



National Nuclear Security
Administration

Babcock & Wilcox Technical
Services Y-12, LLC
(B&W Y-12)

Fiscal Year 2014
Performance Evaluation
Report (PER)

NNSA Production Office
B&W Y-12

Performance Period:
October 2013 – June 2014

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APPROVED FOR PUBLIC RELEASE

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

Scott A. Hawks / NPO Y-12 Classification Officer 09/09/14

Executive Summary

This Performance Evaluation Report (PER) provides the assessment of Babcock & Wilcox Technical Services Y-12, LLC (B&W Y-12) performance for the period of October 1, 2013 through June 30, 2014, as evaluated against the objectives defined in the Fiscal Year (FY) 2014 Strategic Performance Evaluation Plan (PEP). The National Nuclear Security Administration (NNSA) Production Office (NPO) took into consideration and consolidated all input provided from NNSA functions both at Headquarters and in the field. The five basic Performance Objectives (POs) in the PEP were graded using adjectival ratings as described in the Federal Acquisition Regulation (FAR). Comments on the performance of each Contributing Factor (CF) and Site Specific Outcomes (SSO) under each PO identified in the PEP are provided as well.

In addition to the quarterly Performance Self-Assessment briefings provided to the NPO throughout the year, B&W Y-12 also submitted a Performance Self-Assessment Report that covered the rating period. B&W Y-12 is to be commended for the thoroughness of their report which embraced the expectation of being self-critical as well as highlighting accomplishments. During the first half of the year, in addition to continuing normal operations, Y-12 worked through a myriad of drills associated with the lapse of appropriations, Continuing Resolution, and requirements related to a potential sequestration. They developed solutions, including initiatives to reduce costs, to help overcome funding shortfalls. In addition, the four month contract transition to the new contractor re-started on March 3, 2014, and was successfully completed on June 30, 2014. B&W Y-12 supported the completion of a very complicated transition in a short amount of time and assisted the new contractor in addressing many challenges. Overall, the contract transition was exceptionally successful and B&W Y-12 did a very good job ensuring minimal impact to the workforce as well as to on-going operations.

PO-1: Manage the Nuclear Weapons Mission (25% of At-risk fee) was rated as VERY GOOD. Overall, B&W Y-12 managed the Nuclear Weapons Mission, exceeding the Program Implementation Plan work scope (Level 2 milestones) funded through Directed Stockpile Work (DSW), Campaigns, Readiness in Technical Base and Facilities (RTBF), and the Secure Transportation's 2014 Task Agreement. B&W Y-12 performed this work scope and met the overall cost, schedule, weapons quality and operational requirements, as well as technical performance, without impact to safety or security. The ability to meet and exceed work scope is noteworthy given the lapse in FY 2014 appropriations at the start of the fiscal year that resulted in a significant number of lost workdays. In most areas, B&W Y-12 accelerated work in the second and third quarters in FY 2014 to allow meeting or exceeding work scope by the end of the reporting period. However, NNSA remained concerned with B&W Y-12's ability to maintain and manage an effective and efficient packaging program. B&W Y-12 kept the high priority surveillance program on schedule despite equipment failures early in FY 2014; dispositioned components 50% ahead of schedule and completed 106% of total required dismantlements. Related to high priority activities, B&W Y-12 performed above expectations for executing the high priority B61-12 phase 6.3 developmental and programmatic activities and the high priority W76-1 monthly component build rates; and, met high priority W78/88-1 phase 6.2 activities and W88 Alt-370 phase 6.3 activities; and Material Recycle and Recovery, and Storage Program activities with the exception of purified metal production.

PO-2: Broader National Security Mission (12.5% of At-risk fee) was rated as GOOD. B&W Y-12 consistently met or exceeded performance, cost, and schedule for program objectives and

deliverables in efforts to remove, eliminate, and minimize the use of proliferation-sensitive materials. B&W Y-12 was challenged in estimating realistic costs, schedules, and commitments with the program sponsors of the Reactor Conversion Program; experienced increased cost and schedule delays (some outside their control), supported the LEUMo fuel development program; and, had difficulties meeting the Global Threat Reduction Initiative's (GTRI) Molybdenum-99 Program schedule and costs. However, B&W Y-12 successfully completed the fabrication of DU-Mo coupons for the pilot line equipment prove-in and delivered 71 DU-Mo coupons, exceeding the goal. Also, in support of GTRI's Remove Program, B&W Y-12 overcame significant technical obstacles to complete several shipments to support the 2014 Nuclear Security Summit including highly enriched uranium (HEU) removals from Canada, France, and Italy. B&W Y-12 led efforts with TVA, AREVA, Nuclear Fuel Services, and the Savannah River Site (SRS) to coordinate the resumption of the Blended Low-Enriched Uranium (BLEU) shipments from SRS. B&W Y-12 exceeded many of the performance criteria for emergency management, incident response, and nuclear forensics. B&W Y-12 supported DOE/NNSA and the intelligence community with an array of experts and support projects, sharing essential information to aid in counterterrorism and counterproliferation activities around the world; and, exceeded expectations in their performance of this high-impact interagency work.

PO-3: Science, Technology & Engineering (ST&E) and Other DOE Mission Objectives (12.5% of At-risk fee) were rated as VERY GOOD. During the rating period, the B&W Y-12 Plant Directed Research and Development program was well managed and ensured that research was not only relevant to the Y-12 mission but also supported other national security needs and technologies that benefit the nation. A significant achievement was the production of the first set of small purified uranium buttons from the complete Direct Electrolytic Reduction (DER) and Electrorefining (ER) system. This is a very important technology for the future of Y-12 which is now a baseline technology for the Uranium Processing Facility (UPF). B&W Y-12 successfully pursued work in other national security mission areas to exercise and expand core competencies, expertise, and capabilities that are essential to current Defense Programs missions and to future mission requirements, including generation of 31 Invention Disclosures over a wide range of technology areas such as neutron detection, manufacturing, and material characterization.

