rework since key information was missing.

CF-2.2: CNS exceeded or met all expectations while meeting overall cost, schedule, and technical performance requirements in supporting efforts to safeguard and secure materials, technologies, and facilities. CNS provided outstanding training in this area including completion of 20 ART courses and eight Personal Radiation Detection classes. As part of the efforts to enhance training in this area, CNS renovated and dedicated the new ART Academy Building.

CNS continued its strong efforts in international activities by: participating in performance testing workshops at the China Center of Excellence, Beijing; conducting a Radiation Portal Monitoring workshop in Obninsk, Russia; conducting an assurance visit and ribbon cutting ceremony for a new guard building in Murmansk, Russia; attending and presenting at INTERPOL's Radiological and Nuclear Investigations Training Course in Tashkent, Uzbekistan; and reviewing the status of physical protection and construction on the final phase of the Kurchatov Institute Nuclear Island. In general, the CNS subject matter experts assigned to these projects consistently provided a high level of support.

CF-2.3: CNS met expectations by preparing several hundred grams of U3O8 of varying enrichments for use as uranium compound standards and completing a test project for the University of Michigan at the Nuclear Detection and Sensor Testing Center Site 2.

CF-2.4: CNS exceeded expectations in completing the WMC Canned Sub-Assemblies measurements at Y-12 on time and on budget and is partnering with the National Laboratories for WMC activities at the Pantex Plant. To date, CNS has delivered all tooling on schedule to the measurement cell for the WMC project, completed drafts of the needed procedures and has completed dry run operations of the related equipment.

In addition, CNS hosted eight UK Atomic Weapons Establishment (AWE) researchers who were sponsored by NNSA to observe and comment on the Y-12 WMC. CNS is nearing completion on development of the Nuclear Detector and Sensor Testing Center Site 1 Library of Test Objects. The library consists of objects that have been deemed highly important for NNSA, the Defense Treat Reduction Agency, the Department of Homeland Security (DHS) Domestic Nuclear Detection Office, and the intelligence community. The library supports missions, including Nuclear Nonproliferation, Nuclear Counterterrorism, International Safeguards, Treaty Verification, and Nuclear Emergency Response.

During the fiscal year, CNS completed the LEMNOS Project, a Joint Signals collections project with LANL and Idaho National Laboratory. It was a complex project that involved mobilization of several vehicles, monitoring instrumentation. The operation was conceived and executed in less than 10 weeks. The NNSA Team Leader forwarded several letters of commendation.

CF-2.5: CNS exceeded expectations through various efforts including delivery of the ART course. The ART course is the only course in the nation that trains law enforcement agencies and site level owners of radioactive sources on how to prepare for and mitigate attempted thefts of radioactive sources. The course is unique and fills a critical niche between where the Nuclear Regulatory Commission regulations end and where Law Enforcement begins. The course is an example of how NNSA has used its expertise to fill a gap in order to improve the security of radioactive sources. In addition, CNS hosted an Australian delegation to conduct a bilateral physical protection visit on Australian-obligated material being stored at Y-12 and supported two training courses sponsored by the U.S. Support Program to IAEA.

CNS was quick in responding to an urgent request, and of high importance, for assistance from NNSA and the State Department regarding a shipment of highly enriched uranium that was made by DOE to a foreign country in the late 1970s. Additionally, CNS participated in a Portal Monitor for Arms Control (PMAC) Preliminary Design Review. This review followed a project review meeting held at the UK AWE in Aldermaston, UK. The project is moving forward with the technical design of a prototype system. A Hazard and Operational Review has also been conducted and a final report has been prepared.

CF-2.6: CNS had limited involvement in planning and implementing exercises for the Render Safe Program at Y-12; however, CNS met expectations for activities in support of the Render Safe Program at Pantex. CNS executed training events and supported program meetings in a satisfactory manner. CNS provided required personnel to fill watch bills and rosters when needed. CNS provided Home Team support to the Marble Challenge exercise. CNS met expectations supporting the maintenance of the radiation training object (RTO) capability and in the development of RTO measurement capability. CNS supports the diagnostics effort satisfactorily as well as performing National Technical Nuclear Forensics (NTNF)/Pre-Det tasks in accordance with written guidance. The schedule and budget for all NTNF tasks are on track. CNS emergency management personnel continued to work together on the development and implementation of an effective improvement strategy.

CNS supported the Radiological Assistance Program Training for Emergency Responders (RAPTER) evolution while team members prepared equipment to support domestic National Security Significant Events. CNS continued coordination with the Radiological Assistance Program (RAP) community on the revision of the Field Operations Guide. Additionally, CNS coordinated training activities with the State of Tennessee and other DOE program tenants of the Oak Ridge Complex, and continued to provide technical assistance and support to improve the Emergency Management Program at Pantex. CNS RAP Region 2 supported the Vibrant Response Exercise which was a U.S. Army North (ARNORTH)-led interagency exercise focused on the response to an Improvised Nuclear Device (IND) detonation in a U.S. city. CNS supported the DoD audience with pre-produced simulated data products and provided liaison officers to support the operations in the Joint Field Office, State Emergency Operations Center, and Joint Information Center.

CNS exceeded expectation for the improvement of emergency management and response across NNSA by providing leadership to the DOE Emergency Management Issues – Special Interest Group Steering Committee and providing subject matter experts to lead various Sub-committees and Working Groups. CNS conducted several exercises and drills to support closing corrective actions.

Consolidation of the two sites continues; the Exercise and Drill program has made considerable improvement since the last review and includes a much improved emergency response organization response to on-site events.

CF-2.7: CNS exceeded expectations in completing the WMC measurements at Y-12 on time and on budget with measurements for 10 national labs. This is a quality achievement that other organizations have had difficulty in achieving. At Pantex, CNS has delivered all tooling on schedule to the measurement cell for the WMC project.

SSO-2.1: CNS exceeded expectations in support of NNSA's Reactor Conversion Program's efforts to execute Pilot Line demonstration products for the uranium-molybdenum (UMo) reactor conversions. Additionally, CNS completed U-Mo Program deliverables for the NNSA Office of Material Management and Minimization U.S. High Performance Research Reactor (HPRR) Program on or ahead of schedule, including shipment of 34 depleted uranium molybdenum (DU-Mo) coupons; shipment of low-enriched uranium molybdenum (LEU-Mo) coupons; shipment of 48 DU-Mo ingots and a shipment of DU-Mo samples to the Pacific Northwest National Laboratory.

During the fiscal year, CNS received zero findings, six observations, four recommendations, and two noteworthy practices as a result of an NNSA audit of the HPRR Domestic Conversion Project Quality Assurance (QA) program of U-Mo fabrication activities. The objective of the audit was to ensure that CNS meets the NNSA Domestic Conversion Quality Assurance Plan that references the NQA-1 quality requirements and ensures that CNS meets the necessary standards prior to fabrication of fuel that will be inserted into a reactor for testing. The audit team spoke highly of the related Quality Assurance program and expressed their appreciation for the coordination and assistance during the audit.

SSO-2.2: CNS personnel and equipment readiness levels in the RAP arena remained in a positive state during this rating period. On October 15, Region 2 executed the first "quarterly report" review session with NNSA one week ahead of schedule. The FY15 Outreach Program objectives were submitted to the HQ RAP Program Manager one-week late. Significant planning and coordination efforts by CNS occurred relative to preparing for supporting significant national events. Comments were received from numerous entities that will require incorporation or resolution.

CNS Pantex Special Response Programs (SRP) provided diligent and timely support of the DOE NNSA Office of Emergency Operations to fully support emergency incident response operations. Numerous activities at the regional and national level continue to be supported as defined in the various FY15 Implementation Plans and at the direction of DOE Headquarters including; Exercise Diamond Dragon, Exercise Vital Archer, Palo Verde Nuclear Reactor exercise, and numerous others. RAP Region 4 response team members deployed in support of several National Security Significant Events and exercise activities.

CNS supported emergency operations and maintained equipment and deployable response teams' readiness; provided training to emergency responders; supported national-level exercises and special events in support of NNSA emergency response operations; and maintained operational readiness in support of Disposition and Forensic Evidence Analysis Team (DFEAT).

CNS Pantex SRP Joint Technical Operations Team (JTOT) response team members attended the Training Tabletop Exercise (TTTX) to prepare for Exercise Marble Challenge 15-01 (MC 15-01) in

November. MC 15-01 is a Federal Bureau of Investigation (FBI)-sponsored nuclear counterterrorism exercise involving National Mission Forces (NMFs). They then deployed personnel in support of MC 15-01. JTOT response team members deployed to Albuquerque, New Mexico, and from there deployed via Office of Secure Transportation aircraft to New Orleans, Louisiana. This was a national exercise involving a weapon of mass destruction (WMD), and response team members supported Home Team Reachback operations at Sandia National Laboratories and provided advice and support to NMF at the event location. JTOT response team members also supported exercise Marble Challenge 15-01 and 15-02.

Performance Objective 3: DOE and Strategic Partnership Project Mission Objectives

Summary

DOE and Strategic Partnership Project Mission Objectives (5% of At-risk fee) were rated as Very Good. Overall, CNS performance was above expectations in management of the DOE and Strategic Partnership Project Mission Objectives. CNS exceeded expectations in demonstrated performance of the work scope funded.

Overall, CNS exceeded DOE and SPP Mission Objectives by expanding and supporting important national security missions for DOE/NNSA. The SPP program executed the majority of its 130 specific deliverables for over 30 different customers. Certain project deliverables were delayed due to work pauses and equipment issues including Li-7 and TerraPower. CNS's efforts to expand SPP work resulted in approximately 165 proposals sent to various Federal and non-Federal SPP customers and other NNSA M&O contractors in direct support of the NNSA mission capabilities including engineering, high explosives, hands-on weapons training, weapons electronics testing, nuclear/radiological training, nuclear forensics, nuclear and non-nuclear fabrication, security analysis, nuclear detection, uranium processing and supply, lithium processing and isotope supply, and national security information technology solutions. CNS received approximately 265 agreements and new funding for approximately $57M from Strategic Partners and other DOE sites. CNS's efforts of engaging universities, including Historically Black Colleges and Universities (HBCUs), with NNSA technologies to pursue science and engineering capabilities in support of NNSA missions are notable.

