National Nuclear Security Administration

Sandia Corporation

Fiscal Year 2014 Performance Evaluation Report (PER)

NNSA Sandia Field Office

Performance Period:
October 2013 – September 2014

November 14, 2014

Executive Summary

This Performance Evaluation Report (PER) provides the assessment of Sandia Corporation's (Sandia) performance for the period of October 1, 2013 through September 30, 2014, as evaluated against the objectives defined in the Fiscal Year (FY) 2014 Strategic Performance Evaluation Plan (PEP). The Department of Energy's (DOE) National Nuclear Security Administration (NNSA) took into consideration and consolidated all input provided [e.g. Contractor Assurance System (CAS), Program Reviews, peer reviews, external reviews, customer review, etc.] from NNSA Program, Functional, and Field Offices. 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 Outcome (SSO) under each PO identified in the PEP are provided as well.

Sandia submitted a Performance Self-Assessment Report entitled Performance Evaluation and Assurance Report (PEAR) that covered the rating period.

PO-1: Manage the Nuclear Weapons Mission (20% of At-risk fee) was rated as Very Good. Overall, Sandia performed above expectations in their ability to manage the Nuclear Weapons Mission.
Despite the funding uncertainties caused by the Continuing Resolution and FY 2014 lapse in appropriations, Sandia met or exceeded almost all (99+%) of the Program Implementation Plan work scope (129 of 130 Level 2 milestones) funded through Defense Programs. Sandia met Limited Life Component Exchange (LLCE) deliverables and overcame challenges in support of the Stockpile Modernization Life Extension Programs (LEPs) and Alterations (ALTs). Sandia recovered from the impact of the corporate pause in explosive operations and accommodated the delay in deliveries of plutonium (Pu) samples from Los Alamos National Laboratory (LANL) in order to conduct important Pu experiments. Sandia was also able to mitigate the impact from one of the Weapons Evaluation Test Laboratory (WETL) centrifuges being inoperable for the year. Sandia's War Reserve (WR) product quality performance has shown significant improvement. Sandia's support of advanced radiography, in collaboration with LANL, LLNL and NNSS, was exceptional.

PO-2: Broader National Security Mission (20% of At-risk fee) was rated as Very Good. Overall, Sandia continues to excel in executing their non-nuclear weapons missions, delivering technology options to a broad range of customers and performed above expectations. Sandia's achievements were reached through: active management; developing, monitoring, and executing programs/projects; meeting customer goals and objectives in a timely manner; ensuring policies and procedures were followed; and continually working to improve its relationships with customers. Sandia continually exceeds many customer expectations by providing unique, superior solutions to current and anticipated national security threats. The overall rating was affected by the Site 9920 explosives event that led to a pause in operations and subsequent mission impact to at least 42 programs and projects.

PO-3: Science, Technology & Engineering (ST&E) and Other DOE Mission Objectives (20% of At-risk fee) were rated as Excellent. Overall, Sandia exceeded expectations in this performance objective as evidenced by execution of research strategies and capability investments, numerous technology advances, science and engineering breakthroughs, and impactful mission results. The Laboratories' ST&E base has been further strengthened to ensure science-based nuclear stockpile stewardship and to provide the technical basis for the annual stockpile assessment. Sandia's unique mission responsibilities in the nuclear weapons program have prompted revolutionary ST&E approaches to address stockpile

stewardship challenges, and Sandia is ensuring investments in research are transformative, innovative, leading edge, and of high quality. Sandia has formed twelve Research Challenge (RC) Areas focused on existing and anticipated national security needs that position Sandia to respond to emerging threats. This has brought focused attention amongst the Sandia research community to synergistically work on the highest priority science and engineering challenges. Sandia is intentionally assuring that all ST&E investments are driven by national security strategic goals and objectives, with strong relevance to mission needs, focus on quality science and engineering, while providing impactful results. Moreover, Sandia maturation of core competencies is demonstrated by science-based Research Foundation (RF) areas that continue to provide the underpinning of essential science and engineering competencies to enable mission success across all mission areas. Both RFs and RCs are clearly aligned with DOE/NNSA strategic goals and objectives and help to serve all mission areas. Sandia has balanced these research investments while successfully transitioning technologies to other government agencies and industry.

PO-4: Operations & Infrastructure (20% of At-risk fee) was rated as Good. Overall, Sandia met expectations in their ability to effectively and efficiently manage the safe & secure operations of the Laboratories while maintaining an NNSA enterprise-wide focus; demonstrating accountability for mission performance and management controls; assuring mission commitments are met with high-quality products and services; and maintaining excellence as a 21st century government-owned, contractor operated facility. Sandia met the expected performance criteria and the overall technical performance requirements of the contract in the areas of operations and infrastructure. Though Sandia has made progress in the areas of assurance, work control, and transparency, continued management focus in these areas is necessary to prevent events such as the Site 9920 accident.

PO-5: Leadership (20% of At-risk fee) was rated as Very Good. Overall, Sandia provided very good leadership in supporting the direction of the DOE/NNSA mission. When challenges arose, Sandia leadership showed great responsiveness and engagement and used issues as an opportunity for continuous improvement both at Sandia National Laboratories and across the Enterprise. Sandia continuously took leadership roles on efforts to drive improvements and coordination across the Nuclear Security Enterprise (NSE) and DOE/NNSA, and showed a willingness to take on challenging tasks in support of the national security mission. Sandia built strong working relationships and partnerships across DOE/NNSA enabling success. However, challenges presented during FY 2014 have strained the relationship and put at risk the efficiency and effectiveness of the endeavor.

Performance Objective 1: Manage the Nuclear Weapons Mission

Summary

Very Good

Overall, Sandia performed above expectations in their ability to manage the Nuclear Weapons Mission. Despite the funding uncertainties caused by the Continuing Resolution and FY 2014 lapse in appropriations, Sandia met or exceeded almost all (99+%) of the Program Implementation Plan work scope (129 of 130 Level 2 milestones) funded through Defense Programs. Sandia met LLCE deliverables and overcame challenges in support of the Stockpile Modernization LEPs and ALTs. Sandia recovered from the impact of the corporate pause in explosive operations and accommodated the delay in deliveries of Pu samples from LANL in order to conduct important Pu experiments. Sandia was also able to mitigate the impact from one of the WETL centrifuges being inoperable for the year. Sandia's WR product quality performance has shown significant improvement. Sandia's support of advanced radiography, in collaboration with LANL, LLNL, and NNSS, was exceptional.

Sandia performed above expectations by negotiating work with program sponsors; achieving an increased level of quality to ensure safe, secure, and reliable weapon performance and transportation; and providing cost-effective operations. Specifically, Sandia coordinated frequently among Sandia, NNSA Federal Program Managers (FPMs), and contract support, leading to a disciplined approach that mitigated risks and helped prioritize critical work scope. Sandia's Enterprise Modeling and Analysis Consortium leadership was critical to successful completion of the NSE business analytics for the FY 2016 Stockpile Stewardship and Management Plan Scope & Complexity Model considerations and thorough analysis and support for the W78/88-1 assessment of alternatives. Overall, Sandia had increased communication and risk mitigation to help NNSA meet their mission despite losing almost the entire first quarter due to funding issues beyond their control.

W76-1 deliveries to the U.S. Navy were completed, including recovery from the missed FY 2013 deliveries. Sandia supported the transition from the Kansas City Plant (KCP) Bannister to the KCP Nuclear Security Campus (NSC) for W76-1 LEP Arming, Fuzing & Firing (AF&F) production. Sandia delivered Lot 13 with 127 Mark Quality capacitors to KCP on May 16, 2014, the largest delivery of capacitors since the Code Blue redesign in 2011, while standing up production of a second capacitor, which provided 121 capacitors in Lot 1, providing over 12 months of contingency.

Sandia's WR product quality performance has shown significant improvement. Sandia expedited a unique evaluation to support another NNSA site in response to 27 potential non-conformances for multiple products destined for WR applications. These analyses verified that there were no impacts to performance requirements and that product flow could continue without introducing unwarranted risks to our nation's nuclear stockpile. Sandia collaborated with KCP to develop containment and preventive actions to ensure that these issues do not reoccur.

Sandia met expectations by completing nine FY 2014 NA-15 Task Agreements to support mission needs for transport across the NNSA Enterprise. Eight of the nine NA-15 Task Agreements were performed at the meets expectation performance level while one task (Site Security Plan and Systems

Analysis Task Agreement) was performed at the above expectations level. Sandia demonstrated flexibility in project management by adding tasks to their workload without significant impact to other analytic projects and tasks. On this project, Sandia demonstrated responsiveness and flexibility to changing analytic needs.