PO-4: Operations & Infrastructure (25% of At-risk fee) was rated as GOOD. This Performance Objective encompasses most of the mission support areas including: Environment, Safety and Health; Projects including the Uranium Processing Facility (UPF) project; Security including Emergency Management and Cyber; Facility and Infrastructure; Business; Legal; Transition; Safety Culture; and Nuclear and Criticality Safety Engineering. The B&W Y-12 safety performance showed great improvement which allowed B&W Y-12 to continue as a Voluntary Protection Program (VPP) Star site and Y-12 achieved the National Safety Council's Occupational Excellence Award for the eleventh straight year. B&W Y-12 managed capital projects such as the Nuclear Facility Risk Reduction Project, the Security Improvement Project, and General Plant and Equipment Expense Projects, in accordance with scope, cost and schedule baselines; however, the UPF Project performance was below expectations. Overall, B&W Y-12 management of the UPF project did not meet expectations due to the following performance concerns: B&W Y-12 mandated overly conservative criticality control measures for the UPF casting line requiring the NNSA to intercede and direct design simplifications. B&W Y-12 did not effectively manage the UPF Design Code of Record as a result of ineffective Design Authority reviews of changes to codes and standards indicating a failure in the Contractor's Assurance System. The B&W Y-12 Safeguards and Security met some, but not all expectations in sustaining effective performance in the areas of physical and information security but made significant progress

in addressing these concerns throughout the year. However, concerns were identified in the topical areas of Nuclear Material Control/Accountability and Protective Force. B&W Y-12's Emergency Management improved in many areas such as reductions in the fire patrols by 41%, compensatory measures by 39% and fire alarm problem signals by 44% since January 2014. Facility availability and sustainability efforts exceeded expectations, with a 15% decline of electricity use, a 23% decline in potable water consumption, and a 42% sewage reduction compared with the original baseline; however, B&W Y-12 problems continued with the management and timely disposition of excess material and infrastructure. In business operations and systems, Y-12 exceeded expectations and successfully worked through a myriad of funding drills and challenges early in the year. In April, Y-12 was recognized for achieving the highest Supply Chain Management savings rates in NNSA; however, they continued to face challenges meeting Small Business Goals (especially with a large project such as UPF). B&W Y-12 Legal provided responsive, accurate, well-supported, timely, and complete information and successfully managed its existing litigation. The four month contract transition was exceptionally successful. Despite the added workload, B&W Y-12 focused on ensuring minimal impacts to the workforce and to plant operations, and as a result, productivity remained high and even increased in some areas while safety metrics were reported at an all-time low. As a key nuclear safety culture initiative, B&W Y-12 identified and completed many workplace improvements in the form of physical plant improvements. In engineering programs, B&W Y-12 effectively supported the production schedule and completed 28 of the highest risk ranked Criticality Safety Evaluations. The UPF Project had three Site Specific Objectives. The Request for Proposal to award the pre-production microwave furnace is planned for September 5 against a milestone date of September 30. The Safety Design Strategy Revision met expectations and was approved. In the UPF Technology Maturation activities, four of the seven baseline technologies completed activities to achieve TLR 6, one is no longer needed, and two require maturation advancement.

PO-5: Leadership (25% of At-risk fee) was rated as GOOD. B&W Y-12 leadership effectively worked through a variety of funding challenges throughout the year. They did a good job ensuring on-going operations were not impacted during contract transition, including the uncertainty regarding personnel actions and the impact to the workforce. Y-12's Contractor Assurance System continued to improve with the maturation of the System Approach to Organizational Health metrics. B&W Y-12 continued to receive enhanced support through corporate oversight and resources from both parent companies.

Performance Objective 1: Manage the Nuclear Weapons Mission

Summary

Overall, B&W Y-12 performed above expectations in their ability to manage the Nuclear Weapons Mission. B&W Y-12 met or exceeded the Program Implementation Plan work scope (Level 2 milestones) funded through Directed Stockpile Work (DSW), Campaigns, Readiness in Technical Base and Facilities (RTBF), and the Secure Transportation's 2014 Task Agreement. B&W Y-12 performed this work scope by delivering to the overall cost, schedule, weapons quality and operational requirements, as well as by technical performance, without impact to safety or security. The ability to meet and exceed work scope is noteworthy given the lapse in FY 2014 appropriations at the start of the fiscal year that resulted in a significant number of lost workdays. In most areas, B&W Y-12 accelerated work in the second and third quarters in FY 2014 to allow meeting or exceeding work scope by the end of the reporting period. In addition, B&W Y-12 performed exceptionally in preparing the plant for the transition of the Nuclear Weapons Mission work to the new contractor. However, NNSA remains concerned with B&W Y-12 ability to maintain and manage an effective and efficient packaging program. NNSA reviewed the B&W Y-12 Self-Assessment and, in most cases, agreed with the overall assessment of very good. Specific observations follow:

Very Good

CF 1.1: B&W Y-12 overall met expectations by accomplishing negotiated work with program sponsors; achieving the expected level of quality to ensure safe, secure, reliable weapon performance and transportation; and providing cost-effective operations. B&W Y-12 completed planned Joint Test Assembly (JTA) deliverables through June and delivered the W78 JTA ahead of the directed accelerated schedule despite delays from the NNSA directed shutdown occurring at the beginning of the fiscal year. B&W Y-12 continued to maintain critical equipment and prioritized maintenance work enabling on-time completion of DSW deliverables despite funding reductions to production support. However, for the 2014 Task Agreement associated with Agent Operation Eastern Command Project, B&W Y-12 met expectations through the end of the 3rd Quarter by meeting all required deliverables for cost, scope, and schedule.

B&W Y-12 did not address the packaging program within their self-assessment. Overall, B&W Y-12 performed unsatisfactorily through Q3 to maintain and manage (including the program baseline) an efficient and effective packaging program. Specifically, B&W Y-12 is responsible for managing the DT-20, DT-22, DT-23, Defense Program Packaging (DPP)-1 and DPP-2 packaging within expected cost, scope, and schedule. B&W Y-12 management's unilateral procurement decision resulted in B&W Y-12 diverting \$1.3M funds needed for new packaging development to cover the cost overruns in existing packaging sustainment. In addition, B&W Y-12 consistently struggled to demonstrate Packcrete equivalency to Kaolite as an impact absorbing and insulating material in NNSA packaging. This caused the DPP-1 project schedule to slip at least two years and impacted certification activities for the DPP-2 with W-76 contents.

CF 1.2: B&W Y-12 overall performed above expectations to increase knowledge of the state of the stockpile, resulting from successful execution of the stockpile surveillance program and a robust scientific and engineering understanding supporting delivery of the annual stockpile assessment. B&W Y-12 kept the high priority surveillance program on schedule despite equipment failures early in FY 2014. B&W Y-12 completed the qualification of the W78 nondestructive laser gas sampling on

schedule. B&W Y-12 successfully completed reports summarizing aging phenomena for LANL and LLNL systems for the Enhanced Surveillance Federal Program Manager and the respective design agencies for consideration in their annual assessments.

CF 1.3: B&W Y-12 overall performed above expectations to execute deliveries for the stockpile work to meet limited-life component exchanges (LLCE) and dismantlements. Though B&W Y-12 does not have an LLCE program, they shipped the W88 LLCs to the KCP in support of this high priority program, ensuring no weapon goes 'red'. B&W Y-12 completed, through the third QTR, the dismantlement program by positioning components 50% ahead of schedule and achieving 106% of the total required dismantlements. The acceleration of the disposition work provided increased storage should future dismantlement and disposition processing increase.