CF-3.1: CNS met expectations by pursuing and capturing additional SPP work during this performance period and exceeded many and met most of the significant deliverables while meeting overall cost, schedule, and technical performance requirements. Specific examples include the receipt of additional funding supporting the NNSA-approved ongoing additive manufacturing initiatives of the Additive Manufacturing Coordination Team (ACT) and successfully meeting milestones associated with the Precision Non-Special Nuclear Materials (SNM) Metals Team FY15 goals. CNS successfully performed work for the "NNSA support to the RES(O) Programme" for UK's AWE.

During the fiscal year, CNS worked with the NNSA Office of Human Capital Minority Serving Institution Partnership Program (MSIPP) to provide research opportunities for professors and students from HBCUs and Minority Serving Institutions (MSIs). CNS is also a partner for two consortia consisting of 14 colleges and universities: the Consortium for Advanced Manufacturing (CAM) and the Research on Science and Engineering of Signatures (ROSES)

Other notable achievements included: Feedstock deliveries to NR fuel fabricator; met current schedules for the production of enriched uranium feed and fuel material for DOE research reactors; and successful deployment of Electronic Medical Business Operations System (EMBOS) at the NNSS.

CNS production of Li-7 for the Office of Science fell significantly behind schedule because of numerous building air quality and equipment issues. In response, CNS worked closely with the Office of Science to find ways to increase production resulting in significant effort to achieve a steady state and reliable operation by the end of the fiscal year.

CF-3.2: CNS exceeded expectations by completing most of the significant SPP deliverables while continuing to expand SPP programs and projects with customers such as the DHS and the Department of Defense in multiples areas of nuclear weapons test equipment, weapons training, and nuclear reactor fuel fabrication.

Major achievements in pursuing additional SPP included receipt of funding from the Naval Sea Systems Command (NAVSEA) Naval Surface Warfare Center (NSWC) to conduct a manufacturing study on the development of a full scale rotor; receipt of funding from DHS to support state and local radiological and nuclear program development and to provide a field-installed encapsulation of 3 LEU plates; receipt of funding from the FBI to provide expertise in support of WMD activities; establishment of a cooperative research and development agreement (CRADA) from Foresite, Inc. to begin collaboration on the patented Magnofex processing method for lead-free soldered and plated electronics; and expanded support to the NASA KiloPower Demonstration Project.

CF-3.3: CNS met most expectations on deliverables including cost, scope, and schedule. CNS ended this fiscal year at 95% spent against the Annual Controlled Baseline for PO-3. Approximately 130 deliverables were successfully executed for a variety of other federal agencies, non-federal entities, and DOE sponsors. During FY15, 98% of work scheduled to be completed by the end of the year was completed. CNS's efforts to expand SPP work resulted in approximately 165 proposals sent to various Federal and non-Federal SPP customers and other NNSA M&O contractors in direct support of the NNSA mission capabilities including engineering, high explosives, hands-on weapons training, weapons electronics testing, nuclear/radiological training, nuclear forensics, nuclear and non-nuclear fabrication, security analysis, nuclear detection, uranium processing and supply, lithium processing and isotope supply, and national security information technology solutions.

CNS has been behind schedule with casting material for the TerraPower and DHS projects because of the inoperability of a unique casting furnace. After several months of effort and technical challenges, CNS focused its resources and successfully restarted this caster and performed these castings that are now undergoing evaluations that, if successful, should allow for the resumption of work that had been put on hold by the TerraPower customer. CNS also experienced several delays because of work pauses and other equipment issues with the CNS Development organization that have put some SPP project deliverables in jeopardy. CNS resumed these operations, but close attention should be paid to execution of the recovery schedules to assure on-time deliverables in FY16.

Performance Objective 4: Science, Technology, and Engineering (ST&E)

Summary

Science, Technology, and Engineering (ST&E) (5% of At-risk fee) was rated as Very Good. Overall, CNS performance was above expectations in its ability to manage the Science, Technology, and Engineering. CNS exceeded expectations in demonstrated performance of the work scope funded.

Overall, CNS exceeded expectations in advancing the frontiers of ST&E. CNS has effectively managed the PDRD and Technology Transfer programs and successfully implemented a broad spectrum of research and development projects that supported national security missions in the areas of Stockpile Surveillance and Enhanced Surveillance, Advanced Manufacturing, High Explosives, Nuclear Nonproliferation, and Material Synthesis and Processing. CNS initiatives within the PDRD program have taken advantage of partnerships with universities and other facilities to obtain both cost and technical expertise resulting from these interactions. CNS also continued cooperative work with the UK's AWE.

CNS substantially contributed to completion of the NNSA Uranium Mission Strategy and the NNSA Uranium Mission Requirements documents and initiated significant effort to begin implementation of this strategy. Also, in support of the NNSA Uranium Strategy implementation, CNS completed the Uranium Technology Development and Insertion Report. This report described the current state of uranium processing technology, identified development opportunities, and provided an approach to achieving a sustainable uranium production capability. To assist NNSA in establishing a Lithium Strategy similar to the Uranium Strategy, CNS developed and delivered planning documents reviewing Lithium Production Capabilities strategy and implementation and a technology roadmap. These documents pull together the key elements needed to sustain the lithium mission.

CF-4.1: CNS continued to make progress toward the integration of the Pantex and Y-12 PDRD programs. CNS completed the review and evaluation of approximately 150 new project proposals and 64 were selected for possible funding in FY16. A total of 129 projects for Pantex and Y-12 are to be funded in FY16 and will be included in next year's Annual Controlled Baseline. Projects were selected based on the technology roadmaps supporting core missions, transformation, and broader national security interests.

During the fiscal year, CNS completed several milestones in establishing an additive manufacturing capability at Y-12, including delivery and installation of a polymer additive manufacturing machine and procurement, and installation of a powdered metal additive manufacturing machine to be installed at the Manufacturing Demonstration Facility (MDF). CNS also established a subcontract with The University of Tennessee and ORNL to use a graduate student to assist in the work to characterize properties of additively manufactured test specimens.

CF-4.2: CNS exceeded expectations in managing research to ensure that projects remain relevant and enable national security missions by implementing approaches, controls, and reviews to improve the performance of R&D activities. Specific accomplishments included: deployment of an efficient ER process to meet future NNSA uranium production goals with a safe and efficient purification process; completion of a study quantifying the temperature at the machine cutter

interface with a high explosive (HE) and evaluated the effects of various machine parameters; and supporting Office of Science initiatives relative to Lithium production. The team developed a proprietary system for separation. As a result of this groundbreaking research, the DOE Office of Science requested that CNS develop a project proposal for additional studies to determine scaling factors and gain a better understanding of the separation techniques and factors.

Innovative PDRD projects advanced the scientific and technical capabilities in several fields and resulted in the achievement of significant intellectual property. This included two R&D 100 Award finalists, four invention disclosures, three patents issued plus five patent applications, ten publications, and one CRADA.

CF-4.3: CNS exceeded expectations performing research that advances the frontiers of science and engineering through multiple projects. CNS and the University of Virginia are leading efforts on fundamental studies of mechanical deformation of uranium, addressing issues related to aging and uranium processing for nuclear energy industry and medical isotope production. Collaboration between CNS, national laboratories, and universities is leading to advances across many scientific and engineering disciplines, including, neutron detection and imaging, nanostructure-based detection systems, and nuclear forensics/nonproliferation. R&D activities at Pantex continued to provide mission-critical information on material properties of high-explosives in the current stockpile and possible replacement formulations.

CNS continued to build on the novel neutron detection semiconductor, $^{6}LiInSe_2$ radiation-detection crystals for improved radiographic imaging. The project significantly improved the crystal properties and size while focusing on development of the material for specific applications, which included hand-held radiation detection and neutron radiography. Research at partner universities is also contributing to advancing radiographic applications. This crystal has recently been applied to neutron imaging and radiography applications. Neutron imagers have been prepared to take advantage of the properties of the $^{6}LiInSe_2$ crystal to yield images with resolution similar to the best imaging detectors in the world. CNS collected the images an order of magnitude faster than the high-resolution neutron imaging detectors. This advancement was submitted for a 2015 R&D 100 Award.

CNS pioneered an approach to testing high-explosives using electric gun technology. This approach will allow comparisons between LX-07 and PBX 9012 to meet a level II milestone. In related research, CNS tested a new Susan Test sabot for insensitive high-explosives (Figure 4.3.1). Computer-aided design has been utilized to incorporate integral changes to retain gas pressure and achieve targeted projectile velocities, and additive manufacturing technologies have been utilized to manufacture prototype test units.

CF-4.4: CNS demonstrated their commitment to maintaining critical skills that are necessary to accomplish missions and enhance the technical work force. PDRD projects enhance core skills in; Lithium and uranium processing and production, high-explosives synthesis, characterization, and machining, advanced materials and additive manufacturing, and novel sensor technologies.

CNS utilized US/UK Joint Working Group activities to enhance the technical capabilities of researchers in areas of common interest. These include: multiple areas important to direct electrolytic reduction and electrofining development at Y-12; Thermal Decomposition and Distillation and Zone Refining and the Direct Material Manufacturing approach for lithium

materials; and, collaborations on topics related to high explosives. Numerous PDRD projects utilized university partnerships, which included collaborations with the UT-Knoxville, Tennessee Tech, West Texas A&M University, Texas Tech University, and the University of Utah.

CNS began advancing manufacturing capabilities through additive manufacturing initiatives. CNS procured and received a Connex 500-UV Resin multi-color, large-scale plastic machine. This machine will be used for prototyping, proof of principle, displays and cutaways, and training aids. CNS also procured its first metal additive machine and installation will begin at Y-12 in July. Once R&D material testing is complete, the first area of focus will be tooling applications. A second, identical machine has been procured for Pantex and will be delivered late summer for similar applications.