Sandia met expectations to increase knowledge of the state of the stockpile, as a result of successful execution of the stockpile surveillance program supporting delivery of the annual stockpile assessment. Specifically, Sandia executed W76-1 Retrofit Evaluation System Test and stockpile surveillance requirements for Annual Assessment and Weapon Reliability activities. Sandia provided Design Agency (DA) technical support for delivery of all W78 instrumented Joint Test Assemblies (JTAs); completed a cost study for the High Accuracy Separation Package; successfully completed a W87 Surveillance Flight Test for JTA407 and completed assembly and additional radio frequency testing for JTA408; and completed W87 test and analysis for abnormal thermal directed-fire scenario indicating safety margin for this environment. Sandia executed W87 CF3352 Producibility Plan Activities in accordance with the NNSA approved plan. Sandia failed to execute the JTA4 builds, resulting in a very high risk, but no mission impact to the flight testing program. Sandia has established and is executing a corrective action plan that includes a critical path schedule and risk mitigation opportunities to ensure adequate product to support required JTA4 builds.

Mechanical vibration issues in October 2013 caused a shutdown of the WETL Navy centrifuge, affecting W76-1, W80 and W88 testing. Sandia developed options for testing which mitigated the impacts. Status was routinely communicated and briefed to NNSA. Sandia transferred W76-1 testing to the Air Force (AF) centrifuge and completed 22 principle tests. Sandia also completed other customer required testing on the AF Centrifuge, which supports schedule recovery of the W80 and W88 lab testing in FY 2015 to obtain data for the Cycle 20 Annual Assessment Report.

Sandia completed all planned activities in support of the Annual Assessment for each weapon system, including tasks to improve the technical basis and Quantification of Margins and Uncertainty (QMU) understanding for the enduring stockpile. Despite reduced budgets, Sandia improved surveillance investigation processes, eliminating the FY 2013 backlog of anomalies as well as almost a 50 percent reduction in Significant Finding Notifications and Significant Finding Investigations. Additionally, Sandia used generic igniters at the Rapid Prototype Facility to determine the impact of preconditioning pulses on igniter performance, saving approximately $220 thousand.

Sandia performed above expectations to execute deliveries for the stockpile work to meet LLCE and dismantlements. Sandia met the cost, schedule, and performance requirements for their component disposition and characterization program and for retired systems management. Sandia provided engineering support to the Production Agencies to produce Sandia-designed components, ensuring NNSA met the FY 2014 W76-1 warhead production requirements and Department of Defense (DoD) warhead delivery schedules. Sandia released Qualification Evaluation Releases (QERs) for W76-1 requalification activities at the Kansas City Responsive Infrastructure Manufacturing & Sourcing (KCRIMS). Sandia supported the Kansas City Plant (KCP) KCRIMS activities, completing 200 QERs for product, processes, gages and testers, including 21 QERs ahead of schedule. Sandia provided excellent support to Pantex with project personnel and weapons responders to complete the W80 and B61 SS-21 Project Plans and Baseline schedule, and conduct the Conceptual Hazard Analysis Task Team Walkdowns under a compressed schedule. Sandia coordinated W80 Neutron Generator (NG) extensions with LLNL in support of AF logistics mitigation planning. Sandia coordinated a new Field

Leak Tester to support AF W80 ALT 369 implementation and completed W80 Hazards of Electromagnetic Radiation on Ordnances testing to meet AF FY 2018 implementation requirements. Sandia built all FY 2014 planned W78 NGs and developed and executed a project plan to complete production of MC4381 NGs; achieved First Production Unit (FPU) for the W87 NG exchange at Pantex; and delivered the W87 NG FPU. However, Sandia encountered NG subassembly failure which affected scheduled qualification activities and will result in an impact to the NG FPU. The situation will require the NG enterprise to evaluate potential impacts to other stockpile systems production schedules and the Future Year Nuclear Security Plan funding profile. Sandia prevented inadequate product from reaching the end user by completing a quick-look lifetime study and leveraging information from the W76 dual revalidation and recent W78-0 QMU efforts; completing the response and successful resolution of a W87 priority unsatisfactory report and identifying a problematic material compatibility issue with a lower level W87 assembly that required an immediate change to the MC3719 Project Plan. Sandia also worked quickly to establish a corrective action plan to recover production activities within an acceptable time frame. Sandia executed the W87 ALT 360 activities by leading the development efforts, including the design, fabrication and testing of an early prototype unit. Sandia excelled in identifying several legacy reservoirs that could lead to life extensions and be reclaimed for risk mitigation.

Sandia met expectations with the NA-12 Senior Management Team initiatives to increase support to Pantex, including PTIP2, DOE-STD-3016 rewrite, Falling Man analysis, and the Program Authorization Weapons Integration for increased safety basis and nuclear explosive activities at Pantex. Sandia has done an adequate job supporting the safety basis and nuclear explosive activities in FY 2014. However, due to a lack of staffing, Sandia is in a position where there is a limit to the amount of work NNSA can commit to at Pantex regarding weapon response. This situation represents a significant risk in supporting current and future authorization basis activities. NNSA recognizes that Sandia has weapon response personnel in training, but emphasizes the need to expedite this training to ensure additional weapon response resources are available to meet the current and future workload. Sandia utilized a new approach to support the W78 Authorization Basis (AB) Project Execution Plan to meet the requirements for W78 Nuclear Explosive Safety Study activities and prevent any impact to W78 operations at Pantex. Sandia released B83 ALT 353 Gas Transfer System modifications on all Valve Product QER documents in April 2014, two months ahead of schedule, providing additional schedule margin. Sandia also successfully completed weapon component disposition characterization of over 19,800 weapon components, exceeding the goal of 18,000, in support of dismantlement across the NNSA Enterprise.

Sandia 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. Specifically, in the area of Non-Nuclear Readiness, Sandia designed, developed, and qualified three new NG testers. Sandia continued the advancement of the tester roadmap and proactively developed a major enhancement to the microelectronic production capabilities. Sandia's accomplishments enhance NNSA's ability to conduct surveillance and inspection on multiple components, while enabling smooth production throughput of Application Specific Integrated Circuits and Heterojunction Bipolar Transistors. In the area of Research and Development (R&D) Certification and Safety, Sandia completed objectives in a timely manner, provided frequent input and feedback, very actively engaged in the mission scope, contributed constructive solutions for current and emerging issues, and addressed and successfully resolved an unprecedented issue within Nuclear Safety R&D work scope. Sandia completed numerous Component Material Evaluation tasks and

component evaluations. Predictive capabilities were developed and deployed in the Fitness for Reuse evaluations for the B61 LEP program and other cross cutting areas. Sandia's Enhanced Surveillance evaluations enabled B61-12 re-use decisions on multiple components, including the MC4146 Rolamite, MC2213A Actuator and Pulse Battery Assembly (APBA), and Thermal Battery and Igniter designs and materials, resulting in an estimated cost avoidance/savings of $150M. Additionally, Sandia met Defense Programs Packaging-1 (DPP-1) container requirements. Sandia is responsible for designing and testing a DPP-1 container pallet assembly, which will modify the NA-20 packaging when DPP-1 containers are used to transport weapon components; however, due to the delay from a participating DOE/NNSA site, Sandia's design efforts are on hold.

Sandia conducted 161 shots on the Z Machine, a 16% increase over FY2013, including 26 in support of Radiation Effects Sciences (RES). These RES shots provided important data on various test objects, and developed additional experimental platforms and capabilities for the RES mission. Sandia made notable progress in the cylindrical experimental platform for equation-of-state (EOS) material property experiments, achieving record pressures for some materials. Sandia also completed and documented five Independent Nuclear Weapons Assessment Program tasks. Sandia expanded the capability to model gallium arsenide devices in support of stockpile needs, and improved the capability of engineers to quickly and consistently conduct sensitivity analyses, as well as solid modeling and structural dynamics simulations. A simulated flight test of a recent Mk5 environmental flight test was successfully accomplished. Sandia also further developed and tested the cavity system-generated electromagnetic pulse simulations capability, including performing uncertainty quantification.

Sandia exceeded expectations in its support of advanced radiography efforts by developing and improving the self magnetic pinch diode for radiography. Additionally, Sandia demonstrated extraordinary cooperation working with LANL, LLNL, and NNSS to provide proposals, analyses, and operational information needed to arrive at the national decision on advanced radiography at U1a. Sandia continued to improve the Z Machine facility to allow for routine operations at 95 kV and 32 MA. This enhancement allows for increased x-ray and neutron yields, as well as higher material pressure experiments. Sandia achieved readiness for the WETL Common System Tester for B61- 3/4/10 per the project plan. The simulation and analysis of response data were completed and documentation has been completed in draft form for QMU for a Directed Stockpile Work III-V Heterojunction Bipolar Transistor circuit. Significant work was also completed related to: higher fidelity multi-environment assessment and testing for weapon system environments, strengthening the technical basis for engineering assessments; and enabling model validation and margin assessment.

