National Nuclear Security Administration

NATIONAL NUCLEAR SECURITY ADMINISTRATION

FISCAL YEAR 2011
PERFORMANCE EVALUATION REPORT

OF

SANDIA CORPORATION

FOR THE MANAGEMENT AND OPERATION OF SANDIA NATIONAL LABORATORIES

Contract No. DE-AC04-94AL85000

This page is intentionally blank.

NNSA FISCAL YEAR 2011 PERFORMANCE EVALUATION REPORT OF SANDIA NATIONAL LABORATORIES

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This Performance Evaluation Report (PER) represents the National Nuclear Security Administration's (NNSA) evaluation of Sandia Corporation's (Sandia) performance against the Performance Objectives (PO) and Performance Based Incentives (PBI) defined in the Fiscal Year 2011 (FY2011) Sandia Performance Evaluation Plan (PEP) Revision 4 under Contract Number DE-AC04-94AL85000.

Structure and Organization:
The FY2011 PEP is organized into three areas: Mission POs, Mission Support POs, and PBIs. Mission POs document the objectives and evaluation criteria of Sandia's programmatic work, and describe the performance expectations to execute the mission of Sandia National Laboratories (SNL); ensuring performance is conducted in a safe, secure, and environmentally sound manner. These POs include both non-nuclear and nuclear mission activities. Mission Support POs document the objectives and evaluation criteria of critical operations and infrastructure to support the mission and describe the performance expectations to support the mission of the SNL. PBIs consist of measures and targets tied to incentive fee. PBIs incentivize the achievement of stretch goals, new initiatives, problem areas, and multi-site performance.

Consistent with the PEP issued pursuant to the contract, Sandia's performance was assessed against the applicable evaluation criteria using a variety of different approaches including, but not limited to, peer review, external reviews, achievement of milestones relevant to targets, customer feedback, and program reviews. The overall FY2011 assessment ratings will be communicated to Sandia in accordance with the performance assessment schedule as outlined in Special Provision H-10, "Performance Based Management."

Overall Performance Summary:
Sandia's overall performance in Mission is rated as "Very Good" for FY2011. Sandia continues to deliver technology solutions for a broad spectrum of 21st century global and national security challenges, including nuclear weapons, nonproliferation, defense systems and assessments, homeland security and defense, energy and climate, and infrastructure security programs. Sandia's sustainment of unique capabilities includes extreme environment testing, modeling and simulation, warhead systems engineering, and integration for the U.S. nuclear deterrent and defense nuclear nonproliferation missions. These national security capabilities are enabled through scientific and engineering competencies fostered by strategic investments in world-class science that push the frontiers of science to underpin and enable technological development in anticipation of future emerging threats. Moreover, Sandia successfully worked to build strategic partnerships with other federal agencies, industry and academia that have expanded beyond the context of technology transfer. Additionally, Sandia's progress to establish Management Assurance Systems across all line organizations and strategic management units provided additional transparency into all mission areas, thereby further establishing mission support as an integral element of mission execution. However, there are areas of concern to include the W76-1 Life Extension Program Code Blue resulting in impacts within and outside of NNSA, and the B61 LEP Weapon Design Cost Report for Options 2A-2D did not meet expectations as it exceeded available funding, and did not align with the available budget. This funding disconnect required additional strategic discussions with the Department of Defense and other external stakeholders and should have been formally communicated much earlier to NA-10, with a set of alternatives, to allow NNSA to address their options. Additionally, Sandia has several continuing quality concerns (e.g., Code Blues, Supplier Management, and Prevention of Production Defects) that require additional improvements to the Sandia Quality Management System. The systemic improvements will need to be identified soon, and causal analysis applied, so that corrective action(s) are institutionalized in order to prevent future issues. Lastly, Sandia safety and security performance needs to improve across all mission areas, and all line organizations need to be held accountable for safe, secure, and environmentally sound operations across the laboratory.

Sandia's overall performance in Operations is rated as "Excellent" for FY2011. Sandia maintained effective and efficient Environment, Safety and Health (ES&H), Integrated Safeguards & Security (IS&S), and Facilities Operations, in support of successful accomplishment of the mission. Sandia provided prompt response to the

state of emergency natural gas curtailment and support to the Fukushima Reactor Response. Sandia earned multiple environmental awards. Sandia successfully transitioned the security responsibilities at the Tonopah Test Range and destroyed thousands of unneeded electronic media. Sandia successfully completed the Heating System Modernization and Ion Beam Laboratory ahead of schedule and under budget (total savings $9.4M). Sandia also completed all fieldwork related to groundwater well installations and completed the Mixed Waste Landfill regulatory closure actions under limited funding. Sandia completed all packaging activities for the removal of Contact Handled and Remote Handled transuranic waste, meeting commitments in the Site Treatment Plan milestone with the State of New Mexico, and removing/disposing of over 60,000 pounds of energetic/explosive materials. Although Sandia's overall performance is rated as "Excellent," there was an operational event with programmatic impact. While there were no worker injuries, there was a serious accident at Building 6530, Plasma Materials Test Facility involving a rapid energy release caused by a lithium reaction. This was a near miss for a serious injury or fatality. Additionally, an operational improvement activity identified in FY2011 is the need for Sandia to team with line organizations to identify measures of line implementation of ES&H requirements.

Sandia's overall performance in Business & Institutional Management is rated as "Very Good" for FY2011. Sound business practices are integrated into all work activities throughout Sandia to maintain effective and efficient operations and support mission objectives. Sandia significantly exceeded the cost savings goal of $15M through validated institutional process improvements across all lines of business and demonstrated enterprise-wide leadership with the implementation of initiatives in Human Resources (HR), Information Technology (IT), and Cyber Security. Sandia's HR team implemented a consumer driven healthcare across the SNL and successfully negotiated this benefit into new collective bargaining agreements with local unions. In IT, Sandia earned the Energy Star energy savings in high performance computing and Sandia Cyber Security professionals assisted across DOE and NNSA in major incident forensic analysis and response. Sandia's Fleet Management Program was recognized for outstanding performance as evidenced by their third recognition as one of "The 100 Best Fleets in North America". Additionally, Sandia supply chain professionals have been responsive to identified issues throughout the year although additional work remains in the functional areas of Purchase Cards and federal contract coordination.

Sandia management drove a comprehensive self-assessment of contractor assurance implementation and effectiveness in preparation for Contractor Assurance System Affirmation. This effort identified the need to better articulate and effectively communicate contractor assurance expectations and the risk management process, including how it correlates to self-assessments, performance measures, and corrective actions. It is noteworthy that Sandia Executive Management is fully engaged to drive assurance throughout Sandia to include setting expectations and articulating how the assurance system should be used to more effectively accomplish the Mission. Although we expect to see measurable assurance system improvement as a result of management engagement and these activities, the activities were implemented only recently; therefore, overall improvement to the assurance system was not demonstrated during this rating period, which was the expectation agreed to in the PEP.

ADJECTIVAL RATING SCALE

Adjectival Rating	Adjectival Rating Common Definition	Award Fee Pool Available to be Earned
Excellent	Contractor exceeded substantially all of the significant performance criteria and has met overall cost, schedule, and technical performance requirements as defined and measured against the criteria for the evaluation period.	91 – 100%
Very Good	Contractor exceeded many of the significant performance criteria, has met overall cost, schedule, and technical performance requirements as defined, and measured against the criteria the criteria for the evaluation period.	76 – 90%
Good	Contractor exceeded some of the significant performance criteria and has met overall cost, schedule, and technical performance requirements and has measured against the criteria for the evaluation period.	51% – 75%
Satisfactory	Contractor met overall cost, schedule and technical performance as defined and measured against the criteria for the evaluation period.	No Greater than 50%
Unsatisfactory	Contractor failed to meet overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria for the evaluation period.	0%

Note: For the purposes of overall laboratory performance evaluation, POs will be considered collectively. The expected minimum level of performance (gateway) on POs to be eligible to earn incentive fee is the "Very Good" adjectival rating level.

RATING OF FY2011 PERFORMANCE	RATING
Programs/Mission	
PO-1: National Security Mission - Nuclear Weapons	Very Good
PO-2: National Security Mission - NonNuclear Weapons	Excellent
PO-3: Science, Technology and Engineering	Excellent
PBI-1: Nuclear Weapon Stretch Goals	Excellent
PBI-2: Nuclear Weapon Quality Assurance - Stretch	Good
PBI-5: Multi-Site (NA-10)	Very Good
Operations	
PO-4: Operations	Excellent
PBI-3: Removal of Materials from Sandia National Laboratories - Stretch	Excellent
Business and Institutional Management	
PO-5: Business Management	Excellent
PO-6: Corporate Governance	Good
PBI-4: Mission Support Efficiencies	Excellent
Overall Rating:	Very Good
Earned Incentive Fee Awarded:	$8,466,050 (85.3%)
Recommended Total Earned Fee (Fixed and At-Risk) Awarded:	$27,003,639 (94.9%)

PERFORMANCE EVALUATION PLAN (PEP) ELEMENTS

PO-1: National Security Mission – Nuclear Weapons

Sandia will diligently and successfully execute mission work based on the programmatic requirements established by customers in alignment with Multi-Year Performance Expectations as measured through the line organizations. This Objective includes Critical Performance Measures and other evidence contributing to the success of the Nuclear Weapons (NW) mission.

Adjectival Rating: Very Good

Summary of Performance

The National Security Mission includes a wide spectrum of activities across NA-10. Sandia completed 116 of 118 Level II milestones. The Science Campaign (SC) and the Inertial Confinement Fusion (ICF) Programs successfully and safely completed several complex and challenging plutonium (Pu) and uranium (U) shots, and continued to increase the capabilities of the Z-Machine in support of future tests at higher currents and pressures. Sandia supported the Barolo subcritical experiments with Cygnus radiography and supported the National Ignition Facility (NIF) nuclear and x-ray diagnostics. Despite severe funding shortfalls, the Advanced Simulation and Computing (ASC) program maintained Sensitive Compartmented Information computing infrastructure and provided improvements in customer/analyst usability of computer programs as well as coupling of computer programs.

The Readiness in Technical Base and Facilities (RTBF) Program successfully and safely completed all mission requirements. The largest single project provided ongoing development of compound semiconductor technologies for the Qualification Alternatives to the Sandia Pulsed Reactor (QASPR) Program. The Engineering Campaigns (EC) program provided critical Directed Stockpile Work (DSW) support in FY2011 including supporting ASC model validation and verification activities. The EC Program efforts supported the B61 Life Extension Program (LEP) development, qualification testing for W76-1 production, and radiation effect testing on Heterojunction Bipolar Transistors (HBTs). Sandia also supported DSW surveillance requirements documents, Limited Life Component Exchanges (LLCE) deliveries, and Integrated Weapons Evaluation Team (IWET) Plan formulation and maintenance for all weapon systems. Joint Test Assembly (JTA) modernization activities gained efficiencies using a new business model for the B61 JTA modernization. Lastly, Sandia successfully completed 15 Phase Gates for six weapon systems (B61, B83, W78, W80, W87, and W88).

Although Sandia demonstrated overall success in National Security Mission – NW assignments, two milestones were not completed. The two incomplete milestones were for the B61-11 Cable Pull Down (CPD) test at the Aerial Cable Facility (ACF) and failure to complete testing of the W87 Small Ferroelectric Neutron Generator (SFENG). Although it did not cause any milestones to be missed, the most substantial issue was Division 1000 missed the delivery of the W76-1 MC4682 Capacitors. This caused the production of Arming, Fuzing and Firing (AF&F) to be significantly reduced in early August at the Kansas City Plant (KCP) to ensure that the KCP production would not have to be completely stopped until capacitors are provided in January 2012. Additionally, the B61 LEP did not meet expectations as noted in the Opportunity for Improvement. A risk-based effort is needed with the B61 cost estimates to help identify and possibly control these potential extra costs (contingencies) and thus allow the B61 costs to be better characterized with manageable risks factored into the cost estimates.

Significant Accomplishments

ICF for NA-112 and SC for NA-113: Sandia received recognition by NA-10, as well as commendation from the Senate Energy and Water Subcommittee on the completion of Pu Shots at the Z-Machine, with the new data obtained described as "one of the most valuable contributions to the stockpile stewardship program". Sandia developed and implemented new capabilities for classified materials property measurements. Z-Machine data and complex molecular dynamics simulations demonstrated the need to replace existing Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) models in weapons design codes for three materials. Load currents as high as 27 Mega Amps (MA) were achieved on radiation-producing shots and

Significant Accomplishments

routine operations were achieved at 85-kV Marx charge. Additionally, Sandia assessed the efficacy of a new containment chamber design in support of obtaining data at currents significantly higher (15.7 MA) than the three 11-MA Pu shots in FY2011.

Sandia participated in the preparation and execution of the two Barolo subcritical experiments at the Nevada National Security Site (NNSS) by optimizing and maintaining the readiness of the Cygnus radiographic machine and the velocity interferometer. The diagnostics provided full recovery of the Pu data on the December 1, 2010 and February 2, 2011 shots. Sandia's ICF program also provided support for the National Ignition Campaign (NIC) Target Physics by participating in target tuning experiments on NIF, performing convergent ablation design simulations, conducting convergent ablation experiments on NIF, and conducting simulations of instabilities and mix in NIC ignition capsules. Sandia also supported the NIC Diagnostics/Systems Engineering by designing and preparing to install two new diagnostics on NIF; (1) the Streaked Polar Instrumentation for Diagnosing Energetic Radiation and (2) the Radiochemistry Analysis of Gaseous Samples, as well as by implementation of the "NAD20" diagnostic at NIF.

ASC for NA-114: The ASC program provided improvements in customer/analyst usability of computer programs and coupling of computer programs, which allowed large-scale analysis of weapon systems and improvements in the verification methodology (i.e. confidence) of the computer simulations. Sandia successfully deployed and utilized the advanced capabilities in support of LEP design activities and the Annual Assessment Report (AAR). The Sandia Neutron Gamma Energy Transport (NuGET) development team completed the implementation of a Prompt-Delayed radiation environment capability, which provides NA-10 analysts with the ability to assess vulnerabilities. Next generation compact models for circuit simulation were developed in support of QASPR for the W88 Alteration (ALT), and numerous ASC efforts supported the B61 LEP.

RTBF for NA-16: The Major Environmental Test received approval on September 7, 2011, of Critical Decision-4 (CD-4) for the Ion Beam Laboratory (IBL) construction project. The project was completed six months ahead of schedule and $5.579M under budget. The Saturn accelerator fired its 4000th shot and HERMES III accelerator fired its 9000th shot this year. These facilities, which came on line in 1987 and 1988, respectively, were originally designed to provide five years of operation. The Annular Core Research Reactor fired its 10,000th shot since it began operations in 1979. Lastly, manufacturing for Micro-Electro-Mechanical systems was recognized with a Research and Development (R&D) 100 award for Microresonator Filters and Frequency References designed and fabricated at Sandia's Microsystems and Engineering Sciences Applications (MESA) facility.

EC for NA-124: Sandia completed a multi-year effort to characterize system pressurization and breach due to decomposition of organic components in weapon systems in support of the B61 LEP development, and also completed characterization of the electrical properties and expected electromagnetic radiation shielding of rubber used in hermetic seals. Other EC highlights included: support of the lifetime assessment of the B83 Lightning Arrestor Connector (LAC), development and optimization of the highest priority surety sensor for manufacturing material compatibility and subsystem integration; design, fabrication and testing of the Tritium Thermoelectric Generator integrated prototype; successful replacement and operation of the W80 testers at Weapons Evaluation Test Laboratory (WETL); and completion of characterization of a B61 material that enables prediction of weapon response for both normal and abnormal thermal-mechanical environments. Sandia had technical scientific and engineering activity accomplishments in support of completion of the QASPR III-V compound semiconductor electronics milestone results, which provided a thorough basis for evaluating the effectiveness of the QASPR methodology for qualification of radiation-hardened circuits for upcoming LEPs.

Readiness Campaign (RC) for NA-124: Sandia conducted a Digital Radiography (DR) training course, focused on the application of innovative, high value, technology-based solutions for the National Security Enterprise. This course provided an overview of the current DR technologies and the latest digital radiography techniques to assist in the qualification of B61 LEP components. Sandia had non-Level II milestones achievements including: (1) a third generation of Micro Modular Telemetry (MMT) cards, Laboratory Test Unit (LTU)-3, were manufactured and tested at board and system level for JTA Telemetry; and (2) the first multilayer ceramic (MLC) production-sized

Significant Accomplishments

development lot was completed with an overall production yield of 75%. The MLC processing and firing steps achieved the required material density resulting in consistent polarization and capacitance values.

DSW Production for NA-122: SNL/California characterized a significant number of excess components and developed a plan for disposition of material in coordination with NNSS. Sandia exceeded expectations in responding to the W88 AF&F ALT project this year. Sandia successfully passed the W88 ALT Customer Requirements Review and completed Phase Gate A for requirements both at a system level and at a component level where there was not a Level II milestone.

Sandia supported 16 Stockpile Flight Tests (SFTs) at the Department of Defense (DoD) locations and Tonopah Test Range (TTR) and completed 59 Stockpile Laboratory Tests (SLTs) and 977 subsequent component tests at WETL for the Core Surveillance Program. This was a considerable increase from FY2010. 13 SFTs in FY2011 were either canceled or determined a "No Test" by the DoD.

Sandia started the W78 Phase 6.1 study on June 1, 2011 upon receiving Congressional authorization, nine months later than planned, and evaluated three of the six Nuclear Explosive Package designs supplied by LLNL with the architectures and mass properties. The B61 LEP completed Phase 6.2, Phase 6.2A and Phase Gate C and submitted the Weapon Design Cost Report (WDCR) report to NA-1 on August 18, 2011. Sandia supported and completed the following Phase Gates with the results of most being Go with No or Minimal Conditions: Gate B for the B61 LEP; Gate A for the W88 ALT both at the system level and nine components; Gate D for the W87 SFENG; Gates A, B and C for the B83 ALT Gas Transfer System (GTS) replacement; Gates B and C for the B83 ALT Electronic Neutronic Generator (ELNG); Gates A, B and C for the B61-11 ALT ELNG; Gate A for the W80 ALT 369 Neutron Generator (NG) replacement.

DSW R&D for NA-124: Sandia completed the seven Stockpile Systems AARs and issued the Cycle 16 Annual Assessment Letter to the Secretary of Energy, Secretary of Defense, and Nuclear Weapons Council.

- Independent Nuclear Weapon Assessment Process (INWAP) supported the W78 and W87 systems as per the Tri-Lab INWAP project plan.
- Provided necessary briefings in support of the U.S. Strategic Command Stockpile Assessment Conference.
- Nuclear Safety R&D assisted Pantex (PX) in a human factors study and lightening safety analysis and improvements.
- Assisted in creating the NA-10 Component Maturation Framework.
- Developed a framework and implemented a deliberate approach to manage trusted suppliers.
- Implemented concepts in JTA Telemetry Systems design and development to streamline decision making and reduce design/development cycle time which was used for a flight recorder laboratory test unit with design to production of a prototype taking less than 10 weeks, compared to a traditional time of 18–24 months.

Secure Transportation Asset (STA) for NA-15: The Sandia Vehicle Maintenance Facility fleet services administrative staff exceeded all required Federal Automotive Statistical Tool reporting deliverable deadlines for FY2011 and provided excellent support with the continuing Phase II transition of the Asset Management Program system and was recognized at the STA Program Review by NA-15.

Other: Sandia line organizations have been proactive in identifying, reporting, and responding to Environment, Safety and Health (ES&H) related issues and events. The Building 858/700 hydrogen gas line leak was identified during routine surveillance, new information related to hazardous chemicals were identified by MESA Fabrication personnel, and the line organization has been proactive in responding with appropriate corrective actions for ES&H related issues and events.

Opportunity for Improvement

- NA-122 is dissatisfied due to the multiple issues requiring negotiations with DoD (e.g., W76-1 Code Blues, ACF). Sandia needs to invite both NA-122 Headquarters (HQ) staff in Washington, DC and Federal Program

Managers (FPM) located at the Albuquerque Complex, to the monthly Joint Performance Assurance and Integration Team meetings to enhance the communication of issues.

- Sandia needs to prioritize their process for placing contracts. Due to late placement of contract with W87 SFENG detonator vendor, Sandia is requesting a one-month slip in the First Production Unit (FPU) date.
- Sandia has not presented options and recommendations for NG production recovery and must improve their ability to identify the impact to the total NG Enterprise.
- Technical editing and proofreading needs to be improved, specifically in the Site Safeguards and Security Plan.
- Needs to continue efforts in support of maximizing the utilization of the Z-Machine.
- The B61 LEP 6.2/6.2A report was published as a draft, instead of final, and did not address Option 3B, which was not within the Phase 6.2 option space. The results from Option 3B were presented to the B61 Project Officers Group (POG) outside the WDCR process. The B61 LEP Integrated Master Schedule/Critical Path was not fully integrated and finalized to fidelity as agreed to by Sandia Management and the FPM for recovery of 3rd quarter yellow Level II Milestone rating. Sandia met the WDCR strategy requirements and provided the information requested by the FPM. However, the implementation of the guidance can be improved particularly in the area of cost and risk contingency calculations.
- Only Division 1000 met expectations by posting their Center presentations that were presented at their Division Management Review (MR). Divisions 2000 and 8000 only posted their presentations to the Executive Management Review (EMR) and need to also post their Center presentations. For the NW Strategic Management Units (SMU), agendas, presentations, and minutes have been posted for all MR levels.
- Safety and security performance needs to improve across all mission areas. Sandia needs to take a proactive approach to address line organization's specific performance issues that drive 10 CFR 824 incidents. Additionally, line organizations do not consistently implement the work, planning and controls concept. Work control issues and events pose a potential risk to mission execution and resource allocation.

Critical Performance Measure 1.1	
Demonstrate effective analysis and management of revenue, cost, and resource allocation compared to Mission Area expectations and projections. Customer satisfaction, as expressed by both Project Customers and Key Customers (biennial), such as using data from the Sandia External Customer Satisfaction (CSat) Survey process.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Very Good**
Sandia successfully managed costs and Full Time Equivalents (FTE) to within 1% of planned activities during a challenging period of a six-month continuing resolution and late developing requirements in several projects (e.g., B61 LEP, W88 ALT). Summary financial reports used by the NW SMU leadership were readily available through the Contractor Assurance System (CAS). Sandia successfully executed a growing workload as all seven weapons systems now have a LEP or ALT in design or production. Overall customer satisfaction was high, with 29 of 30 customers (key and project customers) surveyed evaluating their level of satisfaction at eight or above on a ten point scale. However, NA-122 is dissatisfied due to the multiple issues requiring negotiations with DoD (e.g., W76-1 Code Blues, ACF). Sandia needs to invite both NA-122 Headquarters (HQ) staff in Washington, DC and Federal Program Managers (FPM) located at the Albuquerque Complex, to the monthly Joint Performance Assurance and Integration Team meetings to enhance the communication of issues.	