CF-4.5: CNS executed or amended six technology agreements (including commercial patent licenses and options, and government use licenses) against an FY15 goal of four. CNS has also generated 60 invention disclosures against the FY15 goal of 50, covering materials, sensors, detectors, fiber optics, advanced manufacturing, tooling, lab equipment, software, and advanced manufacturing. CNS entered into or extended five partnership agreements against an FY15 goal of six with a memorandum of understanding (MOU) with Texas Tech University pending. These partnership agreements are with universities and one state-funded institution, are designed to further collaboration on mission-related R&D, allow for personnel access at each institution, and commercialize technologies. In addition, CNS received 13 U.S. Patent and Trademark Office patents in FY15, with five additional allowances pending. CNS also entered into their first funds-in CRADA in over a decade with a private company to investigate the benefits of a novel CNS process to electronics performance and reliability. CNS established one Technology Transfer office and all enabling administrative considerations to manage technology transfer activities at the Pantex and Y-12 sites.

Exceptional progress has been made in the improvement of processing uranium machine chips and recovery of metal from these processes. Six proof-of-principle chip casting experiments have been completed with an average metal recovery of 92%, and CNS has procured a full-scale prototype furnace to continue studies. Based on CNS studies on the rinsing of machine chips, the NNSA Uranium Program Manager and Y-12 management approved the installation of a permanent rinse station in Y-12 Production for improved handling procedures. Finally, these studies also allowed for piloting the elimination of the Ultrasonic Chip Cleaning Stations in the recovery process to improve the casting quality and reduce the cost of processing chips for metal recovery.

SSO-4.1: In support of the Uranium Program Manager, CNS substantially contributed to completion of the NNSA Uranium Mission Strategy and the NNSA Uranium Mission Requirements documents and initiated significant effort to begin implementation of this strategy. In support of the NNSA Uranium Strategy implementation, CNS delivered the Uranium Technology Development and Insertion Report, which describes the current state of uranium processing technology, identifies development opportunities, and provides an approach to a sustainable uranium production capability. Uranium Mission Transformation activities continued to advance on all fronts, including MAR reduction, process relocation projects, and planning for infrastructure investments. Measurable evidence of the positive impact of MAR reduction actions has been obtained from the reconciled EU inventory data for 9212. The decrease in 9212 MAR is directly attributable to the dissolution of EU uranyl nitrate crystals.

Performance Objective 5: Operations and Infrastructure

Summary

Operations and Infrastructure (35% of At-risk fee) was rated as Good. Overall, CNS performance met expectations in meeting the DOE/NNSA mission by ensuring Site Operations and Infrastructure were maintained and available to meet assigned missions. CNS continued to have challenges in effectively and efficiently managing work throughout the rating period. Several issues compromised safety, security, and quality assurance principles. While some areas for improvement were identified and an overarching plan for Performance Excellence was developed, abnormal events and security incidents continued to occur. Although there were pre-existing cultural conditions that precipitated issues after CNS took over M&O responsibilities, CNS was slow to react in response to operational issues and did not always work transparently in responding to them. Throughout the rating period CNS experienced issues with adherence to procedures while performing work, demonstrated poor work processes that resulted in abnormal events, experienced continued reoccurrence of events, and lacked depth and breadth in investigations resulting in issue reoccurrence. These events have led to worker exposures to hazards, non-compliances with plant safety and health requirements, violation of procedures related to packing and shipping of nuclear material, circumventing work procedures negatively impacting material control and accountability, and working outside of the NNSA approved authorization basis. The quality of deliverables in project management, nuclear security, (i.e., Y-12 Site Safeguards and Security Plan, corrective action plans) and business required "rework" and re-submittal to NNSA for additional reviews.

CNS leadership demonstrated commitment to "raise the bar" to meet NNSA expectations but significantly more work is required to achieve performance excellence in every aspect of work and a reduction of abnormal events, security incidents and other issues. The overall response to this significant issue did not exhibit the urgency that was associated with the potential risks. Many of the CNS Performance Excellence initiatives are strategic in nature that may not prevent issues from reoccurring in the short term. It is unclear how CNS will balance the strategic nature of their current performance excellence initiative with the urgent need for a move towards consistently excellent performance.

CF-5.1: CNS was challenged with the implementation of Environment Safety and Health processes. CNS continued to have worker exposures to workplace hazards (e.g., lithium, noise, asbestos) and concerns with the number of motor vehicle safety events. However, CNS injury recordable rates continued to be below NNSA and significantly below industry averages. CNS was slow to react to immediate operational issues that could have impacted safety or mission deliverables (e.g., 10 CFR 835 non-compliances, water leaks in known mercury contamination areas, worker exposure complaints, conservative decision making, and procedure compliance, etc.). CNS experienced issues with securing loads during transportation activities, several employee injuries resulting in multiple days off or restricted work activity, segregation of waste streams, housekeeping/site appearance, and expired Job Hazard Analyses. CNS initiated a focused job hazard analysis team to identify process improvements. CNS did not complete a High Explosive Inventory as required. However, a recovery plan was established and completed. CNS also identified changes to the Explosive Site Safety Plan and is working to meet the updated operational posture.
CNS fire protection assessments were behind schedule; however, CNS's plan to update the assessments by the end of the FY was successful. NNSA is concerned with the number of fire

protection compensatory measures at the sites. Although some compensatory measures are attributable to aging infrastructure, complacency has resulted in some measures being tolerated longer than necessary. Continued emphasis is needed in reducing the fire protection compensatory measures at both sites. CNS performed well in meeting environmental compliance permits and commitments. Permit applications were submitted in a timely manner and overall permit compliance was very high. CNS Y-12 recovered well from sanitary permit exceedances for mercury early in the FY. There were no noncompliances identified during state and city inspections of the air and sanitary programs in Tennessee. The Waste Operations Department at Pantex received no hazardous waste violations this FY, and has now accumulated 21 consecutive years without any NOVs. Tennessee Department of Environment Conservation conducted an assessment at Y-12 that resulted in a positive review. An Independent Assessment was also conducted of the Environmental Management System at Y-12 that resulted in positive results at Y-12.

CNS continues to be challenged in Radiological Protection performance. NNSA is concerned with radiological protection staffing losses affecting the ability to adequately survey work space and monitor the conduct of radiological work. CNS issued a Radiological Control Program Stewardship plan for Y-12 which reflects promising actions; however, sustainable performance improvements have not been demonstrated (i.e., the FY ended with 42 personnel contaminations). Industrial Hygiene (IH) program at Y-12 has been challenged by lithium and planned response to off-normal occurrences. CNS has developed an Enterprise Chronic Beryllium Disease Prevention Program (CBDPP) that is being reviewed by NNSA. Revisions are required before NNSA will approval can be completed. CNS is also working to integrate the Worker Safety and Health Programs and the Integrated Safety Management Systems into a single enterprise program.

From a Quality Assurance perspective, CNS developed an integrated Quality Assurance Program Description (QAPD) and submitted it for NNSA approval. While it could not be approved as written, CNS began to quickly address NNSA's input and held meetings with NNSA to ensure the feedback was understood. This integrated QAPD is a key piece of the CNS initiative of an Integrated Quality Management System that will serve as the foundation for the program across the Enterprise which will be a key component in achieving performance excellence. Given the Quality-related issues this year, NNSA noted that CNS is working diligently to strengthen the implementation of the Quality program at all levels of the organization. This was most recently demonstrated in the work associated with commercial grade dedication at Pantex. CNS also tracks a key initiative for Supplier Quality that should improve the overall process for evaluating and overseeing suppliers with an enterprise process.

NNSA noted that CNS' efforts to integrate site level programs into enterprise level programs have continued to progress in some areas.

CF-5.2: CNS managed the majority of capital projects in accordance with scope, cost and schedule baselines.

For small projects under $10M, CNS generally completed the work within cost and schedule parameters as noted below. CNS is working to address the impacts from these delays. Two major projects successes this year include the demolition of 9808 and completion of the Post 8 upgrades at Y-12.

	CPI	SPI	Comment
Pantex	1.08	0.95	Three projects are experiencing significant delays: Flame Detection project because of an inability to move material from the facility to perform work and engineering delays; 12-98 Cells 2 and 4 lead-ins replacement because of an anomalous unit in the facility; and 12-104 Vacuum Chamber because of QA-1 delays, engineering resources, and vendor delays.
Y-12	1.04	0.96	Three of 47 projects rated yellow due to schedule delays. Controllers 28/29 schedules were impacted by higher priority work. The subcontract for Building 9119 Auditorium design and installation was awarded in July, later than expected and with a longer scheduled than expected. Building 9204-2 Concrete Remediation is impacted by latent site conditions that have delayed field activities and increased project cost.

With regard to line items, the Nuclear Facility Risk Reduction Project (NFRR), was completed 11 months ahead of schedule and $5.7M under the cost. The NNSA Project Management Executive (PME) approved CD-4 on January 20, 2015, ahead of the planned CD-4 scheduled date of December 2015.

Prior to January 2015 when CNS took custody of the High Explosive Pressing Facility (HEPF), CNS served primarily as the project's coordinator for project management support and EVM data entry providing prompt and reliable project analysis. CNS also managed the Title III services contract (CH2M Hill) throughout FY15. For the last three quarters of FY15, CNS took ownership of the HEPF facility issues, but has been very slow in accepting responsibility for HEPF facility issues, aside from periodic maintenance. Examples include shutdown and re-start sequencing for air-handling and dehumidifier units required by site-wide utility shutdowns (the procedures for these normal events still seem to be in draft) and addressing potential hot water damage to the roof resulting from a malfunctioning steam Condensate Return Unit (CRU). Although the CRU is under warranty, CNS did not react timely to prevent damage and took several days to take action in response to the malfunction CRU. CNS is managing their portion of the HEPF project within its approved cost baseline, expected scope, and schedule. Significant improvements were observed in the latter half of FY15. CNS's interface with the USACE for punch list, warranty, and latent defect item reporting and resolution identified gaps. CNS continued to work with USACE cooperatively on closing submittal gaps related to facility start-up, and has accepted additional scope/responsibility for filling addressing approximately 1/3 of the remaining submittal items. CNS is proactively working pre-start start-up activities with great flexibility responding to equipment and documentation availability and has successfully worked to recover the project's overall schedule where possible.