Sandia exceeded expectations for the B61-12 LEP. As the B61-12 LEP Interface Manager (IM), Sandia worked closely with the Air Force Nuclear Weapons Center, Air Force Life Cycle Management Center, and Boeing engineers to define requirements, identify unresolved issues and develop burn down plans for the Bomb Assembly (BA) to Tailkit Assembly (TKA) Interface Control Document for the B61-12 LEP. Furthermore, the Sandia DA supported an unplanned Heat Sink Technical Interchange Meeting to facilitate understanding and engineering exchange of Tailkit Heat Management issues between Sandia and Boeing St. Charles. The Sandia DA supported an independent assessment of the TKA design to meet environmental requirements, which was outside baseline scope and performed within the baseline budget, and demonstrated great agility in providing detailed analysis and technical integration guidance to inform an Executive Project Officer's Group (POG) decision to increase the length of the Air Force provided tailkit. The Sandia DA also led and executed the first B61-12 LEP

Programmatic and Technical Review for the Executive Project Officer's and POG Subgroup members on the current status of the design and Air Force integration issues. The Sandia DA successfully assembled, tested, and shipped the first B61-12 Compatibility Test Unit (CTU)-4 (known as the Bomb-to-Tail Emulator) to the F-15 Software Integration Lab on time in October 2013, which was a significant accomplishment for the B61-12 LEP since this critical path milestone was essential to the parallel effort to update the F-15 Operational Flight Software in time for the first F-15 flight. Moreover, the Sandia DA has supported continuously changing schedules for Vibration Fly Around (VFA) flight dates and necessary preparation activities, including T2 modification verification. Sandia also provided excellent technical knowledge and expertise at the unplanned VFA/IMV review in 2014. The Sandia DA produced and delivered an All Up Round cutaway to Washington DC within 30 days of request. This was unplanned scope and was executed within site budget. The Sandia DA made an APBA redesign choice informed by components material performance evaluations, obtained FPM approval, and conducted a successful Conceptual Design Review and Gate Review in July. The APBA Product Realization Team made a significant effort to accelerate design, fabrication, and testing of the first group build to keep the component on track and off critical path.

Sandia performed below expectations in some areas regarding the W88 ALT370. Sandia damaged development material during building and testing of the Critical Radar Arming and Fuzing Test (CRAFT) unit, and in a separate occurrence, damaged a Navy-owned Radar module during environmental testing. Sandia also provided a less-than-flight worthy transmitter for Follow-on Commander-in-Chief (CINC) Evaluation Test (FCET)-50. The FCET-50 issue was not communicated up the chain nor resolved in a timely fashion. Sandia did not implement proper engineering protocols and quality control, and did not communicate the technical issue with the Project Management Team. Sandia recovered from these incidents through risk mitigation and/or prompt reactive response to the issues. Sandia implemented improved management controls over the conduct of testing protocols and authorities. For the FCET-50 delivery, the ALT 370 management team took extraordinary measures to meet a revised recovery schedule. Sandia demonstrated significant agility in addressing the issues. Although Sandia was not successful on several fronts, Sandia is recognized for taking full responsibility and mitigation actions, resulting in the FCET-50 test body delivery to the DoD. In other areas of the W88 ALT370 program, Sandia fully met expectations by completing activities associated with the test and qualification schedule and the Level I and II milestones. Sandia successfully built, delivered, and flew a development fuze as part of the CRAFT, meeting all test objectives. Sandia also successfully built and tested another development fuze in the FCET-50 body. With the exception of FCET-50, Sandia successfully designed, built, and tested prototype hardware and completed system integration activities per the approved schedule. Sandia also successfully led the component and system design reviews.

Sandia met expectations for the W78/88-1 LEP by coordinating among the labs, and with NNSA, to successfully track and close out the program. Sandia completed the NNSA-requested list of prioritized Phase 6.2 activities for the W78/88-1 LEP, the controlled program close-out activities, and the 120-day study. Monthly and close-out reports met expectations and deadlines and the budget conformed to the spend plan. Sandia successfully out-briefed interested stakeholders and provided final reports to meet the FPM's standard.

SSO 1.1: Sandia conducted excellent dynamic materials properties work, including an experimental series on lithium deuteride. The challenges faced at LANL's Technical Area (TA)-55 impacted Sandia by delaying the processing and release of plutonium samples. In late July, LANL was able to deliver Pu

samples to Sandia. Due to experimental configuration changes, the Pu sample windows cracked and did not provide a double seal as required by the Z Machine Authorization Basis, and therefore the samples could not be used. NNSA supported Sandia's decision to delay the experiment to FY 2015 due to the safety issue. Sandia also overcame delays caused by the Sandia Corporate Explosive Operations Pause, and completed extensive efforts to obtain approval to utilize an asymmetric ramp configuration for the Quarter 4 Pu experiment, which resulted in the highest pressure Pu shot conducted on Z Machine and provided Pu EOS data at ~80 percent higher pressure than previously obtained. Another successful Pu experiment was conducted on Z Machine on October 3, which provided high pressure data on a weapons program Pu alloy.

Sandia demonstrated the ability to conduct integrated Magnetized Liner Inertial Fusion experiments on the Z Machine. In doing so, Sandia was able to overcome significant technical challenges, which included laser alignment for target pre-heat and development of a final optics assembly that minimized vacuum loss. Sandia performed above expectations with regard to Advanced Simulation and Computing (ASC). Sandia led the tri-lab CoDesign team effectively in the ASC coordination with DOE Office of Science regarding Exascale planning and are deploying a tri-lab advanced architecture environment for advanced software experiments. Sandia also deployed and supported use of proxy applications by the Fast/DesignForward vendors who are trying to understand the unique ASC application programming requirements. Sandia successfully rolled out the High Performance Conjugate Gradient benchmark to the high performance computing (HPC) community to use in parallel to the HPLinpack benchmark for the Top500 List and released the Power Management Application Programming Interface (API) Rev 1 for the HPC community to explore further. Sandia also served as the lead lab for the ASC tri-lab Input/Output (IO) benchmark activity via the Structural Simulation Toolkit, which is heavily used by the HPC vendors, academia and other agencies' HPC programs.

SSO 1.2: The Sandia DA & production agency (PA) exceeded expectations for the B61-12 LEP program and are recognized for their significant effort to implement a new Earned Value Management System (EVMS) and related processes at the site. The EVMS implementation, along with the required resource loaded site schedule, was a success despite the complexity of the site, project and significant organizational cultural change that was required. The Sandia DA is also commended for their efforts and resources applied to assisting NNSA in developing and refining the NNSA Integrated Master Schedule (NIMS). Sandia's leadership and teamwork with NNSA and other sites have improved the alignment of DA to PA site schedules and between the sites and NIMS. The Sandia DA continued to minimally maintain the Integrated Master Summary Schedule (IMSS) in the first quarter until the FPM authorized them to discontinue maintenance of the IMSS and focus all efforts on the new Sandia Integrated Site Schedule (ISS) and NNSA NIMS in the second quarter. The Sandia DA and PA created their site resource loaded schedules on time in accordance with FPM direction, and worked with NNSA to refine site contributions to the Baselined NIMS to improve compliance with the Project Controls System Description and the Project Controls Manual guidance and critical path management.

SSO 1.3: Sandia met expectations by submitting the revised NG plan incorporating NNSA comments and as specified by the Defense Programs Business Process Systems R008 and T067 requirements before the end of the 1st quarter as required. Sandia collaborated with NNSA on the development of Program Execution Plan that integrates the Defense Programs Program Execution Guide. Sandia has met or exceeded all NGs builds (planned/completed) for the W76, W78, W87 and B61 Recert. NG ship requirements defined in the Limited Life Component Program Control Document (PCD) were met for

the W76, W78, W87 and B61 Recert. This build strategy helped to minimize delivery risk due to production stoppages by providing a healthy finished goods inventory position for these NG products. Sandia exceeded the small neutron tube yield improvement plan (40 percent planned yield in 1st quarter and 60 percent for the balance of FY 2014) by averaging 71 percent yield for FY 2014, allowing 100 extra small neutron tubes to be built within existing funding, with a cost savings of $340K.

SSO 1.4: Sandia met expectations by developing and implementing surveillance metrics for the surveillance program early. Sandia implemented surveillance metrics supporting prioritization and assessment activities in an environment of budget uncertainties and shortfalls as captured in the annual assessment letter. Sandia re-deployed personnel early in FY 2014 and later, when funding was available, re-engaged to complete activities. Sandia refined the surveillance metrics per the JASON's report recommendations to support better communication both within and outside NNSA and promote an understanding of stockpile surveillance issues. Sandia hosted a tri-lab briefing for NA-12 to discuss the implementation of surveillance metrics to close the 2009 initiative from NA-12.

SSO 1.5: Sandia exceeded expectations for Project Controls Implementation for the W88 ALT 370. Sandia shouldered the greatest burden for converting project-specific and institutional controls to the new EVMS model, and were able to begin Earned Value (EV) beta testing well before the end of the fiscal year. In addition, Sandia exceeded expectations by performing a detailed cost and feasibility study for the Conventional High Explosive Refresh Option, which withstood additional scrutiny for a follow-up study. Sandia is actively managing cost at the component level through the Cost and Performance Review Board process and has implemented their EVMS in accordance with NNSA direction through the Project Controls System Description. Sandia is positioned to fully implement EV reporting starting in FY 2015.