CF 1.4: B&W Y-12 overall performed above expectations to demonstrate the application of new strategies, technologies, and scientific understanding to support stewardship of the existing stockpile and future stockpile needs. Although there have been some delays in completing the Enhanced Surveillance milestones, B&W Y-12 has worked closely with the Federal Program Manager to ensure a plan has been in place to correct issues. Y-12 has prepared six samples to run on the Low Temperature Thermal Decomposition (LTTD) unit. Additionally, the hand-held Diffuse Reflectance Infrared Fourier Transform (DRIFT) implementation plan was released to headquarters, and DRIFT development was restarted after a shutdown over material accountability. B&W Y-12, in partnership with Livermore National Laboratory, used tooling fabricated with additive manufacturing technology to assess the viability of this technology for weapons work. This was a 'first time' use of additive manufacturing technology within the Nuclear Security Enterprise.

CF 1.5: B&W Y-12 completed the Stack 11 project, deployed a modern Product Characterization System interfacing with the Manufacturing Operations Management (aka MOMentum) system, and completed the Optical Coordinate Measurement Machine (CMM) replacement project on schedule.

CF 1.6/SSO 1.2/SSO 1.3: B&W Y-12 overall performed above expectations for executing the high priority B61-12 phase 6.3 developmental and programmatic activities. B&W Y-12 completed the B61-12 selected acquisition report on schedule, created a resource-loaded baseline, submitted requested monthly reports on schedule, stayed on schedule to provide FY 2015 and FY 2016 test hardware, executed a life-of-program buy for the Bellows component, and performed MRLs per Headquarters' guidance. Y-12 also completed disassembly of the first set of Canned Sub-Assemblies (CSAs) for the B61-12 LEP, providing critical components for design agency testing and evaluation.

CF 1.6/SSO 1.4: B&W Y-12 overall met expectations to execute the high priority W78/88-1 phase 6.2 activities and W88 Alt-370 phase 6.3 activities in accordance with NNSA approved schedules, and is demonstrating earned value management systems (EVMS) for these programs. For both the W78/88-1 and W88 ALT 370, B&W Y-12 delivered site monthly reports as required; remained on track to update their project schedule for resource loading; and remained on track to implement an EVMS by the end of the FY. For the W88 ALT 370, B&W Y-12 and continued to provide limited support during the engineering development phase of the program by providing early requirements definition for the JTA and war reserve (WR) production. For the W78/88-1, B&W Y-12 fully supported the high priority W78/88-1 LEP 120-Day Study and closeout activities.

SSO 1.1: B&W Y-12 met overall cost, schedule, and technical performance requirements as defined in the high priority Material Recycle and Recovery, and Storage program, with the exception of purified metal production (PMP). The PMP is behind schedule as aging and failing program equipment continued to hamper operations. All purified metal operations returned to service during QTR 3, and it is expected doing so allows for the new contractor to meet the purified metal production goal at the end of QTR 4 rating period. The microwave process prove-in was completed April 30, 2014, and Area 5 de-inventory finished well ahead of its milestone goal of 3 MT of material de-inventoried from Building 9212.

SSO 1.5: B&W Y-12 overall performed above expectations for the high priority W76-1. During Q1, Q2 and Q3 of FY 2014, B&W Y-12 met or exceeded W76-1 Program Control Document (PCD) monthly component build rates despite significant equipment failures and with weekly prioritization of site-wide equipment maintenance work due to a reduction in FY 2014 Production Support funding. This enabled the on schedule delivery of WR units to Pantex for next level warhead assembly. B&W Y-12 executed disassembly of Retrofit Evaluation System Test (REST) and Stockpile CSAs in accordance with PCD and Integrated Weapon Evaluation Team (IWET) schedule requirements. B&W Y-12 consistently submitted their monthly reports to NNSA ahead of the submittal deadline.

Performance Objective 2: Broader National Security Mission

Summary

B&W Y-12 met or exceeded expectations during the first 3 quarters of FY 2014. This performance summary is based on achieving consensus between the PO-2 Program Offices and the Field Office. These accomplishments were made in spite of many challenges including impacts from the lapse in government funding in FY 2013 and additional work associated with the four month transition period to the successor contractor.

Good

For efforts to remove, eliminate, and minimize the use of proliferation-sensitive materials, B&W Y-12 consistently met or exceeded performance, cost, and schedule for program objectives and deliverables. These efforts included the completion of the Belgium highly enriched uranium (HEU) removal project and the removal of fresh (unused) excess HEU targets from Canada to a U.S. processing site. B&W Y-12 exceeded most of the performance requirements for efforts to remove, eliminate and secure materials, technologies and facilities, and for conducting planned security upgrades, training, and technical support activities on schedule and within budget. B&W Y-12 safely and securely completed low enriched uranium (LEU) deliveries to NNSA foreign research reactor (FRR) customers consistent with NNSA contract delivery schedules.

Y-12 had a challenge estimating realistic costs, schedule, and commitments with program sponsors for the Reactor Conversion Program. In spite of good faith effort, Y-12 consistently exceeded its allocated budgets. The US High Performance Research Reactor (USHPRR) Y-12 FY 2014 budget had to be increased from \$9.75M to \$11M partially as a result of cost overruns. Additionally, for the USHPRR program, Y-12 reported schedule slips on 59% of planned activities and 75% of planned deliverables with some of the costs overruns associated with issues and matters beyond the contractor's direct control.

B&W Y-12 continued work to support the LEUMo fuel development program. The LEUMo fuel development activities continued to experience increased cost and schedule delays during the performance period, some outside the control of B&W Y-12 such as the government shutdown. Others delays were caused by equipment outages, and fabrication errors that required product rework. Although the baseline was periodically adjusted and approved by NNSA for these cost and schedule changes, overall performance did not meet program expectations and improvement is needed to ensure quality products are delivered within cost and on schedule.

B&W Y-12 underestimated the effort required for the structural analysis needed to recertify the ES-2100 shipping package, resulting in the work taking longer than anticipated and exceeded planned project cost.

B&W Y-12 successfully completed the fabrication of DU-Mo coupons for the pilot line equipment prove-in and delivered the product to B&W Nuclear Operations Group, ultimately completing fabrication of 71 DU-Mo coupons. This exceeded the goal of 66 and fully met the updated schedule.

For the Jamaica SLOWPOKE conversion project, activities started slowly, but are now progressing well for FY 2014. During FY 2014, Y-12 completed the LEU powder production and supported NPO in negotiating the fuel fabrication contract.

Y-12 supports the high-density LEU foil target development within the Global Threat Reduction Initiative's (GTRI) Molybdenum-99 (Mo-99) Program. Throughout FY 2014, Y-12 continued to have difficulty meeting its deliverables on schedule and within cost, and the scope of the project has been reduced in order to meet the requirements of the program. All of the milestones and deliverables originally agreed upon in the authorized work scope have slipped significantly. While Y-12 maintains key technical capabilities for this program, continuous equipment failures and limited staff availability have significantly delayed progress on activities.