CNS supported NNSA in obtaining the High Explosive Science and Engineering Facility (HESE) Critical Decision 1 in January 2015. CNS also provided access and technical support to the Enterprise Construction Management Services (ECMS) contractor in conducting site surveys to support project D&D scope and estimate refinement during 3Q and 4QFY15.

CNS adequately supported development of the CD-0 package for the Lithium Capability Project with approval obtained April 30, 2015. CNS continues to support the federally-led Analysis of Alternative (AoA) efforts by preparing functions and operational requirements, programmatic and technical requirements, desired attributes, alternatives, risks and opportunities, and coordinating planned on-site team visits and high level Lithium briefing strategies. This AoA effort is expected to be completed in May 2016.

The Material Staging Facility project's package met expectations. The initial cost estimate of $500M developed by CNS for the project did not follow best practices and was subsequently increased by $200M. This revision took several months and delayed the CD-0 approval date.

CNS did an excellent job supporting the aggressive schedule for the Administrative Support Complex (ASC) CD-0 and CD-1 packages. The business case for the ASC project was developed ahead of schedule.

CNS adequately addressed the Independent Project Review (IPR) recommendations, and the IPR team recommended approval of the CD-1 package in May. The initial cost range developed by CNS for the Emergency Operations Center (EOC) project was almost twice the available budget. NNSA subsequently directed a re-conceptualization of the EOC, and CNS worked to re-estimate cost associated with resizing the building to address only core requirements. CNS refinement of the project requirements and resizing resulted in a revised CD-1 package submittal in the month of August 2015. Due to the June 2015 Secretarial direction, CNS was directed to support an independent AoA. The CD-1 documentation will need to be updated based on the results of the AoA.

CNS met expectations on the Calciner project with CD-1/3A approval on July 2, 2015. In addition, a life safety code equivalency approval was obtained from NNSA to allow the equipment to be installed in a new location in an existing facility, thus reducing a high risk impact to the project execution. Project procurement activities as part of the CD-3A long-lead procurement approval have resulted in a potential overall schedule delay to the project critical path procurement strategy. CNS piping demolition activities and installation walk downs were timely achieved. As noted by the IPR team, the CD-1/3A transmittal package quality was initially below the FPD expectations, where the documents were laden with editorial errors, the project execution plan was encumbered with non-project specific details, and planning information that should have been in separate planning documents. CNS did a notable job improving the documentation quality, and the PME approved CD-1/3A.

CNS met expectations on the Fire Station Project. CNS supported the CD-0 package for the project and received CD-0 approval in May 2015 on schedule. The project team responded to NNSA's request to expedite the CD-1 package in order to meet a CD-1 approval by the end of FY15 which was later rescinded.

CNS met expectations on the Electro-Refining Project. CD 1/3A was received on schedule in 2015. The project team successfully supported multiple reviews which included an Independent Cost Review, AoA and an Independent Project Review.

CNS exceeded expectations in providing support to the Energy Savings Performance Contracts (ESPCs) projects. This support provided timely design submittal reviews, excavation permitting, documentation classifications, and metering verification validations. CNS supported NNSA with

investment grade audit reviews and support cost estimates and information necessary to modify the ESPC contract this fiscal year with expanded lighting, energy conversion, and cooling tower utility energy savings projects.

CF-5.3: CNS developed a strategic framework establishing a vision strategy and organizational philosophy for the safeguards, security and emergency services organization. The strategic framework was a positive step forward. The CNS approach now requires the establishment of short- and long-term objectives for security and emergency management, a plan for establishing priorities based on this vision, and a plan for transforming the security and emergency services organization to address problems in an integrated manner. While the strategic approach is being developed into a detailed plan, recurring events continued to demonstrate that the current CNS approach to security is lacking. The high number of security incidents that occurred during this rating period indicates that improvements in safety culture are needed.

A lack of formality of operation persists as evidenced by operational failure to consistently implement security based requirements; recurring events in the protection of Personally Identifiable Information and Unclassified Controlled Nuclear Information (e.g., off-site locations) indicated that a sound strategy for integrating security requirements among the CNS business partners doesn't exist; and that a lack of understanding regarding security based requirements is evident. An event involving the packaging and shipment of highly enriched uranium highlighted the overall lack of success that CNS has experienced in turning around performance as related to conduct and formality of operations. A shipment from Y-12 to an offsite laboratory exemplifies this culture and performance problem. Areas of concern include supervisory engagement and control, procedural compliance, manual manipulation of data, lack of a questioning attitude, and confidence in material control and accountability. The CNS initiative to strive for performance excellence, which encompasses improved formality of operations and an increased safety and security conscious work environment has not yet shown results.

CNS continued positive performance in the following program areas: Human Reliability Program, Classification, and Protective Force. While improved performance was noted in Physical Security Systems, challenges continue regarding sustaining the operability of an old security system. CNS requested and received additional support to trouble shoot and re-configure a sensor line resulting in repairing the system, although the system remains fragile due to its age. Previously reported success regarding to False Alarm Rate/Nuisance Alarm Rate reduction efforts associated with animals continued to show positive results. This area is one, similar to vegetation control, both of which run in cycles and will require continuous management attention.

Y-12 security operations overall are effective and noted a continued effort to address Protective Force (PF) equipment updates to include refurbishment of BearCats and an effective and strong showing by PF in force-on-force activities for the year.

Technical improvements noted at Y-12 include:

- updates to the main entrance (Portal 8) to the protected area to include enclosing it, providing heating and air-conditioning, which provides protection from weather for newly installed security technology;
- lighting along Bear Creek Road illuminating the ridge (dominant terrain) on the north side of the protected area;

- implemented measures to positively address animals driving false and nuisance alarm rates; and erected a fence along the perimeter along Scarboro Road to better delineate the Plant boundary and federal jurisdiction.

Pantex's security operations are effective and continue to improve. Of note, these improvements included phasing out antiquated armored vehicles and replacing them with BearCats, refurbishing BearCats already on hand that were due for service but had been delayed because of budget constraints, and initiating replacement of old electronic components in the Zone 12 Perimeter Intrusion Detection & Assessment System (PIDAS). Similar to Y-12, Pantex is faced with the challenges of an aging security infrastructure (e.g., PIDAS, ground surveillance radar and security screening booths) and ARGUS implementation issues. Although Pantex possesses a "can do" production attitude, the Plant security culture is an area that always requires management vigilance. An example of this is issues with training documentation for PF members identified by NNSA. Training documentation validity was noted as a problem--PF training had not been accomplished upon review as stated in the formal training records. CNS management did effectively respond to this finding, but it is an example of the need for better self-assessment and management support of a "critical eye" when looking at programs internal to their operation. The EA security inspection at Pantex indicates that the essential elements of the Pantex security program are sound and nuclear weapons are securely stored, handled, and transported while at Pantex. There were areas identified for improvement and those are in the process of being addressed in FY16.

The rate of improvement for the security program has been slow. Deficiencies identified in past inspections at Y-12 and confirmed in follow-on DOE Office of Enterprise Assessments (EA) have not been fully addressed. For example, repeated and new EA findings from the September 2014 security inspection have not been fully addressed (e.g., NNSA has rejected a number of submitted corrective action plans for being inadequate). Negative trends in Incidents of Security Concern (IOSC) data were noted throughout the rating period and included inquiries lacking thoroughness, untimely response to incidents, and inaccurate information in reports. The number of incidents and their recurrence, particularly in the area of classified matter protection and control, indicated that root causes are not being identified and adequately fixed. Many of these incidents reflect employee's inattention to detail and failure to comply.

As part of the strategic framework, CNS provided an outline of a strategic plan for sustaining, refurbishing and replacing critical security infrastructure. However, an affordable approach to address the aging infrastructure problem has not matured. Additionally, CNS has not developed a plan to address a longstanding issue with non-standard storage of classified material. This problem will require an integrated solution among security, operations, facility management (infrastructure), and other functions. This lack of integration is reflected in the CNS implementation plans to bring these non-standard storage areas into compliance with DOE directives. As a result, the plans are too costly with no schedule for revision nor reasonable technical approach in pursuing an equivalency or exception to policy.

CNS made progress with emergency management in internal and external (i.e., off-site partners) communications and refinement/development of processes and checklists. From the June 16th, 2015 drill and the August 26th, 2015 exercise, the changes made to managing the Emergency Public Information efforts were considerable. CNS has made progress in establishing an enterprise approach to emergency management through organizational and programmatic initiatives. For example, a very aggressive schedule for implementing some of the tools necessary to continue the

improvement of the programs through an enterprise approach has been proposed and appears to address many of the longstanding issues with offsite interface communication, internal communications, procedure improvements, and situational awareness during emergencies for the emergency response organization. Both sites completed their exercises scheduled for the year, a total of five between the sites. Improvements were noticeable for the Pantex program, both through internal and external reviews. However, sustainability and continued improvement are needed.

CF-5.4: CNS provided timely and thorough information consistent with the NNSA Infrastructure Program Management Plan guidance issued September 2014. However, CNS is encouraged to be more proactive about notifying the appropriate NNSA program managers when project issues arise. CNS effectively addressed NNSA program management initiatives, including: meeting the BUILDER Initial Operating Capability (IOC) deadline on time with quality data and actively supporting BUILDER implementation phase two; participating in the newly established Site Portfolio Manager interface meetings; and supporting the Facilities Disposition Working Group and providing information in a timely manner to support the FY15 Facilities Disposition Report to Congress.