In the area of Enhanced Surety, Sandia work continues to be beyond exemplary for both near-term detailed execution and long-term vision. Sandia completed all work on or ahead of schedule and at or below planned cost. Sandia was given the lead on the difficult task of completing a thorough and updated Tri-lab Multi-Point Surety Plan, and executed that task flawlessly, even though the deadline set by HQ was unusually tight. Sandia completed its Joint Integrated Lifecycle Surety tasks nine months ahead of schedule, despite the scope of the work being expanded significantly beyond that which had been planned at the beginning of the year. Sandia's work on the highest priority component development has been superb even though the project objectives underwent significant midyear revision. SSO 1.6: Sandia demonstrated support of integrating Weapon Quality activities across the Enterprise, including the 2014 Nuclear Explosive Safety Workshop and the 2014 Weapon Quality Workshop; successfully piloted NNSA's initiative regarding Nuclear Enterprise Assurance activities; and provided adequate Nuclear Explosive Safety Study Group membership support.

Performance Objective 2: Broader National Security Mission

Summary

Very Good

Overall, Sandia performed above expectations in executing their non-nuclear weapons missions, delivering technology options to a broad range of customers. Sandia's achievements were reached through: active management; developing, monitoring, and executing programs/projects; meeting customer goals and objectives in a timely manner; ensuring policies and procedures were followed; and continually working to improve its relationships with customers. Sandia continually exceeded many customer expectations by providing unique, superior solutions to current and anticipated national security threats. The overall rating was affected by the Site 9920 explosives event that led to a pause in operations and subsequent mission impact to at least 42 programs and projects.

Sandia continued to accomplish work within scope, schedule, and cost for the Global Threat Reduction Initiative program. Sandia significantly exceeded expectations for the Domestic Material Protection Program, securing 61 buildings, which appreciably reduced the risk of these sources being used in Radiological Dispersion devices. This success was enabled by improvements in their contracting process resulting in better schedule performance. The International Program improved this year with much better project controls and lower carry-over. Sandia established new work in several countries conducting table-top exercises. Sandia's efforts were critical in completing security upgrades in a partnering country to support a shipment of low enriched uranium, and in implementing security upgrades in Uzbekistan to allow for removal of all remaining highly enriched uranium.

Sandia was technically superb in supporting Protect Integration through high level briefings to congressional staff, Office of Management and Budget, Government Accountability Office, and NNSA senior leadership and superbly managed the In-device Delay program staying consistently ahead of schedule with superior technical performance.

Research and Development work exceeded planned technical delivery in some cases, such as with test monitoring capabilities development. Overall, work met budget and performance schedule. Sandia supported the Nuclear Safeguards and Security program, meeting cost, schedule, and technical requirements. For the International Nuclear Security Program, Sandia worked six bilateral physical protection assessment visits; conducted 29 physical protection training courses, provided nuclear security training to 792 students from 50 countries; supported 11 bilateral engagement and coordination meetings and provided physical protection subject matter experts for 15 IAEA Consultancy Meetings and workshops. Sandia supported seven technology development projects for Safeguards Technology. Sandia has exceeded some expectations for Nonproliferation, and Safeguards Policy while working within the negotiated risk with sponsors providing good to high level of quality. Sandia has exceeded many areas in Safeguards Engagement providing sound technical input and program support for nuclear safeguards engagement. Sandia performed above expectations in some areas of nuclear controls, providing strong support on strategic and sustainability planning and guidance; served as laboratory lead for the Technical Advisory Committee for the Middle East Science Institute for Security; served as the laboratory leads for the International Nonproliferation

Export Control Program, providing excellent technical and project support for 4th quarter

engagements; and continued to contribute to high-priority curriculum development activities, which included specialized proliferation analyses, and continued to offer program managers additional resources and tools to maintain the quality of deliverables and reduce costs. Sandia exceeded expectations in many areas in Nuclear Verification, providing excellent support across the Warhead and Fissile Material Transparency program to include technical initiatives to develop and evaluate future warhead monitoring approaches such as the radiation detector. Sandia leads U.S. efforts for the major International Data Centre (IDC) Re-engineering project and network modeling improvements at the IDC, and is performing key evaluations on measurement equipment and components in the International Monitoring System.

Sandia's Second Line of Defense (SLD) program support continued to improve throughout FY 2014, with Sandia's management team greatly improving communication. Sandia provided consistent and effective sustainability support, being attentive to SLD's future plans and have offered several initiatives to assist SLD in achieving FY 2014-FY 2018 goals. Sandia offered crucial expertise to SLD's new lifecycle analysis and sustainable communications efforts. Sandia continued to accomplish work within the present budget profile, scope, cost, schedule, quality and risk. Sandia provided excellent support on project activities, giving timely and comprehensive input on technical issues for the Material Consolidation and Civilian Sites program. Sandia's subject matter expertise, foreign partner training, and project support for several important foreign engagements continues to be excellent. Sandia provided significant support for the China Center of Excellence project; coordinating, hosting and/or teaching nuclear security best practices workshops for key international partners, which were well executed and received.

Sandia exceeded expectations in some areas for Emergency Management, such as coordinating the Program specific Home Team training event and establishing the secondary component measure campaign. The Technology Integration program was responsive, forward thinking, and committed to collaboration, ensuring projects were finalized and delivered to operational teams and International Radiological Assistance Program Training for Emergency Response. The International Emergency Management and Cooperation Programs at Sandia demonstrated outstanding performance in maintaining and improving training programs, willingness to support short notice taskings, specialized training, mission support activities for major public events, and reachback assistance. Sandia met expectations in the full-scale exercise "Bridge Over Troubled Water", 4th of July Preventive Radiological Nuclear Detection activities in Albuquerque, Los Alamos Salt Crystal response in July 2014, support to the Consequence Management Program coordinating the Federal Radiological Monitoring and Assessment Center (FRMAC) Assessment Manual with the Operational Guidelines, delivery of Turbo FRMAC training at this year's High Performance Conference, Vibrant Response Exercise, and provided the Stabilization Operations Program technical, training, and logistic support for nine training sessions and three city maintenance events.

Sandia continued to exceed expectations through its support to multiple government agencies, providing advanced solutions to defend against national security threats. Sandia exceeded expectations by developing, demonstrating, and fielding technology supporting NNSA Interagency Work (IAW) activities. Examples of this work and activities include: 1) developed and supported advanced radar technology to detect Improvised Explosive Devices, which has reduced U.S. and Coalition Forces in-theater threats and casualties (Secretary's Achievement Award Winner); 2) supported successful Missile Defense Agency mission intercept exercises, such as the kinetic "hit to kill "intercept that will help improve the reliability and performance of the Ballistic Missile Defense

System; 3) continued design, development, analysis, test, and fielding of various systems and technologies that enhance situational awareness, in order to provide decision makers with timely and accurate information; 4) continued development and application of a suite of software tools to perform global life cycle cost, reliability, security, and sustainability studies allowing the DoD to make informed investment decisions; 5) continued to advance technology and systems such as the Electromagnetic Rail Gun, High Power Microwave, and Radio Frequency to counter national security threats; 6) continued to support the over one-million fielded cryptographic processor units designed by Sandia for the military GPS receiver and will modernize the system for the next generation of military receivers; 7) continued to support DoD Air Forces Europe by developing and deploying new technology that ensures a balanced and effective security system using Joint Conflict and Tactical Simulation providing nuclear surety; 8) designed and implemented energy architecture which reduced energy costs, fuel consumption, sustained energy and ensured energy reliability for base operations in Theater; 9) led and represented the United States in a multi-nation severe accident benchmarking exercise for Fukushima; and 10) developed modelling capabilities which have been used in support of counter terrorism and national security.

Many of Sandia's IAW projects involve multiple internal and external disciplines and organizations including both U.S. and foreign entities. These complex arrangements require continual coordination and communication among various levels of leadership. This high level of coordination was further demonstrated by the Sandia-developed systems-engineering capability for conducting complex, state-of-art programs that require Sandia to integrate new or existing technology in the development of a system(s) that meets sponsor/user needs. Additionally, Sandia continued to be resourceful in leveraging investments involving Laboratory Directed Research and Development, Nonnuclear Proliferation, Nuclear Weapons, and IAW in order to sustain and enhance critical NNSA capabilities supporting the national security mission.