In support of GTRI's Remove Program, Y-12 overcame significant technical obstacles to complete several shipments to support the 2014 Nuclear Security Summit including HEU removals from Canada, France, and Italy and has provided significant technical expertise in order to further refine the reconciliation of U.S. exports to EURATOM countries. Y-12 supported GTRI to further reduce the percentage of unreconciled material that the U.S. has exported.

Y-12 exceeded expectations in providing technical support to the Office of National Infrastructure and Sustainability's (ONIS) Transportation Security Project (TSP) and Sustainability Project, including support for project team assurance visits and Performance Testing Workshops. Technical experts are assisting NNSA in the development of limited-scope performance tests for transportation security. Y-12 technical experts assisted in the development and presentation of technical workshops on Radiation Portal Monitoring, and Performance Testing in the technical areas of Physical Protection and Material Control and Accounting. Y-12 personnel demonstrate outstanding professionalism and cooperation with Russian representatives, helping NNSA to achieving a mutual understanding and conceptualization of performance testing.

Y-12 provides subject matter expertise (SME), contracts and financial management, and project support on Russian nuclear security engagement with Kurchatov Institute (KI) in Moscow, Russia, and Atomflot in Murmansk, Russia. Overall, Y-12 has provided high-quality support on KI and other projects as needed, especially in the area of performance testing and conducting vulnerability assessments through table top simulations. Y-12 SME support has provided valuable contributions to multiple workshops and training activities with Russian partners, all of which have been well executed and well received.

Y-12 continues to do a good job supporting NA-26. Y-12 is responsive to feedback on the content of planning documents, and has caught up on schedule and cost after the lapse in Government funding caused a minimum of one month of lost time.

Y-12 continues to do a good job providing planning support associated with the new 13.4 down-blending contract. Y-12 has been very proactive in recommending approaches that would accelerate production capacity at both Y-12 and the future contractor.

Y-12's accomplishments include:

Fully recovered the oxide shipping schedule after it fell behind due to the first quarter Government shutdown; performance in the 2nd and 3rd quarters exceeded expectations.

The work load increased for Y-12 when SRS could no longer accept shipments of HEU due to a safeguards issue at SRS.

Y-12 fully supported efforts to optimize tritium production by holding E05 HEU (and its derived LEU). Y-12 suggested a workable label swapping plan that will maximize the unencumbered HEU and LEU for future swapping with encumbered or obligated material.

Y-12 performed timely planning to supply foreign research reactor needs, maintaining an adequate inventory for more rapid shipment.

Y-12 led the effort with TVA, AREVA, Nuclear Fuel Services, and the SRS to coordinate the resumption of the Blended Low-Enriched Uranium (BLEU) shipments from SRS. Y-12's efforts will help ensure that any delays in resuming shipments in FY 2015 will be mitigated.

Supported efforts to accelerate feed to the downblender for the next offering and has done a good job seeking other HEU that could be made available to increase the feed (INL, metal).

B&W Y-12 consistently met or exceeded performance, cost, and schedule for completion of scheduled shipments of HEU for down-blending in support of the Mixed Oxide (MOX) Backup LEU Reserve downblending contract, and comprehensive analysis and response to frequent inquiries associated with uranium management, transfers, and plans for future HEU down-blending to optimize use of DOE excess uranium.

For the Emergency Management Program, B&W Y-12 continues to make substantial improvements to the program as evidenced by increased Emergency Response Organization (ERO) staffing, training and fast tracking the improvements to the drill and exercise program. For Emergency Response the Radiological Assistance Program (RAP4), Y-12 maintained operational readiness by maintaining equipment, conducting personnel training and supporting short notice operational taskings; the Stabilization program provided subject matter experts to support the Phase 0 (device stabilization) effort; the Render Safe program supported both the Nuclear Weapons Accident and Incidents Exercise in FY 2014 (NUWAIX 14) and the Marble Challenge Improvised Nuclear Device Exercise in FY 2014; the Operations and Exercise Program provided scientific expertise to serve as evaluators and participants for NUWAIX 14 and Marble Challenge 14-02 exercises; and the Nuclear Forensics, Pre-Detonation program maintained operational readiness for the Disposition of Forensics Evidence Analysis Team (DFEAT) by adhering to written guidance, schedule and budget for the program.

During the third quarter of FY 2014, B&W Y-12 met expectations in support of the Emergency Management, RAP, STAB, Operations and Exercises, and DFEAT Programs. The contractor's performance is consistent with mission objectives, scope, cost and scheduling requirements.

In Counterterrorism & Counterproliferation, B&W Y-12 supported DOE/NNSA and the intelligence community with an array of experts and support projects, sharing essential information to aid in counterterrorism and counterproliferation activities around the world. Analyses were provided in a timely manner and met cost and technical performance measures.

B&W Y-12 shipped four scheduled Naval Reactors (NR) fuel material Campaigns to Nuclear Fuel Services (NFS) on schedule and 16% under budget.

Approximately one third of the work performed under this Performance Objective is interagency work. B&W Y-12 exceeded expectations in the performance of this high-impact interagency work. Funding was received from seven sponsors, utilizing the skills of over 350 Y-12 employees. B&W Y-12 exceeded many of the performance criteria for incident response and nuclear forensics. Support to DHS was expanded through the conduct of a Nuclear/Radiological Operations Surge training course with significant future activities being planned and the development of a nuclear forensics data analysis tool that exploits pattern recognition capabilities of an artificial neural network. Additional examples of high-impact interagency work that integrates with the NNSA mission and strengthens Y-12 critical skills are as follows: The National Aeronautics and Space Administration (NASA) provided initial funding to support the development of the Kilopower space reactor and has included Y-12 in its strategic planning. A Nuclear/Radiological Operations Surge training course was conducted in Miami, Florida, for FEMA which described the training as “ultra realistic and superior.” B&W Y-12 also exceeded expectations in the development of a novel design for encapsulating uranium for the next generation of the Radiological Signature Test Devices being manufactured for DHS.

Performance Objective 3: Science, Technology, and Engineering and Other DOE Mission Objectives