Critical Performance Measure 1.2	
Performance against Level II Milestones associated with Advanced Simulation and Computing (ASC), Science Campaign/Inertial Confinement Fusion (ICF), and Readiness in Technical Base and Facilities (RTBF).	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
Sandia satisfactorily completed all Level II Milestones, excluding a HQ approved extension to one joint SC Level II Milestone 3793 (now due in FY2012) in response to a LANL request. Over half of the SC and ICF Level II Milestones were completed between 1 to 3 months early. Sandia completed three Pu shots and two U shots at Z-Machine and achieved routine operation at 85-kV Marx charge (22% of FY2011 shots) at Z-Machine, largely due to	

Critical Performance Measure 1.2

maintenance improvements. Sandia also achieved load currents as high as 27 MA on radiation-producing shots.

Sandia made work schedule enhancements in an effort to increase the Z-Machine shot rate and implemented a new hardware procurement procedure to ensure diverse suppliers, more efficient post-shot disassembly of hardware, and a remotely controlled system to reduce the time to troubleshoot imbalances in the 36 Marx banks. Sandia also designed and tested a new containment chamber that should allow data to be obtained at currents significantly higher (15.7 MA) than the 11-MA level of the three Pu shots conducted during FY2011. Z-Machine data and complex molecular dynamics simulations demonstrated the need to replace existing LANL and LLNL models in weapons design codes for three materials. LLNL developed a new equation of state for material #2 as a result of Sandia's simulations and Z-Machine data. Sandia also pursued the development of new platforms and diagnostics to study off-Hugoniot and off-the-principal isentrope properties of various materials.

Sandia was a key participant in preparing for and executing the two Barolo subcritical experiments at the NNSS by optimizing and maintaining the readiness of the Cygnus radiographic machine and the velocity interferometer. The diagnostics provided full recovery of the Pu data for both shots. Sandia also provided considerable support for NIF nuclear and x-ray diagnostics and for the analysis of mix in ignition capsule implosions during FY2011. The success of Sandia's SC and ICF Programs is evidenced by five teams receiving CY10 Defense Programs Awards of Excellence: 1) Cygnus and Velocity Interferometer System for Any Reflector (VISAR), 2) Magneto-Rayleigh-Taylor Experiments, 3) Pu Isentropic Compression Experiment (ICE) Material Disposition, 4) Radiation Effects Source and Testing Development, and 5) Refurbished Z Plutonium.

Sandia's ASC program made advances in the development and implementation of advanced simulation tools for predictive engineering sciences as evidenced by the deployment and utilization of advanced capabilities in support of LEP design activities and the AAR. This includes coupling of computer programs, which allowed large-scale analysis of weapon systems, implementing new physics capabilities into Sierra, completion of a comprehensive Quantification of Margins and Uncertainties (QMU) assessment of thermal safety for the B61, and completion of a full-system structural dynamics model for the B61. Stockpile stewardship computing work focused on foundational work in support of future architectures and standing up the Cielo platform. Next generation compact models for circuit simulation were also developed in support of QASPR. Sandia also made improvements in the customer/analyst usability of the computer programs, as well as in the verification methodology (i.e. confidence) of the computer simulations. Additionally, Sandia provided technical leadership to national and international communities in computational mechanics, validation methodologies, and advanced computer architectures, resulting in 30 peer reviewed journal publications.

The RTBF program supported a wide variety of R&D projects in Microsystems, Materials Science, Engineering Science, and Radiation Science. RTBF also supported NNSS diagnostics for sub-critical experiments, the Weapon Intern Program, the Nuclear Criticality Safety Program, foreign technology assessment, and micro He-3 detector development. RTBF developed enhanced initiation models for thermal battery activation to improve voltage rise time predictions, reducing uncertainty and risk for current DSW design efforts. Sandia received regulatory approval of the Pu Air Transport (PAT-1) Safety Analysis Report from the Nuclear Regulatory Commission in January 2011. This approval of the Certificate of Compliance allows for the air transport of Pu metal as a new payload for the PAT-1 package. This is the only package in the world certified for this purpose.

Critical Performance Measure 1.3

Performance against Level II Milestones associated with Directed Stockpile Work (DSW), Secure Transportation Asset (STA), Engineering Campaign, and Readiness Campaign.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Good

Sandia successfully supported the significant scope increase in DSW, as all seven weapons are now undergoing a LEP (W76, B61, and W78) or ALT (B61, B83, W80, W87, W88). Sandia completed 78 of the 80 Level II milestones. The two milestones not completed were for the ACF B61-11 CPD test and failure to complete testing for the W87 SFENG. The ACF remained shut down through FY2011 and the B61-11 CPD test schedule slipped to

Critical Performance Measure 1.3

mid-FY2012. While Division 1000 made a concentrated effort to stand up the ACF, it is still more than 4 months beyond the revised startup date. When the scheduled March 2010 test could not be completed, this required NNSA to request DoD to perform a B61-11 test at TTR six months earlier than planned to provide data for the Cycle 16 Annual Assessment. Sandia did not recognize the fact that NNSA had to renegotiate with DoD in the Sandia Performance Evaluation Assessment Report (PEAR). Sandia discovered a High-Voltage Breakdown (HVB) on Process Prove-In (PPI) of W87 SFENG units during functional testing and is delaying system level qualification pending resolution of the HVB. Although this may delay the production of the FPU, it was advantageous to find this problem before production begins. Sandia is working a fault tree-analysis to understand and resolve the HVB concern by the end of January 2012.

Sandia system team and managers adequately supported the B61 Phase 6.2/2A study and met the study milestones in FY2011. The engineering and programmatic teams should be commended for their dedication and long hours to overcome delays and meet study milestones. However, it is significant to note that the costs associated with the B61 Phase 6.2/2A study did not meet NNSA expectations although Sandia did meet the deliverables associated with the NNSA WDCR strategy document. The life extension options developed significantly exceeded the President's budget and the initial Sandia estimates provided in FY2010 and FY2011, communicated at the March 2010 and 2011 budget meetings. While delays in FY2010 funding and scope limited the range of B61 LEP options Sandia could evaluate, the resulting disconnect between the Option 2C full nuclear and non-nuclear costs reported in the Phase 6.2A WDCR and the NNSA budgetary constraints, places the B61 LEP at risk and may impact the overall commitment and the schedules to subsequent life extension programs. The funding disconnect should have formally been communicated to NA-10, with a set of alternatives, including reassessing feasible non-nuclear scope and addressing Sandia's risk acceptance for the program by driving more efficiency in product development, testing and qualification activities. NNSA recognizes Sandia initiated development of new options to address this concern but was very late in the B61 Phase 6.2/2A study process. Sandia completed non-nuclear component design reviews to determine adequacy of conceptual design for execution of the cost study and provided potential technical solutions in support of enhanced surety features for the B61-12 LEP. Sandia provided required input to the NNSA Project Plan, the Stockpile Evaluation Plan, the System Qualification Plan and to the Phase 6.2/6.2A Study Report for Options 2A to 2D, and cost estimate to NNSA for the WDCR on August 18, 2011. Sandia updated the Technology Readiness Levels (TRL) and Manufacturing Readiness Level assessments for each major Military Characteristic-level subsystem/component. However, the study is not complete and the Project Team is still working to align the scope with the budget, which puts the FPU commitment of 2017 at risk. In previous years, Sandia advocated the technology maturation of the direct optical initiation (DOI) option for future LEPs. However, after spending a large amount of funding to mature DOI, and an alternate option, Sandia determined that the DOI option was not feasible for the B61 LEP. Sandia should do better planning and utilization of resources for future technology maturation of other options that it advocates. Sandia led the B83 ALT 353 and 753 Product Realization Teams (PRTs) and supported the ALT Phase Gates to meet a July 2014 FPU. Sandia provided weapons response and systems engineering services to the B83 Tooling Upgrade project and scrambled to meet unscheduled deadlines for updated weapons response. A Laboratory Command Disable capability was qualified and demonstrated on a B83.

Sandia supported the W76-0 disassembly of 20 AF&Fs to support Component and Material Evaluation (CME) testing and 20 NG detonators were tested to determine sensitivity for lot acceptance. Sandia was able to successfully close the Intent Stronglink (ISL) existing Code Blue from FY2010 in January 2011 with the new ISL in an AF&F. Sandia addressed three new Code Blues for the W76-1 LEP in FY2011 that caused impacts to resources and production at KCP in FY2011 and impacts to PX, the DoD, and U.K. in FY2012 and FY2013. A first new Code Blue for the Launch Accelerometer (LA) was worked with the U.S. Navy and NNSA to change requirements and worked with KCP to bring another LA tester for added capacity, so that the Code Blue closure was imminent at the end of FY2011. A second new Code Blue for the Capacitor was initiated in January when the Sandia External Production (SEP) organization in Division 1000 could not meet a deliverable scheduled for KCP in April. The delivery slipped month by month when Lots 5 and 6 were scrapped at the SEP subcontractor. Previously, Lot 3 was scrapped and Lot 4 was partially scrapped which should have indicated a change had occurred during production. The impact was production of AF&Fs were significantly reduced in early August at KCP to ensure production

Critical Performance Measure 1.3

would not stop until capacitors can be provided (scheduled for January 2012). Additional impacts from the SEP organization not meeting the capacitor deliverable were: Kansas City Responsive Infrastructure Manufacturing Sourcing (KCRIMS) build ahead of AF&Fs have been canceled at KCP; assembly flow times have been compressed at KCP; estimated $20M will be spent for a second line at KCP to catch up when capacitors are available; and NNSA had to renegotiate deliverable schedules with both the DoD and the U.K. for FY2012 and FY2013. A third new Code Blue for the NG was started in May 2011. Sandia determined the component that failed and is instituting countermeasures to start production by December 2011.

Sandia supported a W78 ground test asset establishing requirements and a project schedule. Sandia continued to develop a new transmitter (SA4045) for use in the W78 JTA6 and completed testing of the legacy NGs at elevated temperatures. Sandia developed the process for extracting aeroshell coupons for material property tests using retired W62 aeroshells, which are equivalent to the W78 aeroshells. Sandia's systems group was very responsive to inquiries from NNSA, supported weekly W78 JTA PRT meetings, and provided resources when requested.

Sandia did not provide input to develop a W87 Firing Set Project Plan requested by the Program Engineer. Sandia performed analysis to qualify impacts due to hostile environment heating for NGs that have been extended beyond their life. Sandia made progress on the procurement and qualification of new transmitters for the JTAs and met the schedule for the W87 High Accuracy Separation Package design activities. Sandia worked with PX and KCP to identify the failure of the cable for JTAs with resolution continuing into FY2012.

Sandia performed eight W88 SLTs at the WETL for Cycle 16 and for efficiency continued centrifuge testing of an additional six SLTs to support the next assessment in Cycle 17. Sandia supported two-instrumented W88 JTA-2R flights and one Enhanced Navy Testbed flight. A mock centrifuge arm capability was qualified at the WETL to support 37 radar and force balanced integrating accelerometer component tests. Sandia completed systems level Phase Gate A in May 2011, subsystem levels Phase Gates A in August and September 2011, and a Customer Requirements Review in March 2011. All project management tools (Program Management Plan, Requirements Management Plan, and Risk Management Plan) were approved by NNSA. The system level design is maturing rapidly to support the system Conceptual Design Review in December 2011.

The B53 Dismantlement Team received NNSA Defense Programs Awards of Excellence. Sandia completed testing and analysis of the Micarta Cap to support the PX accelerated schedule of completing dismantlement in FY2011, instead of FY2012. Sandia resolved several B53 anomalies including being on hold twice pending separation of components. Sandia also took positive steps to dismantle the W62 Joint Task Group (JTG) trainer at Building 6620, SNL/New Mexico, instead of at PX. Additionally, Sandia worked towards the resolution of the W84 Disassembly and Inspection Nuclear Explosive Safety Study (NESS) post start finding. The conceptual walkdown of the W84 Seamless Safety (SS)-21 process was completed in June and Sandia has been helpful in establishing a plan at KCP for the production of the H1408 storage and shipping container for closeout of the NESS post start finding.

Sandia committed resources to attend the Management, Technology & Production and Production Support mid-year Program Reviews, which was extremely valuable in identifying funding issues in FY2012 that required correction to support the weapons program managers and their budget forecasts for FY2013. Sandia has been cooperative and responsive to the request for surveillance historical data. The Product Realization Integrated Digital Enterprise (PRIDE) Project Management Team site representatives have demonstrated exceptional inter-site collaboration and recognize the strength of achieving enterprise-wide solutions for enterprise-wide challenges especially through PRIDE's Project Management Improvements.

The R&D Certification and Safety program accomplishments included a Laser Diode Initiator prototype that was developed and tested to TRL-5 in support of the B61 LEP detonators for the spin rocket motors and designing a new electrically isolated Optical Transducer Assembly, which was prototyped to TRL-4 to reduce 30% of packaging to support all LEP/ALTs. NNSA HQ accepted the Integrated Lifecycle Security approach developed at Sandia to determine threat risk against multiple venues against the stockpile. The Nuclear Enterprise Assurance is a new

Critical Performance Measure 1.3

initiative, receiving NNSA HQs' full support, and has been implemented at Sandia and KCP to manage trusted suppliers. Sandia achieved an AF&F Packaging Technologies technical breakthrough by producing highly-filled uniformly dispersed thermoset materials that has application to Reentry Vehicle/Reentry Body (RV/RB) and NGs. Sandia built, tested, and identified modifications needed for the next build cycle for the Electrical Contact Stronglink hardware that will be used for both the B61 LEP and W88 ALT. The Critical Function Control Switch group successfully passed testing (normal environments and margin testing). Sandia developed a "NG Knowledge Gap Roadmap" framework, which was used as a tool to identify the gaps in the SFENG HBV problem and to resolve the LFENG loss of bias (LOB). Sandia demonstrated aluminum welds on GTS-like geometries that will support the W78 LEP. Sandia also developed and demonstrated an advanced inspection capability for B61 LEP component, and then shipped the inspection system to KCP. The NG Tester PRT achieved a Qualification Engineering Release (QER) release for the active ceramics power supply for two new testers to support the W76 and W78 FENGs and W87, W80, and W88 SFENGs.

Sandia met monthly NG deliverables to DoD and PX in FY2011 for the W76-0, W76-1 and W78. SEP met 99% of FY2011 requirements, delivering 115 components lots comprising 15,240 units from 10 technology areas. Sandia External Production missing the deliverable for the W76-1 Capacitor has resulted in a Code Blue. In FY2011, 59.96% of deliverables were in support of the W76-1 LEP.

Sandia provided oversight and coordination for all Office of Secure Transportation (OST) funded projects and met all deliverables in accordance with the 18 task agreements. Sandia completed the Overland Palletized Unit Shipper pre-production design review, the Safety Evaluation Report, the Site Safeguard and Security Plan, and evaluation of new cargo tie-down configurations. Sandia Transportation Command and Control System (TCCS) project provided support for TCCS, including strong support for the TCCS Version 4.4 Phase II upgrade. Sandia did not meet TCCS mapping and controlled interface schedule or target and complete the task scheduled for FY2011. It is expected that Sandia will complete the task in FY2012. Sandia provided outstanding support to the OST FY2011 Emergency Management Joint Training Exercise by providing equipment, staged mock accident scene, coordinating all the necessary environmental reviews, providing 24 hour support during the exercise and assured all clean-up was performed according to the tight exercise schedule.

Sandia provided briefings in support of the U.S. Strategic Command Stockpile Assessment Conference, assisted PX in a human factors study, assisted in a lightning safety analysis and improvements, and assisted in creating the Component Maturation Framework. Sandia Organization 5943 and 5944 provided briefings, on short notice, to DoD and NNSA leadership on special topics. In addition to all the activities related to milestones, Sandia completed many activities that had no related milestone (e.g., W88 ALT, aircraft compatibility, explosive development).

Sandia support of EC and RC has been excellent by fully supporting both mid-year and year-end program reviews. These staff intensive meetings were invaluable to the Federal Program Managers to track both technical progress and associated funding, which at year's end, were right on projected targets. Additionally, these meeting identified programmatic and funding issues for the out-years that will require specific federal leadership. Sandia remained fully cooperative and responsive to all HQ program requests. Sandia led a multi-site team to re-prioritize the RC technical activities and then coordinated those activities with the B61 LEP Federal Program manager. The RC milestone accomplishments include: 1) developed advanced inspection capability for B61 LEP component with KCP, and 2) completed Gates B & C for the B83 ELNG; completed development activities and TRL assessments per the Project Plan; completed Qualification Plan; and developed qualification strategy for B61-11 ELNG.

The EC milestone accomplishments included: development, prototyping and testing activities on the highest priority surety sensor; continued development of advanced power technology, including the design, fabrication and testing of the integrated prototype; characterization of the electrical properties and expected electromagnetic radiation shielding of rubber materials used in hermetic seals on weapon systems; development of an updated five-year plan for the Sandia Nuclear Survivability Program based on DSW Stakeholder review/input; conducting system CME reviews for the B61, W78, W80 and B83 in collaboration with KCP; completion of the Enhanced Surveillance

Critical Performance Measure 1.3
stockpile aging and lifetime assessment in support of the annual assessment process and the Technical Basis for Stockpile Transformation Planning; completion of notable technical scientific and engineering activities in support of QASPR III-V compound semiconductor electronics; successful replacement and operation of the W80 STE testers at WETL; and development of an Integrated Safeguards & Security (IS&S) interface design for the W76-1, including demonstration of the communication system for the fully integrated system in the transportation environment; and supporting the lifetime assessment of the B83 LAC, where the root cause of the insulation resistance drop in varistor LACs was investigated and identified concerns mitigated.

Critical Performance Measure 1.4	
Demonstrate effective performance by NW-funded line organizations of functional requirements in SNL policy areas such as Integrated Safeguards & Security (IS&S), Environment, Safety & Health (ES&H), Finance, and Corporate Governance, as performance impacts mission execution. Evidence of performance is described below.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Very Good**

Issues associated with Special Access Programs, identified by NNSA, have been elevated to Sandia Senior Management. A formal 100-Day Plan with milestones and completion dates is in place to ensure timely resolution of the issues. However, specific actions to correct and resolve these security concerns have not been formalized through a corrective action plan based on causal analysis. Additionally, there have not been measurable improvements in security performance in line operations, despite numerous Integrated Safeguards & Security (IS&S) initiatives intended to improve security performance of line operations and activities. Lastly, performance measures or metrics that capture and quantify the overall impact on mission requirements and related activities have not been used by Sandia.

The number of line cyber security incidents involving classified information on unclassified systems reported has risen every quarter since the second quarter of FY2010. These incidents impact the mission through possible compromise of national security information, the shutdown and purge of systems and/or networks to remove classified from unclassified systems and data storage, lost resources due to reactive measures, and information technology/cyber professionals focused on re-engineering controls rather than enhancing mission. It is too early to tell if the steps taken late in FY2011 will have a long term impact on the increasing numbers of line cyber security incidents; therefore, this needs to be closely monitored by Sandia and immediate action taken if the negative trend is not reversed in the first two quarters of FY2012.

The Days Away, Restricted, or Transferred Case Rate (DART-CR) continued its downward trend and the concept of Engineered Safety may assist implementation of Work Planning and Control (WP&C). For example, Sandia applied lessons learned relative to Engineered Safety from the sled track incident and subsequent restart activities to the start-up activities at the ACF in FY2011. However, there are still performance concerns by the line organizations as many work control issues and events occurred this year and these performance concerns pose a potential risk to mission execution and resource allocation. While there are adequate policies and procedures in place, line organizations do not always consistently implement the WP&C concept. This creates additional risk and resource allocation concerns to the mission. Issues such as development of explosive site plans for the ACF, contingency plans for shipping explosives for production use, and the lithium-thionyl chloride battery event, all highlight these concerns for line operations within the NW SMU and either had the potential to or affected mission operations. Enhanced attention to implement WP&C concepts is needed in the line organizations to mitigate potential risks or problems.

In 2008, Sandia was directed to modify business processes to comply with federal requirements for funds-out Interagency Agreements (IA). Instead of working to meet this direction, Sandia sought exemptions and multiple extensions to avoid [delay] compliance. In 2011, NNSA no longer authorized extensions and Sandia was forced to execute 27 new funds-out IAs. This sudden influx of actions strained resources and forced insufficient time for acquisition planning thereby putting important NNSA missions at risk. As a result, Sandia sought further exceptions to federal requirements causing additional delays for some actions.

[redacted]

Critical Performance Measure 1.5	
Demonstrate continuous improvement in NW mission performance through process and other efficiencies.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**

Process/operational improvements at the Z-Machine resulted in a reduction in time required to execute a Pu Shot. Additionally, changes in the scheduled work hours at Z-Machine resulted in a longer shot window at Z-Machine. While difficult to quantify, it certainly results in more shot opportunities, especially for more complex shots, which take more time to set-up and execute.

Sandia conducted 14 principal W88 SLTs during the fiscal year at WETL. Only eight were planned but to improve efficiency, the W88 continued principal testing on six additional AF&Fs to reduce centrifuge set-up time. Additionally, the Weapon Information System (WIS) was upgraded to include new functionality requested by NNSA to support a new business process of providing the capability to track and account for H1616 and H1700 containers, which was a FY2011 priority for NNSA. Lastly, as a result of the February 2011 abrupt natural gas shut down, Centers 1700 and 4800 held a Lean Six Sigma event to develop a risk mitigation strategy for any future inadvertent loss of natural gas, water and/or electricity.

Other Considerations

It appears as though line organizations are not working in concert with SMU's implementation and use of the CAS. Self-assessments are conducted in line organizations and documented in Laboratory Enterprise Self Assessment (LESA) database and Corrective Action Tracking System (CATS), but seem to be more cursory with little to no rollup and analysis of issues identified to determine cause and appropriate corrective actions that may be applicable laboratory wide. Management surveillances also appear to be on a downward trend with minimal documentation or findings. The Management Review (MR) Committees (Division Leadership Meeting, Divisions Assurance Committee, and Security, Safety, Health and Environment Action Committee) develop action items/issues for their respective groups but have no integrated process to record, act, or identify cross cutting concerns.

Overall transparency and communication with the Sandia Site Office Programs group, across all the NW SMUs, has increased and is now excellent. In FY2011 SSO was invited to attend all levels of the NW SMU MR, which allowed SSO to have a better understanding of Sandia's Management Assurance System and technical work activities and issues. SSO was also invited to observed and obtain presentations from weapons programs reviews, phase gates meetings, and surveillance meetings allowing SSO to gain an understanding of the accomplishments and issues that Sandia is working.

PO-2: National Security Missions – NonNuclear Weapons

Sandia will diligently and successfully execute mission work based on the programmatic requirements established by customers as measured through the mission areas. This Objective includes Critical Performance Measures and other evidence contributing to the success of the following missions:

a. **Energy, Climate, and Infrastructure Security (ECIS),**
b. **International, Homeland and Nuclear Security (IHNS), and**
c. **Defense Systems and Assessments (DSA).**

Adjectival Rating: Excellent

Summary of Performance

Sandia delivered research results and technology deployments for numerous DOE/NNSA internal and external government agencies, foreign governments, academia, and industrial partners for a broad spectrum of national security applications. Sandia excels in executing their non-nuclear weapons missions delivering technology options through three Strategic Management Units (SMU) ECIS, IHNS, and DSA.