Due to the serious nature of the unintended detonation at Site 9920 in December 2013, Sandia paused explosive operations. Sandia was very slow to clearly communicate to NNSA the overall programmatic, schedule, cost, and mission impacts from the explosives pause. There was also a lack of clarity and questions within Sandia's Program Management Units (PMUs) and with the NNSA concerning the timetable and path forward for resumption of operations. Sandia's mission impact list, provided shortly after the end of FY 2014, was not complete and did not effectively address the significance and "cost" of lost project opportunities that Sandia chose not to pursue due to the explosive pause, possibly losing other opportunities to reduce national security risks. However, a final list provided later reflected clear programmatic impacts to at least 42 projects, including delays of up to 9 months or more, cancellations, renegotiated work scope, and cost increases. Impacts included a delay in a key test for NA-80 and a test schedule adjustment for NA-20 with explosive work moved to another site. Additionally, the Army's Advanced Hypersonic Weapon was terminated shortly after lift-off at the Kodiak Launch Center after experiencing an unexpected event. The cause of the anomaly is still under investigation, which is being led by the DoD. Communication problems regarding mission impact, similar to the Site 9920 explosive incident, have resulted.

Sandia exceeded expectations by working with interagency strategic sponsors to re-scope and refine projects, program requirements, and expectations in order to adapt to budget challenges encountered during the first half of the fiscal year, and anticipated FY 2015 budget challenges. Despite these challenges, IAW customer satisfaction and demand for Sandia products and services was validated by the exceptional ratings of the Sandia Corporate Satisfaction survey and the FY 2014 revenue, which

exceeded the revenue from previous years. Sandia developed a revenue projection analysis tool to support decisions associated with lab sizing, workforce planning, fund type budget authority, and overhead rate management. The automated projection process increased product quality by extracting information from corporate databases eliminating keying, and formatting errors, and reduced process timelines from approximately 80 hours to less than an hour. Sandia conducted a "Life of an Interagency Agreement at Sandia National Laboratories" presentation to over 100 people, improving the understanding and processing of interagency agreements. Sandia is exceeding IAW negotiated programmatic and technical expectations, and has implemented oversight, controls, and processes to monitor project execution.

With respect to the IAW portfolio, Sandia has been working on improving transparency, but continues to have gaps in Management Review 1 &2 notifications, customer project review notifications, SharePoint site access containing IAW project status and assurance information, impact of IAW projects, and documentation of project performance. A renewed commitment to transparency and partnering is needed for IAW at all levels and by all PMUs.

SSO 2.1: Sandia exceeded expectations in meeting schedule and performance for the Space Nuclear Detonation Detection (SNDD) mission. Sandia achieved ASC9100 recertification for their SNDD program, which improved rigor in the program, ensuring performance. Sandia also completed all interim milestones. Sandia was able to purchase parts for the remaining Global Positioning System (GPS) Global Burst Detector (GBD) III 1-8 systems, and will be able to shorten the production schedules for the remaining 4-8 units in the out years which allows NNSA and the Air Force more flexibility in the schedule. Sandia continued to make progress in the GBDIII – Prime design. For the complementary work Sandia does for the Air Force, Sandia completed the Air Force Test Readiness Review for the Integrated Correlation and Display System, which is used for mobile mission processing of above ground nuclear detonations in the earth's atmosphere and in space.

SSO 2.2: Sandia provided requested planning and execution assets for the 2014 DOE Nuclear Weapon Accident/Incident Exercise (NUWAIX14).

SSO 2.3: Sandia demonstrated excellent performance proactively contributing to the tri-lab Nuclear Counter Terrorism (NCT) High Explosives and Nuclear Materials roadmaps that are being used to guide national programs with special recognition for hosting the interagency Joint Disablement Campaign meeting. International support of the NA-80 mission was also well coordinated and executed with special recognition for execution of the Tier Threat Model Archives Validation (TTMA-V) Type 5 test at Thunder Range, a milestone experiment in the ongoing effort to predictively model disablement actions. Additionally, special recognition is given to Sandia for participation in Rodeo Moment, a large-scale proof-of-concept experiment in support of standoff disablement efforts, as well as supporting Block 8, a render safe training course for emergency responders. A Sandia-hosted, NNSA intra-office sponsored international meeting was changed from a classified engagement to an unclassified one without notifying all sponsors of the event, resulting in significant difficulties. Sandia provided excellent performance and response ahead of schedule for almost all expected research on NCT's "task list" items.

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

Summary

Excellent

Overall, Sandia exceeded expectations in this performance objective as evidenced by execution of research strategies and capability investments, numerous technology advances, science and engineering breakthroughs, and impactful mission results. The Laboratories' ST&E base has been further strengthened to ensure science-based nuclear stockpile stewardship and to provide the technical basis for the annual stockpile assessment. Sandia's unique mission responsibilities in the nuclear weapons program have prompted revolutionary ST&E approaches to address stockpile stewardship challenges, and Sandia is ensuring investments in research are transformative, innovative, leading edge, and of high quality. Sandia has formed twelve Research Challenge (RC) Areas focused on existing and anticipated national security needs that position Sandia to respond to emerging threats. This has brought focused attention amongst the Sandia research community to synergistically work on the highest priority science and engineering challenges. Sandia is intentionally assuring that all ST&E investments are driven by national security strategic goals and objectives, with strong relevance to mission needs, focus on quality science and engineering, while providing impactful results. Moreover, Sandia maturation of core competencies is demonstrated by science-based Research Foundation (RF) areas that continue to provide the underpinning of essential science and engineering competencies to enable mission success across all mission areas. Both RFs and RCs are clearly aligned with DOE/NNSA strategic goals and objectives and help to serve all mission areas. Sandia has balanced these research investments while successfully transitioning technologies to other government agencies and industry.

Sandia exceeded expectations in implementing its laboratory research strategy. The research strategy clearly aligns discretionary investments [e.g., Laboratory Directed Research and Development (LDRD), RFs, RCs, and Technology Transfer] with the research strategy and directly supports DOE/NNSA priorities. This strategy was demonstrated through increased and effective laboratory all-hands meetings that resulted in the identification of technical subject matter experts across the laboratory, the formation of RC research teams, and increased enthusiasm that resulted in better cooperation across Sandia program and line organizations to address the Laboratories' most complex science and engineering challenges. These teams have made notable progress during this period of performance. In addition, the research strategies provide the programmatic line of sight for all Sandia researchers and staff, which have increased cooperation and effectiveness across all research organizations. External peer reviews of Sandia's RFs have confirmed notable progress in the implementation of these research strategies, and very positive feedback regarding Sandia's investments in LDRD projects. The outcomes of LDRD research demonstrated significant science and engineering breakthroughs. For example, the PANTHER Grand Challenge LDRD project achieved dramatic decreases in the amount of computational time required to detect aircraft and maritime behavior outliers in large-scale databases, thereby enabling critical national security actions. LDRD is clearly improving laboratory capabilities, which helps to sustain a vibrant and skillful technical workforce. Moreover, LDRD impacts account for 26 percent of publications, 53 percent of technical advances, 46 percent of patents, 24 percent of software copyrights, 56 percent of new post docs, and 68 percent of R&D 100 awards, representing 6 percent of Sandia's total fiscal year budget.

Sandia exceeded expectations in ensuring research is relevant, enabling the national security missions, and benefitting DOE/NNSA and the nation. Sandia's leadership successfully emphasized the importance of these eight mission areas and their contribution to technical solutions with a focus on its investments in capabilities, people, infrastructure, and tools. This mission area framework provided new clarity to what Sandia has long held to be essential, specifically, that the long-term enduring health of capabilities necessary to execute the nuclear weapons mission requires broader national security work. Recent research and development impacts confirm investments made in research areas have direct benefit to various and broad national security applications. For example, Sandia developed new tools, techniques, and methodologies to better detect and respond to emerging threats, enabled by Nanodevices and Microsystems RF, such as: on-chip optical communications for high-speed computing, microsystems-enabled photovoltaics power electronics, solid-state lighting, diagnostic tools for failure analysis, and trusted electronics. Independent external advisory boards reaffirmed the relevance and impact of Sandia's research, stating "*…the work performed by Sandia is unquestionably relevant to the Labs' national security missions and of benefit to Sandia National Laboratories and the nation.*"

Sandia exceeded expectations in ensuring research is transformative, innovative, leading edge, high quality, and advances the frontiers of science and engineering. These advances were demonstrated through numerous awards and commendations that confirm Sandia's leadership in science and engineering, including three R&D 100 awards, four Federal Laboratory Consortium (FLC) awards, various high-quality publications in science journals, and numerous appointments of Sandia researchers into professional science and engineering societies, several of which are named Fellows. Sandia also implemented new Research Quality Standards that are intended to provide assurance to customers that research is of the highest integrity. Examples of exceptional research results include: 1) materials scientist analysis on the MC4146 Rolamite confirmed that the legacy component can be harvested and reused in the B61-12 LEP; 2) wind tunnel testing and analysis of a full-scale mock B61-12 uncovered a previously uncharacterized physical phenomenon that is informing the LEP design and providing additional technical basis for the current stockpile; 3) co-invented first-ever technology that uses antibodies against a pathogen to "affinity-select" vaccine candidates, enabling rapid vaccine development to counter naturally occurring/ intentionally introduced bacterial/viral pathogens; 4) Microresonator technology that increases frequency hopping rates (and reduces size and cost), enabling a new class of radios for the US military with less probability of detection/interception; and, 5) Developed a computational dynamical core code (Albany/FELIX) to simulate Greenland and Antarctic Ice Sheet evolution and contributions to global-sea-level rise, thus aiding climate change impact assessments of extreme weather.