Summary

Overall, B&W Y-12 exceeded expectations in the National Security Mission by effective application of science, technology, and engineering. Much of the B&W Y-12 work in this area was funded through the Plant Directed Research and Development (PDRD) program and was guided by the technology focus areas of the Y-12 Technology Roadmap. The B&W Y-12 PDRD program was well managed, tracking progress on milestones and deliverables for all funded projects. B&W Y-12 did an excellent job ensuring that research was not only relevant to the Y-12 mission but also supported other national security needs and technologies that benefit the nation. A large portion of the B&W Y-12 research effort focused on the Uranium Processing Facility (UPF) and advancing technologies directly relevant to the Y-12 mission. A significant achievement was the production of the first set of small purified uranium buttons from the complete Direct Electrolytic Reduction (DER) and Electrorefining (ER) system. This is a very important technology to the future of Y-12 which is now a baseline technology for UPF. After testing several material options, B&W Y-12 successfully demonstrated a type of insulation necessary for a microwave furnace entombment strategy to be used as a geometry control for criticality safety in special casting operations in UPF. Also in support of UPF, they are on track to achieve a Technology Readiness Level (TRL) of six by the end of the fiscal year for the UPF rotary calciner. A current high priority for Y-12 is the transition of operations out of Building 9212. The rotating calciner will help with this effort as will another technology, a new rinse method for uranium chip cleaning that eliminates the need for ultrasonic tanks. B&W Y-12 successfully pursued work in other national security mission areas to exercise and expand core competencies, expertise, and capabilities that are essential to current Defense Programs missions and to future mission requirements. The site generated 31 Invention Disclosures over a wide range of technology areas such as neutron detection, manufacturing, and material characterization. B&W Y-12 consistently produced and managed research projects that exceeded expectations for research that was both innovative and transformative. B&W Y-12 made considerable progress improving technical capabilities through in-house technology additions, the revitalization of research laboratories and by expanding collaborative efforts with universities and other DOE sites. In spite of the challenges with maintaining a healthy vibrant research environment in facilities with unreliable, aging equipment and infrastructure while attracting and maintaining an engaged workforce, B&W Y-12 consistently produced sound relevant research beyond what would be expected of a production facility. B&W Y-12 provided a new research design for a 25-kg radiation signature training device used in DHS exercises to evaluate detection of a significant quantity of nuclear material. In addition, B&W Y-12 performed unique reactor fuel R&D for TerraPower involving casting and heat treatment of advanced U-Zr alloys. The Y-12 PDRD program, as well as other science, technology and engineering efforts at Y-12, were well managed and B&W Y-12 exceeded the expectations of most program sponsors and partners in accomplishing work within expected budget, scope, cost, schedule, risk, and quality.

Very Good

Performance Objective 4: Operations and Infrastructure

Summary

Overall, B&W Y-12 met expectations in this performance objective. Ongoing operations continued to meet expectations overall despite the added workload and pressures of executing a contract transition.

Good

B&W Y-12 met expectations in implementing the Environment, Safety, and Health programs. B&W Y-12 safety performance showed great improvement which allowed B&W Y-12 to continue as a Voluntary Protection Program (VPP) Star site. Y-12 achieved the National Safety Council's Occupational Excellence Award for the eleventh straight year. Site injury/illness performance improved in key areas, including Lost Work Day Away cases, which decreased by 58%, and Days Away, Restricted, or Transfer (DART) cases, which improved by 59%. The total Recordable Case (TRC) was 0.56, and DART rate was 0.21. B&W Y-12 made significant strides in improving Safety Culture during the review period with the issuance of the Nuclear Safety Culture Improvement Plan and development of the Nuclear Safety Culture Dashboard. The contractor improved the Dashboard by moving towards more subjective criteria. The B&W Y-12 Radiological Control organization was challenged over the rating period with multiple failures in program implementation resulting in a Key Initiative and development of the RADCON Continuous Improvement Plan (RCIP). The overall Fire Protection Program was a concern earlier in the fiscal year but B&W Y-12 made significant progress in reducing the number of fire protection compensatory measures, fire alarm problem signals, and made significant improvements to firefighter fit-for-duty requirements. During this period, B&W Y-12 received a Preliminary Notice of Violation (NOV) from the Office of Health, Safety, and Security (HSS) Office of Enforcement related to two events (Lithium Hydride Exposure and Accidental Discharge) that occurred in Fiscal Year (FY) 2013. B&W Y-12 also had challenges with respect to Work Planning and Control including lock-out/tag-out and hazard identification. An area of key concern was the impact of deteriorating facility and infrastructure conditions and the potential impact of these conditions on worker safety and mission accomplishment. Although the degradation of concrete due to chemical corrosion of rebar was recognized and controls were in place to limit access to suspect areas, the fact that 400 pounds of concrete fell from the ceiling in a facility is concerning.

B&W Y-12 met expectations in managing capital project in accordance with scope, cost, and schedule baselines; however, as described in its own section, the UPF Project performance was below expectations.

The Nuclear Facility Risk Reduction Project (NFRR) performance continued to meet the current budget and schedule. The project successfully managed the challenges of working in an operating facility to accomplish completion of the Switchgear refurbishment, Brine Chiller System, Stack 33, Casting Furnace Vacuum System Pump installation, Cooling Tower water lines, and Stack 38/48; MCC installation and documentation close-out; Stack 27/28 tie-in testing and documentation closeout; Stack 110/43 Phase I completion and Phase II work continued on schedule with electrical, duct work; Stack 43 tie-ins continued; and completed waste management of demolished EF-113 duct, equipment and excavated soils. Currently, the project overall performance is 93.2% complete compared to 92.8% planned.

The Security Improvement Project (SIP) achieved Critical Decision (CD)-4 (Project Completion) on March 28, 2014. The SIP successfully enhanced a portion of the Y-12 security infrastructure by improving some aspects of detection, assessment, delay, response, access control, and Central Alarm Station (CAS), and Secondary Alarm Station (SAS) capabilities per the scope defined in the Systems Requirements Document. Beneficial occupancy was achieved for all applicable areas. Individual systems were placed into operation as they were completed. The SIP Project met all performance goals related to cost, schedule, and scope. The project completed \$19.9M under the original CD-2 approved TPC (\$20.9M under the current TPC) and achieved CD-4 95 days ahead of the currently approved June 30, 2014, CD-4 date. There are currently no open subcontracts and no claims/request for equitable adjustments (REAs) and there were no recordable injuries over the entire 10-year life of the project. The final cost was \$51.6M compared to the total project cost of \$72.6M. All post CD-4 activities were closed on May 29, 2014, and the implementation of the SIP at the Y-12 National Security Complex is complete.

General Plant Project/General Plant Equipment/Major Items of Equipment/Expense Projects performed overall under budget and within schedule. The current overall cost performance index is 1.02, and the overall schedule performance index is 1.00. All 13 completed projects in FY 2014 were finished within budget. Since the start of the fiscal year, B&W Y-12 developed the CD-0 packages for the Electrorefining, Calciner, and the Direct Electrolytic Reduction projects; all three packages were well coordinated with NPO and the first two were processed and transmitted to the HQ Program Office for review and approval. B&W Y-12 began development of the Emergency Operations Center CD-1 package and initiated development of CD-0 for the Fire Station and the Electrical Improvements for Nuclear Operations (EINO) projects. The Security Area Boundary Enhancement and Reductions Project (SABER) CD-0 package was developed and transmitted to HQ in December 2013. B&W Y-12 initiated development of a phased approach for SABER per direction from HQ. While all recently submitted CD-0 package approvals are delayed pending NNSA decisions associated with the UPF and the Red Team Review, the B&W Y-12 CD-0 transmittals were timely and developed with good quality. NOTE: UPF performance data is in a separate section dedicated to just UPF.

