National Nuclear Security Administration

Lawrence Livermore National Security, LLC

Performance Evaluation Report

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NNSA Livermore Field Office

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Executive Summary

This Performance Evaluation Report (PER) provides the National Nuclear Security Administration's (NNSA) assessment of the performing entity's, Lawrence Livermore National Security, LLC (LLNS), performance of the contract requirements for the period of October 1, 2023, through September 30, 2024, as evaluated against the Goals defined in the Performance Evaluation and Measurement Plan (PEMP).

Pursuant to the terms and conditions of the Contract, the PEMP sets forth the criteria by which NNSA evaluates LLNS's performance, as required by Federal Acquisition Regulation (FAR) Part 16.4, *Incentive Contracts*, which outlines expectations for administering award-fee type incentive contracts. This is the type of contract in place between NNSA and its management and operating partners. A key requirement of FAR Part 16, *Types of Contracts*, is to establish a plan that identifies award-fee evaluation criteria and "how they are linked to acquisition objectives which shall be defined in terms of contract cost, schedule, and technical performance."

In accordance with the regulation, the PER assesses LLNS' performance against the PEMP and provides the basis for determining the amount of award fee earned by LLNS. NNSA took into consideration documentation (e.g., contractor assurance system, program reviews) obtained from NNSA Program and Functional Offices both at Headquarters and in the field. This report provides performance feedback, highlighting key accomplishments and issues that need attention. Specific observations for each Goal are discussed below.

Notable accomplishments included working aggressively to balance risks to W87-1 pit First Production Unit (FPU) and support the Los Alamos National Laboratory (LANL) production agency with rapid review of Quality Evaluation Releases (QER) data, adjudication of design definition updates, and disposition of nonconformances necessary to achieve FPU; achieving first pit reacceptance for the W80-4; reaching a record fusion yield of 5.2 Mega Joule (MJ) on an ignition experiment; and leading the development of creative solutions to mitigate the Insensitive High Explosives supply chain issues impacting the W80-4/W87-1.

LLNS fully delivered, installed, and integrated NNSA's first exascale computer, El Capitan, for unclassified work. LLNS also completed lifetime testing of the Line Replaceable Units (LRU) 24 for Advanced Sources Detectors (ASD) Scorpius and successfully collaborated with the Kansas City National Security Campus (KCNSC) on the first NNSA Direct Ink Write part. However, continued focus is needed in partnership with the production agency and Federal Program Office on Porcula down selects scope and schedule, and the Nob Hill experiment is now planned for third quarter of fiscal year (FY) 2025.

LLNS had several significant accomplishments and exceeded deliverables in multiple areas for Global Nuclear Security. LLNS provided key nuclear and radiological security expertise with international partners and field tested a prototype scanner array that the International Atomic Energy Agency (IAEA) can use to verify fuel assemblies inside spent fuel storage tanks. LLNS provided excellent Nuclear Emergency Support Team (NEST) operational support for key efforts such as the Asia Pacific Economic Cooperation Summit, Super Bowl LVII, and the Democratic and Republican National Conventions.
LLNS continued to be a world class leader in Mission Innovation. Improvements at the National Ignition Facility (NIF) included new anti-reflective coating and increased capacity in the Optics Recycle Loop. LLNS designed and built a high-purity germanium gamma-ray sensor that was launched aboard the SpaceX Falcon Heavy rocket carrying the National Aeronautics and Space Administration's (NASA) Psyche spacecraft. LLNS and BridgeBio announced clinical trials have begun for a first-in-class medication that targets specific genetic mutations in many types of cancer.

LLNS' mission enablement continued to exceed expectations. LLNS successfully managed the multi-day response to Corral Fire that tested and validated emergency plans and procedures. LLNS executed construction projects totaling $499.6 million (M) and maintained project performance ahead of schedule and

under cost. LLNS made improvements in several Materials Control and Accountability (MC&A) areas but continues to struggle to complete material accounting and analysis due to operational inadequacies in staffing and equipment. LLNS is working to address safety culture challenges identified in one directorate.

LLNS leadership provided support to several Nuclear Security Enterprise (NSE) and Enhancing Mission Delivery Initiatives (EMDI) efforts, including EMDI-18, *Integrated Science, Technology, and Engineering Plan*. LLNS leadership led the 80-4 Life Extension Program (LEP) program to receive the first Mark Quality stamp from the Livermore Field Office (LFO) for the Nightwatch Digital Product. This is the first new production agency designation in the enterprise since 1996 and paves the way for qualification of LLNS developed products in support of the W87-1 and future programs. LLNS received its 5th Glassdoor Employees' Choice Award, Top Hispanic Employer by *DiversityComm* magazine, Top Indigenous STEM Workplace by *AISES Winds of Change* magazine, and Best Place to Work for Disability Inclusion by the *Disability Equality Index.* Stronger leadership of the MC&A program is needed to avoid programmatic impacts.