CNS continued to apply appropriate resources in a systematic fashion to maintain and operate the production plants. CNS was generally effective in making quick repairs to damaged equipment and maintaining facilities and utilities equipment operational. CNS pursued completion of overdue preventive maintenance, infrastructure improvements, and improved asset management. However, in the absence of a comprehensive plan to attack the aging infrastructure, CNS fell behind in some areas, particularly the Pantex electric power distribution system where lack of preventive maintenance has reduced the redundancy of the system. There was also an unplanned power outage during this performance period. CNS continued to struggle with the timely disposition of excess, unneeded material.

CNS has put adequate resources and emphasis on resolving issues associated with aging infrastructure and keeping equipment operational during the year. Despite significant challenges facility availability has met mission needs all year. CNS also reduced the amount of overdue preventive maintenance and has put aggressive plans in place for improving electric plant distribution system reliability and performance. However, CNS has not effectively integrated predictive maintenance into its overall asset management program and there is still room for improved integration in coordinating maintenance and repair activities with production. CNS accomplishments include efficient and timely implementation of program planning tools including BUILDER, Laboratory Operations Board, Facility Information Management System, and G2. CNS continuously provided quality information, was never late, and, for several major deliverables, was significantly ahead schedule. While there were issues with initially uploading the new G2 program reporting system, CNS quickly rebounded. NNSA recognized the programmatic expertise and accomplishments in managing data related to condition assessments, deferred maintenance, and overall infrastructure reliability and selected CNS as the Center of Excellence for the BUILDER initiative. As an enterprise leader, CNS met all requirements in an accelerated timeline and supported the NNSA's efforts to implement BUILDER across the enterprise within the established programmatic milestones. They also supported NNSA's Core Risk Informed Infrastructure Strategic Planning (CRISP) and Maintenance CRISP Working Groups through the attendance of periodic bi-weekly and face-to-face meetings, directly influencing and impacting NNSA infrastructure policy and guidance, and addressing key infrastructure strategic challenges.

CNS performed well in meeting project commitments under the Unneeded Materials and Chemicals program that included dispositioning 56,700 cubic feet of material at Y-12. However, CNS did not meet expectations to remove over 100 excess, rusted drums from the 9720-18 pad. CNS dispositioned over 11,095 cubic feet of material at Y-12 and 13,300 cubic feet at Pantex.

CNS requested and obtained NNSA commitment to fund a number of specific electrical, maintenance, and equipment projects to help ensure the viability of Y-12's enriched uranium facilities. The commitment includes $85 M over 4.5 years. This commitment was based, at least partially, on CNS demonstrating their ability to effectively and efficiently complete projects.

CNS initiated the Storage Plan for Achieving our Culture of Excellence (SPACE) Program to develop an effective inventory control program and sourcing strategy for procurement, storage, control, distribution, and disposition of supplies, parts, and equipment. Currently, about 80% of materials on site are not in an inventory control program resulting in large unnecessary costs associated with lost or redundantly procured items and storage. These efforts were initiated at Y-12 with plans in place to include Pantex in FY16. CNS has aggressive identified storage locations, inventoried matter, conducted an options analysis, and initiated coordination/negotiation with CROET for storage space at the East Tennessee Technology Park. This is a commendable effort that should result in significant operational and procurement savings.

During FY15, CNS successfully executed modernization and recapitalization projects to address aging infrastructure and reduce deferred maintenance. They quickly mitigated the impacts associated with four High Pressure Fire Loop (HPFL) mainline and lead-in breaks either through temporary repairs or alternate valve alignments. CNS also awarded the construction contract for replacement of the deteriorating High Explosives Filtration System at 12-121, thus mitigating its failure and the potential impact for shutting down HE Machining operations in that facility. CNS also awarded contracts to address obsolete emergency lights in building 12-44, replace nine Uninterrupted Power Supply systems in five locations at 12-84 and 12-104, and to assess lightning protection systems in ten production facilities. CNS is effectively executing the Bay and Cell Reinvestment Strategy and replaced six HPFL Lead-ins during the fiscal year with another six lead-ins under contract for replacement during FY16. CNS is establishing a safety class prototype infrared Flame Detection Fire Protection System and receiving Nuclear Explosive Safety Change Evaluation (NCE) approval; continuing efforts towards developing the Radiation Air Monitoring System (RAMS) prototype; and installing the Phase 1 of the Fiber Optic Network. CNS successfully executed General Workplace Improvement (GWI) projects; completing over 30 activities and costing/committing over $11.4M towards these initiatives. Some notable milestones include: the Post 8 enclosure project; renovating restrooms and locker areas in buildings 12-5 and 12-6; refurbishing guard station 730, and replacing the FS21 Septic System.

CNS initiated an "Own the Zone" program which has resulted in disposition of more than 10,000 cubic feet of material. CNS removed over 450 feet of verified dead and abandoned high voltage cable and restored critical infrastructure processes (e.g., Salt Bath, Lathes, A/B crushers, and cooling towers). CNS made improvement in the predictive maintenance program resulting in less man-hours required for work planning. CNS, Tennessee Valley Authority, and NNSA collaborated to obtain an agreement in principle with regulators regarding an exemption to utility power distribution regulations. Housekeeping remains a concern across the Y-12 site. Excess materials (e.g., concrete rubble, asphalt, electrical conduit) from maintenance and construction projects are not always properly disposed of after project completion. Likewise, problems with litter and site

housekeeping still occur. During the reporting period, CNS made notable progress in the areas of Renewable Energy, Waste Reduction, Water Use and Management, and implementation of ESPCs as evidenced by both sites receiving NNSA and DOE Sustainability awards relating to those initiatives. CNS also obtained approval of an ESPC modification to expand current utility energy savings projects. During the reporting period, both sites are overall meeting expectations with regards to energy management goals. Notable progress at both Pantex and Y-12 has been made in the areas of Renewable Energy, Waste Reduction, Water Use and Management, and implementation of Energy Savings Performance Contracts. Y-12 National Security Complex received one of the 2015 Federal Energy and Water Management Awards. Through its Be-Wise with Energy Dollars program, CNS made changes in utilities management at Y-12 that has saved more than $6 million in fuel, water, and electricity costs.

During Q4 of FY15, based on Pantex implementation of a model Environmental Management System (EMS), the Texas Commission on Environmental Quality (TCEQ) approved Pantex participation in an Innovative Programs regulatory collaboration. Participation will allow Pantex regulatory flexibility to reuse wastewater in processes that previously used potable water and thereby increasing the probability of Pantex meeting water conservation goals.

CNS, through the Continued Safe Operating Oversight Team, continued to identify issues and resolutions for maintaining operations in Y-12's enduring nuclear facilities, i.e., 9212, 9215, and 9204-2E. Their efforts resulted in the Facility Risk Reduction Project that focused on facility and equipment upgrades necessary to maintain these facilities for an interim period. As decisions were made to adjust the Uranium Processing Facility scope and significantly extend the life of 9215 and 9204-2E, CNS established the Enriched Uranium Facility Extended Life Program. CNS hosted an aging facility workshop with federal and contractor participants from across DOE, NNSA, other federal agencies and representatives from the UK Ministry of Defense and conducted three sets of small-team gap analysis focusing on various aspects of keeping the enduring facilities operational. CNS developed a charter for an Extended Life Workshop that was endorsed by NNSA. The workshop is scheduled for November 2015. In these ways, CNS is effectively managing key facilities and operations to meet NNSA's mission indefinitely.

CF-5.5: The CNS Business functions continued to operate effectively while working through a myriad of merger and consolidation tasks, although in some areas they have struggled to meet expectations. CNS continued to perform consolidation activities from two accounting systems for the STARS reporting and funds control, as well as performed initial effort in the development of a single financial system. CNS also began consolidated reporting for their support services to the Federal Salaries and Expense account. The FY15 and FY16 cost model impacts and realignment discussions with stakeholders continued through this period. It is not clear to NNSA that CNS has matured their budgeting and forecasting processes to communicate programmatic impacts to contractor and federal program managers to enable informed resource and funding decisions. In the last quarter there has been a decline in communication from the CNS in regards to the delivery of a single financial system. CNS informed NNSA in July 2015 that the consolidated financial system would be delayed from October 1, 2015, until FY18. Additional communication is required for a common understanding for the delay to ensure success and transparency in this area. This plan requires balancing expectations for the NNSA and the CNS team with affiliates. NNSA has concerns with the high level of risk inherent in the CNS current manual accounting processes. Without remedy, NNSA is at high risk for audit findings and possible misstatement of the financial

statements. The operation of two financial systems is not efficient or economical. Manual processes have caused delays in financial deliverables.

CNS was challenged in defining and implementing processes to support the acceptance of cost savings deliverables; the validation of savings; transparency to NNSA; tracking of implementation costs; development of a measurable baseline for supply chain; and delivery of clearly defined scope and cost baselines. Implementation of a single financial management system was delayed, putting the integrity of cost savings program at risk. Without transparency and sufficient tracking of execution costs, supply chain, and benefit savings, the likelihood of NNSA validating net cost saving with confidence will continue to be at risk.

Progress was made in the areas of accounting for savings fee, establishing funding reserves for savings, developing tracking systems, and launching the Annual Controlled Baseline (ACB) Change Management Council. The 2015 Cost Reduction Proposal (CRP) was successfully accepted on June 29, 2015, with some limitations and contingencies. The 2016 Cost Savings ACB and CRP deliverables were delivered late and missing critical elements to facilitate federal validation. The I-19 Process and Procedures document directs specific milestones for each of these contract deliverables. As the ACB and CRP are central to the implementation and measurement of the Cost Savings program, CNS's failure to timely submit these documents to the Government placed the entire Cost Savings program at risk of unsatisfactory performance.