ECIS SMU provides knowledge and solutions for the nation's most challenging problems in Energy, Climate, and Infrastructure. ECIS provided its customers with expertise and unique modeling supporting energy assurance, energy surety, climate modeling, nuclear reactor safety, severe incidence response, and smart grid development.

IHNS SMU focuses on the protection of nuclear assets, nuclear materials, nuclear emergency response, nonproliferation, counter terrorism and arms control. IHNS delivered effective technology solutions to support decisions makers, provided state-of-the-art physical protection for military installations housing nuclear weapons, training war fighters to defeat improvised explosives, and supported non-proliferation and arms control work.

DSA SMU supports the military, assessment, and non-proliferation community by applying Sandia's engineering, science, and technology capabilities to develop innovative systems solutions for the toughest national security challenges. DSA delivered advanced science and technology solutions that deter, detect, track, defeat, and defend against threats to our national security for Department of Defense (DoD) and the intelligence community.

Sandia continually exceeds customer expectations by providing unique, superior solutions to current and anticipated national security threats. Sandia's innovative science technology and systems engineering approach is a hallmark of Sandia National Laboratories (SNL).

Significant Accomplishments

Sandia, with its diverse customer base, conducts research to protect our homeland, provides technology to aid our war fighters, develops technology to ensure our energy security, and secures and tracks nuclear material around the world. The following are samples of the unique and innovative technologies pioneered at Sandia that can be presented in an unclassified venue:

- Production and assessment of key U.S. Nuclear Detonation Detection System (USNDS) payloads.
- Leading USNDS Architecture Study.
- Successfully organized and implemented four events for International Nonproliferation Export Control Program.
- Sandia achieved meaningful results to NNSA/Defense Nuclear Nonproliferation (DNN)/Global Threat Reduction Initiative's (GTRI) ability to meet Presidential and Department goals.
- Completed the pilot course for the Gulf Nuclear Energy Infrastructure Institute.
- Provided technical expertise to help the implementation of the New Strategic Arms Reduction Treaty (START).
- Increased security of nuclear materials domestically and internationally to help meet nuclear nonproliferation goals.
- Provided key technical support and expertise for a DOE and the Department of Defense (DoD) collaborative effort to assess and enhance energy surety at over 17 critical military installations.

- Achieved breakthroughs in nanoscience technology that will aid in the nanoscience of batteries development.
- Performed climatic modeling efforts, using high performance computing methods that have greatly enhanced current capabilities.
- Provided expertise in nuclear reactor safety and incidence response after the Fukushima reactor incident to assist in assessment of consequences.
- Created and applied an internationally recognized framework to improve safety and security of biological agents.
- Provided state-of-the-art physical protection for military installations housing nuclear weapons both domestically and internationally.
- Conducted activities that ranged from training war fighters to defeat improvised explosive devices (IED) to ensuring airworthiness of material used to construct U.S. commercial airline fleets to reduce risk to the public.
- Developed innovative systems, sensors, and technologies for defense and intelligence communities.
- Developed noteworthy and award winning systems that are being used in-theater by the warfighter and domestically to counter IEDs.

Opportunity for Improvement

Safety and security performance needs to improve across all mission areas. Sandia needs to take a proactive approach to address line organization's specific performance issues that drive 10 CFR 824 incidents. Additionally, line organizations do not consistently implement the work, planning and controls concept. Work control issues and events pose a potential risk to mission execution and resource allocation.

Performance Measure 2.1

Demonstrate effective analysis and management of revenue, cost, and resource allocation compared to Mission Area expectations and projections. Customer Satisfaction (CSat), as expressed by both Project Customers and Key Customers (biennial), such as using data from the Sandia External CSat Survey process.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Excellent

Sandia conducts a thorough assessment of their planning each month through review of revenue, cost, and resource allocation, and comparing the actuals to projected values. These assessments were discussed at each quarterly SMU management review (MR) meeting to assess issues, trends, anticipated work, and future business opportunities. These assessments allow Sandia to effectively monitor and adjust their program area to meet mission requirements and respond to new and emerging national security threats. Sandia also developed quarterly assurance reports for each SMU. The report identifies activities conducted during the quarter, provides evidence that revenue, cost and resource allocation is monitored regularly, and identifies plans or progress in assessing customer satisfaction.

Sandia conducts an annual CSat. This year Sandia randomly surveyed 256 out of 1219 non-nuclear weapons customers. There were three parts to the survey. Part one addressed performance, schedule, staff, teaming, relationship, cultural diversity, communication, and cost. Part two addressed overall customer satisfaction, and part three included open-end questions for customer comments. ECIS had a 27% response rate, DSA had a 42% response rate, and IHNS had an 86% response rate. The CSat results continue to be "Excellent" in a majority of the areas surveyed and are consistent with prior year surveys. Sandia's commitment to its customer and ability to deliver unique solutions or products continues to allow Sandia to lead the complex in work for other (WFO) activities strengthening their position to respond to current and emerging nuclear and non-nuclear security threats.

Sandia continues to execute its Work Authorizations (WA) for NNSA and DOE programs timely and efficiently to meet mission requirements. Sandia provided regular input to the Sandia Site Office (SSO) and NNSA/HQ during the continuing resolution period requesting allocation disbursement for the various programs to allow successful program execution without disruption during the continuing resolution period.

Sandia worked to the established carryover values for FY2011 in each program area in nuclear nonproliferation to ensure that they would meet the established target for each area with values ranging between 5% - 8%, which was historically much higher. One area exceeded the goal based on the STARS data, the overage is attributed to an accounting rule for Sandia as they are reporting only a 6% carryover for core programs.

Performance Measure 2.1
Sandia demonstrates effective control over its WFO Program through quarterly MRs in addition to the monthly partnering meetings between Sandia and the SSO. These meetings identify time sensitive issues and concerns. Action items from these meetings are tracked and reviewed at each subsequent monthly meetings.

Critical Performance Measure 2.2	
Demonstrate performance through management review and monitoring of DOE/NNSA Work Authorizations and other customer milestones and deliverables associated with the ECIS, IHNS and DSA missions.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**

Sandia conducted monthly and quarterly MRs. These reviews demonstrated Sandia's commitment to meeting WA requirements and customer milestones. These reviews also identified how Sandia handles problems or issues that affect mission execution. SSO transparency into level 2 and 3 MR was welcomed and informative to understanding Sandia's decision-making process in meeting requirements.

Sandia supported over 1200 customers though WA requests or WFO agreements. Due to the technical achievements and responsiveness to meeting customer objectives, Sandia generated high customer satisfaction and repeat customers.

Sandia provided excellent technical support for the Defense Nuclear Nonproliferation (DNN) portfolio in most areas. Sandia met and exceeded requirements while keeping cost in line. Sandia's support helped NNSA meet Presidential and Department goals ranging from delivering key USNDS payloads, reducing and protecting vulnerable nuclear and radiological material, preventing and countering the proliferation or use of weapons of mass destruction, to improving the ability to deter, detect, and interdict illicit trafficking of vulnerable stockpiles. The following are highlights of Sandia's activities:

- Excellent production and assessment of key USNDS payloads: Sandia successfully delivered and then tested, through launch and subsequent operations, the second in the series of Global Burst Detectors. Through innovative design, production and management techniques, Sandia met all cost, budget and schedule milestones.
- USNDS Architecture Study: Sandia led an interagency study reviewing the requirements for a potential alternate USNDS system. Working in concert with LANL and LLNL, Sandia is conducting the analysis that could alter the U.S. space system for detection of nuclear detonations.
- Demonstrated that the research and development (R&D) conducted for DNN R&D is on the leading edge of national and international capability.
- Contributed to numerous aspects of the Next Generation Safeguards Initiative, including Concepts and Approaches, Gas Centrifuge Enrichment Plant Safeguards, Human Capital Development, international engagement, and technology development. Sandia played a critical role in supporting the International Nuclear Security Program, including assisting with bilateral training and engagement, international policy/document development, and bilateral assessment efforts to ensure security over U.S. nuclear material abroad.
- Sandia's delivery of yearly engagement plans and work proposals has been on-time and of high quality and Sandia's technical support for workshops has been exemplary.
- Outstanding efforts in assisting the Confidence Building Measures program in organizing a very successful technical workshop held at the Middle East Scientific Institute for Security in Amman, Jordan.
- Provided support in the area of Warhead and Fissile Material Transparency initiatives. This included significant support associated with New START implementation and consideration of potential future initiatives, involvement in a U.S./United Kingdom (U.K.) dismantlement transparency initiative throughout 2011.
- Provided support in the security of domestic and international nuclear research reactors and radiological sources and exceeded their overall goal. In supporting GTRI's In-Devise Delay Program, Sandia was flexible and highly responsive to tasks from HQ and took independent initiatives to enhance the program.
- Security upgrades in South Africa that are key to President Obama's goal to protect all vulnerable nuclear material in four years were completed. Sandia project teams were able to adapt to a challenging work environment and travel schedule to successfully keep this project on track.
- Sandia's efforts were critical to completing the final shipments and security upgrades at Kazakhstan's BN-350,

Critical Performance Measure 2.2

which culminates a 10-year effort to secure the largest cache of weapons-grade material in a non-weapons state.

- Provided support to ensure all aspects of the work supporting Russian Federation Ministry of Defense projects were completed on-schedule and within budget, helping the organization reach established programmatic metrics and milestones.

Sandia created the world's first nanoscale battery inside a transmission electron microscope. This technology will enable future generation of lithium-ion battery to use nanostructured electrodes to help increase the power and energy density for electric vehicles and mobile devices. Sandia also developed a new methodology for assessing the energy surety of key facilities and installations using their Energy Surety Microgrid Assessment tool demonstrating a secure microgrid architecture with the ability to maintain operation surety.

Sandia completed work on Risk Management and Hazard Analysis of Marine imported Liquefied Natural Gas (LNG) project quantifying the likelihood of cascading ship and cargo tank damage from an initial spill and fire and to assess impact on public safety. The draft report to Congress is under review by DOE.

Sandia provided expertise and modeling support for both Deepwater Horizon and the Japan Earthquake emergencies to help understand and analyze the potential effects and consequences of these disasters. Sandia provided technology in many areas to the intelligence community assisting them in meeting their requirements.

Sandia led a multi-lab effort to develop and implement an approach to significantly enhance the nation's high performance computer modeling of our global climate integrating this advanced method in the Community Earth System Model. Sandia also conducted research in developing a continuous-flow, recuperating thermochemical heat engine driven by directly heating reactive material with concentrated solar irradiation. This research provides the building blocks for producing sustainable synthetic fuels that will be equivalent to today's fossil-derived liquid fuels.

Sandia was the lead System Integrator for the real-time processed high resolution Synthetic Aperture Radar (SAR) that allows for the detection of IEDs. Sandia developed the SAR sensors based on Sandia's MiniSAR technology. The Copperhead Counter IED system significantly exceeded all performance requirements and has been recommended as a proven Counter IED system by the Joint IED Defeat Organization Oversight Review and Advisory Board.

Single Events Upset Xilinx-Sandia Experiment was placed on the International Space Station. It is the first space flight of Xilinx's latest radiation-hardened reconfigurable Field Programmable Gate Array (FPGA). The Sandia Team will be evaluating the reliability of high performance, reconfigurable computing in the space radiation environment. The goal of this experiment is to detect and characterize Single Events Upset in radiation tolerant Vitex-4 FPGA.

Sandia demonstrated new real time Ground Moving Target Indication (GMTI) and video SAR tracking. This new system combines real-time tracking with simultaneous GMTI and video SAR processing to enable continuous surveillance of maneuvering ground vehicles over long durations and distances. This will help lead to the goal of developing a radar mode similar to full motion video from electro-optical and infrared sensors, but with advantages of day/night, all weather surveillance.

Aegis Readiness Assessment Vehicle (ARAV)-C team received a David Packard Excellence in Acquisitions Award, which is DoD's highest level acquisitions team award. Sandia supported the Aegis Ballistic Missile Defense Program with the Flight Test Mission launch campaign. An ARAV rocket was successfully launched with Sandia supporting the launch and producing the attitude control module. This new vehicle allows the U.S. to test against complex realistic countermeasures.

Critical Performance Measure 2.3	
Demonstrate effective performance by ECIS-, IHNS-, and DSA-funded line organizations of functional requirements in SNL policy areas such as Integrated Safeguards & Security (IS&S), Environment, Safety & Health (ES&H), Finance, and Corporate Governance, as performance impacts mission execution. Evidence of performance is described below.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Very Good**

Sandia conducted quarterly MRs at both the Division and SMU level to address issues that crosscut the Division and SMU interest. These meetings were open to SSO to observe Sandia's management approach to resolving problems that affect mission execution. Additionally, Sandia provided access to level 2 meetings to further advance the transparency into the management of programs. Sandia also instituted a quarterly assurance report for each SMU to provide evidence of performance toward Performance Evaluation Plan (PEP) objectives. These reports captured areas of concern for the program space, and documented monthly information, progress toward meeting customer milestones, and areas of concerns.

Sandia participated in a HQ Lean Six Sigma Review started in FY2011 to address processing time for the Work For Others (WFO) program. Sandia provided a significant amount of data on metrics related to processing times that it has captured over many years from its robust WFO program, which is a model for the complex. Sandia also participated in biweekly calls with HQ to address upcoming issues for WFO, Technology Partnerships (TP), and Laboratory Directed Research and Development (LDRD). Sandia also prepared a monthly news note that is submitted to HQ identifying significant achievements or issues they are working for WFO, TP, and LDRD. This report included current status on the number of WFO agreements and total dollar value. Sandia also prepared a report on the WFO Strategic Plan and how they would mitigate changes in funding for the next three years.

Sandia worked with the Albuquerque Complex on the Approved Funding Plan distribution during the continuing resolution to ensure funding allocations were placed in areas that would meet the overall program goals without impacting schedule or slowing progress on the defined milestones. Sandia worked to lower its carryover percentage and exceeded the goal of 8% in most areas of Nuclear Nonproliferation.

Issues associated with Special Access Programs, identified by NNSA, have been elevated to Sandia Senior Management. A formal 100-Day Plan with milestones and completion dates is in place to ensure timely resolution of the issues. However, specific actions to correct and resolve these security concerns have not been formalized through a corrective action plan based on causal analysis. Additionally, there have not been measurable improvements in security performance in line operations, despite numerous Integrated Safeguards & Security (IS&S) initiatives intended to improve security performance of line operations and activities. Lastly, performance measures or metrics that capture and quantify the overall impact on mission requirements and related activities have not been used by Sandia.

The high number of security incidents is indicative that there have been no measurable improvements in security performance within line operations despite numerous IS&S initiatives intended to improve security performance within those operations and activities. Performance measures or metrics that capture and quantify the overall impact on mission requirements and related activities have not been used by Sandia; therefore, while it is obvious there was some impact to mission, the extent of impact cannot be quantified.

The Days Away, Restricted, or Transferred Case Rate (DART-CR) continued its downward trend and the concept of Engineered Safety may assist implementation of Work Planning and Control (WP&C). However, there are still performance concerns by the line organizations as many work control issues and events occurred this year. These performance concerns pose a potential risk to mission execution and resource allocation. While there are adequate policies and procedures in place, line organizations do not always implement the WP&C concept. This creates risk and resource allocation concerns to the mission. Issues that highlight this concern are: non-communication of environmental compliance violation at Kauai Test Facility in 2009 that was just identified this year by SSO during a review of National Environmental Policy Act (NEPA) documentation for an upcoming test and a the molten lithium

Critical Performance Measure 2.3

event. Enhanced attention to implement WP&C concepts is needed in the line organizations to mitigate potential risks or problems.

In 2008, Sandia was directed to modify business processes to comply with federal requirements for funds-out Interagency Agreements (IA). Instead of working to meet this direction, Sandia sought exemptions and multiple extensions to avoid [delay] compliance. In 2011, NNSA no longer authorized extensions and Sandia was forced to execute 27 new funds-out IAs. This sudden influx of actions strained resources and forced insufficient time for acquisition planning thereby putting important NNSA missions at risk. As a result, Sandia sought further exceptions to federal requirements causing additional delays for some actions.

Critical Performance Measure 2.4

Demonstrate continuous improvement in ECIS, IHNS and DSA mission performance through process and other efficiencies.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Excellent

Sandia improved on the transparency into mission execution in several ways this year. The first example is Sandia's implementation of a risk based management assurance tool in ECIS and IHNS that is used to track issues, risk, and progress to customer milestones. This information is updated quarterly and is utilized during the MR at both the SMU and Division level. The second is the development of the assurance report that documents evidence of progress toward PEP objectives.

By the 4th quarter, Sandia provided increased transparency at the MR 2 and 3 level for all three SMUs. This provided SSO with better understanding of how management addresses areas of concern and at what level they are handled or elevated for resolution. Additionally, Sandia, in conjunction with SSO, convened quarterly joint performance assurance teams to provide a method to foster better two-way communication between the Sandia and SSO on areas of concern and achievement.

SMUs improved on the cost estimating systems to provide customers with better estimates for proposed work, specifically project estimates for proposals. This effort can be tied back to CSat results that identify Sandia as higher than average to conduct work and the desire of the customer to understand the breakdown in cost.

Each SMU had a concern with how space utilization was tracked by Division 4000, which led to the development of a new method (currently under review) to better identify space utilization with Division 4000. This system, if deemed acceptable to the SSO, will provide better insight to the disparity between each SMU's assessment of space utilization (Division 4000), and the site office.

The overhead rate for international travel was significantly higher than the rate of other travel based on out of date policies. The IHNS sought a request to change to the policy that will save Nuclear Nonproliferation activities approximately $2M a year in overhead travel costs to international locations. This change also benefits our other customers where Sandia supports in theater activities. Sandia was able to benchmark a self-assessment program between organization 2700 and 1700; this type of collaboration across all of Sandia's would benefit their self-assessment program.

Other Considerations

It appears as though line organizations are not working in concert with SMU's implementation and use of the CAS. Self-assessments are conducted in line organizations and documented in Laboratory Enterprise Self Assessment (LESA) database and Corrective Action Tracking System (CATS), but seem to be more cursory with little to no rollup and analysis of issues identified to determine cause and appropriate corrective actions that may be applicable laboratory wide. Management surveillances also appear to be on a downward trend with minimal documentation or findings. The MR Committees (Division Leadership Meeting, Divisions Assurance Committee, and Security, Safety, Health and Environment Action Committee) develop action items/issues for their respective groups but have no integrated process to record, act, or identify cross cutting concerns.

PO-3: Science, Technology & Engineering

Sandia will effectively execute Science, Technology and Engineering (ST&E) to enable and support the Laboratories' national security missions and to advance the frontiers of ST&E. Critical performance measures are used to assure effective management of ST&E.

Adjectival Rating: Excellent

Summary of Performance

Sandia significantly exceeded expectations in all performance measures and continues to maintain a strong ST&E base that contributes to and strengthens the national security missions of the Department of Energy (DOE), NNSA, other federal agencies (OFA), and industrial partnerships. Sandia embraced opportunities to push the frontiers of science to further enable revolutionary technology and engineering breakthroughs and is making strategic investments in a broad spectrum of unique technical capabilities and competencies to better integrate mission competencies across Sandia National Laboratories (SNL).

Sandia successfully maintained critical skills during a very challenging year of workforce management. Sandia continues to advance in innovative technologies that: help sustain, modernize and protect the nuclear arsenal; prevent the spread of weapons of mass destruction (WMD); protect national infrastructures; defend against terrorism threats; enhance capabilities to the armed forces and national defense; lead the way to ensure the stability of the nation's energy and water supplies; and contribute towards the creation of a firm platform for increased U.S. economic development.

Sandia made considerable strategic investment for Laboratory Directed Research and Development (LDRD) Program. LDRD continues to help accelerate discovery and innovation that has lead to breakthroughs in ST&E, which leads to broader strategic partnerships with OFA, industry and academia. The Early Career LDRD Program has proven very successful to foster early career development of next generation scientists and engineers. Industrial partnerships continue to excel across SNL to further promote Technology Transfer, commercialization, entrepreneurship, and ultimate economic development for our nation. Partnerships programs such as Sandia Science and Technology Park, Entrepreneurial Separation for technology transfer, New Mexico Small Business Assistance, Technology Ventures, University Partnerships, and Technology Transfer, have all resulted in successful outcomes.

Sandia's maintains an extensive external peer review of research foundations, LDRD and overall ST&E strategy. External Review Panels and Sandia Science Advisory Board provide insightful and candid counsel and advice to the Executive Office, Chief Technology Officer (CTO), Sandia Board of Directors, and Sandia Research Leadership Team (former Science, Technology, and Engineering Council) to help foster a stronger ST&E base. Results of external reviews provide confirmation of Sandia's ST&E Strategy as being commensurate with national security challenges of the 21st century. The Sandia Site Office (SSO) commends this external peer review system and Sandia's ability to take heed to constructive counsel and advice provided.

Although Sandia demonstrated overall success within the Performance Objective, two issues were addressed this fiscal year regarding Intellectual Property and Licensing. The first issue was an Inspector General audit suggested that there were shortcomings associated with Sandia's management of Organizational Conflict of Interest (OCI) with Lockheed Martin sponsored work activities. The second issue was discovered by Sandia that resulted in the lapse of several patents in Sandia's license portfolio due to non-payment of maintenance fees. However, both of these issues were resolved to include corrective actions and mitigation plans to avoid future shortcomings.

Significant Accomplishments

- Received four Research and Development (R&D) 100 Awards, including Microresonator Filters and Frequency References, Biomimetic Membranes for Water Purification, Ultra-high-voltage Silicon Carbide (SiC) Thyristor, and the Demand Response Inverter.
- Stingray Improvised Explosive Device (IED) dismantlement tool has been successfully used in Afghanistan.

Time magazine named Stingray technology one of the "50 best inventions of 2010." There were 7,000 units of life saving water disruptor used to safely disable improvised explosive devices were deployed to warfighters in Afghanistan seven months after Team Technologies, a Sandia Science and Technology Park tenant, acquired a license for the technology from Sandia.

- Earned three FY2011 environmental sustainability (EStar) awards from DOE for notable accomplishments in pollution prevention and sustainable environmental stewardship.
- In partnership with Cray and Los Alamos National Laboratories (LANL), successfully developed and deployed the Cielo petascale capability supercomputer for the Advanced Simulation and Computing Program.
- Led adoption of co-design of architectures and applications as a key strategy of the National Exascale Computing Initiative.
- Successfully leveraged Sandia's science and technology resources to achieve necessary technology maturation for nuclear weapon systems.
- Successfully performed plutonium (Pu) experiments (using samples provided by LANL), developed Pu containment safety measures, and executed pulsed power experiments – resulting in very high quality scientific results.
- Progressive scientific results in nanotechnology-based research in targeted cancer therapies that builds on Sandia's expertise in porous silica, sponsored by LDRD and $4M in National Institute of Health (NIH) grants, in cooperative research with the University of New Mexico.
- Federal technology award for CANARY water sensor software used to detect contaminants in water networks.
- Microsystems and Engineering Sciences Applications (MESA) was recertified for Trusted Design Services and Trusted Foundry Services by the Department of Defense (DoD), Defense Microelectronics Activity.
- Innovative research and engineering breakthroughs in support of DOE sponsored Consortium for Advanced Simulation of Lightwater Reactors to revolutionize nuclear power generation and reduction of nuclear waste.
- Growth in cyber security development and technical support to other federal agencies.
- Development of full system models for mechanical, thermal and structural design and qualification of the B61 Life Extension Program (LEP).