B&W Y-12 Safeguards and Security Program met some, but not all expectations in sustaining effective performance in the areas of physical and information security, although special nuclear material and sensitive information were adequately protected. B&W Y-12 entered FY 2014 with a myriad of issues requiring management attention. Examples of these issues/concerns included the need for greater formality of operations; protective force (PF) procedures requiring consolidation and revision; quality of self-assessments and the performance assurance program; and management of findings. B&W Y-12 made significant progress in addressing these concerns throughout the year. Specific examples included efforts to formalize PF conduct of operations, reduced PF overtime, decreased critical systems element average repair time, successfully conducted performance testing of the PF program, and closed 22 of 25 Corrective Action Plans from the 2012 HSS inspection. However, during this performance period, additional concerns were identified in the topical areas of Nuclear Material Control/Accountability and PF indicating that the safeguards and security program had not matured enough to sustain effective performance. For example, in the 2nd and 3rd quarters of the evaluation period, two incidents involving poor handling and accountability of low-attractiveness level nuclear material resulted in B&W Y-12 not meeting expectations in managing security challenges and sustaining effective daily operations. In the 3rd quarter, another concern arose over the control of classified working papers in production areas. B&W Y-12 management response to these

issues/concerns was prompt and B&W Y-12 developed corrective actions that provided NPO assurance that these issues should not recur. Two of the three events illustrated that greater cooperation/interaction between security and plant operations was needed to improve the Site's awareness and adherence to existing security procedures and requirements – a key factor in sustaining security program performance. In the area of PF, poor performance exhibited during an external assessment conducted by HSS during the 2nd quarter identified repeat areas for improvement regarding familiarity with the response location and use of breaching equipment. As a result of the assessment results, B&W Y-12 was only granted conditional approval of certification for this specific portion of the PF program. Full accreditation was dependent upon adequate implementation of a corrective action plan and demonstration through testing that all affected PF personnel consistently performed at the established standards. Additionally, two incidents identified the need for further enhancement to search procedures used prior to PF shift changes. The corrective actions implemented appear to be effective. Physical Security system availability was excellent and maintenance efforts addressed repairs to Priority 1 Critical System Elements. Security system performance at an access control point continued to be problematic due to system outages caused by equipment malfunctions and/or equipment operability problems in severe weather conditions. The security program areas in Classification, Personnel Security, Foreign Visits and Assignments, and the Human Reliability Program were well managed and performed effectively. No systemic issues were noted in these areas during the FY 2014 survey. Additionally, B&W Y-12 proactively managed budgetary challenges in late FY 2014 that favorably positioned the new contractor for continued operations.

The B&W Y-12 Emergency Management program performed effectively and improved in many areas. Examples of program performance and improvements include: fire patrols were reduced by 41%, compensatory measures by 39%, and fire alarm problem signals by 44% since January 2014. B&W Y-12 successfully planned and conducted three emergency management exercises, including support of the NA-41 No-Notice Exercise Program. Applicable to the Emergency Management and Security Programs, B&W Y-12 effectively and efficiently prepared for safe and secure shutdown of non-essential site operations during the late CY 2013 government shutdown. During the period, safety culture issues were identified within the Fire Department Operations. It was apparent that additional emphasis was needed on improving communications within this organization and the contractor engaged an outside mediator to facilitate a solution. One of the areas of concern was related to proposed changes in the fitness for duty standards after an issue was identified by NPO.

The B&W Y-12 Cyber Security Program focused on implementing technical solutions and ensured actions were taken in a timely manner to address NPO findings (expected to be completed post-contract transition in FY 2015). During the 2nd quarter, a 3rd party team conducted a review of the network security controls. After several attempts, the review team was unable to gain access to B&W Y-12 networks. B&W Y-12 also enhanced cyber security capabilities in the classified and unclassified cyber security environments by implementing a Security Information and Event Management (SIEM) system on the classified services network (CSN) to replace the existing detection system that was no longer supported. B&W Y-12 also implemented appliances on the unclassified services network (USN) to inspect inbound email for malware and detect anomalous behavior in email attachments. B&W Y-12 configured and implemented two new scanners to support automatic vulnerability scanning of virtual local area networks and continued to refine packet capture capabilities on the USN by sending network traffic statistics to the Cyber Security SIEM for analysis. The Y-12 Unclassified Cyber Security program underwent two external reviews and received positive feedback from both

reviews. The NNSA Information Assurance Response Center concluded through their penetration testing that cyber security was well-implemented on the Y-12 unclassified computing environment. Based on NNSA Information Management (NA-IM) organization technical assessments this rating period and evaluation of other cyber security program areas, NA-IM's evaluation of Y-12's cyber security program is that the program meets expectations, exceeding in one and meeting 11 implementation factors. Overall, the B&W Y-12 Cyber Security Program maintained an effective security posture.

Overall, B&W Y-12 met the expectations as set forth for facilities in a number of areas. Sustainability efforts exceeded expectations, with a 15% decline of electricity use, a 23% decline in potable water consumption, and a 42% sewage reduction compared with the original baseline. In November 2013, an Energy Savings Performance Contract (ESPC) was awarded to Johnson Controls. The ESPC included five Energy Conservation Measures (ECMs): Steam Decentralization; Chiller System Improvements; Lighting Upgrades - Non-Production Buildings; Steam & Condensate System Improvements; and Compressed Air System Improvement. Lighting upgrades began in January 2014. Other ECMs were in the design phase. However, in other areas, B&W Y-12 continued to have problems with the management and timely disposition of excess material and infrastructure. Examples included the excess coal moving equipment, post 8 excess barrier mechanisms, and the blue shed area on the east end.

Overall, B&W Y-12 met expectations in maintaining and operating facilities and infrastructure during this period. B&W Y-12 maintained an aging and outdated utility system infrastructure at >99% availability and quickly recovered from casualties such as a loss of high voltage power due to storm damage and recovery of the steam plant due to boiler control faults. B&W Y-12 lowered operational costs by reducing power consumption and utility system piping losses and provided excellent support to the ESPC contract. However, the lack of correct "as built" utility system drawings, over reliance on "skill of craft," and lapses in operator and supervisor awareness led to problems. These problems included isolation of fire suppression system to two locations, isolation of steam system to occupied buildings, excessive steam discharge during post maintenance start up, and use of plant equipment prior to performing post work testing resulting in equipment failure. There was improvement in maintenance work planning and control with the application of significant contractor management resources as evidenced by increased on time maintenance execution. The implementation of the Conduct of Maintenance Monitoring and Improvement Plan was in process but was not mature and there were still clear gaps in hazard identification and safe effective execution of maintenance activities. For the year, production of purified uranium metal was significantly behind schedule due to failures of aging equipment and B&W Y-12's overall management approach of restoring the system service. B&W Y-12's decision to forego a Readiness Assessment was a contributing factor to several of the issues that subsequently arose. During transition, key equipment was slowly returning to service; however, the production goal for FY 2014 is not recoverable.