CNS Information Systems and Solutions (IS&S) with few exceptions, sustained mission-critical computing resources for both sites. Excessive attrition of CNS Information Technology (IT) and Cyber critical skills, limited financial resources and contract restructuring prevented CNS from meeting its implementation schedule for their Draft IT Architecture and Technology Transformation Plan. CNS IS&S improved the stability of the NPO desktop and implemented high definition video conferencing between Y-12 and Pantex. Enhanced mobile computing simplified cross-site access to information resources. These technology advances are key to the success of a single managed M&O contract. CNS does not have a resource-loaded plan for delivering the Merger and Transformation IT solutions or the Draft IT Architecture and Technology Transformation Plan. In addition, the FY16 ACB has not identified resources to support CNS' corrective action plan associated with Y-12 data centers. The current IS&S configuration management process does not provide a systematic approach for managing information technology changes, which span both sites and as a result, can lead to system instability.

CNS invested significant resources to resolve employee benefits concerns and reach agreement with unions. CNS was transparent and provided timely updates on union negotiations. However, receipt of multiple incomplete negotiation packages caused NNSA rework, additional time, and unnecessary reviews with NNSA Senior Leadership. Also, the data was conflicting resulting from the different analysis and methodologies utilized by the providers, Aon Hewitt and Booz Allen Hamilton. CNS implemented a new consolidated Leadership Incentive Award program for both sites. Initiated leadership issues in Human Resources impacted timely communication and deliverables and overall effectiveness during this critical time of benefits changes. Additionally, CNS began developing a comprehensive strategy evaluating critical skills and ensuring knowledge preservation. CNS has acknowledged recruiting and retention of critical skills is an issue for the production sites. The maintenance of critical skills has a direct impact on the NNSA missions and senior management focus, beyond HR, must continue to ensure not only a strategy is written, but tools are also implemented to address the issue long term. In the interim, the CNS Knowledge Preservation

Management System serves as a bridge to hiring activity and the onboarding of new personnel in critical areas.

The CNS Supply Chain Management (SCM) group awarded several large subcontracts such as a Bechtel National Inc. (BNI) contract for UPF; a Booz Allen Hamilton subcontract supporting transformation activities; and, granted conditional consent for subcontractor AON Hewitt to administratively support HR benefits. However, an NNSA review of management actions resulting from Internal Audit subcontract reviews found several delinquent actions remain unresolved. CNS consolidated procurement system was approved by NNSA in September 2015. CNS received NNSA approval for conversion of agency-owned motor vehicles to GSA leased motor vehicles as well as completed the excess firearms demilitarization resulting in savings. Continuing integration activities, CNS completed the FY15 preliminary personal property inventory consolidating both sites under the same plan. Additionally, the NNSA Personal Property Branch completed the personal property validations/reviews for SCM with no issues or concerns resulting in an approval of the CNS Personal Property Management System. NNSA presented CNS an award for having the highest year-over-year growth percentage in Supply Chain Management Center commodity usage. While CNS fell short of their overall Small Business goal, underperforming at 49.1% of their 65% fiscal year goal, the Y-12 SCM received the DOE Small Business Mentor of the Year Award and Pantex SCM received three awards including the Small Business Administration Procurement All Star. Finally, CNS ensured no disruption to fuel availability services despite the unexpected cancellation of a local Oak Ridge area service contract.

CNS Internal Audit, Ethics and Employee Concerns organization met expectations this fiscal year; however, they had to delay critical financial audits due to limited resources. CNS responded to all external reviews-related tasks on or before their requested response date and investigated all concerns in a timely manner.

CF-5.6: CNS Legal effectively minimized potential legal risks in numerous areas, including providing a thorough legal opinion regarding the impact of the planned 2% employee pension contributions in light of the Texas Payday Law, as well as a memorandum outlining the allowable costs issues associated with such planned action. CNS Legal also provided information on a timely basis related to a subcontract for non-radiological laundry services in Maryville, TN, storm water exceedances for the period October – December 2014; and assisted in developing a response to NNSA comments on subcontracts with BNI and Aon Hewitt, as well as assisting in resolution of inappropriate use of legal disclaimer on documents specifically prepared for NNSA. Required reports such as the Quarterly Litigation Report and input into the Final Monetary Contingent Liabilities Report were provided within the required time frames, as were detailed whistleblower information and information related to alleged unfair labor charges. Information regarding a new TN law, effective July 1, 2015, that makes it illegal for an employer to terminate an employee for storing a gun in their car in an employer parking area was provided, along with an analysis of why CNS believes the law is preempted by the Atomic Energy Act. CNS Legal also supported the single CNS Procurement Operating Manual, unified sets of subcontract terms and conditions, and complicated transactional documents associated with ASC.

CNS managed its outside legal activities in compliance with its Legal Management Plan by submitting timely invoices and requests for outside counsel approvals that demonstrated effective internal controls and minimize action of litigation costs. It is not clear how the hiring of outside

counsel to represent CNS employees during an Office of Inspector General investigation minimized legal risk to CNS and NNSA or if this represented a best legal practice.

CF-5.7: The CNS Cyber Security program had not experienced any incidents stemming from an external threat.

A recent NNSA assessment of the Pantex portion of the CNS Cyber Security program validated that the core technical cyber security protections and processes adopted at Pantex are successful at mitigating and detecting attempted intrusions.

This assessment also identified a number of concerns that show a general degradation of aspects of the cyber security program, IT operations, and telecommunication activities. While this assessment report is in draft, it is expected to contain multiple findings and numerous opportunities for improvement. A number of the concerns identified during this assessment of the Pantex site reflect concerns identified through previous assessments at the Y-12 site. CNS has demonstrated additional focus on this area which has resulted in improvement, but the overall execution of some program aspects is still below expectation.

The CNS cyber security program has made continued efforts to address the high rate of attrition. The CNS Cyber Security personnel have demonstrated significant commitment to executing the requisite core activities of the Cyber Security program, but the sites continue to experience delays in program integration and execution of routine program management, authorization, and operational activities. The attrition of senior, technical personnel and lack of a formal plan for managing core cyber security activities continue to be key NNSA management concerns.

The CNS Cyber Security program at both sites have demonstrated positive execution of a number of key efforts, such as submission of the integrated CNS Cyber Security Program Plan, update of the Y-12 ARGUS Information System Security Plan, and response to numerous external data calls. However, assessment of the overall CNS Cyber Security program at both sites continues to show declining performance and an inability to meet overall programmatic expectations.

The CNS Cyber Security program must be improved programmatically and technically to ensure continued effective execution and mitigation of risks to an acceptable level.

SSO-5.1: CNS maintained site infrastructure in an acceptable condition providing the necessary support for meeting mission requirements during the whole year. CNS's facility outages at Pantex and utility outages at Y-12 are effectively managed and producing excellent results. However, the contractor's performance measures are not identical or mature at the respective sites. Additionally, issues continue with work instruction quality and worker adherence to processes and policy reflecting negatively on disciplined operations. CNS has the right plan, management commitment and focus on the right things, but they need to improve expectations for execution of work at the floor level to attain excellence.

Positives:

- Y-12 Preventative Maintenance Optimization Plan evaluated by Institute of Nuclear Power Operations (INPO) and determined to be the right approach and on track for success. INPO representative noted craft utilization in the process was "best in class".

- Pantex Electric Distribution System repairs completed without issue. Recovery and Improvement Plan developed and in progress. Contractor work on substations accomplished during labor strike.
- Y-12 Power Operations replaced eight failed power poles and removed 2,120 feet of abandoned overhead communications cable.
- Equipment and facilities at Pantex were maintained and repaired without incident during labor strike.
- Contractor performed well during Defense Nuclear Facilities Safety Board Pantex maintenance program review. Review resulted in no significant nuclear safety issues.
- Contractor performed well during DOE Office of Enterprise Assessments review of Y-12 conduct of maintenance on nuclear safety systems. Review resulted in no nuclear safety maintenance performance issues.

Negatives:

- Maintenance Quick checks continue to identify issues with work instructions and worker adherence to processes and management requirements.
- Ineffective engineering support during infrequently performed or newly developed maintenance tasks such as five-year Fire Suppression System Preventative Maintenance and Oven Repairs.
- UPF and Site Coordination problems regarding potential future ELZA-1 compliance issues resulted in missed deadlines for providing needed information to NNSA.
- Structural concrete failures continue to occur and hinder operations.
- Performance measures are not consistent between the respective sites; thus, overall enterprise performance monitoring is not effective.
- Use of non-traditional Maintenance Backlog definition resulted in not reporting over 200 work requests as backlog.

SSO-5.2: CNS continued to have operational performance challenges with its execution of work controls including lockout/tagout procedure violation, fire in waste container, incident of security concerns, and radiological work contamination related to improper work practices, completion of weapon operations in accordance with Design Agency specifications, three Technical Safety Requirement (TSR) Violations related to Combustible Controls, a TSR Violation related to inadequate control of safety system operability status, and two events where subcontractors performed work that had not been properly authorized. Key areas of concern included improper shift routines and operating practices, inadequate control of equipment and system status, inadequate operation practices, and improper work practices. These concerns are also consistent with CNS self-evaluation results and resulted in a number of CNS initiatives (control of work improvement plan, revamping of the production senior supervisor watch oversight program, performance excellence key initiative, performance excellence training, etc.) to address them. Performance in this area was consistent throughout the year with periods of acceptable performance followed by significant abnormal events resulting from significant breakdowns in the formality of operations.

In the final quarter of the reporting period, CNS continued to experience issues with disciplined execution of operations. A SNM material handling issue at Y-12, a dual lock violation at Pantex, along with several other less significant performance issues indicate that there is significant room for improvement of disciplined operations at both plants. CNS did take some positive actions to begin the process of improving operations at the floor level. Two notable initiatives were face to face interactive sessions between the CNS Chief Operating Officer and all supervisors regarding the goals for attaining performance excellence and briefings to all first line supervisors at Y-12

regarding minimum expectations for performance. Additionally, both site managers have become more engaged in the quality of day to day operations of the plants. Overall for the year; however, CNS did not exhibit the necessary urgency to promote and attain performance excellence.