Opportunity for Improvement

Revamping Intellectual Property Management and Licensing Program, based upon Sandia assessment of licensing internal control weakness.

Critical Performance Measure 3.1

Demonstrate the value, technical excellence and impact of ST&E.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Excellent

- Continues to be the provider of innovative, science-based, systems engineering solutions to our nation's most challenging national security problems.
- Numerous successes in the deployment of ST&E applications to help sustain, modernize and protect our nuclear arsenal; prevent the spread of weapons of mass destruction; deploy new capabilities to for national defense; defense against terrorism; protection of national infrastructure; and, ensuring stable sources of energy and other critical resources.
- Continues to maintain critical skills by nurturing expertise, facilities, and equipment to create world-class science that pushes the frontiers of knowledge.
- ST&E Strategy anticipates future mission needs in preparation for science and technology surprise.

Critical Performance Measure 3.2

Demonstrate effective management and assessment of the Laboratories' technical capabilities in coordination with the SMUs.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Excellent

- Sandia initiated the development and implementation of a sustainable capabilities management model that maximizes broad service to the nation and enhances the credibility of DOE, NNSA and SNL.

Critical Performance Measure 3.2

- The CTO formation of Research Leadership Team (RLT) enables broader integration across mission execution elements to leverage resources and more effectively work towards technology and engineering solutions.
- The RLT is contributing to the development and implementation of Sandia's business objectives and strategy by monitoring, maintaining awareness of, and responding to scientific and technological developments.
- Effective Management Assurance Systems have been developed and implemented, which provide evidence against critical performance measures.
- The CTO is assisting SMUs to: identify the science and technology base required to achieve their strategic objectives; creating an institutional stewardship relationship between SMUs and select customers; and assisting SMUs to assess technological risk and readiness in support of program planning, execution and development.

Critical Performance Measure 3.3

Demonstrate effective management and successful execution of a Laboratory Directed Research and Development (LDRD) Program that promotes and enables innovation and creates new, differentiating capabilities.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Excellent

- Managed a successful LDRD Program that helps to foster employee initiated research and development within an institutional strategic framework that provides new, differentiating capabilities essential to mission success.
- Sandia has one of the largest LDRD portfolios of projects, with over 427 ongoing projects during FY2011, totaling nearly $165M.
- The Early Career LDRD Program received very positive feedback from external reviews and participants, enabling early career researchers to participate in competitively selected LDRD research projects with emphasis on both research and workforce management.
- External peer reviews of LDRD Grand Challenge projects have been very positive and provide Sandia with feedback to maintain progression of promising research endeavors, and confirm relevance and importance of research projects.
- LDRD management worked diligently on improving transparency across SNL, with emphasis on objective selection of projects that help to diversify well balanced research portfolios. Transparency included town-hall meetings, information sessions, and various other forums to help and assist researchers with LDRD proposal procedures and processes, and provide SSO with confidence in project selection process.
- The LDRD Program developed balanced a Management Assurance System that is now well represented across all SNL SMUs and mission execution elements, providing the ability to measure and track program goals.

Critical Performance Measure 3.4

Demonstrate the development and execution of effective partnerships with universities, industry and other laboratories.

Sandia Self-Assessment Rating: Very Good	NNSA Rating: Very Good

- Continues to enhance Technology Transfer and experienced numerous successes to assisting industrial partnerships with technology and economic development.
- Experienced growth in industrial partnerships with external partners and for local economic development through continued support for the New Mexico Small Business Assistance Program and the Sandia Science and Technology Park.
- For the first three quarters of FY2011, the Work for Others (WFO) / Cooperative Research and Development Agreements (CRADA) Department (10012) executed 48 CRADAs valued at nearly $50M.
- Recognized by Federal Laboratory Consortium with three awards, including 1) State and Local Economic Development Award from the New Mexico Small Business Assistance Program; 2) Excellence in Technology Transfer for the Stingray Water Disruptor; and 3) the Interagency Partnership Award for the CANARY Event Detection Software (Sandia and Environmental Protection Agency).
- University Partnerships Strategy was revamped through the Sandia Campus Executive Program, to help foster corporate investments in research, recruiting, and education activities that are aligned with select Campus Executive universities.

Critical Performance Measure 3.4
• Two issues were addressed this fiscal year regarding Intellectual Property and Licensing. The first issue was an Inspector General audit suggested that there were shortcomings associated with Sandia's management of Organizational Conflict of Interest (OCI) with Lockheed Martin sponsored work activities. The second issue, discovered by Sandia, was the lapse of several patents in Sandia's license portfolio due to non-payment of maintenance fees. However, both of these issues were resolved to include corrective actions and mitigation plans to avoid future shortcomings.

Critical Performance Measure 3.5	
Demonstrate continuous improvement in the management and execution of ST&E.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
• Demonstration of continuous improvement has been evident throughout the entire fiscal year, with a focus on ST&E Strategy, Research Foundations, Management Assurance, Intellectual Property Strategy, Research Environment Improvement, and promotion of scientific exchanges under Export Control/ International Traffic in Arms Regulations (ITAR) regulations. • Programmatic planning, management and performance across six existing ST&E Research Foundations have resulted in positive feedback from all external peer reviews. • Sandia Science Advisory Board confirms Sandia ST&E direction is strategic, diverse and very strong. • Newly developed Management Assurance Systems, including balanced scorecard system provide mechanisms to measure and track critical performance measures. • Intellectual Property Strategy improvements have been assessed and new systems have been implemented, with an emphasis on enabling the results of publicly-funded R&D to be deployed for the U.S. public good to help further strengthen our nation's economic security. • Research Environment focus groups have helped to identify methods to help foster innovation, discovery and creative thinking amongst research staff. • Sandia developed and implemented LDRD Grand Challenge Management Assurance Reviews to assure large investments in Grand Challenge goals and objectives are being met.	

Other Considerations
Newly developed Management Assurance Systems, metrics and balanced scorecard systems provide a comprehensive mechanism to track critical performance measures across performance objective.

PO-4: Operations

Sandia will maintain effective and efficient Environment, Safety & Health (ES&H), Integrated Safeguards & Security (IS&S), and Facilities Operations, such that the appropriate infrastructure, tools, training, policies, and guidance are in place to fully support successful accomplishment of the mission.

Adjectival Rating: Excellent

Summary of Performance

Performance in the areas of ES&H, IS&S, and Facilities were measured through negotiated performance objectives developed for each of these programs, in conjunction with a subjective assessment of Sandia's overall policy area program performance.

The responsiveness of Sandia ES&H support organizations to unplanned events and their overall support to the mission are excellent. Sandia also provided excellent support to the Fukushima Reactor Response and provided sufficient management attention to ensure commitments in the Site Treatment Plan (STP) were met. However, opportunities for improvement (OFI) include teaming with the line to identify measures of line implementation of ES&H requirements, including Work Planning and Control (WP&C) and Human Performance Improvement (HPI) as Sandia continues to experience inconsistent policy implementation across the corporation. This issue was addressed in Sandia's FY2011 Performance Evaluation Assessment Report (PEAR) as well as in an OFI in the FY2010 Performance Evaluation Report concerning HPI application. Additionally, while there were no worker injuries, there was a serious accident at Building 6530, Plasma Materials Test Facility involving a rapid energy release caused by a lithium reaction. This was a near miss for a serious injury or fatality. While the Sandia investigation has not been concluded, there is an opportunity to learn and improve practices associated with safe initial entry into the facility to assess condition, WP&C, application of engineered safety, and other related matters. The downtime will affect programmatic activities.

Sandia Facilities and Fire Protection Programs have met or exceeded their performance metrics and are anticipated to meet the metrics for a few activities that are still waiting for the final data submission. Some of Sandia's significant accomplishments are: the completion of both line item projects ahead of schedule and $9.4 million below budget; improved maintenance worker productivity by 7%; self identified and is now addressing a site wide water supply and distribution system vulnerability in the Coyote Test Field; improved space utilization from 84% to 88%; and worked "out of the box", with the Sandia Site Office (SSO) on the identification and development of alternative financing of the Mission Support Complex.

Sandia IS&S successfully met 99% of the Critical Performance Indicators (CPIs) established for FY2011, exceeding their 90% goal. Sandia IS&S provided excellent leadership in partnering with line organizations to address security related performance issues. Sandia achieved efficiencies by reducing the security footprint and improving program alignment by transitioning the Protective Force Operations at the Tonopah Test Range (TTR) to the U.S. Air Force as well as implementing a management review process that made tremendous improvements in the IS&S assurance program. In addition to maintaining effective performance, Sandia also provided corporate support in the development of corrective actions for the closure of longstanding ES&H related findings (e.g., D2, D3 and D4).

The Sandia Counterintelligence (CI) program continues to provide excellent support and results to the CI Directorate. Sandia CI exceeded expectations in some critical areas and ensured that CI requirements were achieved. Program deliverables for budget and schedule have exceeded expectations.

Significant Accomplishments

- Prompt response and effective management to the state of emergency natural gas curtailment and outage minimized what could have been a much more significant damage to facilities and mission.
- Earned three EStar Awards, two Best in Class awards, and four Environmental Stewardship awards.

[redacted]

Significant Accomplishments

- Following the 2010 EMCORE incident, Sandia established a team to develop and implement a workplace violence training program for Sandia workers that includes active shooter response.
- Mission Support Z-Machine operations were conducted safely in a planned and deliberate manner.
- Provide prompt response to ensure safe and secure delivery to the Fukushima Reactor Response.
- Providing sufficient management attention to ensure commitments in the STP were met.
- Successfully transitioned the security responsibilities at the TTR associated with protective force operations and alarm system monitoring, assessment and response to the U.S. Air Force.
- Supported IS&S initiatives and multi-year efforts to reduce the overall security footprint by destroying approximately 37,500 pieces classified legacy cyber media and 39,000 classified pages and by also digitizing approximately 325,000 classified pages as part of the Classified Virtual Library project.
- Sandia Infrastructure Operations Division successfully implemented a comprehensive management review (MR) process that feeds into and directly supports the overall Executive Management Review (EMR) process currently used by Sandia management.
- Substantially increased the output of analytical reports compared to FY2010. Effectively analyzed, compiled and provided threat information via Threat Assessments, Special Reports, CI Notes and Analytic Referrals.
- Developed and maintained a strong insider threat program.
- Developing an information technology-enabled analytic capability and have aligned that capability with the CI Headquarters (HQ) plan.
- The vulnerability in the site-wide water distribution system, identified during a Sandia self-assessment, is being addressed by upgrades to the water supply and distribution system in the Coyote Test Field.
- Both line item projects were successfully completed; Heating System Modernization (HSM) and Ion Beam Laboratory (IBL), ahead of schedule and under budget for a total saving of $9.4 million. NNSA put forth the IBL Project as an example of how NNSA is improving the way they do business.
- Made significant progress in refining their Earned Value Management System (EVMS) that will result in a system that will be in full compliance with American National Standards Institute (ANSI) Standard.
- Improved office space utilization from 84% to 88% and freed up 100 offices to co-locate the B61 program.
- Completed all fieldwork related to groundwater well installations and completed the Mixed Waste Landfill regulatory closure actions, even under limited funding.
- 7% improvement in maintenance worker productivity, which drove improvements in preventative maintenance completion and a reduction of backlog.
- Excellent response to the underground hydrogen gas line leak and wrote a lessons learned report to share with the DOE complex.
- Worked with SSO in "out of the box" thinking on the identification and development of options for alternative financing of the Mission Support Complex that may be feasible. This effort involved discussions with the General Services Administration and the New Mexico Finance Authority.

Opportunity for Improvement (OFI)

- For projects less than $5 million, Sandia needs to continue to trend cost, quality, or other productivity metrics, to demonstrate improved efficiencies. Sandia needs to use the approved Project Authorization form, approve the projects within 60 days of Work Authorization, and cost projects within their costing goals on Facilities Infrastructure Recapitalization Projects.
- Ensure that only real property assets are included within the Facilities Information Management System (FIMS) database. Sandia is working to resolve the concern regarding sheds, currently in FIMS that is not considered to be real property.
- Team with the line to identify measures of line implementation of ES&H requirements, including WP&C and HPI.
- While there were no worker injuries, there was a serious accident at Building 6530, Plasma Materials Test Facility involving a rapid energy release caused by a lithium reaction. This was a near miss for a serious injury or fatality. While the Sandia investigation has not been concluded, there is an opportunity to learn and improve practices associated with safe initial entry into the facility to assess condition, work planning and control,

application of engineered safety, etc. Timely completion of the investigation and implementation of resulting actions will help minimize programmatic impact.

Critical Performance Measure 4.1

Environment, Safety and Health -- Sandia will maintain effective and efficient ES&H and Emergency Management (EM) such that the appropriate infrastructure, tools, training, policies, and guidance are in place to fully support successful accomplishment of the mission.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Very Good

SSO generally agrees with Sandia's PEAR for PO-4.1. Sandia exceeded performance expectations in their prompt response and effective management to the Fukushima Reactor Response. Sandia radiation protection successfully restarted its junior radiation control technician course to ensure line support is maintained. Additionally, Sandia successfully implemented a comprehensive ES&H management review process that feeds into and directly supports the overall EMR process used by Sandia management.

Sandia supported safe Z-Machine operations in a planned and deliberate manner and provided sufficient management attention to ensure commitments in the STP were met. Sandia continues WP&C Manual and tool development (e.g., electronic Job Safety Analysis; training courses) with limited resources to communicate process requirements to the line. Sandia also proactively evaluated the impact of proposed new American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) for manganese by surveying welding operations. In FY2011, there were no unprotected (e.g., due to lack of personal protective equipment) airborne beryllium exposures exceeding 10 CFR 850 limits. However, Sandia's full shift exposure monitoring identified instances where airborne beryllium exposures exceeded the ACGIH TLV when personal protective equipment was not worn for all tasks in the monitored shift. Sandia voluntarily chose to adopt the lower TLV and needs to ensure unprotected exposures do not occur.

Sandia earned three EStar Awards for High Performance Computing Water Reduction and Energy Efficient Cooling, Integrated Sustainability Planning and Design, and Water Consumption Reduction. Sandia was also the recipient of two Best in Class awards and four Environmental Stewardship awards.

Although Sandia demonstrated overall success in the area of ES&H, the following are areas of opportunities for improvement. Sandia needs to develop a resolution to a repeat finding by the Department of Energy Laboratory Accreditation Program (DOELAP) associated with Sandia's blind spike program for dosimetry. Sandia could also improve their management of developing Explosive Site Plans so that these plans are able to obtain 'first pass' approval. Additionally, as noted in the Sandia's PEAR, Sandia should focus on identifying measures to indicate line level implementation of ES&H requirements, including WP&C and HPI.

While there were no worker injuries, there is an opportunity for improvement to learn and improve practices through Sandia's investigation associated with the serious accident at Building 6530, Plasma Materials Test Facility, involving a rapid energy release caused by a lithium reaction. This was a near miss for a serious injury or fatality. The lessons learned and subsequent opportunities for improvement could include safe initial entry into the facility to assess condition, WP&C, application of engineered safety, and other related matters. Timely completion of the investigation and implementation of resulting actions will help minimize programmatic impact.

Sandia needs to ensure regulatory submittals are timely. Some submittals (out of many) were received by the SSO on the date they were due to regulators or after the regulatory due date. Examples include *Annual Report of Sanitary Sewer System Overflows Calendar Year 2010, Status Report for Portable Engines at the United States Department of Energy/Sandia National Laboratories/California*, and *Annual Hazardous Waste Report* and *Response to Violation to the Sanitary Sewer System Permit 2069F.*

Sandia also needs to ensure line organizations recognize the significance of Sandia receiving Notices of Violation (NOV) and fines. Sandia received 3 NOVs (Sandia/NM Wastewater without fine, Sandia/CA Hazardous Waste Facility without fine, and Sandia/CA Hazardous Waste with fine) this year. In addition, Sandia/NM also had a

Critical Performance Measure 4.1
wastewater exceedance at Microsystems and Engineering Sciences Applications (MESA) Facility but a NOV was not issued. While SSO generally agrees with Sandia's PEAR for PO-4.1, nowhere in the FY2011 PEAR are receipt of NOVs mentioned. Sandia did not adequately identify corrective actions that would prevent recurrence of the fire on the Evaporative Cooler Pad during roofing operation on Building 983. The identified corrective actions did not address the serious need not to extinguish a fire using "manual techniques" or the need to re-train employees on how to call the Sandia "911" from a cell phone. SSO acknowledges that Sandia has been responsive to ES&H issues raised during FY2011 Periodic Contractor Performance Report process, but some issues require additional time for SSO to validate resolution. The following issues should be resolved in FY2012: improved critique process (finalizing measures to ensure the correct procedures/participants/reportable events/completeness, and including critiques as an initial steps in the occurrence-reporting process); designated authorities for granting waivers from the explosive safety manual, timely processing of environmental storm water inspections; and improved timeliness and quality of 10CFR851 non-compliance tracking reports. **Emergency Management** Sandia was instrumental in applying first-of-its kind advanced gaming technology to secure the nation's borders as evidenced during their response at the 2011 National Level Exercise and praised by the lead exercise planner, Federal Emergency Management Agency. Sandia developed a new software tool (Standard Unified Modeling, Mapping, and Integration Toolkit [SUMMIT]) for disaster situations to now view building damage and other post-disaster effects that was tested during the conduct of the 2011 National Level Exercise. Sandia's prompt response to the state of emergency natural gas curtailment and outage was noteworthy as Sandia's effective management of this emergency minimized what could have been much more significant. Following the 2010 EMCORE incident, Sandia established a team to develop and implement a workplace violence training program for Sandia workers that includes active shooter response. Also of note is the Sandia initiative to enlist the support of DOE HQ Office of EM Implementation (NA-43) for evaluators to serve on the Sandia evaluation team for the annual full-scale exercise. This initiative shows a proactive approach to continuous program improvement. A successful HS-45 assist visit concluded Sandia made appropriate revisions to their Emergency Action Levels (EALs) and the Incident Commanders can categorize and classify an operational emergency event in a timely manner using the EALs. Although Sandia demonstrated overall success in the area of EM, there are opportunities for improvement. While Sandia developed and implemented an Issues Management and Resolution System (IMaRS), there is still a need for focused involvement of managers and the Strategic Planning Team related to the corrective action process to identify and correct systemic concerns.

Critical Performance Measure 4.2	
Integrated Safeguards & Security -- Sandia will manage and operate its operational safeguards and security and counterintelligence functions to fully support successful accomplishment of the mission, while protecting the public, the worker, and national security assets in accordance with the terms and conditions of the contract.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
SSO generally agrees with Sandia's PEAR for PO-4.2. Sandia IS&S successfully transitioned the security responsibilities at the Sandia TTR associated with protective force operations and alarm system monitoring, assessment and response to the U.S. Air Force in accordance with the established transition plan and schedule. Sandia continues to use an outstanding requirements-based approach to build the annual FS-20 funded IS&S budget. Additionally, Sandia successfully implemented a cost recovery mechanism associated with Work For Other	

Critical Performance Measure 4.2

(customer-funded) activities that is being used to reduce the overall FS-20 funding requirement at the enterprise level. For FY2011, Sandia IS&S was able to reduce FS-20 funding requirements by approximately $15 million.

Sandia has been able to reduce their security footprint by destroying approximately 37,500 pieces of classified legacy cyber media and 39,000 classified pages and digitizing approximately 325,000 classified pages as part of the Classified Virtual Library project. Sandia also successfully implemented a comprehensive IS&S MR process that has shown significant improvement in the IS&S assurance program and feeds directly into and supports the overall EMR process used by Sandia Senior Management.

Sandia successfully dispositioned carryover Critical Performance Indicators from FY2010 and met 99% of CPIs indicated for FY2011 as compared to 85.75% from the previous performance cycle. This improvement is based upon an improved set of CPIs supported by the use of operational, business and mission support metrics. The CPIs are derived from and support the multi-year strategic objectives provided by NNSA Defense Nuclear Security (DNS). The 99% completion rate exceeded the 90% goal and is indicative of a well performing IS&S program. For FY2011 all topics in the IS&S program were rated, using an internal rating scale, as "Satisfactory", which is the highest IS&S rating achievable.

Sandia made significant progress related to the trending and analysis of line-related security performance data and is now able to better characterize and categorize areas of performance concern within specific line organizations and activities to more accurately identify organizations and activities that are driving high security incident rates.

In response to a corporate concern regarding line performance issues in the various IS&S program elements Sandia, IS&S begun commissioning Performance Assistance Review teams and activities to assist line organizations with security implementation issues in an attempt to prevent or reduce reportable security incidents. This is to include incidents attributed to a lack of understanding of IS&S policies, practices and procedures that are required to be implemented throughout Sandia's line organizations. During this performance period, Sandia developed, piloted and fully implemented an integrated assessment program designed to provide a performance evaluation with a security focus tailored to address actual line operations and activities. This approach significantly minimizes the disruption of line operations during IS&S performance assessment activities.

In support of DNS consolidation efforts between Sandia and Lawrence Livermore National Laboratory (LLNL), the technical surveillance countermeasures (TSCM) requirements for the Sandia California site were successfully transitioned to the LLNL TSCM team in March 2011.

Sandia provided daily CI oversight to all related entities associated with both Sandia locations and has substantially increased their output of analytical reports when compared to FY2010. Sandia also effectively analyzed, compiled and provided threat information via Threat Assessments, Special Reports, CI Notes and Analytic Referrals. Sandia also developed and maintained a strong insider threat program in addition to developing an IT-enabled analytic capability. This capability aligned their program with the CI HQ plan. Sandia has been very responsive in assistance with the HQ CI Insider Threat Division. Sandia performed CI Investigations at a high level, and documented matters in CI Portal. Sandia Field Office (SFO) personnel are pro-active in posture, responsive to taskings/requests, and communicate regularly and clearly with HQ CI Investigations Division staff. SFO developed and maintained excellent relations with Sandia personnel, which enabled SFO to identify and call upon subject matter experts to assist HQ CI when needed.

Sandia continues to utilize a strong threat awareness training program for SNL/New Mexico and SNL/California that met stretch goals that were identified in their awareness training plan and successfully completed all cyber requirements in a timely manner.