B&W Y-12 completed the Phase I assessment of facilities and infrastructure, reviewing 118 facilities and utility infrastructure items and performed utilization assessments of 67 facilities based on the Laboratory Operations Board (LOB) criteria. B&W Y-12 Sustainability and Stewardship dispositioned unneeded materials and chemicals, with more than 12,000 items dispositioned to date. More than 67,000 lbs. of metal were recycled from various initiatives with a cost avoidance of more than \$28K.

B&W Y-12 completed the refurbishment of Building 9212's Holden Gas Furnace, which included a first-of-kind repair and/or replacement of furnace masonry, repair of the structural steel, and reconfiguration of the piping to better balance, mix, and deliver gas mixtures. Working closely with ES&H disciplines, the contractor established work controls to address and contain excessively high exposures to hazardous materials.

B&W Y-12 met or exceeded expectations in delivering efficient, effective, and responsible business operations and systems. Particularly, during the first half of the year, Y-12 worked through a myriad of drills associated with the lapse of appropriations, Continuing Resolution, and requirements related to a potential sequestration. They developed solutions, including initiatives to reduce indirect costs, to help overcome funding shortfalls. For instance, B&W Y-12 maintained Critical Skill positions at an average of 98% (well above the 90% goal) despite funding shortfalls that reduced overall headcount strength. In April, Y-12 was recognized for achieving the highest Supply Chain Management savings rates in NNSA. B&W Y-12 Information Technology (IT) collaborated well with B&W Pantex IT on a variety of initiatives. Several of the business-related functions, especially Human Resources, Chief Financial Officer, and IT, were heavily involved in contract transition tasks during the last four months of the contract. The contractor not only supported the transition, including executing a Voluntary Separation Program (VSP) and supporting the new contractor, but maintained normal operations during this challenging period. However, during this rating period, Y-12 continued to face challenges in meeting its Small Business Goals (results through May were 35.2% compared to a goal of 45%), especially with a large project such as UPF. B&W Y-12 did not successfully implement the Nuclear Materials Finance Module and failed to identify/communicate this problem in a timely manner in addition to other financial-related challenges.

Overall, the B&W Y-12 Legal Organization (Legal) exceeded expectations. Legal provided responsive, accurate, well-supported, timely, and complete information to the NPO Y-12 Site Counsel. Examples included the following: submittal of B&W Y-12 pension documents related to the WSI subcontract termination; the Y-12 Sanitary Sewer flow; ESPC Tri-Party Agreement; loan of personal property (firearms) to the Oak Ridge City of Police; the RCRA permit transfer package to the successor contractor; and an Anti-Deficiency Act Plan. Legal managed its existing litigation by providing required settlement requests, requests for outside counsel, and invoices in accordance with 10 CFR Part 719. Significant achievements during this period included successfully defending the company in a whistleblower lawsuit brought by a subcontractor employee under 10 CFR 708. In addition, B&W Y-12 Legal was a key player in negotiating the Transfer Agreement as part of contract transition for the Transfer of Responsibilities and Interfaces to the successor contractor. The Transfer Agreement facilitated the orderly transfer of M&O responsibilities from B&W Y-12 to the successor contractor by memorializing the cooperative roles and responsibilities of both contractors. B&W Y-12 managed its FOIA and Privacy Act program by completing special FOIA requests in a timely manner and worked to reduce the backlog of Privacy Act to a minimal number.

SSO 4.1 The four month contract transition to the new contractor re-started on March 3, 2014, and was successfully completed on June 30, 2014. The contract transition was a huge additional and extremely important workload above normal day-to-day operations. The transition team worked very well addressing many challenges and supporting the completion of a very complicated transition in a short amount of time. The incumbent contractor provided exceptional support to the new contractor by helping refine their transition plan and schedule, and keep the transition on track. They were instrumental in helping overcome many issues that came up throughout transition, such as

protecting sensitive information, clearance issues, and helped develop new processes, such as a register to track requests for information and support, that not only enabled a smoother transition, but also should be used as benchmarks for future contract transitions. Despite the added workload, B&W Y-12 focused on ensuring minimal impacts to the workforce and to plant operations, and as a result, productivity remained high and even increased in some areas while metrics for safety instances were reported at an all-time low. The new contractor commented several times near the end of transition about the outstanding support they received by B&W Y-12 to ensure a successful transition.

SSO 4.2 As part of the Building a Great Nuclear Safety Culture Key Initiative, B&W Y-12 identified workplace improvements in the form of physical plant improvements. Over \$3M of FY 2014 General Workplace Improvements were planned and completed, which included refurbishment of several lunch rooms, restrooms, and break rooms in various buildings. All nine projects were completed by June 30, 2014.

The Employee-Driven Safety Campaign addressed high-priority issues within the baseline Common Site Support Program. The baseline plans provided about \$1M to address issues in FY 2014. B&W Y-12 completed 769 issues out of the 898 identified. The primary focus was in walking paths, stairs/handrails, parking lots, and exterior lighting. Recent completions include new handrail configuration at the stairs to Building 9710-3 and replacement of sidewalk sections in front of Building 9113 that corrected long-standing employee safety concerns. To address heat and cold issues for personnel using Post 8 for entry and exit, B&W Y-12 developed a planning estimate to design, procure, and install a hard-wall barrier and associated systems for the pedestrian access control area of Post 8. These initiatives improved employee morale regarding site safety and played a role in improving Y-12's safety performance.

SSO 4.3 B&W Y-12 engineering programs (e.g., nuclear safety, criticality safety, and other related programs) effectively supported the Y-12 production schedule. The Nuclear Criticality Safety program successfully completed 28 of the highest risk ranked Criticality Safety Evaluations (CSE) and was on track to complete approximately 35 additional CSEs that fall in the medium risk ranked area per the NCS Implementation Review Action Plan. B&W Y-12 NCS engineering also aggressively worked several continuing significant fissile production issues including Building 9212 E-Wing casting failures, chip processing difficulties in regards to low yield, and the development of an alternate strategy to safely release Primary Extraction raffinate. B&W Y-12 identified several new Technical Safety Requirements (TSR) surveillance requirements for fire suppression systems. B&W Y-12 Engineering played a key role in providing support with change packages, safety basis revisions, procedures, piping modifications, and troubleshooting for the ongoing Holden Gas Furnace refurbishment including its flame management system (Vital Safety System). The majority of the packages were timely and quality products. B&W Y-12's challenges consisted of improper usage of Authority Having Jurisdiction role for nuclear fire protection systems; deference of several safety basis improvement expectations; and ineffective resolution of comments associated with the Y-12 Packaging and Transportation program. Overall, B&W Y-12 successfully executed each engineering program during the last three quarters and successfully and appropriately completed transition activities on time.