Sandia met expectations in maintaining a healthy and vibrant research environment that enhances technical workforce competencies and research capabilities. For example, Sandia implemented an Inter-Institutional Visitor Agreement with the University of New Mexico to work on collaborative Nuclear Energy Technologies research and also improved alignment of its Campus Executive University research investments with its long-term strategic talent needs by structuring its FY 2015 "call for Campus Executive fellowships" around RCs. Sandia also took a strategic approach in an effort to improve the research environment by completing a "State of the Research Environment" report. This report assessed the condition of the research environment at Sandia and outlined key environment improvement commitments and activities. While the report assessed the research environment as good, it also identified some areas for improvement to help attract and retain staff.

Sandia exceeded expectations in performing research to accomplish the high priority, multi-year research objectives, advance ST&E, and develop technologies for the public good through technology transfer. For example, Sandia submitted 263 technical advances, filed 240 patent applications, created 87 copyright works, issued 159 government use notices, signed 64 licensing agreements, and executed 26 new Cooperative Research and Development Agreements (CRADAs) valued at nearly $50 million. Successful CRADAs with industrial partners have enabled commercialization of a small centrifugal microfluidic device to diagnose blood conditions called, "SpinDX," and development of a miniaturized device for enhanced detection of bacillus anthracis (Anthrax). The value of new CRADAs increased 200 percent over FY 2013. Sandia significantly improved the quality of intellectual property management, licensing, and CRADA processes, yielding several thousands in previously uncollected licensing and royalty revenue. Additionally, through the New Mexico Small Business Assistance Program, Sandia continued to provide important technology transfer and economic assistance to the state, with nearly 200 small businesses benefiting from such technical assistance. Sandia was awarded four regional FLC technology transfer awards and one national award for excellence in technology transfer. Sandia co-led the DOE License Administration Working Group where all DOE labs solve licensing administrative problems and identify best practices. Sandia's engagement has helped the DOE improve contractual compliance and royalty distribution and collection processes and procedures.

Sandia exceeded expectations in the pursuit and delivery of high impact work that strategically integrates with the DOE/NNSA mission and leverages, sustains and strengthens unique science and engineering capabilities, facilities and essential skills in support of future national security mission requirements. These successes were demonstrated through numerous DOE sponsored energy and science sponsored programs, for example: 1) contributions made to advance the President's Climate Action Plan by creating an innovative framework for DOE's Quadrennial Energy Review to establish and track metrics for resilient and critical infrastructures (electricity, oil, gas); 2) commendation by DoD Undersecretary for Installations and Environment identifying Sandia's Solar Glare Hazard Analysis Tool as a planning resource for mitigating glint/glare hazards from solar energy systems; 4) created the first DOE sponsored program called "Infrastructure Research and Station Technology (H2FIRST)" that addresses technical challenges associated with hydrogen refueling stations; 5) delivered critical energy security assessments and reports to DOE in support of Energy Secretary Moniz calling upon Sandia's expertise in nuclear energy sciences to lead key policy-informing studies for DOE on nuclear spent fuel and DOE high-level waste disposal options, leadership in Supercritical Carbon Dioxide Brayton Loop Cycle technology and backend of nuclear fuel/waste cycles; and, 6) addressing important climate change questions through atmospheric sciences research; and 7) provided technical support for the Waste Isolation Pilot Plant (WIPP) Technical Assessment Team following the radiological incident.

Sandia met expectations in accomplishing work within the budget profile, scope, cost, schedule, risk, and quality negotiated with the program sponsors or partners. Sandia's management assurance systems confirmed projects are being performed within scope, budget and schedule across DOE (non-NNSA programs), LDRD, Non-Federal Entities and CRADA projects.

Performance Objective 4: Operations and Infrastructure

Summary

Good

Overall, Sandia met expectations in their ability to effectively and efficiently manage the safe & secure operations of the Laboratories while maintaining an NNSA enterprise-wide focus; demonstrating accountability for mission performance and management controls; assuring mission commitments are met with high-quality products and services; and maintaining excellence as a 21st century government-owned, contractor operated facility. Sandia met the expected performance criteria and the overall technical performance requirements of the contract in the areas of operations and infrastructure. Though Sandia has made progress in the areas of assurance, work control, and transparency, continued management focus in these areas is necessary to prevent events such as the Site 9920 accident.

Overall, Sandia was challenged in meeting safety and health expectations this performance period. Management controls and oversight did not meet expectations demonstrated by the December 11, 2013, unintended initiation of a detonator at Site 9920 that caused injury to a Sandia member of the workforce, and the unauthorized technetium work in Building 823. Investigations of these events identified the need to address site-wide gaps in Work Planning and Controls (WP&C) and safety culture. The Site 9920 event prompted Sandia to pause explosives operations. In order to resume operations, an independent review team (IRT) process was established. The resumption process of the paused explosive operations greatly improved with input from NNSA. Sandia has an opportunity to institutionalize the IRT process improvements such as delineating pre- and post-start resumption conditions; observing actual work evolutions/activities; and assessing adequacy of operational requirements. By the end of the performance period, all but two departments resumed operations. The NA-1 chartered Accident Investigation Board (AIB) indicated the need for improvement of WP&C and the Safety Culture at Sandia National Laboratories. Sandia's aggressive leadership response to the AIB Report has demonstrated how seriously Sandia has viewed the accident at Site 9920. The Laboratories Director personally led small-group discussions with more than 900 members of management that then flowed out to reach all the members of the workforce. Lessons learned were shared throughout Sandia and the NNSA Enterprise. A safety culture survey by DuPont was also conducted. While Sandia captured multiple vignettes that demonstrate progress is being made in various areas necessary to improve safety, Sandia has an opportunity to objectively explain the measurements used to demonstrate the effectiveness of underlying systems deployed. Sandia must demonstrate continuous improvements in WP&C and the Safety Culture through the implementation of the "Site-Wide Strategy for Safety Improvement Actions".

Sandia's Safety and Health systems met expectations for Radiation Protection and Electrical Safety. Improvements in Industrial Hygiene were noted and validated by an external review. Total Recordable Case Rate (TRCR) and Days Away, Restricted and Transferred –Case Rate (DART-CR) are the lowest in years (1.1 TRCR and .27 DART-CR).

The level of rigor in which safety and health self-assessments were conducted is varied, and Sandia has an opportunity to improve upon its self-assessment program by defining expectations to assess Environment, Safety, and Health (ES&H) Policy Areas against contractual requirements over a defined

period of time, defining expectations for Line Organizations to be assessed (either by Policy or Line) against Sandia's ES&H Policy Areas over a defined period of time, and how lessons learned from events/incidents could be used to monitor the ongoing effectiveness of Sandia's ES&H program.

Overall, Sandia's environmental program met expectations. Sandia exceeded expectations in the management of their Long Term Stewardship program. Sandia reaffirmed their ISO 14001 certification for their Environmental Management System. Sandia also made significant progress addressing numerous storm water compliance issues, and continues to actively track and close remaining issues. Sandia's assurance processes did not provide the necessary performance information to enable Sandia to conduct a comprehensive self-assessment of all environmental permits, permit requirements and documentation. Sandia met expectations working to receive approval of the Resource Conservation and Recovery Act (RCRA) permit. Although there were three Notices of Violations, Sandia took the corrective actions to avoid additional penalties.

Overall, Sandia met expectations in accomplishing capital projects in accordance with scope, cost, and schedule baselines. Sandia exceeded expectations by completing the work on the Test Capabilities Revitalization-2 project on schedule and $4 million under budget. Sandia met expectations contributing to the delivery of the Livermore Valley Open Campus-Collaboration in Research & Engineering for Advanced Technology & Education (CREATE) Project Critical Decision-1 document to the Livermore Field Office for coordination with NNSA. Sandia met expectations on DOE-Environmental Management funded Environmental Restoration Operations Project with performance indexes SPI=0.95 and CPI=1.12. The FY 2014 DOE Office of Environmental Management Work Plan milestones (5 of 5) are considered complete. Also, Sandia adopted best project management practices for the Sandia Silicon Fabrication Revitalization tooling replacement.

Overall, Sandia exceeded expectation for managing an effective Safeguards and Security (S&S) program. In addition to meeting performance expectations for all S&S topical and sub-topical elements, the Sandia S&S program continues to provide exceptional resource planning and execution, as well as maintaining a highly self-critical assurance program that exceeds expectation for transparency, rigor and formality. Moreover, the security program achieved a number of "above baseline" accomplishments in the Security program, all designed to improve security performance and increase productivity, while enabling the mission. For example, in response to a self-identified issue, the Security Program is implementing engineered controls on Closed Areas that will assist the line organizations in verifying whether their Closed Area is in a secure or unsecure state.