Critical Performance Measure 4.3

Facilities Operations -- Sandia will manage and operate its Facilities and Fire Protection Programs to fully support

Critical Performance Measure 4.3	
successful accomplishment of the mission, while protecting the public, the worker, the environment, and national security assets in accordance with operating requirements described in the provisions of the contract as found in the Facilities Management Reporting tool maintained in Integrated Laboratories Management System (ILMS).	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**

SSO generally agrees with Sandia's PEAR for PO-4.3. Overall Sandia performed in an excellent manner in managing and operating the Facilities and Fire Protection Programs to support the mission, while protecting the public, the worker, the environment, and national security assets. Sandia met or exceeded their performance metrics or they are scheduled to meet the metrics for a few activities that are still waiting for the final data submission.

Fire Protection: Sandia Fire Protection has markedly improved its communication and sharing of performance metrics and data with the SSO since the beginning of the fiscal year. In addition, a Sandia self-assessment identified vulnerability in the site-wide water distribution system. This vulnerability is being addressed by upgrades to the water supply and distribution system in the Coyote Test Field. Sandia advocated for the site-wide Corporate Issue #39 to manage facility hazardous material inventories to thresholds required by the National Fire Protection Association (NFPA) 1, Fire Prevention Code, Uniform Fire Code, and the International Fire Code. Sandia developed a new process to develop facility pre-incident fire plans in accordance with NFPA 1620. Throughout the year, Sandia performed the planned facility fire protection assessments and pre-incident fire plans. Fire Protection Engineering planned and supported an orderly shutdown of 271 automatic sprinkler systems to minimize damage to facilities and operations because of the gas outage. The sprinkler systems were brought back online over seven days using a process that assured all systems were back in operation.

Project Management: Two line item projects were successfully completed; HSM and IBL, ahead of schedule and under budget for a total saving of $9.4 million. NNSA put forth the IBL Project as an example of how NNSA is improving the way they do business. Although there were funding limitations, Mechanical Shock upgrades are 80% complete on the Test Capabilities Revitalization Phase 2 project, with the 20-inch actuator fabricated and assembled. Overall, Sandia met or exceeded performance cost and schedule targets associated with projects less than $5M. Sandia made significant progress in refining their EVMS that will result in a system that will be in compliance with ANSI/EIA-748B. However, there are opportunities for improvement for projects less than $5M, Sandia needs to continue to trend cost, quality, or other productivity metrics, to demonstrate improved efficiencies. Sandia needs to use the approved Project Authorization form, approve the projects within 60 days of Work Authorization, and cost projects within their costing goals on Facilities Infrastructure Recapitalization Projects.

Real Property: Preliminary Real Estate Plans were submitted on or ahead of schedule. Sandia submitted quality Real Estate documents for leases and land use permit requests. Utilization of office space improved from 84% to 88%. The improvement was due to the development of solutions to manage and measure space more effectively. Sandia's space management program effectively planned and managed freeing up 100 offices to co-locate the B61 program. However, there are opportunities for improvement as Sandia should ensure that only real property assets are included within the FIMS database. Sandia is working to resolve the concern regarding sheds currently in FIMS that is not considered to be real property.

Sustainability: Sandia consistently supported the bi-weekly Operational Awareness (OA) sessions with SSO Sustainability Program Manager. Sharing of information was transparent and in spirit of partnership. Sandia delivered a quality Annual Site Sustainability Plan; provided High Performance Sustainable Buildings Guiding Principles training and technical assistance to DOE and NNSA; actively supported the DOE Office of the Inspector General (OIG) four-day audit on metering; and was successful in removing the Contractor Requirements Document (CRD) by actively supporting the Review and Comment System (RevCOM) and Enterprise Operating Requirements Review Board/Joint Operating Requirements Review Board processes conducted on DOE Order 436.1, *Departmental Sustainability.*

Environmental Restorations Operations: Sandia consistently supported the bi-weekly OA sessions with SSO Federal Project Director. Sharing of information was transparent and in spirit of partnership. Sandia delivered a

Critical Performance Measure 4.3

quality Annual Work Plan; delivered quality quarterly reports to the New Mexico Environment Department; completed of all fieldwork related to groundwater well installations; completed the Mixed Waste Landfill regulatory closure actions; and completed quality EVMS and monthly reporting to Environmental Management/HQ.

Maintenance: All metrics have been met or were exceeded. Sandia overcame concerns with regard to deferred maintenance management with respect to Sandia facilities, challenges with respect to closure of the HS-64 Finding C-2, and the DOE OIG Audit – *Management Controls Over Warranties*. Sandia's quick responses substantially reduced impacts from the gas service curtailment and thus were able to overcome obstacles presented by the "deep freeze." Sandia had a 7% improvement in worker productivity, which drove improvements in preventative maintenance completion and a reduction of backlog. The Electrical Maintenance organization worked 753 days without a lost-time accident. Sandia has done an excellent job responding to the hydrogen gas line leak that occurred between Buildings 858 and 700. Facilities personnel investigated extent of condition and wrote a lessons learned report to share with the DOE complex. Sandia material scientists performed a thorough analysis of the stainless steel corrosion. The Sandia Facilities organization continues to do an outstanding job supporting mission activities in key production facilities such as the Neutron Generator Facility (NGF) and Microsystems and Engineering Sciences Applications (MESA) Fabrications. Facilities personnel coordinate closely with the line every day to complete the extremely large amount of preventive and reactive maintenance work necessary to keep these facilities operating and available for production activities.

Site Planning: Sandia continues to perform well in development of Ten Year Site Planning documents and complying with guidance and requirements from NNSA/HQ. HQ continues to solicit input from Sandia on a variety of topics including previewing of guidance before distribution. Sandia has been requested to provide a planning briefing to the entire NNSA Complex involved in the NNSA/HQ Long Range Integrated Infrastructure and Facility Planning effort. Sandia is acknowledged as one of the complex leaders in all aspects of long-range and site-wide planning efforts. Sandia worked diligently to develop the functional and operational requirements and related documents for the Emergency Operations Response Center, while simultaneously developing and submitting the Ten Year Site Plan. Sandia continues to work on planning efforts for site-wide traffic, gate reconfiguration, and large scale renewable energy options. The gate reconfiguration discussion involved very large audiences of civil engineering and security personnel from Kirtland Air Force Base, Sandia and SSO. Sandia diligently supported SSO with the identification and development of options which might be available for alternative financing of the Mission Support Complex. This involved discussion with the General Services Administration and the New Mexico Finance Authority.

Other Considerations

While the Organization 4000 MR process has improved greatly during this fiscal year, the ES&H policy area continues to improve explaining how assessments by Policy Area and Line are selected based on risk, and how corrective actions are effectively sustained. As also shared in Sandia's PEAR, the new Electronic Risk Management Tool, in addition to the new Sandia corporate Assurance Information System tool, should help communicate risks, but it is too early to determine effectiveness of these tools. Additionally, it is unclear how the ES&H Policy Area (or Sandia Corporate) intends to validate implementation of the "hand-off" actions associated with the "D-series" corrective actions (related to assessments and corrective actions).

In general, assurance information in Sandia's Integrated Laboratories Management System (ILMS) is accessible to SSO but there are barriers to SSO access resulting from use of local server databases or programs not accessible in ILMS. There are also frequent issues with access to Sharepoint or Filenet records caused by inconsistent record-owner understanding or granting of permission and access privileges. Additionally, finding and integrating information in ILMS continues to be overly burdensome, and in some cases, information in the Corrective Action Tracking System (CATS) has not been available to SSO. However, the ES&H Dashboard and the Facilities Dashboard should provide a much improved tool for reporting performance metrics in FY2012. The recent availability of a "Sandia Hosted Desktop" removed some of the technical and administrative barriers that have impeded SSO's access to assurance information, but it does not consistently demonstrate corrective action/issues

Other Considerations
management as observed through oversight. Self-assessments need to be more thorough and include field implementation of corrective actions as it appears Sandia under-categorizes the results of self-assessments and the significance of identified issues. It is difficult to determine if Sandia's self-assessments are helping Sandia validate performance, verify compliance, or find areas to improve efficiency. Out of the 428 assessments planned and scheduled for FY2012, only one was related to fire protection. However, Sandia is now addressing SSO concerns with Risk Management within the facilities by developing a Risk Assessment Tracking Tool that allows Sandia to collect risks at department, group, and center levels. In early FY2011, Sandia efforts were primarily expended on listing risks versus demonstrating how significant risks are effectively managed. At the end of FY2011, Sandia Facilities was making favorable progress by establishing links between existing risks and needed controls. Facilities is beginning to use the Risk Assessment Tracking Tool to generate the Integrated Assessment Schedule and internal audits and assessments it plans to conduct in FY2012 and FY2013. However, Sandia risk scores and risk controls are lower than what SSO would have expected for fire protection.

[redacted]

PO-5: Business Management

Sandia provides support to fully accomplish the mission with effective and efficient infrastructure and business management services, such that the appropriate infrastructure, tools, training, policies, and guidance are in place.

Adjectival Rating: Excellent

Summary of Performance

Sound business practices are integrated into all work activities throughout Sandia to maintain effective and efficient operations and support mission objectives as are noted throughout the Sandia Performance Evaluation Assessment Report (PEAR). Performance in the areas of Human Resources (HR), Information Technology (IT), Cyber Security, and Supply Chain were measured through negotiated performance objectives developed for each of these programs, in conjunction with a subjective assessment of the overall Policy Area's program performance. The Finance program was evaluated through objectives and measures established by the NNSA Chief Financial Officer (CFO).

Sandia demonstrated enterprise-wide leadership with implementation of initiatives in HR, IT, and Cyber Security. Sandia's HR team implemented consumer driven healthcare across Sandia National Laboratories (SNL) and successfully negotiated this benefit into new collective bargaining agreements with local unions. In IT, Sandia earned the Energy Star (EStar) energy savings in high performance computing. Sandia Cyber Security professionals provided assisted across DOE and NNSA in major incident forensic analysis and response. Sandia is commended for its Property/Fleet Management Programs as they continue to be recognized for outstanding performance as evidenced by their third recognition as one of "The 100 Best Fleets in North America". Sandia Supply Chain professionals have been responsive to identified issues throughout the year, although, additional work remains in the functional areas of Purchase Cards (P-Cards) and federal procurement/contract coordination.

Significant Accomplishments

- Led Lean Six Sigma event for the NNSA Field Financial Management Division (FFMD) and Business Management Advisory Council (BMAC) to explore opportunities in Enterprise-wide shared services.
- Led and/or significantly participated in the DOE/NNSA driven Incurred *Cost and Budget and Reporting (B&R) Code Crosswalk* initiatives. Although there were initial rollout problems, Sandia was the first to implement Oracle R12, which will ultimately benefit other NNSA sites.
- Implemented a new consumer driven healthcare plan design that is expected to reduce long-term liability and produce significant savings.
- Successfully negotiated bi-lateral agreement on the Metal Trades Council and the Office and Professional Employees International Union collective bargaining agreements.
- Earned the EStar Award for high performance computing water reduction and cooling.
- The Network Revitalization Project deployed over 9,000 optical network terminals.
- Implemented an E-mail Concept Program that requires deliberate user action to acknowledge classification level prior to sending an e-mail.
- Continues to demonstrate a reputation for excellence in cyber security forensics, analysis, incident remediation and response was evidenced by requests from DOE for Sandia to provide assistance with major system compromises at two national laboratories in FY2011.
- Made significant strides to establish and enhance their security posture on the Sandia Classified Network through hardening of desktop systems, enhancements to logging capabilities, and server upgrades.
- Deployment of a data loss prevention tool in the 3rd quarter of FY2011 is reaping early benefits by preventing the transmission of an average of 24 e-mails per day that contain unprotected personal information.
- Fleet Services was named as one of the "100 Best Fleets in the Country" by the *Government Fleet* magazine.
- Made remarkable improvements in meeting and exceeding its small business socio-economic goals in FY2011.
- Held a NA-1 benchmarked Economic Impact Summit in New Mexico and California that highlighted Sandia's partnering with local small business and suppliers.

[redacted]

Significant Accomplishments

- Received GreenGov Presidential Award for developing and implementing photovoltaic powered carts.
- Received ISO-9001 recertification for the procurement Quality Management System.
- Leveraged best industry practices from its parent company to improve Sandia's Performance Assurance System (PAS), specifically in addressing Risk Management, Supplier Quality, and Program Management Review (MR) Process.

Opportunity for Improvement

- Resolution of the NNSA CFO's concerns regarding non-compliance with Cost Accounting Standards. Oracle R12 implementation in FY2011 will allow Sandia to comply with the Cost Accounting Standards issues (except 405) in FY2012.
- While significant strides have been made, Freedom of Information Act (FOIA) request processing needs to remain a management priority and be appropriately resourced to handle the workload.
- As evidenced by the IT Services procurement and federal agency order transition to interagency agreements, communication between Sandia divisions and line organizations with Supply Chain personnel appears less than optimum resulting in inadequate planning for contract procurement/execution and has led to unnecessary extensions and cost growth to the existing contracts.
- Despite fourth quarter progress, concerns with the health of Sandia's P-Card Program remain due to the material weaknesses uncovered in P-Card monthly reports and factual accuracy checks.

Critical Performance Measure 5.1

Finance -- Sandia will support the mission by operating its Finance Program and policy areas in an effective and efficient manner and in accordance with operating requirements described in the provisions of the contract.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Very Good

Sandia rated the 15 FFMD coordinated critical performance measures ranging from "Good" and "Excellent". FFMD rated Sandia as "Pass" on these measures for the first three quarters, but the 4th quarter had a "Fail" rating on one of the 15 targets. Using an internally developed rating scale, FFMD rated Sandia overall as "Satisfactory" in the 4th quarter primarily due to three issues: a "Fail" on one measure (late submissions of STARS); reports with errors; and Internal Audit not fulfilling the scope of the Labor Audit. However, FFMD provided an overall annual rating of "Good" (the highest FFMD rating).

The Sandia Site Office (SSO) rates Sandia as "Very Good" due to the 4th quarter FFMD rating and the unresolved Cost Accounting Standard issues. During the year, FFMD provided 17 notable positives and 10 notable negatives. Some of the more significant positives include: 1) No Obligational Control Level overcosts in FY2011; 2) an impressive database used to monitor auditable subcontracts as well as reviews of subcontractor accounting systems and various cost type contracts; 3) Sandia's Internal Audit projected questioned costs to the universe based on the findings and questioned costs in the sample in the FY2010 Incurred Costs Employee Relocation Audit issued May 12, 2011; 4) Sandia assisted in returning needed funding to Headquarters (HQ) in an emergency request in May 2011. Sandia provided a response in a short period of time allowing FFMD to meet HQs' emergency deadline; and 5) Sandia led and/or significantly participated in several DOE/NNSA initiatives such as Incurred Cost, B&R Code Restructure, and Shared Financial System/Service.

Some of the more significant issues include: 1) The Labor Audit performed by Sandia Internal Audit did not include floor checks that were specifically included in the audit scope of the FY2011 plan. 2) For the most part, Sandia's AFP points of contact are providing timely and actionable AFP submissions and responses to Certification of Funds requests. However, there is a noticeable decline in quality and timeliness in some programmatic areas in the 3rd quarter. In the 4th quarter, Sandia made notable progress with their reports. 3) Sandia was late on their STARS file submission two of the last three months. Although the files were late due to an Oracle system upgrade, it had an impact on and resulted in a late FFMD and HQ submissions; and 4) Pension & Pension Related Benefit Liability Estimates STARS submission contained errors which FFMD subsequently identified. FFMD directed Sandia to correct and re-submit, but the files were provided after the deadline.

Critical Performance Measure 5.1

Although Sandia rated this measure as "Excellent", the Cost Accounting Standards issues remain from the FY2010 performance review. Sandia developed a plan to rectify the various FFMD identified Cost Accounting Standards issues, except 405, and is in the process of implementation. Sandia focused on the Cost Accounting Standards 405 issue and held numerous meetings with FFMD and SSO. However, progress on the issue has been slow and there is no apparent immediate resolution. This is due to disagreement across the entire DOE complex on the interpretation as how Cost Accounting Standards applies to burdens on executive compensation.

Critical Performance Measure 5.2

Human Resources -- Sandia will support the mission by operating its Human Resources Program and policy areas in an effective and efficient manner in accordance with operating requirements described in the provisions of the contract.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Excellent

Out of eleven performance metrics, in the FY2011 HR Objective Matrix, Sandia self-assessed seven metrics as "Excellent" and four as "Very Good". All critical measures indicate GREEN in Sandia's Integrated Laboratories Management System (ILMS). Sandia's metric ratings accurately reflect successful year-long performance that indicates the two critical HR projects, Total Compensation and Workforce Acquisition, are on track and meeting milestones. The Total Compensation project will replace the current Integrated Job Structure with a more robust, market-referenced structure in FY2012. The Workforce Acquisition project is intended to increase Sandia's ability to acquire and retain technical capability to meet current and future mission needs.

Sandia reached bi-lateral agreement on the Metal Trades Council and the Office and Professional Employees International Union collective bargaining agreements (CBA). In the new CBAs, Sandia successfully negotiated medical and retiree benefits changes for bargaining employees that had been implemented for non-represented employees putting all employees under common models. Some of those changes included negotiating subsidy limits on retiree health for existing employees, and implementing a merger of the Pension Security Plan into the Retirement Income Plan. With the asset merger, Sandia is expected to reduce future pension contributions in 2013.

Sandia implemented a new consumer driven healthcare plan design that is expected to reduce long-term liability, produce $3M in savings the first year and serve as an NNSA BMAC model. In addition, Sandia outsourced retiree health benefits reducing overhead and adding efficiency, as well as initiating a high performance health network leveraging a local provider that has the potential to transform healthcare delivery while increasing quality and reducing overall cost. Sandia Senior Management proactively addressed the challenging Pension Protection Act-driven requirements enabling Sandia to meet the FY2011 requirements while also prefunding FY2012.

The Lockheed Martin Voice (Employee) Survey results were very positive despite the past years' challenges with pensions, benefits, and the pay freeze that would suggest Sandia management is clearly communicating changes to employees and employees understand the need for these changes. Additionally, over the past two months Sandia communicated to their workforce the Personal Identifiable Information (PII) definition and associated policy; thereby raising awareness of PII across the lab. Sandia also rolled out a new PII training, required annually, with material in compliance with federal direction and meeting SSO expectations. Sandia HR implemented a new Compliance Training Initiative to increase effectiveness of corporate and organization compliance training and to reduce the burden without compromising policy area performance. Within twelve months of implementation, the estimated cost savings from this initiative was $2M.

Critical Performance Measure 5.3

Information Management -- Sandia will support the mission by operating its Information Management (IM) Program and policy areas (Cyber Security and Records Management) in an effective and efficient manner in accordance with applicable contractual requirements to ensure confidentiality, integrity and availability of information and information systems, guarding against unauthorized access, modification or denial.

[redacted]

Critical Performance Measure 5.3	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**

SSO generally concurs with Sandia's PEAR for PO-5.3. Sandia's IT performance measures consistently achieved outstanding thresholds in 10 of 12 areas in FY2011. Sandia ended the year with a rating of less than "Excellent" in two areas. These areas were rated as "Very Good" based on overall quarterly performance. The drop in Sandia Restricted Network (SRN) availability to 99.2% in the first quarter was due to a power outage that affected only a few people in remote areas as well as a Radio Frequency (RF) interference problem. Sandia Chief Information Officer (CIO) communications with SSO have improved considerably as the Sandia CIO leveraged management reviews, performance feedback sessions, and frequent one-on-one senior management interface to discuss project progress, IT issues, and strategic direction. Sandia successfully rolled out Oracle R12 that will improve functionality and financial data recording and reporting. Sandia IT also developed Product Realization Integrated Digital Enterprise (PRIDE) tools for Division 1000 that will greatly aid nuclear weapon stockpile certification. To reduce IT energy usage, Sandia deployed a software application that turns off desktop computers at night. In addition, the DOE Inspector General performed an audit on IT energy savings efforts as they relate to server virtualization and data center cooling and found Sandia was ahead of all facilities they have audited.

Sandia implemented an E-mail ribbon Proof of Concept program. This was driven by the FY2011 Sandia Security Improvement Plan. This program was aimed at developing and piloting an e-mail ribbon for e-mail applications that requires deliberate user action to acknowledge classification level prior to sending and receiving e-mail. Sandia Cyber Security successfully completed all milestones in their FY2011 Annual Operating Plan. The majority of Cyber Security metrics were in the outstanding range in FY2011.

Sandia's progress on the PII Plan for Enhanced Protection has been satisfactory and has been re-baselined to incorporate actions driven by the Lockheed Martin review of Sandia processes. All actions identified in the original plan were completed in FY2011.

Although Sandia demonstrated overall success in this measure, there is room for improvement. For example, continued emphasis is needed on implementing the same rigor for Telecommunications Security self-assessments as is currently in place for Unclassified and Classified Cyber Security self-assessments. Additionally, while Sandia demonstrated improvement in the quality of the final Telecommunications Security self-assessment conducted in FY2011, more work is needed to ensure greater consistency between assessments and appropriate use of sampling methodologies.

Additionally, very little evidence has been provided regarding the resolution of Sandia's wireless approval process that was first identified by SSO in October 2009. FY2011 milestones associated with a revised corrective action plan for the wireless approval process were not completed on schedule. Continuing issues with timely coordination of wireless approvals were noted throughout the year. In addition, more than half of the SSO approvals for wireless systems on file have expired and, to date, no requests to renew or cancel these expired approvals have been submitted by Sandia.

Critical Performance Measure 5.4	
Supply Chain Management -- Sandia will support the mission by operating its Supply Chain Management Program and policy areas in an effective and efficient manner in accordance with operating requirements within the provisions of the contract.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Very Good**

Sandia rated their overall performance score for Supply Chain Management (SCM) as "Excellent" with all 19 metrics individually rated at "Very Good" or higher. While only 50% of FY2010 socioeconomic goals were met, socioeconomic performance was significantly improved in all six categories in FY2011. Sandia exceeded the goal of 52% on small business utilization with final results greater than 58%. The only goal that Sandia fell short of was its 1.5% goal for Service Disabled Veteran Owned Small Business contract placements. While actual performance was 1.41%, this represents ~ 100% increase over the FY2010 results. In addition, it is anticipated that final Supply

Critical Performance Measure 5.4

Chain Management Center (SCMC) data for FY2011 will be "Green" in every performance category as briefed by the SCMC/Integrated Product Team Site Champion at the end of the 3rd quarter of FY2011.

Sandia's Fleet Services was named by Government Fleet Magazine as one of the "100 Best Fleets in the Country" for the third time. Sandia improved its standing from 77th to 27th place out of 38,000 eligible fleets in North America.

Sandia IT services and computer support subcontracts will expire on September 30, 2012 after all options have been exercised and with cost growth (over 20%) above and beyond the original $20M that was authorized by DOE/NNSA. As early as May 2010, Sandia posted a Request for Information. However, lengthy delays currently estimate the follow-on subcontracts forecast an award date of February 2013 and a start date of April 2013. SSO remains concerned with what appears to be a lack of expediency and due diligence in adequate and timely planning and contract execution to avoid unnecessary extensions and cost growth to the existing contracts.