With respect to engineering support to the UPF project, the timeline developed to implement project specific procedures has not been met. The continued reliance on plant engineering procedures has

exacerbated design deliverable error rates and overall inefficiencies in performance. In addition, the Design Code of Record has not been effectively managed resulting in a recent update – prompted by NNSA direction - containing changes to 223 individual Codes, Standards and DOE directives (approximately 45% of the total referenced requirements). The cascading impacts to the project's specific design criteria have not yet been determined. This condition represents an institutional deficiency in the flow-down of contractual requirements, a shortcoming of the Design Authority to review for applicability changes to consensus Codes and Standards, and a weakness in the Contractor's Assurance System.

Uranium Processing Facility Project

Overall, B&W Y-12 management of the UPF project did not meet expectations due to the following performance concerns: B&W Y-12 mandated overly conservative criticality control measures for the UPF casting line requiring the NNSA to intercede and direct design simplifications. B&W Y-12 did not effectively manage the UPF Design Code of Record as a result of ineffective Design Authority reviews of changes to codes and standards indicating a failure in the Contractor's Assurance System.

Baseline Management: An updated Estimate-to-Complete for PED and the TPC were finalized on October 1, 2013, following an intensive multi-month bottom-up estimate to reflect the quantities of commodities, residual engineering effort, and updated pricing information. The updates to both the PED Baseline valued at \$226M and the TPC Forecast Baseline were to be codified by late October but the associated trends were neither finalized nor incorporated.

Baseline Performance: Cost and schedule performance trended downward between October 2013 and January 2014. The actual engineering percent complete through January 2014 was behind plan, and design deliverables supporting the 90% design completion milestones were trailing the project plan prior to new technical direction in February. For Direct Engineering activities, the three month rolling average in January (prior to new technical direction for alternatives) was 0.85 for Cost Performance Index (CPI) and 0.84 for the Schedule Performance Index, reflecting an ongoing negative trend. In February, after recognizing that the TPC estimate was higher than the approved range, NNSA directed the project to suspend low-equity work and develop a revised work plan for the balance of the fiscal year. After the approval of the revised work plan in March 2014, the UPF project performance continued to track below expectations. The May Engineering Progress and Performance Report (EPPR) CPI was at 0.92, marking nine consecutive months of performance below 1.0, the longest such trend since the October 2012 replan.

Response Actions to Project Alternatives: In early calendar year 2014, in response to increases in the overall project cost projections, the UPF project team initiated and developed alternative approaches to reduce the project cost. The project suspended low-equity design efforts and issued a revised interim baseline to reflect the changes in project direction. The project implemented necessary staffing adjustments through the month of June in response to an alternative design approach. These adjustments and responsiveness to off-project review team recommendations demonstrated agility.

Resolution of Design and Technical Issues: Casting remains a significant challenge. Since January 2013, the Project has worked to implement the B&W Design Authority's direction on design requirements for the casting line. That direction mandated overly conservative criticality control measures for all casters, thereby requiring a significant redesign effort and negatively impacting plant

throughput. In June 2013, the NNSA Peer Review Team identified significant technology challenges driven by the approach to criticality safety. In January 2014, B&W developed an alternative casting furnace design that was later aborted after consulting with industry experts and suppliers. In March 2014, NNSA directed the simplification of design and technology development efforts by relying on widely accepted practices for criticality safety control. Following that direction, technology risks have been eliminated and plant throughput objectives have been restored for normal casting operations. However, special casting operations continues to pose a significant mission risk until issues related to technology, specialty materials, criticality safety controls and product quality are resolved.

Sub-Project Execution: The quality and completeness of Site Preparation related Critical Decision (CD) packages (CD-3A and Site Infrastructure and Services) were excellent. Response to NNSA technical direction, for modification of CD packages, has been excellent and reflects client focus and flexibility. B&W's integration and coordination with USACE contractors has resulted in timely feedback, as well as good integration with Y-12 plant organizations in support of the Site Readiness Subproject.

UPF Project Safety: The project continued to maintain an excellent safety record. The project's leadership team continued focus on safety culture and this is a considerable strength.

SSO 4.4 Complete design and performance specifications issue a Request for Proposal and award the procurement of the pre-production microwave furnace. The Request for Proposal to award the pre-production microwave furnace was issued May 23, 2014, with a planned award by September 5, 2014, against a milestone date of September 30, 2014.

SSO 4.5 Finalize and deliver Safety Design Strategy (Revision 8) and complete the Process Safety Reports consistent with the schedules defined therein. The Safety Design Strategy (SDS) Revision met expectations. UPF's Safety Design Strategy Revision 8 was submitted on October 3, 2013, and was approved by NNSA on October 11, 2013.

SSO 4.6 Effectively manages technology maturation activities to support achievement of Technology Readiness Level 6 for the seven baseline process technologies by September 2014. Four of the seven baseline technologies have completed technology maturation activities to achieve TRL 6, and one of the seven is no longer required to support of the new approach to UPF. The remaining two technologies requiring maturation advancement in a relevant environment are normal and special casting. The Project is proceeding with acquisition of a full-scale microwave test unit to demonstrate operability, reliability and throughput requirements in a relevant environment which will lead to achievement of TRL 6 or higher. Although progress in microwave casting technology development efforts has improved since March 2014, this technology will not achieve TRL 6 before September 2014.

Performance Objective 5: Leadership

Summary

B&W Y-12 leadership effectively worked through a myriad of drills associated with the lapse of appropriations, continuing resolution, and requirements related to the sequestration. In addition, B&W Y-12 leadership met expectations in ensuring on-going operations were not impacted during all the challenges associated with contract transition, including the uncertainty regarding personnel actions. Towards the end of contract transition, the new contractor commented on the positive support from B&W Y-12 leadership, especially in sharing information regarding the turnover of issues and pre-existing conditions. During this period, on-going operations also included completing EM-funded American Reinvestment and Recovery Act (ARRA) projects. B&W Y-12's performance in ARRA projects exceeded expectations by executing additional scope against an aggressive schedule within funding parameters.

Good

The B&W Y-12 Contractor Assurance System (CAS) effectiveness was rated at the "Managed Level" in that performance was measured and monitored both qualitatively and quantitatively. Continuous improvement was desired and routinely sought and processes were understood and controlled. The CAS continued to improve with the maturation of the System Approach to Organizational Health metrics. Additionally, B&W Y-12 adequately captured key issues and transitioned them to the new contractor prior to the end of transition.

B&W Y-12 pursued cost efficiencies and avoidances despite the contract transition. This year 203 initiatives were validated by the contractor with a total value of \$35M against a \$40M annual goal. The most significant initiative, resulting in a reduction of non-occupational workplace absences, has a potential cost avoidance of \$5.7M.

B&W Y-12 received enhanced support through corporate oversight and resources from both parent companies. Many of their senior positions utilized requests for offsite services from their corporate offices.

In the Packaging and Transportation (P&T) area, numerous technical issues were not resolved in a timely and acceptable manner by senior management.