Additionally, given the limited resources available to secure facilities with S&S assets, Sandia implemented the Security Interests System, a novel system that provides physical security operational analytics. The system applies real-time analytics to characterize facilities, and the associated security risk, by evaluating individual facilities based on a characterization methodology that delivers a relative facility importance, enabling the security program to apply graded security measures commensurate with the types of security interests used, stored, or processed at each
Sandia structure. The system is easily customized and structured to grow as the program's operational analytics requirements evolve. Sandia also implemented their Contract Security Management Database, a data management system that contains all records for contractor companies requiring a Facility Clearance. More importantly, the system automates Facility Clearance processing to include processes for Foreign Ownership, Control, or Influence; Key Management Personnel clearances; and Security Plans. It provides engineered controls and checks against the Oracle database for real-time

contract status. The system highlights the effectiveness of the security program's information management investments and represents a "best in class" advancement that should be shared within the National Security Enterprise as a model program. Finally, Sandia introduced several initiatives designed to promote partnerships between the security program and the workforce, to improve the security culture. Leading the initiatives is the "Security & You" program, designed to lead the transition from security compliance focus to an active mission partner focusing on mission success. Sandia also created a "brand" for Security communications along with a strong partnering theme utilized throughout their communications with the workforce. Rounding out the initiative was their quarterly "Security & You Learning Minute" for managers to share with their staff, which focuses on security-centric lessons learned.

Simultaneously executing three full-scale nuclear weapons development programs, Sandia's classified operations continue to grow. Given the increase in classified activity, Sandia continues to experience a significant number of security incidents, topping out at 190 incidents of security concern in FY 2014. Failure of the workforce to follow established Corporate Policy relative to classification reviews continues to be an S&S management concern because of the risk created when transmitting or storing the information via the unclassified network. However, Sandia's security program has initiated a number of unprecedented actions to ensure the security program is integrated in line mission work.

Developed with the intent to provide innovative solutions to security challenges, the Security Incident Advisory Panel (SIAP) unifies Sandia's security professionals and mission-centric members of the workforce (from all levels of the workforce) to review security incidents, reporting and response, associated human performance indicator factors, and causal statements to determine what changes would be most effective in reducing incidents across Sandia. The panel is chaired by Deputy Director of Safeguards and Security, and championed by the Chief Security Officer/Vice President of Infrastructure Operations. Sandia's SIAP is responsible for developing and presenting improvement related recommendations to the Security Program, line organizations, and the Chief Security Office.

Additionally, Sandia implemented the 2900/4200 Security Improvement Team, a collaborative effort designed to leverage subject matter expertise from both organizations to analyze, identify conditions, and develop actions designed to prevent recurrence of additional security incidents within Center 2900. The effort was initiated with a green-belt led activity that focuses on Center 2900 security incidents, (Category A's and B's). Included in the initiative is embedding a security expert in the organization to shadow mission-centric work performed in Center 2900 to observe mission work in the host environment, identify work practices inconsistent or incompatible with security performance and report deficiencies and suggestions for improvement. Embedding security staff also provides the security program insight and understanding of mission work. The scope of the program will be expanded to all of Division 2000 in a phased approach after the green belt learning activity is completed. Finally, the security program is expanding the scope of its integrated line assessment, instituting a more formal program to compliment the current assistance-oriented program. Under the new program, identified deficiencies are managed under rigorous resolution of findings protocols by the Division 4000 Assurance Department, rather than on the spot corrections, thereby providing consistent causal analysis and trending. The Division 4000 Assurance Department utilizes a weighted random generator that gives consideration to risk factors of security assets, ensuring higher risk areas are evaluated more frequently. Finally, Sandia's protective force program performed exceptionally in a number of high profile events at Sandia facilities, including the emergency landing of a private aircraft inside the Limited Area at Sandia National Laboratories/California, reflecting

positively on both Sandia's security program and the NNSA.

Overall, Sandia delivered efficient, effective and secure networks and information systems and made progress in reconstituting 2013 sequestration losses through recovery of Cyber Security Work for Others costs. A continued emphasis on expanding Cyber Security assurance activities in FY 2015 is needed to meet federal, DOE and NNSA objectives for continuous monitoring of security controls. Sandia's timely response to the Heartbleed vulnerability minimized the operational impact of one of the most significant and widespread vulnerabilities to surface in years. Sandia is commended for their efforts to share information and tools to counter the vulnerability helped ensure the security of all DOE and NNSA sites. Sandia Cyber Security assurance activities identified gaps in telecommunications security performance at three out of four remote sites assessed this year, which demonstrates both the effectiveness of these assessments in identifying problems and potentially declining line performance at remote sites between Cyber Security assessment cycles. The NNSA observed maturation in the Sandia Field Intelligence Element's telecommunications security oversight this year, evidenced by their execution of a complete program review of all TEMPEST areas.

Sandia exceeded expectations in energy sustainability goal progress. Sandia's favorable performance in energy intensity reduction, water intensity, fleet greenhouse gas reduction, Energy Independence Security Act Section 432 energy and water audits, renewable energy, and potable water intensity reduction offsets Sandia's slightly unfavorable performance in High Performance Sustainable Buildings (HSPB) and metering. Sandia exceeded expectations by being responsive to several NNSA requests that are expected to provide continuous improvement across the Enterprise, including: 1) overview on the Data Center metric and facility tour; 2) demonstration of validation process for buildings meeting the HPSB Guiding Principles; 3) hosting the NNSA Sustainability Summit and sharing lessons learned; and 4) demonstration of the Institutional Transformation (IX) Modeling Program for energy conservation (campus approach) prior to the Sustainability Summit.

Sandia met expectations in maintaining, operating, and modernizing DOE/NNSA facilities, infrastructure, and equipment in an effective, energy efficient manner. Sandia supported the Laboratory Operating Board Facility & Infrastructure Assessment Initiative by completing the condition assessment data collection and reporting the results to NNSA for Phase 1 and 2. Sandia continues to have a presence on the Facilities Disposition Working Group and responds in a timely fashion to all information requests, including providing risk information and infrastructure videos. Sandia has acknowledged issues in alignment of strategic facility planning, and is improving their processes to provide a clear picture of future facility needs.

Sandia delivered efficient, effective and responsive business operations and systems that met expectations. This performance was demonstrated by holding Calendar Year 2014 pre-Medicare retiree medical premiums flat and employee premiums to a 4 percent increase versus a 7.2 percent national increase by advancing a comprehensive wellness management strategy focused on managing health risk. Only 5.3 percent of the population was classified as high risk, versus a benchmark of 12.3 percent, resulting in lower healthcare costs. Sandia successfully recruited and maintained the talent necessary to execute the mission and held voluntary attrition at 2.2 percent. An area of concern within Human Resources is the results of Sandia's Benefits Value Study (Ben-Val) which showed a weighted average for the site at 2.7 percent above the threshold required by DOE. Sandia needs to improve communications and transparency with NNSA when requesting approvals required by contract, and provide sufficient fact-based substantiation for proposed actions, particularly for those actions that

bring precedence setting business decisions with potential Enterprise-wide implications.

Sandia effectively managed a $2.7 billion budget during a difficult period of budget uncertainty. Sandia received a Good rating from the Office of Field Financial Management for all four quarters during FY 2014 and Sandia has improved transparency across the board with two noteworthy areas being the impact of Cost Accounting changes and indirect rate variance. There are areas where transparency could improve, including the decision process for sizing of the Program Management (PM) and Division Support (DS) pools, and the full disclosure of all elements within the Statement of Cost Incurred and Claimed. Opportunities continue to exist for reductions in PM and DS indirect spending that would create more available funds to meet mission objectives.

Sandia achieved an Excellent/Green rating on all four personal property measures and worked to exceed Supply Chain Management Center expectations for FY 2014. Sandia deployed services and resources to acquire, manage, and dispose of materials for mission delivery success. Although Sandia met or exceeded four out of five of its lower level socioeconomic goals, Sandia did not meet its overall small business goal. The total contract dollar amount and percentage of total dollars spent on contracts with small businesses has significantly declined this year as compared to the past five years. Sandia's subcontract management weaknesses were evident in the areas of Electronic Subcontracting Reporting System administration and reporting, outdated policies and procedures, and have yet to provide full transparency into how all contractual requirements are being met.