Sandia encountered numerous challenges in discontinuing its practice of issuing Federal Agency Orders (FAOs) and the transition to NNSA-issued Interagency Agreements (IA) as required by NNSA memo dated September 30, 2008. Sandia started experiencing issues when the other Government agencies began rejecting Sandia's FAOs either upon execution or, in some cases, after the work had already been performed with the incorrect assumption that the FAO had been accepted by the other Government agency. In many cases, these scenarios required DOE/NNSA to be executed "After the Fact" IAs to pay for work that had been performed under an FAO when the other Government agency realized they were unable/unauthorized to cash Sandia's payment as a result of the unauthorized FAO.

Evidence was provided to Sandia's SCM on monthly P-Card reports with repeated and material weaknesses in report documentation. These reports had been identified for some time as lacking substantial, meaningful data along with careless errors, and lack of ownership and review by higher management. While the reporting was deficient for several months, the issues identified did not create material weaknesses in the P-Card program.

DOE/NNSA continues to work with Sandia to identify other potential clauses not included in either Section I or Section II of their subcontracts. Sandia has been proactive in including the Combating Trafficking in Persons clause, which had previously been omitted.

NNSA continues to have concerns that rigorous self-assessments for personal property management are not voluntarily identified. However, more recent conversations indicate an acknowledgement of the importance for rigorous self-assessments in areas that have not been reviewed in some time. NNSA looks to Sandia to identify potential self-assessments in light of the high value of personal property Sandia is responsible for managing from acquisition through disposition (approximately $1B).

NNSA recognizes and appreciates SCM's commitment to improving its responsiveness to deadlines and aggressively working to avoid unnecessary delays and extensions.

Other Considerations

Transparency to comprehensive business data exists in Sandia's PAS and system updates for most data aligns quarterly with the management review process. Access to the electronic data repositories continues to be challenging at times due to federal and contractor firewall interface issues and data owners have at times been slow to grant federal access to important Sandia performance data. Subject matter experts continue to rely heavily on functional meetings and operational awareness activities to fill in the gaps and understand/interpret data found in the ILMS. Providing federal access to the Sandia Corporation Management Review process this past year has provided valuable insight into important business analysis and decisions.

PO-6: Corporate Governance

Sandia will operate its Corporate Governance policy area (including legal), which encompasses Sandia's quality assurance system, decision-making framework, and rules governing employee and business conduct, in an efficient and effective manner and in accordance with operating requirements described in the operations of the contract such that the appropriate infrastructure, tools, training, policies and guidance are in place to support the mission.

Adjectival Rating: Good

Summary of Performance

Sandia's Corporate Governance Policy Area worked on many activities to drive improvement during this fiscal year. However, it will take time before overall improvement to Sandia's Performance Assurance System (PAS) can be demonstrated as a result of these activities. Sandia Senior Management is now fully engaged to drive assurance throughout Sandia, at all levels, to include setting expectations and articulating how the assurance system should be used to more effectively accomplish the mission.

Significant Accomplishments

Sandia Senior Management has fully engaged in defining assurance and setting expectations and accountability for use of assurance throughout Sandia. Sandia performed a comprehensive self-assessment of contractor assurance implementation. This assessment provides a basis for Sandia's readiness for affirmation and more importantly, a baseline of assurance maturity across all Sandia entities that will allow Sandia to measure future progress. Sandia continues to effectively manage legal risk as evidenced by the continuing decline in the number of lawsuits filed against Sandia and a continuing decline in outside counsel costs.

Opportunity for Improvement

Sandia's Corporate Governance Policy Area needs to better articulate and effectively communicate Sandia's risk management process, including how it correlates to self-assessments, performance measures, and corrective actions and the expectations for the use of the Assurance Information System (AIS) to effectively document risk. Additionally, the Sandia Site Office (SSO) has not seen evidence through the assurance process that Sandia is providing the necessary feedback regarding the "health" of the quality program. Lastly, Sandia needs to consistently comply with the requirements of its Legal Management Plan.

Critical Performance Measure 6.1

Critical Performance Indicators and other evidence that demonstrate management review and assessment of corporate management to ensure efficient, effective and continually improving performance.

Sandia Self-Assessment Rating: Very Good	NNSA Rating: Good

Multiple performance measures can be found in PAS, including several that were developed internally by Sandia and identified as "critical performance measures". During the second quarter Corporate Governance Management Review (MR), Sandia noted that these critical performance measures needed to be modified so that they could be of better value/use to Sandia. However, during the third and fourth quarter MRs, Sandia did not provide an update on these critical performance measures and to date there is no evidence in PAS that these measures have been modified. There are also six performance measures in PAS that are tied to this Performance Objective; however, only three of the six performance measures were populated with data during FY2011. One of the measures not populated, regarding Contract Reform Implementation, was cancelled late in the fiscal year due to a lack of available data; however, this cancellation did not go through proper change control. Sandia has been collecting data this FY on another measure regarding MR completeness and quality; however, as of the end of the fiscal year, there was no data populated. This indicates Sandia is not utilizing their complete set of measures to assess performance.

The MR process continues to develop into a forum that is valuable to managers within this policy area. Sandia developed a process to monitor MRs and the Executive Management Review (EMR) in order to assess how well the

Critical Performance Measure 6.1

requirements of CG100.6.19, *Conduct Management Review*, are being met. Sandia uses the results to provide feedback and improve the MR process. Sandia's measure regarding MR completeness and quality is posted in PAS and will be populated to show trends towards compliance with CG100.6.19, *Conduct Management Review*.

Sandia performed a comprehensive self-assessment of the Contractor Assurance System (Sandia's PAS) implementation this fiscal year. This assessment (*Sandia Contractor Assurance System Affirmation Readiness Review)* was sponsored by the Sandia Executive Vice President (EVP) for Mission Support. The self-assessment provided a baseline of assurance maturity across all Sandia entities (Strategic Management Units, Divisions and Policy Areas) utilizing an assurance maturity model and the integration of NNSA NAP-21 requirements. This also provided a basis for contractor assurance readiness for affirmation.

Even though Sandia has taken positive steps such as baselining PAS maturity for each entity within Sandia and maturing the MR/EMR process, Sandia continues to struggle with the measures and other indicators utilized to ensure efficient, effective and continually improving performance.

Critical Performance Measure 6.2

Sandia will demonstrate improvements to Sandia's Performance Assurance System as defined in the February 26, 2010, *Plan for Improving Sandia's Integrated Laboratory Management System*.

Sandia Self-Assessment Rating: Good	NNSA Rating: Satisfactory

Although Sandia is working on various activities to drive improvement to PAS, overall improvement is yet to be demonstrated. This is partly due to the fact that many of the activities that may provide improvement are newly initiated. One example is the AIS. The AIS was developed some time ago; however due to schedule slippages, was only recently partially implemented. Another example is the recently developed Assurance Improvement Plan (AIP). It will take time for Sandia to be able to demonstrate the impact on PAS.

The AIP replaces the draft *Plan for Improving Sandia's Integrated Laboratory Management System.* The AIP includes the Corporate Handoffs from the HS-64 D-2, D-3 and D-4 findings. SSO expressed concern with Sandia's concept of a "rolling wave" for this plan in which new activities can be added, and others deleted, as Sandia determines appropriate to drive improvement. While SSO understands the concept and Sandia's intent, this approach of continuously assessing and correcting makes measuring success difficult when there is not an established baseline and a desired end state. SSO and Sandia have agreed that through the FY2012 PEP, Sandia will be measured on the activities associated with the dated August 5, 2011, Revision 1, AIP.

In FY2011, Sandia conducted a comprehensive PAS self-assessment to review implementation and effectiveness. The assessment included a Sandia-developed assurance maturity model to review CAS/PAS maturity throughout all Sandia entities. SSO was provided an interim report that included results after 13 of the entities were reviewed. The final report is now in review at Sandia.

A positive step has been Sandia Senior Management's commitment to driving improvement in contractor assurance. As part of Sandia Strategic Objective 3, a goal was established that focuses on effective assurance. In addition, there have been several sessions with management across Sandia to discuss and define assurance and to set expectations across Sandia. Sandia also made several organizational changes that show Leadership engagement in assurance including the recent reorganization that established the EVP for Mission Support and the creation of a Corporate Risk Officer.

Critical Performance Measure 6.3

Sandia will effectively and efficiently manage the corporate risks inherent in the management and operation of SNL.

Sandia Self-Assessment Rating: Good	NNSA Rating: Satisfactory

Risk-management techniques and approaches for identifying risks and appropriate responses have been a concern throughout FY2011. However, it is noted that several positive steps toward improvement have been taken including

Critical Performance Measure 6.3

the creation of a Corporate Risk Officer. This role has been given to the EVP for Mission Support to ensure corporate risk is managed and to establish a process to identify enterprise-level risks. In addition, the *Sandia Contractor Assurance System Affirmation Readiness Review* provided a baseline risk maturity level and improvement can now be measured.

SSO continues to have concerns with Sandia's risk evaluation process in terms of how it correlates to self-assessments, performance measures and corrective actions. However, the AIS risk module along with the coordination of an Affirmation Alignment Kick-Off between SSO and Sandia will begin to address these concerns. Further, Sandia's Corporate Governance Policy Area needs to better articulate and effectively communicate Sandia's risk management process, including its tie to self-assessment, performance measures and corrective actions and the expectations for the use of the AIS to effectively document risk.

Although the FY2011 PEP does not include a specific measure on legal management, performance regarding management of legal risk was clearly contemplated to be addressed under PO-6 (*"Sandia will operate its Corporate Governance policy area (including legal) . . ."*). However, performance data specific to management of legal risk were notably absent in the PEAR. FY2011 presented several opportunities for improvement in the management of legal risk. Defects in Sandia's Partnerships, Agreements, and Licensing System (PALS) database resulted in the lapse of patents underlying several licenses for non-payment of maintenance fees. The defects were discovered in the course of investigating allegations raised in a demand letter from counsel for one of the licensees. As a result, Sandia suspended all licensing activity for a period of several months, retained outside counsel without prior SSO approval, and refunded royalties to several licensees to reduce the risk of potential legal liability. Despite assurance that licensing activity would not resume until the causal analysis was completed and the results briefed to SSO, licensing was restarted even though SSO has yet to be briefed on the results of the causal analysis. As noted in the 2nd quarter Periodic Contractor Performance Report, SSO views Sandia's Legal Management Plan as a mechanism Sandia should fully employ to enhance management of legal risk. Unfortunately, Sandia did not consistently follow its Plan; *e.g.*, Sandia failed to obtain SSO approval of (1) the settlement of a National Labor Relations Board Complaint, and (2) the hiring of outside counsel to provide a seminar on alternative financing. However, Sandia is to be commended for overall effective management of legal risk as the number of lawsuits filed has continued to decline and the costs of outside counsel engaged to defend Sandia in lawsuits and formal administrative hearings have continued to decline since FY2007.

PERFORMANCE BASED INCENTIVES

PBI-1: Nuclear Weapons Stretch Goals

Achieve stretch goals detailed below to demonstrate Sandia's leadership within the National Security Enterprise. Evaluation of these stretch goals will consider the availability of sufficient funding needed to complete such additional work.

Adjectival Rating: Excellent

Summary of Performance

The stretch goals reflected in this Performance Based Incentive challenge Sandia to go beyond the achievement of current year Level II milestones, by stretching resources and productivity to exceed expectations. As such, Sandia successfully exceeded the milestone performance criteria and met overall cost, schedule, and performance requirements for all but one of the stretch goals. Sandia failed to meet stretch target PBI-1.2.2, *Complete Neutron Generator (NG) production up to 700 units*. On June 7, 2011, NG production of the Large Ferro-Electric Neutron Generator (LFENG) was paused due to loss of bias (LOB) failures at final acceptance testing. In spite of this pause in production, NG shipments continued to meet all FY2011 directive schedule requirements through a combination of existing inventory from FY2010 and the 521 NGs that Sandia produced in FY2011.

Significant Accomplishments

NA-10 recognized Sandia's effort in conducting the plutonium (Pu) shots at Z-Machine as well as their collaborative efforts with Los Alamos National Laboratory (LANL) in a letter to both Sandia and LANL, which praised their collaboration and acknowledged the challenges that were overcome to reach the capability to perform Pu shots. The letter stated, "The restart of this program could not have come at a more opportune time given the emphasis in the SSP on progress on the Predictive Capability Framework, the Boost Initiative, and in establishing the technical basis for additional surety options for the B61 Life Extension Program." The Senate Energy & Water Subcommittee also recognized the data from the Z-Machine Pu shots as being "one of the most valuable contributions to the stockpile stewardship program."

Sandia Advanced Simulation and Computing (ASC) developed new technologies resulting in improved model-building agility to support B61 Life Extension Program (LEP) system design. Additionally, Sandia showed a marked increase in support of the Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) requalification efforts, by adding additional staff and creating a General Engineering document to track product and tester requalification efforts.

Performance Measure 1.1

Exceed Level II Milestones associated with Advanced Simulation and Computing (ASC) and Science Campaigns/Inertial Confinement Fusion (ICF), as described in detailed statements shown below.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Excellent
Performance Target	**Comments**
1.1.1 ASC-related stretch goal(s): Apply ASC modeling and simulation tools to aid in component requirements definition for the B61 Life Extension Program (LEP). This will be done in three steps: 1) Demonstrate a tetrahedral-based geometry tolerant meshing (TGTM) capability in Cubit for	Sandia met this Performance Target. Sandia's approach to meeting this stretch goal was modified based on initial customer interaction, such that other technologies, in addition to the originally planned tetrahedral-based geometry tolerant meshing technology, were determined to be needed and were therefore also developed. Three geometry tolerant technologies (Gap/Overlap Tool, Tolerant Component Connections, and Automated Defeaturing Tool) were developed by the Sandia Cubit Team, which have improved model-building agility to support system design, with emphasis on the B61 LEP. Customer feedback from the analysts utilizing these new technologies was very positive, particularly the considerable timesaving

Performance Measure 1.1	
full system models; 2) Advance TGTM capabilities from demonstration to routine application; and, 3) Demonstrate the TGTM capability in developing a B61 thermal analysis mesh.	realized in developing models.
1.1.2 ICF-related stretch goal(s): Successfully complete the following ICF-related work in FY2011: 1) Contingent on timely reception of the needed targets from Los Alamos National Laboratory (LANL), conduct (3) plutonium shots and (2) uranium shots, and (1) material #4 shot on Z, providing results from each test within 30 days to LANL and HQ.	Sandia met this Performance Target. The three Pu shots were successfully completed at Z-Machine on November 18th, March 31st and September 22nd. Sandia responded to an NNSA programmatic and technical need by collaborating with LANL and conducting a high priority experiment on material #4 in lieu of one of the originally planned Pu shots. LANL requested the change, which was supported by HQ and SSO. Data on the dynamic response of Pu was provided to LANL and NNSA within 30 days of each shot. The two depleted uranium (U) equation-of-state shots were successfully completed on August 29th and September 1st. While the data is still being analyzed, preliminary results on principal Hugoniot, release state, and material strength have been shared with both LANL and NNSA. The importance of the data about the behavior of Pu at high pressure obtained from the Z-Machine Pu shots was recognized by NA-10 and the Senate Energy & Water Subcommittee.
1.1.3 Science Campaign-related stretch goal: Demonstrate pulsed power performance to meet Science Campaign requirements; develop advanced pulsed power sources for radiation effects testing, radiography, and isentropic compression experiments (ICE).	Sandia met this Performance Target. Sandia developed and/or demonstrated numerous new capabilities at Z-Machine in FY2011. In addition to over 20% of the shots at Z being performed at 85-kV Marx Charge, several complicated Radiation Effects Science (RES) shots were also conducted on Z. Sandia is developing new methods to obtain data at higher pressures, using cylindrical geometry and close coupling with computational modeling, and to acquire off-Hugoniot and off-the-principal-isentrope data. Sandia also demonstrated new capabilities to obtain data on preheated materials and pressurized gases. Sandia also designed and tested a new containment chamber to a peak current of 15.7 MA for an ICE. Sandia linear transformer driver technology was also tested at increasingly high voltages.

Performance Measure 1.2	
Exceed Level II Milestones associated with Directed Stockpile Work (DSW) and Engineering Campaigns, as described in statements shown below.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
Performance Target	**Comments**
1.2.1 Leverage technology maturation and planning to provide multiple opportunities for insertion of new technology into the NW Stockpile as part of upcoming LEPs, limited life component exchange, alts & mods. Also, ensure alignment of methods to qualify (non-nuclear) components against established (documented) hostile radiation threat	Sandia met this Performance Target. Sandia assisted in the progress of the component maturation framework (CMF) by developing a matrix for Sandia components. Sandia briefed DSW Managers during the Integration Planning meeting in February 2011. Program Readiness supports a wide variety of research and development projects for technology maturation and nurturing of critical expertise. Sandia, with LANL and Lawrence Livermore National Laboratory (LLNL), delivered a paper to NA-10 on June 17, 2011, providing planning options for Sustained Stockpile Life Extension. The document described future alternative strategies to enhance technical effectiveness in the context of an evolving stockpile and deterrence landscape. SNL, LANL and LLNL have led the eight NNSA sites in producing four deliverables to explore planning options for phased stockpile development and production,

Performance Measure 1.2	
environments.	"a build approach", in preparation for the October 2011 Nuclear Weapons Council (NWC) Standing Safety Committee (SSC) meeting. Sandia updated the CMF results for the B61 LEP, the W88 ALT and the W78 LEP. Sandia repeatedly demonstrated the ability to overcome significant technical challenges in order to deliver capability for qualification of radiation hardened components to the stockpile. Sandia provided an excellent 5-year plan for maturing radiation hardened technologies and nuclear survivability assessment capabilities. This plan provides an outstanding foundation for establishing a truly integrated framework across ASC, Readiness in Technical Basis and Facilities (RTBF), and DSW Research and Development (R&D) for maturing nuclear survivability-related technologies at Sandia. The documentation was extremely thorough and will be a valuable resource for planning and programming in the future. Sandia organized a DSW stakeholder review of the R&D activities and priorities of the nuclear survivability campaign to assure proper alignment with DSW programs and included construction of a five-year plan. Sandia also conducted Qualification Alternatives to the Sandia Pulsed Reactor (QASPR) reviews to NNSA for the W88 ALT.
1.2.2 Complete Neutron Generator production up to 700 units (includes a full-fee target of 700 units encompassing U.S., U.K., surveillance and development units) in accordance with agreed-to schedule and resource allocation.	Sandia did not meet this Performance Target of Production of 700 NG units. On June 7, 2011 NG production of the LFENG was paused due to LOB failures at final acceptance testing. Sandia immediately assembled a problem solving team to investigate and resolve the failure. Sandia shipped 578 NGs in FY2011, supplementing the 521 NG built, by drawing down existing inventory from FY2010. Based on current schedule requirements, the NG production pause may affect deliverables in FY2012. Indications are that the Worst Case scenario has been realized and none of the various assembly/subassembly levels will be useable when operations restart. Because this scenario will essentially require restart of production with new NG subassembly product, more lead time will be required and a root cause needs to be identified and/or a qualified process solution needs to be in place by December 1, 2011 or deliveries starting in April 2012 will be impacted. Sandia is still evaluating risk mitigation measures with respect to utilizing either NG shelf life assets or legacy W76-0 NG assets with sufficient life (longer lead time risk mitigation options). Sandia is also evaluating the reliability and performance of NGs with the LOB problem as a further risk mitigation option.
1.2.3 Implement the new NNSA 3-point cost estimating approach for LEPs and demonstrate the approach on B61 LEP.	Sandia met this Performance Target. Sandia, in accordance with established Phase 6.2/6.2A processes, completed the Weapon Design Cost Report (WDCR) for the B61 LEP. The cost estimate was prepared for a range of options as established by the B61 Project Officers Group and included the baseline option (2C) which incorporated both Direct Optical Initiation (DOI) and Multi-Point Safety. A series of independent reviews concluded that Sandia's estimates met the criteria. Sandia developed a three-point cost estimate for the full nuclear and non-nuclear LEP, coupled with a more mature understanding of scope and resource requirements.
1.2.4 Utilize existing resources within the stockpile systems to conduct	Sandia met this Performance Target. Sandia showed a marked increase in support of the KCRIMS requalification efforts by adding additional staff and

Performance Measure 1.2	
Engineering Evaluation for hardware and testers per the requalification activity plan derived by the NNSA / SNL / Kansas City Plant (KCP) Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) Steering Committee and summarize impacts to the stockpile systems at the end of FY2011.	creating a General Engineering document to track product and tester requalification efforts. The requalification focused on the work which was required to keep KCRIMS on schedule. This significantly reduced the FY2010 and FY2011 workload but increased Sandia's future risk by deferring workscope into FY2012-FY2015. This workload is spread across systems and components, and most affect quality engineering. • B61 - Several previously identified KCRIMS products were removed from the high priority list due to the Joint Test Assembly (JTA) modernization effort. Some Requalification Notice responses were completed and other work was limited to defining preliminary requalification quantities, material disposition responses, and minimal planning. • W76, W88, and B83 - No requalification plans were issued in FY2011. Work was limited to defining preliminary requalification quantities, material disposition response, hardware and tester disposition response and minimal planning. The W88 funded work for a quality engineer to investigate how the Kansas City Plant might outsource some of Sandia's work. • W78 - Two requalification plans were released for the Forward Support and Support Assembly in support of the JTA6. Outsourcing for the JTA6 is ongoing. Additional work supported defining all KCRIMS related preliminary requalification quantities, material disposition response, and planning including coordination and responding to the Sandia KCRIMS Program Team. • W80 - Two requalification plans were released for the Aft Assembly, MC4801 and the CT1600, Cable Assembly, Electrical. Additional work supported defining all KCRIMS related preliminary requalification quantities, material disposition response, and minimal planning. • W87 - One requalification plan was released for the MC3719, Firing Set Assembly. Work was limited to defining preliminary requalification quantities, material disposition response, and minimal planning.

PBI-2: Nuclear Weapons Quality Assurance – Stretch

The Sandia NW SMU has been making Quality Management System improvements over the past several years. In FY2011, Sandia will continue to improve its quality assurance (QA) methods and focus on the four identified opportunities for improvement, as identified below. These four areas, if successfully addressed, would significantly benefit product realization and product quality delivery at Sandia and its NSE partners (Kansas City Plant, Pantex, suppliers, etc).

Adjectival Rating: Good

Summary of Performance

Sandia scored well on all four targets and made good progress in improving the specific Nuclear Weapons Strategic Management Unit (NW SMU) Quality Management System (QMS) elements identified for FY2011. However, Sandia has several continuing quality concerns (e.g., Code Blues, Supplier Management, and Prevention of Production Defects) that require additional improvements to the Sandia QMS. Those additional systemic improvements for FY2012 and beyond will need to be identified soon, and causal analysis applied, so that corrective action(s) are institutionalized in order to prevent future issues.

Significant Accomplishments

There has been significant progress related to conducting Peer Reviews, which have the potential of preventing future issues. In addition, the Weapons Qualification activities for the B61 have been organized for multiple levels with integration and a review process around Fagan inspections with prevention in mind.