SSO-5.3: CNS continued to support safe operations by having viable and responsive engineering programs supporting both production work locations. CNS resolved many engineering issues associated with various weapon systems. This included an extensive amount of effort in resolving the Code Blue issue that affected three weapon systems. Also, CNS was proactive in resolving technical issues associated with several anomalous and non-anomalous units (e.g., units with stuck components). The weapon challenges this year (e.g., Code Blue, anomalous/non-anomalous units) required extensive communication, facilitation, and cooperation with the Design Agency in order for Pantex to receive a weapon response that would continue to support operations.
CNS led an enterprise effort to evaluate the current weapon response processes (i.e., Weapon Response System Improvement Review). The Review evaluated the current weapon response processes and initiated formulation of the "new weapon" response process.

Additionally, CNS completed numerous "falling man" operational enhancements such as: Bay/cell layouts; utilization of high explosive floor mats with chamfered edges; elimination of trip hazards (vacuum lines); enhanced training; and a systematic and controlled approach to workers or visitors entering a High Explosive work area (i.e., cell). Another significant contribution to NNSA was the establishment of the Weapons Complex Falling Man Committee. CNS is leading this effort and working towards the development of a DOE "Falling Man" Standard. After the NA-1 falling man visit, CNS committed to providing a summary report that will provide recommendations on subsequent falling man operational enhancements. Due to the strike, CNS was not able to transmit the final report to NNSA this fiscal year,

CNS developed and implemented a plan to downgrade 9204-2 (Beta 2) from a nuclear to non-nuclear facility. Progress was made to de-inventory the facility which is scheduled to be completed by the end of the calendar year. In addition, CNS published data generated from conducting experiments that may be used in the future for categorizing or downgrading nuclear facilities (e.g., 9201-5 Complex). In addition, CNS completed an analysis of alternatives for 9995 that is currently being evaluated by NNSA for additional downgrading.

As part of the Area 5 De-inventory efforts, NNSA approved nuclear safety basis documents for Building 9212 that reduced the MAR by >40%. This resulted in a postulated off-site dose reduction from 17.5 rem to approximately 10 rem. Similarly, safety basis documents were approved for reducing the MAR by greater than 60% at Building 9215. This safety basis change also instituted the metal equivalency methodology for inventory accountability at 9215 which had previously been implemented at 9212. In addition, CNS presented an informal approach to further de-inventory facilities that will result in more materials being shipped to HEUMF.

CNS submitted the UPF Conceptual Safety Design Report (CSDR) and Safety Design Strategy (SDS) Revisions 9 and 10. All three documents were approved by NNSA. In addition, NNSA reviewed the UPF secondary confinement ventilation technical evaluation that resulted in an approved UPF Safety Design Strategy (Rev. 10). Generally, the UPF CSDR and SDS were of high quality and technical thoroughness.

In further support of execution of mission critical projects, the SDS's for the ER Project (10 CFR 830 Major Modification) and the Calciner Project were approved by NNSA via Safety Validation Reports. This was a necessary step to support the two projects gaining CD-1/3A status.

CNS resolved electrical distribution issues associated with the Pantex Renewable Energy Project (PREP) that included sub-station upgrades and an electrical power conditioning plan. In addition, CNS is working with Texas Tech University on developing an electrical distribution system "smart grid" that will improve performance. Also, CNS resolved facility engineering challenges with Stack 47 that support safety operations.

CNS completed a Nuclear Criticality Safety (NCS) three-year baseline assessment that evaluated all CNS work activities including implementation of controls, several implementation process improvements, improved processes for operational reviews, improved fissile material handler training, and the formalization of a Criticality Safety Officer training and qualification process resulting in an improved program. Engineering led development of a strategy to replace the Criticality Accident Alarm System that provides flexibility to accommodate Y-12 transformation including consistency with UPF to reduce long term operating costs. In addition, CNS implemented direct canning in 9204-2E that allowed material to be transported to HEUMF and not through 9212.

However, implementation of NCS requirements continue to challenge the contractor. Some examples include chemical recovery mopping, decontamination area and excessive maintenance material backlog, and needed plant improvements. One such improvement was resolving engineering issues associated with the primary extraction raffinate monitor. Other NCS implementation issues included a number of very significant fissile material work control issues were noted in the FY15 period, which along with plant legacy container and material handling (CMH) and other equipment issues, indicate an increased risk of operations. CNS staff overall continue to self-report NCS infractions at a high level and NCS engineering response is noted as particularly effective and proactive. Furthermore, the NCS Committee issued an excellent report that identified several very significant recommendations which, if acted upon, should greatly improve the program.

CNS has experienced continued problems with leaks within the aging HPFL at Pantex. These leaks have affected both Bay and Cell operations at different times during the year. CNS has also brought two new HPFL pump houses on line this year, and took one aging pump house offline. The end result is an increased safety posture going from two to three safety-class diesel fire pumps.

CNS Engineering responded and supported the recovery of the PPtF spill and vendor graphite issue. Also, CNS Engineering continued to be an enterprise leader in addressing plant aging issues through the Continued Safe Operating Oversight Team, the organization and conduct of an Aging Management Workshop, and current efforts for development of an Extended Life Program for 9204-2E and 9215.

In support of the state of Nevada and DOE Memorandum of Understanding on the disposal of Consolidated Edison Uranium Solidification Project, CNS supported an ORNL shipment of special nuclear material (^{233}U) that required extensive coordination between numerous CNS and NNSA organizations. The first shipment was considered a success for both the State of Nevada and the Department.

To improve organizational effectiveness and efficiency, CNS fire protection engineering related functions were consolidated into one organization. CNS hired critically needed staff in the areas of safety basis and nuclear explosive safety. However, a large majority of the staff hired had minimal experience in weapon assembly/disassembly operations. To supplement this lack of experience in the new staff, CNS has worked to direct hire or utilize staff augmentation with weapon assembly/disassembly experience however more work is required.

CNS continued to experience issues that were not related to new or revised weapon response. Although CNS responded timely to each issue, nuclear explosive operating procedures and other management systems required improvement in order to prevent variability from being introduced into work activities. To prevent variability from being introduced into work activities, CNS initiated actions to drive continuous improvement of nuclear and nuclear explosive operations that included:

- Developed a conceptual plan to consolidate the Unreviewed Safety Question Determination at both sites;
- Initiated an assessment of a sampling of TSRs and Limiting Conditions for Operations at both Plants;
- Improved the development of authorization basis documentation (DSAIP) at Pantex that resulted in 23 change packages being submitted to NNSA which closed 13 legacy Conditions of Approval, Technical Review Comments, or Planned Improvements; and
- Developed an approach to increase the efficiency of Dispersion Modeling by using a common set of tool box software packages that will result in a reduction of 100 different software applications.

Throughout the year, CNS provided high quality safety basis documents but recently, annual update submittals for the site Safety Analysis Report, HEUMF, 9215, and 9995 were either returned to CNS or rescinded for improvement. Issues included lack of detail, an incorrect statement that could have led to operating outside of the TSRs, inconsistencies between the SAR and TSR, and lack of coordination of TSR changes to a safety system which were determined to not be acceptable.

SSO-5.4: CNS has continued with several quality of life workplace improvements at both locations such as breakroom/restroom remodeling, guard station refurbishment, lighting/heating, enhancements to Post 8, 9119 Auditorium, kitchen/break room improvements, side walk and railing improvements, etc. However, related to quality of life, NNSA is concerned with the lack of housekeeping at the Y-12 site. The site continues to struggle with both indoor and outdoor housekeeping and needs to place significant emphasis on improving this issue. The lack of effective housekeeping is directly related to performance excellence.

CNS completed the Safety Culture survey (with mixed conclusions) and implemented several initiatives, such as a manager/supervisor training class. Safety Culture continues to be implemented at a higher level (not on the shop floor) and CNS raised the Safety Culture initiative from individual Pantex and Y-12 site initiatives to a key initiative. The next step will be to integrate this into the overall CNS Performance Excellence initiative.

Performance Objective 6: Leadership

Summary

Leadership (10% of At-risk fee) was rated as Satisfactory. Overall, CNS performance struggled to meet expectations in meeting the DOE/NNSA mission by ensuring Leadership is effectively managing programmatic concerns.

CNS leadership continued the challenging work to merge and consolidate processes and procedures. CNS also continued to maintain day-to-day operations and maintain plant output of acceptable levels for two sites but had difficulty effectively addressing weaknesses in operational discipline that could threaten safe, secure, high quality mission accomplishment. CNS continued to have performance excellence challenges with its execution of work controls including lockout/tagout procedure violation, fire in waste container, incidents of security concern and radiological work contamination related to improper work practices, completion of weapon operations in accordance with Design Agency specifications, three TSR Violations related to Combustible Controls, a TSR Violation related to inadequate control of safety system operability status, and events where subcontractors performed work that had not been properly authorized. CNS has initiated meetings between the Chief Operating Officer and Supervisors to enhance communication of priorities and expectations. The President and the Chief Executive Officer are meeting monthly with random employees to improve accessibility and communication between employees and the CNS President's Office.

CF-6.1: CNS' three strategic goals are focused on 1) integrating the Enterprise, 2) revitalizing the infrastructure, and 3) investing in people. With respect to integrating the Enterprise, CNS has developed an NSE Production and Logistics Strategy and is moving forward on a number of fronts (see SSO-6.2). In addition, CNS led an enterprise effort to evaluate the current weapon response (i.e., Weapon Response System Improvement Review) which initiated formulation of the "new weapon" response process. In the area of revitalizing the infrastructure, CNS is aggressively pursuing a new Administrative Support Complex by partnering with the private sector to potentially build and lease a new facility that would house approximately 1,100 employees (see CF-5.2). Other infrastructure initiatives include a strategy to reinvest a portion of contract savings into an "infrastructure pool" that is focused on improving the physical conditions of the site. The third area is investing in people. In this area, CNS rolled out an enterprise-wide variable pay program approach, including Leadership Incentive Awards (LIAs), the Critical Engineering Retention Program (CERP), and Special Recognition Awards. CNS is leveraging these programs to reduce attrition and increase job acceptance rates.