Sandia exceeded expectations in delivering efficient and effective management of legal risk and incorporation of best legal practices, as evidenced by the following: 1) effective implementation of litigation lessons learned, providing training designed to enable Sandia managers and supervisors to recognize and mitigate legal risk inherent in their interactions with the workforce, active engagement of in-house counsel in internal committees and councils, and judicious use of outside counsel for issues where in-house expertise is unavailable, all of which has contributed to a sustained low level of litigation; 2) continued excellent support to the Department of Justice in the Bayou Choctaw condemnation litigation; and 3) implementation of the Bridgeway eCounsel Legal Matter Management system. Sandia met expectations as evidenced by the following: 1) effective management of preparations for the RCRA permit hearing; 2) management of outside counsel and invoice review per requirements of 10 CFR Part 719 and the Sandia Legal Management Plan; 3) addressing resource gaps in the Legal Division; 4) continued support of DOE/NNSA in US v. Huang post-plea hearing activity; and 5) settlement of a federal court Equal Pay Act case. Sandia is below expectations as evidenced by the following: 1) Sandia declined to provide outside counsel's work product to NNSA, impeding the NNSA's ability to conduct effective oversight of legal management, in non-compliance with Clause I- 73, Access to and Ownership of Records, calling into question Sandia's commitment to transparency; 2) the increase in the number of administrative agency complaints alleging discrimination is of concern, and warrants further analysis and implementation of legal risk mitigation strategies; 3) Sandia's docketing system for patent prosecution is ineffective, and must be consolidated and centralized to ensure filing and payment deadlines are met and sufficient time is allowed for obtaining necessary approvals; and 4) communication, coordination, and cooperation between Org. 11500 and NNSA Patent Counsel is less than effective and must be improved to ensure successful execution of Sandia's Intellectual Property strategy in support of the technology transfer mission.

SSO 4.1: Sandia fell short of demonstrating measurable corporate improvement in work planning and controls across the Laboratories from the application of Engineered Safety. While line organizations

are engaging workers, conducting peer reviews on the safety cases, and making improvements to the WP&C Repository, continued senior management attention is vital to: ensure consistent understanding of expectations; share good practices among line organizations; develop means to measure WP&C improvements; sustain and monitor safety cases; and institutionalize "Management of Change" concept for safety cases.

SSO 4.2: Sandia significantly exceeded expectations in improved life-cycle management, and has significantly reduced chemical, hazardous, and nuclear material inventories. Sandia completed the disposition of 36 Sprint Rocket motors, significantly reduced the overall quantity of explosives in Sandia's inventory, and reduced a significant amount of its chemical inventory. Sandia's planned continued improvements will ensure the effectiveness of the life-cycle management of materials.

Performance Objective 5: Leadership

Summary

Overall, Sandia provided very good leadership in supporting the direction of the DOE/NNSA mission. When challenges arose, Sandia leadership showed great responsiveness and engagement and used issues as an opportunity for continuous improvement both at Sandia National Laboratories and across the enterprise. Sandia continuously took leadership roles on efforts to drive improvements and coordination across the Nuclear Security Enterprise and DOE/NNSA, and showed a willingness to take on challenging tasks in support of the national security mission. Sandia has built strong working relationships and partnerships across DOE/NNSA that enables success. However, challenges presented during FY 2014 have strained the relationship and put at risk the efficiency and effectiveness of the endeavor.

Very Good

Sandia demonstrated strong leadership and a thorough understanding of the DOE/NNSA strategic vision through the development and deployment of its Strategic Plan for the next five years that builds off three key characteristics: nuclear weapon capabilities, national security impact, and strategic value to the nation. It is evident through this plan and through day-to-day interactions with the Laboratories, Sandia is building upon the foundation of the nuclear weapons program to support the broader national security mission. Sandia also worked closely and in an integrated manner with Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and a myriad of other federal agencies to provide advice and support on a number of challenges and opportunities in the national security arena.

Sandia made progress in promoting a culture of critical self-assessment, and has worked closely with NNSA to improve transparency and collaboration using the Site 9920 event as a catalyst. Sandia needs to ensure transparency is institutionalized across the Laboratories internally and with the DOE/NNSA. This transparency is particularly important for reimbursable work that involves numerous non-traditional, non-DOE customers and a broad spectrum of work representing a significant and growing portion of Sandia's portfolio. Sandia continued to drive improvement across the Laboratories with activities such as Community of Practice continuous learning events, deployment of performance monitoring activities and scorecards, improved training, quality reviews of self-assessments, and more critical feedback through self-assessment activities such as quality maturity assurance reviews. Sandia demonstrated best practices in self-assessment such as security, telecommunications, and nuclear weapons quality. For example, Sandia implemented a new Nuclear Weapons quality assurance process to determine trends and corporate issues; however, other areas, such as ES&H require attention to continue progressing.

For assurance to continue to mature to full effectiveness, all entities need to develop and sustain focus on preventive/predictive actions versus reactive responses. As was evidenced in the Site 9920 event, improvement in contractor assurance and self-assessments by line organizations to assure work is being performed consistent with requirements and by policy areas in setting requirements, supporting the line, and monitoring policy implementation is needed. With NNSA prompting, Sandia, for the first time, tracked the mission impact from the Site 9920 event and noted that at least 42 programs and projects were impacted. Sandia should utilize this information effectively to institutionalize a process

for tracking and reporting compensatory measures and the mission impact of notable abnormal events like the Site 9920 and Advanced Hypersonic Weapon mishaps.

While the event at Site 9920 revealed underlying issues at Sandia, the response by senior management showed the seriousness with which Sandia approached the accident and a commitment at the highest levels of Sandia leadership to address the performance concerns. Recognizing that the root causes of the event likely extended beyond the specific incident, Sandia started a process to address not only the specific causal factors but to improve the overall work planning and control across the laboratory. Sandia has worked across the DOE/NNSA complex to share findings and lessons learned from this event. Additionally, Sandia exhibited excellent coordination and partnership with the NNSA in the development of an integrated plan to improve the safety culture across the site.

Accomplishment of the mission of the Nuclear Weapons Complex depends upon the mutual commitment of NNSA and Sandia to developing and sustaining highly effective working relationship at all organizational levels. Challenges presented during FY 2014 have strained the relationship and put at risk the efficiency and effectiveness of the endeavor. One such challenge: the concerns regarding allegations of Sandia's involvement in impermissibly attempting to influence certain federal transactions and in conducting lobbying activities are so serious that both the DOE Inspector General and the U.S. Department of Justice are currently investigating the situation. NNSA needs a partner that is fully committed to the requirement "to maintain full and open communication at all times, and on all issues affecting contract performance, during the term of this Contract." Sandia's commitment to the positive and cooperative relationship contemplated by the contract has been modest, and falls short of what is expected of a Federally Funded Research and Development Center (FFRDC): "The FFRDC is required to conduct its business in a manner befitting its special relationship with the Government, to operate in the public interest with objectivity and independence, to be free from organizational conflicts of interest, and to have full disclosure of its affairs to the sponsoring agency.". Sandia's initial refusal and extreme reluctance to provide an investigation report to NNSA is one example that calls into question Sandia leadership's commitment to transparency and the obligation as an FFRDC to full disclosure of its affairs to the NNSA.

Sandia has continued to successfully leverage Lockheed Martin Corporation resources and expertise to improve performance results, incorporate best practices, and drive efficiencies across the Laboratories through their use of corporate EVMS and business processes.

Sandia exceeded expectations in its efforts to develop, integrate, and implement enterprise solutions that greatly improved enterprise-wide efficiencies. For example, Sandia provided key technical support to the WIPP facility following the detection of contamination at that facility and provided quick turn-around on contingency activities in support of staging LANL containers as a result of the shutdown of operations at the WIPP facility. Sandia also spearheaded the reutilization of a one million dollar inventory of DOE Science SF6 gas. The National Environmental Policy Act-approved project reduced DOE risks by removing the gas from an aging storage system in a populated area.
Additionally, Sandia was the first site, and so far, the only site, to implement NNSA SD G 1027. This supplemental directive allowed the use of more accurate and realistic values to determine nuclear facility hazard categorization, and was crucial to reducing Sandia's "nuclear footprint" - resulting in further risk reduction and the downgrading of two nuclear facilities at Sandia National Laboratories. Sandia's approach is a model for other sites to adopt.

Sandia teamed with the KCP to develop the Joint Sandia National Laboratories/KCP External Production Transition Plan to transfer production agency mission for four types of externally produced components from Sandia responsibility to KCP responsibility. The plan showed transition costs will be managed within the total approved budget and will not impact program deliverables. This collaborative effort demonstrated excellent partnership.

Sandia leadership continued to provide effective program management of the safeguards and security program. Consistent with the last several years' performance, the program executed well under the established budget execution target, by aggressively looking for efficiencies, and pursuing program investment opportunities with the greatest return on investment. Sandia's timely response to the Heartbleed vulnerability minimized the operational impact of one of the most significant and widespread vulnerabilities to surface in years and their efforts to share information and tools to counter the vulnerability helped ensure the security of all DOE and NNSA sites.

Sandia leadership continued to exhibit professional excellence while showing flexibility and resiliency in the face of new and challenging scenarios and using them as opportunities to grow. Sandia leadership effectively worked through a myriad of drills associated with the lapse of appropriations, continuing resolution, and requirements related to the sequestration. Sandia executive leadership has continued to take on numerous leadership roles across the DOE/NNSA Enterprise, and demonstrated a great willingness to work above and beyond to support the national security enterprise. As an example, Sandia successfully demonstrated leadership in supporting the NNSA Laboratory Operating Board initiative on facilities and infrastructure assessment by sharing lessons learned with the NSE during progress reviews.