Sandia developed a new NW Quality Assurance Model for Product Realization, which includes improvements to strategic issues impacting the NW Chief Engineer, reporting on Design, Production, Integration, and Quality. Sandia also developed a new Quality Assurance Core Team (QACT) role to help identify repeating/systemic quality issues and recommend solutions for implementation. In addition, the QACT leadership successfully facilitated discussions between Sandia Management and the Sandia Site Office (SSO) resulting in improved understanding of the systemic issues that led to Sandia solutions/improvements around Sandia designs, production and Requirements Modernization and Integration (RMI) activities. Lastly, the work of the Sandia MC4682 and Neutron Generator (NG) Loss of Bias (LOB) Teams to identify issues, work the issues, their openness to inputs, and the level of transparency provided to SSO into all aspects of finding solutions were very well executed.

Opportunity for Improvement

Sandia has had many production issues around supplier management that has been identified as a weakness and as an opportunity for improvement again this fiscal year. In this context, "supplier management" is to be understood as "Sandia's management of their supplier," as Sandia has not taken appropriate action(s) to determine the causes(s) of recurring non-conformances to permanently correct the systemic problem (QC-1 Section 4.1).

The supplier management issues with the Lot 20 MC4378 Timer, sub-lots a and h, and the issues with other explosive components, clearly demonstrate that prior causal analysis and corrective actions were not effective. In addition, corrective actions were expected to be systemic and implemented by other Sandia organizations procuring war-reserve products but those solutions did not prevent the more recent MC4682 issues. SSO continues to be concerned as to the effectiveness of Sandia External Production's (SEP) causal analysis and corrective action solutions given that those solutions have not produced the production success expected for those products. However, SSO has seen production success when the production responsibility of one of SEP's products (MC4379A Timer) was assigned to Sandia's Internal Production's management and staff. While Sandia Internal Production's staff had no experience with the production requirements for the MC4379A Timer, they started from the beginning, and within a year, were able to deliver timers that met all requirements and without technical issues. SSO recognizes that a self-assessment is underway to sort out these very issues and SSO is counting on this effort, and/or other remedies, to correct this critical QMS weakness.

Opportunity for Improvement
The dual capacitor and NG, both experienced production issues great enough to be identified as Code Blue products this fiscal year. One component is built at a supplier and one is built at Sandia. In the future, root causes and solutions that prevent code blues should be assigned a high priority prevention analysis and corrective action plan. Altogether MC4682 lots 5 and 6, along with Timer and Detonator lots, had quality issues that affected budgets at both Sandia and the Kansas City Plant (KCP) ($3-$5M at Sandia and ~$20M at KCP). Design and development dollars were saved early in the program (quarter cost goal) but the consequence of not having a robust QMS is that there are large cost and schedule impacts to NNSA, KCP and Sandia commitments. Preventative measures, along with improvements to the NWSMU QMS, would have cost substantially less and are needed to prevent these situations from occurring again.

Performance Measure 2.1	
Execute a quality improvement plan to improve the effectiveness of the Sandia NW quality management program that incorporates prevention of weapon product defects, addresses recurring quality deficiencies, and leads to cost-effective quality assurance.	
Sandia Self-Assessment Rating: Good	**NNSA Rating: Good**
Performance Target	**Comments**
2.1.1 Implement improvements to processes so that Sandia designs are sufficiently mature prior to entering into full-scale production at the NSE manufacturing facilities. Develop design peer review process and demonstrate effectiveness on the B61 LEP. Working with the KCP, develop quality assurance key performance parameters and demonstrate effectiveness on relevant NW production activities.	Sandia met the criteria of this performance metric. The particular strengths for this target are that prevention of design issues have begun early in the design process, which is due to conducting peer reviews and improving the quality assurance processes for the B61 LEP Program.
2.1.2 Demonstrate improvements in executing Sandia processes so that Sandia QA and Nuclear Safety (NS) SMEs inputs are acted upon by management to resolution in accordance with Sandia processes. Track both QA and NS concerns, and document timely management decisions. Demonstrate effectiveness during FY2011 Stockpile Annual Assessment Cycle.	Sandia met the criteria of this performance metric. Sandia is now tracking issues, and actively managing the issues that have led to the timely resolution of multiple challenges in Cycle 16 of the Annual Assessment Process. Sandia also worked on Requirements Modernization and Integration (RMI) process improvements to improve Sandia Engineering Authorizations procedures.
2.1.3 Implement improvements so that Members of the Workforce (MOW) are fully trained and qualified prior to beginning mark-quality or war-reserve work. Develop training curriculum and tracking system for PRT Leads and L-1 Managers. Implement curriculum & tracking system in FY11.	Sandia met the criteria of this performance metric. Sandia implemented improvements in their training curriculum and are tracking training for all Product Realization Teams (PRT) Leads and L-1 managers.
2.1.4 Implement an improved methodology that leads to the effective prevention of quality-related production defects. Develop categories of defects that would benefit from a prevention program. Develop effectiveness metrics, including cost effectiveness, for prevention programs. Establish and demonstrate a pilot defect prevention program within one or more SNL production organizations.	Sandia did not meet the criteria of this performance metric. The pilot defect prevention program Sandia established had limited results. SSO is disappointed to see that "document errors" as the logical choice for a prevention pilot given the systemic issues that have caused high costs of non-conformance in FY2011 and prior years for explosive products (e.g., FY2011 for one explosive product, approximately $200,000 cost of non-conformance, the MC4378 Lot 20, sub-lot a. and h.).

PBI-3: Removal of Materials from Sandia National Laboratories - Stretch

Sandia will safely and efficiently remove nuclear and explosive/energetic material from SNL sites.

Adjectival Rating: Excellent

Summary of Performance

Sandia exceeded expectations in the preparation of no-defined-use (NDU) nuclear material and Transuranic (TRU) waste for disposition, and the removal of explosives. Sandia's collaboration with external organizations resulted in the achievement of numerous disposition goals and Sandia's diligence resulted in exceeding all of the targets that were within their control. Sandia completed the repackaging of Lovelace Respiratory Research Institute (LRRI) TRU waste for off-site shipment, which is a task that required extraordinary effort, including obtaining an exemption from 10 CFR 830. The completion of all packaging activities for removal of TRU waste required relentless coordination with personnel from the Waste Isolation Pilot Plant (WIPP), the Central Characterization Project (CCP), Nevada National Security Site (NNSS), Idaho National Laboratory (INL), and Department of Energy Office of Environmental Management (DOE/EM).

Significant Accomplishments

Sandia focused considerable effort this fiscal year on completing all packaging activities for removal of Contact Handled (CH) and Remote Handled (RH) TRU waste. This required unrelenting coordination with personnel from WIPP, the CCP, NNSS, INL, and DOE/EM. Sandia's perseverance resulted in completing two initial shipments of CH TRU, meeting the Site Treatment Plan (STP) milestone with the State of New Mexico to remove all mixed TRU waste and mixed sealed sources, and preparing all CH and RH TRU waste for offsite shipment.

In order to perform the repackaging of Hazard Category 3 LRRI TRU waste for off-site shipment, Sandia requested and received an exemption from 10 CFR 830. This repackaging activity was performed in the Radioactive Mixed Waste Management Facility (RMWMF), where a glovebox installation was upgraded to support this repackaging effort. Sandia obtained the exemption, completed the upgrades to the RMWMF glovebox, performed a verification and validation of the proposed activity, and safely completed the repackaging. This resulted in preparing the difficult LRRI TRU waste for offsite shipment.

Sandia achieved the successful completion of the repackaging of 30 RH TRU waste drums through the extensive use of the Auxiliary Hot Cell Facility (AHCF). Due to mechanical breakdowns and non-conforming waste, the schedule was, at times, four weeks behind. However, Sandia implemented novel approaches to gain back schedule and through planning, coordination, and the dedicated work effort of the staff at the AHCF, successfully completed the repackaging target one week ahead of the original schedule.

Opportunity for Improvement

N/A

Performance Measure 3.1

Sandia will safely and efficiently remove nuclear No Defined Use (NDU) materials from SNL sites.

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Excellent
Performance Target	**Comments**
3.1.1 Sandia will complete removal of Highly Enriched Uranium (HEU) Scrap, including Prompt Burst Excursion (PBE) sodium/uranium fuel scrap and remaining NDU enriched uranium.	Sandia pre-packaged the waste for placement into the new DOE Type A fissile material shipping container (9979), obtained the initial production containers and prepared the waste for shipment. Withdrawal of the container certification by DOE is the only obstacle remaining to ship this waste offsite.

Performance Measure 3.1	
3.1.2 Sandia will make significant progress to remove classified radioactive materials from SNL/CA, stored in Building 927.	Sandia made significant progress on this target by identifying: resources outside Sandia to perform the work, a disposal path to include shipping containers and transport mechanisms, and funding sources. However, much remains to be done in terms of planning and securing funding. The continued storage of this material results in ongoing security costs associated with maintaining a vault-type room in a non-limited area.

Performance Measure 3.2	
Sandia will safely and efficiently process and stage transuranic (TRU) waste for removal in support of DOE Complex goals.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
Performance Target	**Comments**
3.2.1 Sandia will repackage all TRU waste (CH and RH) in preparation for shipment to WIPP.	Sandia completed the repackaging of all the CH and RH TRU waste. Though confronted with a steep learning curve to prepare TRU waste for shipment to WIPP, Sandia supported all the required inspections, demonstrations and document requests. Sandia's preparations also allowed the completion of the STP milestone to remove all mixed TRU waste and mixed sealed sources.

Performance Measure 3.3	
Sandia will safely and efficiently remove excess explosive/energetic material from SNL sites.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
Performance Target	**Comments**
3.3.1 Sandia will remove at least 45,000 pounds of explosives before the end of FY2011.	Sandia exceeded this target and disposed of over 60,000 pounds of explosives/energetic material.

Performance Measure 3.4	
Sandia will remove non-certified Co-60 sources from the Gamma Irradiation Facility (GIF) to further reduce materials at risk.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
Performance Target	**Comments**
3.4.1 Sandia will make significant progress to downgrade the GIF to a radiological facility.	Sandia completed this target by submitting an exemption request to downgrade the GIF from Hazard Category 3 nuclear facility to a radiological facility. The exemption request is being reviewed by SSO prior to submittal to NA-10 for approval.
3.4.2 Sandia will make significant progress towards removing the non-certified Co-60 sources from the SNL/NM site (i.e., preparations in FY2011 to support removal of non-certified Co-60 sources from SNL/NM by the end of FY2012).	Sandia completed two of the four phases of this project and is expected to complete shipment in FY2012

PBI-4: Mission Support Efficiencies

Establish enduring Sandia practices that achieve operational efficiency, while sustaining effectiveness, through reform of Laboratory-wide processes and the implementation of Governance.
Adjectival Rating: Excellent

Summary of Performance

Sandia continued to evaluate and transform their business processes to more efficiently manage the business as well as support the NNSA Governance Initiative as is identified in the Sandia Performance Evaluation Assessment Report (PEAR). Sandia implemented improvements based on value streamed process reviews that provided enduring results while continuing to focus on a longer-term strategy that reduced complexity, increased standardization, and better aligned organizational execution for end-to-end workflow. Sandia's efforts yielded cost efficiencies that exceeded the $15 million annual target and demonstrated progress toward the institutionalizing of key business processes. Sandia achieved record hiring to support their workforce strategy and mission requirements. Sandia has been transparent with their indirect cost pool management and helped federal analysts understand their indirect budgeting and oversight processes. Sandia allocated strategic investment funds and provided support to begin the Site-wide Environmental Impact Statement (SWEIS) analysis. Finally, Sandia Integrated Safeguards & Security (IS&S) was successful at implementing Security reform (NNSA NAPs 70.2 and 70.4) in a manner that resulted in reduced security costs and operational efficiencies. SSO recognizes Sandia IS&S stepped up its efforts to work with other Sandia organizations, such as cyber security, to develop and deploy select engineering controls. While, Sandia IS&S begun to cultivate and establish partnerships with the line organizations, corporately, Sandia was not able to provide or demonstrate measurable evidence of improved line security performance.

Significant Accomplishments

- Significantly exceeded cost savings goal of $15M through validated institutional process improvements.
- Achieved record hiring in support of the Sandia Workforce Strategy, up 157% from FY2010, to meet an upsurge in retirements and mission requirements.
- Developed a long-term strategic approach including a one-time up-front investment that will ensure the repeatable and defensible implementation of future NNSA NAPs.
- Assumed a lead role in piloting the Defense Nuclear Security (DNS) Safeguards and Security Performance Metrics Program and took the lead in the development of automated data capture and reporting systems to be used throughout the National Security Enterprise (NSE).
- Implemented Oracle R12 to drive more efficient operations and improve accuracy for better internal controls.

Opportunity for Improvement

Despite many completed actions and efforts to prevent/reduce security incidents, no measurable improvement in line security performance was demonstrated during the performance period. The total number of 10CFR824 type security incidents at the close of this performance period exceeded the FY2011 goal of 70 by 31 incidents.

Performance Measure 4.1

Sandia uses management techniques & methodologies to reduce and/or avoid costs. Sustainable cost efficiencies create both savings (reduction in actual expenditures) and avoidance (decreased or prevented future costs).

Sandia Self-Assessment Rating: Excellent	NNSA Rating: Excellent
Performance Target	**Comments**
4.1.1 SNL will use risk-based decision making, Lean Six Sigma tools and techniques, and other business operations improvements that result in process improvement	Sandia provided a list of process savings that were adjusted numerous times during the last quarter. While not all claimed savings were realized, SSO validated savings greater than the goal of $15M. Some of the savings identified include carryover from the previous year, as a full year's savings were not claimed in FY2010. Although a list of savings

Performance Measure 4.1	
savings equivalent to $15M (including savings from 4.1.2). Reported cost savings/avoidance will be in accordance with Sandia CPS FIN100.2.RPRT.2 or as estimated and documented through Lean Six Sigma methodology. Generally, cost savings/avoidance will only be reported for a 12-month period, starting with the date of implementation.	has been provided, and redirection of savings identified, Sandia did not meet all the requirements of their Corporate Procedure FIN 100.2 RPRT.2 *Document Efficiency & Cost Savings*. Notable process improvements that resulted in significant savings or cost avoidance include: the technical library now purchases subscriptions with unlimited article downloads instead of a pay per use; implemented a Consumer Driven Health Plan and incentive plan, and outsourced their Medicare retiree plan; implemented a new process that allowed Sandia to forgo destructive testing on packages meeting certain criteria; and several Governance initiatives.
4.1.2 Sandia will capture and report all cost savings and avoidances realized through Governance implementations.	Sandia reported Governance savings to SSO, which was then included in an End of Year Summary Report on Governance submitted by SSO to NA-17 at the end of FY2011.
4.1.3 Sandia will identify how cost/resource and savings/avoidance were redirected.	Redirection of savings has been identified for most of the savings. In general, most of the savings have gone to pensions. However, the largest part came from reduced overhead costs and cannot be directly tied to reutilization. Reduced overhead flows directly back to mission in the form of reduced cost.

Performance Measure 4.2	
Sandia will undertake and implement a strategy in FY2011 to address workforce planning to identify and maintain core capability while ensuring seamless operations.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
Performance Target	**Comments**
4.2.1 Sandia will develop a workforce strategy to articulate future workforce requirements per HR 100.1.6, *Implement an Integrated Workforce Management Approach*. Progress to plan will be monitored and reported quarterly through the Management Assurance process. Reaching 80% or more of the planned hires by the close of FY2011 defines success for the entire corporation	Sandia met milestones associated with this project. Engaged and targeted employee communications were a key element of this project throughout the year. Staffing numbers through year-end are 1130 against a goal of 1160. Year end metrics are as follows: 97.4% = FYE 2011 Hires to Goal 92.2% = Offer acceptance rate 107% = FYE 2011 Acceptance to Goal 32.3% = women external hires 31.6% = Ethnically diverse external hires Hiring numbers are up 157% from FY2010 and 470% from FY2009. Diversity of hires exceeded goals. Upon receipt of a final FY2012 budget resolution, Sandia hiring challenges could remain into FY2012 driven by separations and additional mission related requirements.

Performance Measure 4.3	
Effectively integrate security into mission work resulting in improved security performance and enhanced productivity.	
Sandia Self-Assessment Rating: Good	**NNSA Rating: Good**
Performance Target	**Comments**
4.3.1 Security reform is implemented while ensuring mission work is performed in a secure manner while reducing mission security costs and increasing productivity	Sandia IS&S was actively involved and assumed a leadership role in the NNSA effort to reform existing DOE security requirements. Sandia participated on NNSA NAP development teams, Joint Operating Requirements Review Boards and Enterprise Operating Requirements Review Boards. Sandia developed a long-term strategic approach

Performance Measure 4.3	
	including a one-time up-front investment in the form of a core implementation team that designed and institutionalized rigorous practices and processes that will ensure the repeatable and defensible implementation of future NNSA NAPs. This approach defines and captures cost savings/cost avoidances resulting from relief from requirements through the successful implementation of the NNSA NAPs. Sandia implemented NNSA NAPs, NAP 70.2 and NAP 70.4, which allowed Sandia to curtail vault-type room (VTR) logging requirements; reduced Intrusion Detection requirements; removed requirements for inventory of accountable classified removable electronic media; and removed escort requirements associated with incidental access to closed areas (formerly referred to as VTR). These initial actions and others, Sandia saved approximately $1.3M in cost savings and related efficiencies.
4.3.2 Provide evidence of improved line security performance through development and deployment of select engineering controls and organization partnerships	Key milestones and other improvement activities identified in Sandia's Security Improvement Project are being completed in accordance with established schedules and due dates, but there has not been any additional evidence to support improved performance as a result of these activities. The total number of 10 CFR 824 type security incidents at the close of this performance period exceeded the FY2011 goal of 70 by 31 incidents.
4.3.3 Improve upon the current root cause analysis process for incidents of security concern to better identify negative trends for use in correcting identified deficiencies	Sandia hired a dedicated causal analyst and begun implementation of a "high-rigor" analysis process intended to determine the root causes of reported security incidents to help prevent/significantly reduce security incidents. Sandia is currently applying the high-rigor approach to high consequence events (IMI-1 and IMI-2 level security incidents). The revised procedure and the new process have the potential to provide useful causal information, but the process is not fully matured. Therefore, the impact on Sandia's efforts cannot be measured at this time.
4.3.4 Management utilizes a comprehensive set of security key performance indicators and a consistent trending and analysis process resulting in improved security performance	Sandia implemented and utilizes a multi-tiered set of metrics that encompasses operational, business and mission enabling performance attributes of the overall IS&S program. These metrics provide a consistent and repeatable basis for trending and analysis. Sandia IS&S exceeded performance expectations by assuming a lead role in piloting the DNS S&S Performance Metrics Program. Sandia IS&S also took the lead in the development of automated data capture and reporting systems to be used throughout the NSE, providing real-time performance data for 2nd, 3rd, and 4th quarters of FY2011.

Performance Measure 4.4	
Sandia will have in place "controlled" baselines for all indirect programs and functions cost pools, utilizing a baseline change control process, and present to SSO for review.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
Performance Target	**Comments**
4.4.1 Provide details of FY2011 indirect cost pools for General & Administrative (G&A), Site Support, Program Management and Supply Chain.	Details of the FY2011 indirect cost pools identified in this measure were provided. The baseline for Program Management and the Integrated Enabling Services (IES) is available through Reportville. IES includes G&A, Site Support, and Supply Chain. Meetings were held throughout the year to provide insight into individual pools. However, SSO takes exception to Sandia's implication in the PEAR that

Performance Measure 4.4	
	the list of reports provides the necessary information to understand all changes to the indirect pools. In order to gain a full understanding of baseline changes, SSO must seek further information from Sandia's system and meet with contractor personnel.
4.4.2 Provide visibility to the change control process.	Sandia provided visibility into the change control process. Sandia accomplished this target by meeting with SSO and provided SSO access to Reportville, IES, and other quarterly status meeting notes. Within Reportville, each indirect cost pool is broken down by projects and the budget amount is identified. However, some areas provide greater visibility than others. Visibility could be enhanced by providing real-time communication. While significant changes are communicated in quarterly meetings, SSO may not be aware of the basis for the changes until well after the occurrence. Additionally, there are small changes to planning levels (baselines) that occur frequently. All changes require manual tracking to understand the status of a project and most recent funding policy decisions.
4.4.3 Provide quarterly status to plan and summary of significant changes.	Sandia met this target. Through a quarterly meeting, Sandia provides a status to plan and discusses significant changes, if any.

Performance Measure 4.5	
Continue to institutionalize cost-effective financial internal controls to assure effective and efficient operations, reliable financial reporting, and compliance with applicable laws and regulations.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
Performance Target	**Comments**
4.5.1 Invest in automation to enhance internal controls leading to more efficient operations and improved accuracy.	Sandia met this measure with the implementation of Oracle R12. While there are some issues, it was successfully implemented in the 3rd quarter. Sandia identified some opportunities going forward as a result of a Lockheed Martin "Getting to Excellence" value stream.
4.5.2 Identify needed improvements and initiate steps to improve internal controls.	On a Pass/Fail metric, Sandia and NNSA Field Financial Management Division (FFMD) rated Sandia as "Pass" on FFMD's Measure 4, under Financial Review and Performance Assessment Department. Sandia has a comprehensive process as part of the NNSA Financial Management Assurance process. Sandia conducted test work in the 3rd and 4th quarter and did not find any material deficiencies.

Performance Measure 4.6	
To improve the efficiency and effectiveness of SNL/NM's mission planning, SNL/NM will provide technical support to DOE and the DOE/National Environmental Policy Act (NEPA) efforts.	
Sandia Self-Assessment Rating: Excellent	**NNSA Rating: Excellent**
Performance Target	**Comments**
4.6.1 Sandia will allocate funds for this project, requiring reprioritization to use limited/reducing indirect funds.	Sandia allocated the required $3M to NNSA in FY2011.
4.6.2 Sandia will respond to data calls and will provide SWEIS development support of high quality to the DOE and the DOE SWEIS Contractor in a timely manner.	Sandia provided excellent support. Significant accomplishments are facilitation of six public scoping meetings, updating Operational Area Environmental Evaluation Source Documentation, and developing Supplemental Information Source Documents.

PBI-5: FY2011 Multi-Site Targets

The deliverables included in the Multi-Site PBI are reflected in the PEPs of all eight Nuclear Security Enterprise (NSE) sites. The rationale for the inclusion of these deliverables in each of the FY2011 PEPs is to provide incentives to the entire NSE to work jointly to achieve goals that are critical to the mission of NNSA Defense Programs. To the degree that a site, like Sandia, has any role to play in the achievement by the NSE of a performance target, NNSA expects that the site will do everything possible to do its part (if applicable) and to support the other sites in the Enterprise to do their parts to achieve the goal.