In mid-June CNS leadership developed a strategic framework establishing a vision, strategy and organizational philosophy for the safeguards, security and emergency services organization. The strategic framework was a positive step forward. The CNS approach now requires the establishment of short-and long-term objectives for security and emergency management, plans for establishing priorities based on this vision, and plans for transforming the security and emergency services organization to address problems in an integrated manner. While the strategic approach is being developed into a detailed plan, recurring security-related events demonstrate that the current CNS approach to security needs to be reevaluated. The number and types of security incidents demonstrated that a weak security culture exists and a lack of formality of operation persists. The

CNS initiative to strive for operational excellence, which encompasses improved formality of operations and an increased safety and security conscious work environment, is in the initial phase.

CF-6.2: CNS communicated key issues to NNSA through periodic management meetings throughout the last quarter of FY15. CNS communicated with NNSA on specific issues, such as the electrical power outage at Pantex, and the electrical distribution system recovery and improvement plan in August, quality issues, as well as concerns with meeting the Extent of Condition implementation schedule and a proposed updated schedule. CNS communicated key issues to NNSA with the May 1, 2015, letter on Performance Excellence that was self-critical and self-reflective of the current operating conditions and culture. The magnitude of issues (e.g., culture) that need to be addressed in order to achieve performance excellence were underestimated, as noted above this effort is in the initial stages. The CNS letter outlined a strategic approach, and compiled existing initiatives into one new Performance Excellence approach. While significant improvement is needed in this area, NNSA notes that CNS has a planned path forward and appreciates their self-critical evaluation of performance. Throughout the year, CNS struggled to lead the process for performance excellence. Although the quality of their strategic proposal for improvement in performance excellence was self-critical and thoughtful in its approach, it was not aggressive or innovative and was in response to NNSA pull rather than as part of a CNS push.

NNSA also noted a strong example of CNS introspectiveness this FY with the various independent assessments (IA) sponsored by Mission Assurance/Quality Performance and Analysis (QP&A) with IAs being conducted in weapon quality at Pantex and Y-12 and with commercial grade dedication at Pantex. This type of self-review is key to improving foundational elements of the Quality Assurance program and is noted as a best practice.

Issues potentially impacting safety, security and quality are not consistently identified and reported which is weakening the overall performance of both production plants. There seems to be a reluctance to report issues completely, accurately, and on a timely basis which leads to issues not being properly prioritized and characterized. Examples of this reluctance include: entering the PISA process; using the appropriate Occurrence Reporting and Process System (ORPS) categorization; self-identifying work place exposures to workers; and categorization of Safeguards and Security Events and not reporting IOSCs.

While NNSA has noted the CAS reports have gotten more self-critical over FY15, the CNS end of year self-assessment was not self-critical. Given all the issues this year that impacted mission, it was unusual that the report was not more introspective.

CF-6.3: CNS CAS Program continues to be at the initial level of effectiveness. CNS submitted the consolidated CAS Program Description at the end of the quarter for review and approval by NNSA. CNS submitted the CAS quarterly report for the third quarter of FY15 and it was a marked improvement from the second quarter. However, some aspects of the quarterly report still did not contain sufficient detail to adequately evaluate the current performance status, including clear analysis of the reported data. Continuous improvement opportunities are identified by NNSA in the Quarterly Issues Management Meeting (QIMM) report with a common aspect to incorporate accomplishments that are achieved for the various Key Initiatives (KIs). The CAS report does not provide information on two KIs, Access Control System and Integrated Scheduling, despite NNSA stating that we do not concur with these closures. NNSA expects Key Initiatives and/or Management Concerns will continue to be addressed in the CNS CAS reports until such time that NNSA concurs they are closed, or recommends their closure. While the report showed a more critical analysis than past quarterly CAS reports,

improvement is still needed. Specifically, the CAS report reflects a wide degree of variation with regard to the information provided based on the organization providing the information. The NNSA concern with the need for improved "analysis of information to gauge the state of work being performed and usage of that analysis to drive improvements should focus the CAS in the right direction," as stated in the July 9, 2015, QIMM letter, still exists. With regard to the "Extent of Condition (EOC) Process," CNS was working to finalize its procedure as the fiscal year ended with key milestones set for FY16. NNSA continues to note issues with extent of condition reviews and notes that CNS is also developing training to ensure the procedural requirements are imparted on personnel conducting EOC reviews.

CNS leveraged parent company resources and expertise during this period in support of the commercial grade dedication review and during the Joint Test Assembly System Improvement Process, Bechtel supported the two week assessment at Pantex by providing one Bechtel team member and two Bechtel support contractors. The assessment resulted in process improvement recommendations. The report for the assessment is being finalized.

CNS leadership responded well to the network outage on May 18-20, 2015; however, the source of the problem took CNS longer than expected due to the existing network architecture. CNS had previously identified the need to improve the network architecture and their management continues implementing these enhancements.

CNS management has made strides to fill critical leadership roles in the quality assurance, emergency management organization and in the cyber security organization, although the safeguards and security organization is experiencing staffing shortages. Staffing shortages are becoming more severe in certain security disciplines, namely material control and accountability (MC&A), protective force and classified matter protection and control (CMPC). The Analytical Chemistry Organization (ACO) made significant progress this year with regard to hiring; working with CNS and HQ to invest $10M in ACO improvements (i.e., HVAC/electrical). Of key positive significance, CNS closed the "Quality Assurance Enhancement" Key Initiative that raised expectations for QA personnel, improved relationships and communications with internal and external customers, improved work-life conditions in the Plant Lab, and improved QA processes such as quality level determinations, hold/witness points, material identification and control, and nonconformance reporting.

CF-6.4: Phase II of the new Enterprise Logistics Management System (ELMS) [formally known as Container Process Improvement Project (CPIP)] was implemented, providing real-time electronic integrated planning, scheduling, and shipping of weapon containers between the Pantex and Y-12 sites. CNS planning is underway for the next phase of system capability, which includes consolidating container planning for all NSE sites within this system and paving the way for the NSE container planning role to be handed off to CNS.

CNS continued to consolidate programs to improve productivity and efficiency (e.g., IT architecture as well as integrated property and purchasing systems). CNS delivered an improved FY16 Annual Control Baseline implementing the CNS cost model, although critical source documents were missing to help inform federal validation. Additionally, CNS held a June workshop to collaborate with NNSA, along with ongoing presentations to NNSA programs and support organizations, to help clarify understanding and educate staff on both the cost model and savings.

CNS began and led the Weapon Response System Improvement Plan (WRSIP) effort to examine the integrated process of identifying the need for weapon response, requesting weapon response,

processing the request, receiving weapon response, and implementing weapons response. This effort was a result of an NNSA Senior Management Team (SMT) challenge to improve weapon response requirements and performance to support Pantex operations. It is anticipated that the WRSIP will be complete early in FY16.

CF-6.5: The CNS organizational structure continued to mature as they acknowledged the difficulty in filling vacant positions and the need for knowledge preservation of departing employees. In September 2015, CNS filled the critical Deputy Y-12 Site Manager after a fifteen month vacancy. CNS took important steps to improve the management of the Emergency Management Program by hiring an Enterprise Emergency Management Program Manager and filling the top Pantex Emergency Management position where CNS has placed management emphasis in improving the program. Additionally, CNS has put in place a strong management team for the Y-12 security program in August 2015. CNS originally projected to develop a "Concept of Operations" describing how the CNS organization is designed to function by summer 2015. It is not clear that sufficient progress and/or priority has been placed on this effort. Due to the strike at Pantex, the CNS and NNSA delayed an off-site Senior Leadership retreat to continue to enhance and improve organizational effectiveness, partnerships, and cohesion of priorities. CNS conducted benchmarking with industry at sites ranging from aircraft assembly plants to nuclear power plant. While important lessons were learned, NNSA has yet to observe significant incorporation of the positive aspects evident at the plants. CNS leadership also successfully supported numerous Congressional and DoD visits broadening interagency awareness of the Enterprise and relevant issues. CNS also continued development of their matrix management philosophy and approach that integrates work processes and procedures horizontally across the organization. Absence of thorough and complete extent of condition reviews has often resulted in re-occurrences of issues and/or rework. This is not indicative of a learning organization. Response to the Stack 47 issue required a significant amount of NNSA management attention before the significance of it was fully recognized by CNS management. Additionally, in the area of abnormal event notification, investigation and response it required an NNSA letter to elicit a formal response from CNS despite significant dialogue throughout the majority of the FY between NNSA and CNS. This again was an NNSA pull rather than a CNS push to exhibit the traits of a continuously learning organization. In the area of the Electrical Distribution System (EDS) at Pantex, although efforts to conduct outages were ongoing the true scope of the EDS vulnerability was not recognized until an unplanned outage in July of 2015.

While CNS has struggled to institutionalize a common/consistent training program, accomplishments have been made such as the core annual site training requirements being consistently developed with the appropriate reciprocities established. However, attention from Senior Leaders regarding the development a single/common platform for the overarching training requirements and program requires additional focus.

An excellent example of instituting this approach involves Fire Protection Engineering where 100% of staff members are now members of professional societies and a number have an active involvement in National Fire Protection Association technical committees. CNS also hosted the Society of Fire Protection engineers to write exam questions for the Fire Protection Engineering Professional Engineering Test and partnered with the University Of Tennessee (UT) to establish a four-course graduate certificate and invest in 21 staff members who participated in the program this year. In addition, CNS worked with UT, including the UT Emerging Leaders Series, and teamed to offer UT project management courses at Y-12.

SSO-6.1: N/A

SSO-6.2: CNS successfully developed the NSE Production and Logistics Integration Strategy in December and subsequently completed all 20 of the tasks scheduled for FY15 on time (12 finished ahead of schedule). A major accomplishment was the implementation of an electronic integrated planning scheduling tool for DT containers between Pantex and Y-12, reducing the time to complete shipping authorization by 90%. Collaboration with the SNL led to proof-of-concept projects designed to transform the legacy suite of applications used to manage "weapons" activities. CNS routinely briefed senior NNSA management regarding ongoing integration activities.