Adjectival Rating: Very Good

Summary of Performance

The deliverables included in the Multi-Site targets are reflected in the PEPs of all eight Nuclear Security Enterprise (NSE) sites to provide incentives for the entire NSE to work jointly to achieve the NNSA Defense Programs mission. Sandia had leadership or co-leadership responsibilities for five of the twelve performance targets:

- Target 1.1 - Ensure W76-1 Life Extension Program (LEP) production remains on schedule - co-led with Pantex and Los Alamos National Laboratory (LANL).
- Target 1.2 - Complete B61 Phase 6.2/2a Option Down Select and Cost Study FY2011 activities that enable a 2017 First Production Unit (FPU) - co-led with LANL.
- Target 1.3 - Initiate FY2011 W78 Phase 6.1 activities - co-led with Lawrence Livermore National Laboratory (LLNL).
- Target 1.4 - Execute the defined Surveillance Program - Sandia led.
- Target 2.3 - Implement Enterprise Wireless project - co-led with the Kansas City Plant (KCP).

A series of independent reviews, including both Sandia and NNSA Headquarters (HQ), concluded that Sandia's estimates for the B61 LEP Weapon Design Cost Report (WDCR) met the criteria. However, the WDCR did not meet expectations as it exceeded available funding and did not align with the available budget, thus required additional discussions with Department of Defense (DoD). Sandia substantially increased the rate of Stockpile Lab Tests (SLT) and component tests at the Weapons Evaluation Test Laboratory (WETL) facility.

Z experiments supported the design and development of advanced surety features, and Sandia contributed to National Ignition Facility (NIF) accomplishments by providing support with Nuclear diagnostics, X-ray Diagnostics, and Calculations of material mixing during capsule implosions. Sandia was also instrumental in the success of the Barolo experiments at U1a, obtaining 100% data recovery with Cygnus.

Sandia provided information reflecting a FY2011 cost savings of $85M, almost half of the NA-10 multisite cost savings goal of $178M.

A significant concern is the current status of three W76-1 Code Blues that were opened during FY2011 for the Neutron Generator (NG), Launch Accelerator (LA), and Capacitor issues. Sandia worked with NNSA to develop and implement Code Blue mitigation activities and plans throughout FY2011. A previous Code Blue that was opened in FY2010 for the Intent Stronglink was closed in January 2011.

Significant Accomplishments

A notable accomplishment is that 59 SLTs and 977 subsequent component tests were completed at WETL. This is a substantially higher rate of testing than was accomplished in FY2010, during which Sandia completed 24 SLTs and 369 subsequent component tests. This increased SLT test rate is even more significant when one considers SLT testing is much more complex and time consuming today than it was five years ago when Sandia last tested at this rate.

Sandia showed a marked increase in support of the Kansas City Responsive Infrastructure Manufacturing and

Significant Accomplishments
Sourcing (KCRIMS) requalification efforts. They added additional staff and created a General Engineering document to track product and tester requalification efforts. The critical material property data obtained through Z experiments supported the design and development of advanced surety features. Additionally, significant Z resources were spent supporting NIF accomplishments, specifically with Sandia expertise in 3 new areas (Nuclear diagnostics, X-ray Diagnostics, and Calculations of material mixing during capsule implosions) as well as Sandia contributions to the design and execution of convergent ablation, shock timing, "symcap", and hohlraum energetic experiments on NIF. Sandia was also instrumental in the success of the Barolo experiments at U1a, by maintaining the readiness of and optimizing the Cygnus radiographic source and the velocity interferometer (VISAR), resulting in 100% data recovery.

Stockpile Item 1	
Sandia Self-Assessment Rating: Complete	**NNSA Rating: Very Good**
Stockpile Item 1.1 - Ensure W76-1 LEP production remains on schedule as identified in PCD W76-01 2011-A (as revised) for deliveries to the U.S. Navy.	
Sandia W76-1 Systems provided all required engineering support to Sandia External Production (SEP), KCP, and Pantex (PX) to meet the delivery requirements to the DoD. The MC4710 Intent Stronglink (ISL) Code Blue that was opened in FY2010 was closed in January 2011 after an ISL with the new design was inserted into an Arming, Fuzing and Firing (AF&F) at KCP in December 2010. For the MC4713 LA Code Blue, relevant Navy requirements were confirmed and revised and the Code Blue is expected to be closed soon. For the MC4682 Capacitor Code Blue, the SEP Organization in Division 1000 did not meet deliverable requirements that were scheduled for delivery at KCP in April 2011. This delivery slipped several months as multiple lots of capacitors were scrapped at the SEP subcontractor (Lot 3, part Lot 4, Lot 5, and Lot 6). The impact of this was that production of AF&Fs was significantly reduced in early August at KCP to assure that the KCP production would not have to be completely stopped until capacitors are scheduled to be provided in January 2012. Additional impacts that have resulted from the SEP Organization not meeting the capacitor deliverable were: 1) KCRIMS build ahead of AF&Fs has been canceled at KCP; 2) Next assembly flow times have been compressed at KCP; 3) estimated $20M will be required to stand up a second production line at KCP to catch up with Production and Planning Directive requirements when capacitors are available; 4) NNSA had to renegotiate the deliverable schedule with both the DoD and the United Kingdom (U.K.); and 5) PX deliveries to the Navy in FY2012 and FY2013 were readjusted.	
Stockpile Item 1.2 - Complete B61 Phase 6.2/2a Option Down Select and Cost Study FY2011 activities that enable a 2017 FPU.	
The B61 LEP completed all activities on schedule for completion of B61 Phase 6.2/2a Option Down Select and Cost Study to meet a 2017 FPU. A Phase 6.2 Conceptual Design Review, including an independent peer review, was conducted to evaluate the feasibility of the system design concept to meet anticipated requirements. The B61 LEP Integrated Phase Gate (IPG) system level Gate B Review of the Phase 6.2 Design was performed and authorization was given to proceed to Phase 6.2A with conditions, which have been addressed. The B61 LEP team completed the WDCR required for Phase 6.2A with approval by the Sandia President and submission to NA-1 August 18, 2011. In April 2011, an Independent Peer Review team for the B61 LEP reviewed the Sandia design and documented their findings in a Peer Review out brief. A series of independent reviews concluded Sandia's estimates for the B61 LEP WDCR met criteria. However, the WDCR did not meet expectations as it exceeded available funding and did not align with the available budget. Inputs and deliverables were completed to support the system level Gate C scheduled for September 23, 2011. The Gate C resulted in a "No Go" decision due to the scope changes from Option 2C to Option 3B not being thoroughly understood.	
Stockpile Item 1.3 - Initiate FY2011 W78 Phase 6.1 activities.	
Due to the delay of Congressional authorization, the W78 LEP Phase 6.1 study was postponed by nine months to start	

Stockpile Item 1

on June 1, 2011. The objectives of the LEP are to extend the W78 life and replace the fuze, to improve safety and security with a goal to deploy in multiple platforms. The LEP team integrated into the POG structure; working with the Air Force on the requirements, weapon performance analysis, surety, trade studies and deliverables for the program. Sandia reviewed and provided feedbacks on the Military Characteristics (MCs), Stockpile-to-Target Sequences, and fuze specifications. Sandia is working with LLNL to identify the feasibility of refurbishment, reuse and replacement options against the requirements. Sandia evaluated three of the six Nuclear Explosive Packages with preliminary system layouts, system architectures and mass properties. Sandia generated a detailed Phase 6.1 schedule, an outline of the Phase 6.1 report, a preliminary Phase 6.2/2A program plan, and overall LEP schedule.

Stockpile Item 1.4 –Execute the defined Surveillance Program.

Sandia fully supported surveillance flight testing across all active weapon systems and successfully completed 16 of the 29 Surveillance Flight Tests (SFTs) planned in FY2011. The other 13 SFTs were not able to be conducted due to DoD issues on the W76-0 (three), W76-1 (five), W80 (three), and W87 (two). Sandia exceeded the 46 planned principal Surveillance Laboratory Tests during FY2011 by successfully conducting 59 at the WETL. This is a substantially higher rate of testing than has been accomplished in several years, and was achieved while: 1) standing up new testers (e.g., W80); 2) modifying and upgrading several existing testers (e.g., B61 and B83); 3) catching up on deferred maintenance associated with the WETL centrifuges (Genisco); and 4) performing almost a thousand component tests. This increased test rate is even more significant considering surveillance laboratory testing is much more complex and time consuming today than it was five years ago when Sandia last tested at this rate. This test rate was made possible due to significant investments in improved efficiency for operations at WETL (e.g., implementing the W88 Off-Arm test capability resulting in 14 SFTs being completed instead of the original plan of 4).

Enterprise Integration - Item 2

Sandia Self-Assessment Rating: Complete	NNSA Rating: Excellent

Enterprise Integration - Item 2.1: Support business process transformation and relocation of the Kansas City Plant.

An initial draft list of gages requiring requalification was be released by end of September. The requalification focused on the work which was required to keep KCRIMS on schedule. Sandia showed a marked increase in support of the KCRIMS requalification efforts. They added additional staff and created a General Engineering document to track product and tester requalification efforts. This significantly reduced the FY2010 and FY2011 workload but increased Sandia's future risk by deferring workscope into FY2012-FY2015. This workload is spread across systems, components, and most affecting quality engineering.

- B61 - Several previously identified KCRIMS products were removed from the high priority list due to the Joint Test Assembly (JTA) modernization effort. Some Requalification Notice responses were completed and other work was limited to defining preliminary requalification quantities, material disposition responses, and minimal planning.
- W76, W88, and B83 - No requalification plans were issued in FY2011. The W88 funded work for a quality engineer to investigate how KCP might outsource some of our work.
- W78 - Two requalification plans were released for the Forward Support and Support Assembly in support of the JTA6. Outsourcing for the JTA6 is ongoing.
- W80 - Two requalification plans were released for the AFT Assembly, MC4801 and the CT1600, Cable Assembly, Electrical.
- W87 - One requalification plan was released for the MC3719, Firing Set Assembly.

Enterprise Integration - Item 2.2: Successfully complete NNSA-approved priority activities to achieve enhanced efficiencies.

Sandia satisfactorily implemented the NNSA-approved priority activities, as defined in the January 2010 SSO-Sandia Governance and Oversight Project Execution Plan, resulting in cost efficiencies from the reduction in the number of directives on contract. Sandia integrated the Joint Operating Requirements Review Board process into their standard business practices. Sandia also achieved cost efficiencies by restructuring the PEP development and review process,

Enterprise Integration - Item 2	
Sandia Self-Assessment Rating: Complete	**NNSA Rating: Excellent**

Enterprise Integration - Item 2.1: Support business process transformation and relocation of the Kansas City Plant.

including elimination of the Joint Performance Council performance review forum, relying instead on the Sandia management review meetings conducted throughout the year to provide performance feedback.

Sandia's integrated cost baseline for FY2010 was 22%. Sandia's planned integrated cost for FY2011 was 30% and Sandia's year-end percentage was 27.3%. The increase in Sandia's integrated cost percentage from the FY2010 baseline to FY2011 can be largely attributed to an FY2011 change in Sandia's labor charging policy for managers and the rising costs of its pension plan without any associated adjustments to the indirect rates charged to its customers. (Needs validation by FFMD) Sandia's assessment profile metric remained above 90% in FY2011 and exceeded the 75% goal established in the NSE Measures & Metrics Enterprise Performance Indicators Summary Report. Sandia attributes the high percentages of internal assessments and findings in comparison with external assessments and findings as an indication of proactive approach to self-assessing and identifying issues that aligns with the Governance Initiative.

Enterprise Integration - Item 2.3: Implement Enterprise Wireless project.

This multi-site effort was led by the Sandia Chief Information Officer (CIO) and KCP CIO. Key efforts/deliverables included: an NSE Enterprise Wireless workshop in November 2010, resulting in an NSE Enterprise Wireless Technical Standards document being completed and submitted to NNSA in March 2011; completion of an Execution Plan of Proposed Wireless Projects in August 2011; and development of a security accreditation plan for the unclassified hotel wireless environment.

Enterprise Integration - Item 2.4: Achieve cost savings of $178M during FY2011 for activities established by the NNSA Business Management Advisory Council (BMAC).

Sandia provided information reflecting a FY2011 cost savings of $85M, almost half of the NA-10 multisite cost savings goal of $178M. Collectively, the NNSA sites exceeded the multisite cost savings goal by almost a factor of two.

Science - Item 3	
Sandia Self-Assessment Rating: Complete	**NNSA Rating: Excellent**

Science - Item 3.1: Achieve National Ignition Campaign FY2011 Objectives.

Sandia provided support to ensure the ignition objective on the NIF by continuing efforts undertaken in 2010 related to: nuclear and x-ray diagnostics and complex computer simulations of material mixing and instabilities during capsule implosions. Sandia also supported National Ignition Campaign (NIC) target physics activities by participating in the design, execution, and analysis of tuning experiments in the areas of ablation physics, shock timing, symmetry capsules, and neutron physics experiments. Sandia designed four diagnostics that have been or are currently being implemented at NIF: (1) total deuterium-tritium (DT) neutron yield diagnostic, (2) x-ray streak camera system to measure capsule implosion trajectories, (3) a streaked polar instrument to diagnose the x-ray burn history called "SPIDER", and (4) an instrument to perform radiochemical analysis of gaseous samples called "RAGS". SPIDER and RAGS are currently being installed at NIF. Sandia's primary effort supporting NIC ignition diagnostics was to design, fabricate and field the neutron activation detector "NAD20", which was fielded on four cryogenically-layered tritium-hydrogen-deuterium capsule shots and five DT exploding pusher target shots. The NAD 20 detector arrangement reduces the uncertainty in the total DT neutron yield measurement, supporting the measurement of record-breaking total neutron yields on the DT exploding pusher target shots. Sandia also participated in the data analysis from other diagnostics, as well as contributed to the design of the magnetic recoil spectrometer.

Science - Item 3.2: Demonstrate key physics necessary for certification of an advanced surety method by 30SEP11.

Science - Item 3

Sandia contributed to this multi-site effort by obtaining relevant material property data from Z-Machine experiments related to advanced surety. Sandia obtained valuable data on three materials of interest (materials #2, #3 and #4). For materials #2 and #3, Sandia also performed pre-shot quantum molecular dynamics calculations to predict the dynamic material response. These Advanced Certification experiments were particularly challenging due to the cryogenic cooling capabilities that had to be developed as well as the precise pulse shaping that was required. The Sandia data was compared with existing equation-of-state tables.

Science Item 3.3 - Complete Barolo experiments at U1a by end of Q2FY2011 (31MAR11).

Subsequent to Sandia's support of the subcritical Bacchus experiment conducted collaboration with the U.K.'s Atomic Weapon Establishment in FY2010, Sandia made further refinements and supported the successful completion of the Nevada National Security Site subcritical experiments Barolo A on December 1st and Barolo B on February 2nd. Specifically, Sandia was responsible for maintaining the readiness of and optimizing the Cygnus radiographic source and the velocity interferometer. Both of the Barolo experiments had 100% data recovery. Sandia also contributed to the preparation of the final shot report.

Science - Item 3.4: Provide reliable, quality service and access to any NNSA laboratory from any NNSA-designated ASC national user facility, independent of the location of the computing resource being utilized.

Sandia provided reliable, quality tri-lab access to Sandia's shared ASC computing resources via the ASC distance and Distributed Computing Wide Area Network. Sandia demonstrated successful completion during the ASC tri-lab Capability Computing Campaign (CCC-1), which provided computing resources to early adopters from all three laboratories, followed by the upgraded Cielo system supporting CCC-2. The maturity of the ASC tri-lab computing environment has been demonstrated by the ease of inter-laboratory access and the user support provided to both local and remote customers on the various platforms. HQ assessed that this distributed computing capability has been provided across platforms.

APPENDIX A - LIST OF ACRONYMS

AAR	Annual Assessment Report
ACF	Aerial Cable Facility
ACGIH	American Conference of Governmental Industrial Hygienists
ACRR	Annular Core Research Reactor
AF&F	Arming, Fuzing and Firing
AHCF	Auxiliary Hot Cell Facility
ANSI	American National Standards Institute
ASC	Advanced Simulation and Computing
AWE	Atomic Weapon Establishment
B&R	Budget and Reporting
BMAC	Business Management Advisory Council
CA	California
CAS	Contractor Assurance System
CATS	Corrective Action Tracking System
CBA	Collective Bargaining Agreement
CCP	Central Characterization Project
CD-4	Critical Decision-4
CDP	Cable Pull Down
CFR	Code of Federal Regulations
CH	Contact Handled
CI	Counterintelligence
CIO	Chief Information Officer
CME	Component and Material Evaluation
CPI	Critical Performance Indicators
CRD	Contractor Requirements Document
CSat	Customer Satisfaction Survey
DART-CR	Days Away Restricted Transferred Case Rate
DNN	Defense Nuclear Nonproliferation
DNS	Defense Nuclear Security
DoD	Department of Defense
DOE	U.S. Department of Energy/National Nuclear Security Administration
DOE/EM	Department of Energy Office of Environmental Management
DR	Digital Radiography
DSW	Directed Stockpile Work
DT	Deuterium-Tritium
EC	Engineering Campaigns
ELNG	Electronic Neutronic Generator
EMR	Executive Management Review
ES&H	Environment, Safety & Health
EStar	Energy Star
EVMS	Earned Value Management System
EVP	Executive Vice President
FAO	Federal Agency Orders
FFMD	Field Financial Management Division
FIMS	Facilities Information Management System
FPGA	Field Programmable Gate Array
FPM	Federal Program Managers
FPU	First Production Unit
FTE	Full-Time-Equivalent
FY	Fiscal Year
GIF	Gamma Irradiation Facility
GMTI	Ground Moving Target Indication
GTS	Gas Transfer System
HBT	Heterojunction Bipolar Transistors
HEU	Highly Enriched Uranium
HPI	Human Performance Initiative
HPSB	High Performance Sustainable Buildings
HQ	Headquarters
HR	Human Resources
HSM	Heating System Modernization
HVB	High-Voltage Breakdown
IA	Interagency Agreements
IBL	Ion Beam Laboratory
IC	Institutional Cost
ICF	Inertial Confinement Fusion
IDL	Idaho National Laboratory
IED	Improvised Explosive Device
IES	Integrated Enabling Services
ILMS	Integrated Laboratories Management System
IM	Information Management
IMaRS	Issues Management and Resolution System
INL	Idaho National Laboratory
INWAP	Independent Nuclear Weapon Assessment Process
IPG	Integrated Phase Gates
IS&S	Integrated Safeguards and Security
ISL	Intent Stronglink
IT	Information Technology
ITAR	International Traffic in Arms Regulations
IWET	Integrated Weapons Evaluation Team
IWFO	Intelligence Work For Others
JPC	Joint Performance Council
JTA	Joint Test Assembly
JTG	Joint Task Group
JTX	Joint Training Exercise
KCP	Kansas City Plant
KCRIMS	Kansas City Responsive Infrastructure Manufacturing and Sourcing
LA	Launch Accelerator
LAC	Lightning Arrestor Connector
LANL	Los Alamos National Laboratory
LEP	Life Extension Program
LESA	Laboratory Enterprise Self Assessment
LFENG	Large Ferro-Electric Neutron Generator
LLCE	Limited Life Component Exchanges
LLNL	Lawrence Livermore National Laboratory
LOB	Loss of Bias
LRRI	Lovelace Respiratory Research Institute
Ma	Mega Amps

[redacted]

MEM	Micro-ElectroMechanical
MESA	Microsystems and Engineering Sciences Applications
MR	Management Review
MRS	Magnetic Recoil Spectrometer
NDU	No-Defined-Use
NEP	Nuclear Explosive Package
NESS	Nuclear Explosive Safety Study
NFPA	National Fire Protection Association
NG	Neutron Generator
NGF	Neutron Generator Facility
NIC	National Ignition Campaign
NIF	National Ignition Facility
NMED	New Mexico Environment Department
NNSS	Nevada National Security Site
NOV	Notice of Violation
NSE	National Security Enterprise
NuGET	Neutron Gamma Energy Transport
NW	Nuclear Weapons
NWC	Nuclear Weapons Council
OA	Operational Awareness
OCI	Organizational Conflict of Interest
OFA	Other Federal Agencies
OIG	Office of the Inspector General
OST	Office of Secure Transportation
PAR	Performance Assistance Review
PAS	Performance Assurance System
PAT-1	Pu Air Transport
PBE	Prompt Burst Excursion
PBI	Performance Based Incentive
P-Card	Purchase Card
PD	Prompt-Delayed
PEAR	Performance Evaluation Assessment Report
PEP	Performance Evaluation Plan
PER	Performance Evaluation Report
PII	Personal Identifiable Information
PO	Performance Objective
POG	Project Officers Group
PPI	Process Prove-In
PREP	Preliminary Real Estate Plans
PRIDE	Product Realization Integrated Digital Enterprise
PRT	Product Realization Teams
Pu	Plutonium
PX	Pantex
QACT	Quality Assurance Core Team
QASPR	Qualification Alternatives to the Sandia Pulsed Reactor
QER	Qualification Engineering Release
QMS	Quality Management System
QMU	Quantification of Margins and Uncertainties
R&D	Research and Development
RAGS	Radiochemistry Analysis of Gaseous Samples
RC	Readiness Campaign
RES	Radiation Effects Science
RevCom	Review and Comment System
RF	Radio Frequency
RH	Remote Handled
RMI	Requirements Modernization and Integration
RMWMF	Radioactive Mixed Waste Management Facility
RTBF	Readiness in Technical Basis and Facilities
RV/RB	Reentry Vehicle/Reentry Body
S&S	Safeguards and Security
Sandia	Sandia Corporation
SAR	Synthetic Aperture Radar
SC	Science Campaign
SCM	Supply Chain Management
SCMC	Supply Chain Management Center
SEP	Sandia External Production
SFENG	Small Ferroelectric Neutron Generator
SFT	Surveillance Flight Tests
SIP	Security Improvement Project
SLT	Stockpile Laboratory Tests
SMRB	Security Management Review Board
SMU	Strategic Management Units
SNL/CA	Sandia National Laboratories/California
SNL/NM	Sandia National Laboratories/New Mexico
SPIDER	Streaked Polar Instrumentation for Diagnosing Energetic Radiation
SRN	Sandia Restricted Network
SS	Seamless Safety
SSC	Standing Safety Committee
SSO	Sandia Site Office
SSP	Site Sustainability Plan
ST&E	Science, Technology and Engineering
STA	Secure Transportation Assets
STP	Site Treatment Plan
SWEIS	Site-wide Environmental Impact Statement
TLV	Threshold Limit Values
TP	Technology Partnerships
TRL	Technology Readiness Levels
TRU	Transuranic
TSCM	Technical Surveillance Countermeasures
TTG	Tritium Thermoelectric Generator
TTR	Tonopah Test Range
U	Uranium
UK	United Kingdom
USAF	United States Air Force
VISAR	Velocity Interferometer System for Any Reflector
VTR	Vault Type Room
WA	Work Authorization
WDCR	Weapon Design Cost Report
WETL	Weapons Evaluation Test Laboratory
WFO	Work For Others
WIPP	Waste Isolation Pilot Plant
WMD	Weapons of Mass Destruction
WP&C	Work Planning &Control