Goal 1: Mission Delivery: Nuclear Weapons
LLNS Amount of At-Risk Fee Allocation: $19,238,830

Goal 1 Summary

LLNS earned a rating of Excellent, and 93 percent of the award fee allocated to this goal. LLNS exceeded almost all of the Objectives and Key Outcomes and generally met the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. During the year, accomplishments significantly outweighed issues, and no significant issues in performance existed.

Objective 1.1

LLNS effectively executed stockpile modernization deliverables through cross-enterprise engagements and demonstrated very good progress on the product definition and design maturation of the W80-4 Nuclear Explosives Package (NEP). LLNS completed the first Full-System Engineering Test with development hardware and diagnostics. Post test hardware evaluation indicates positive results through a full system lifetime and provided evidence for Technology Readiness Level (TRL) 6 progression of a substantial number of components. LLNS delivered NEP builds for two Joint Test Assembly (JTA) development ground tests and flight tests. The ground tests successfully demonstrated the integration and operation of the JTA diagnostics and data systems with the missile test data equipment and demonstrated survival of a JTA-lifetime at operational extremes through ground testing. LLNS achieved FPU for two W80-4 components this FY.

LLNS struggled with several late design issues on the W80-4 that have the potential to impact FPU and rate production, including the W80-4 MC5108 and Porcula components. Continued focus is needed in partnership with the production agency and Federal Program Office on Porcula down select scope and schedule to minimize impacts to rate production. In response, LLNS has engaged in intense teaming with KCNSC to identify a path forward for Porcula that preserves System FPU. In parallel with root cause investigations, LLNS and the KCNSC Porcula Product Realization Team (PRT) identified two design changes that would not affect system FPU. The team fabricated and tested those options at a highly accelerated pace and LLNS completed the first successful test of the redesign.

LLNS engaged the Production Agency (PA) on an inspection and production approach for the MC5108 that recovers schedule. LLNS relaxed numerous acceptance inspection requirements as requested by the PA. LLNS engaged an external vendor to fabricate similar detonators for development testing and reduce PA build quantities. The W80-4 Chemistry team continues to have excellent results on materials aging and compatibility. Joint work between Lawrence Livermore National Laboratory (LLNL) and KCNSC continued to raise production yields on cushions for the W80-4 and W87-1 at KCNSC. LLNS is successfully tracking toward final component FPUs.

LLNS continued to make excellent progress on design, testing, and production readiness of the W87-1 Program. Key design improvements were implemented in anticipation of adverse test findings, thereby avoiding delays that would have resulted in later design releases to the PA. LLNS continued to work closely with PA partners to establish production capabilities and to ensure that LLNS components can be manufactured and inspected.

LLNS actively worked to develop recovery plans for the W87-1. Design definition, hardware and system tests are behind baseline schedule, driving overall cost and execution risk. However, by working closely with the PAs on design definition, LLNS successfully kept production realization on schedule for all its war reserve (WR) components to support a future FPU, consistent with current Program of Record. LLNS mitigated PA hardware delays by building additional components itself and by assisting PA builds. Some system tests are delayed relative to the FPU date in the original baseline, but LLNS continued to execute

critical tests that support production realization as well as developing alternate flight and ground tests to mitigate the Sentinel delays.

LLNS is aggressively working to resolve a number of design, manufacturing and supply chain issues to ensure on-time FPU and rate production for the W80-4 and W87-1. LLNS partnered with the Federal Program Office and other laboratories, plants, and sites to evaluate opportunities to mitigate system test delays on the W87-1 due to restructuring of the Sentinel program. LLNS assumed the leadership role in advocating and deploying creative solutions to mitigate Insensitive High Explosive issues impacting the W80-4 and W87-1 and effectively partnered with the Pantex Plant to implement. LLNS and LANL have successfully collaborated on the development and execution of an integrated schedule to support the qualification and certification of new high explosives and binders.

LLNS has done an excellent job in relying heavily on Mod/Sim to refine the design and reduce test needs, including the redesign of a critical mount which was found to be a potential problem after detailed simulation work. LLNS has analyzed the results from four major hydro tests and has concluded that the NEP design is sound.

Objective 1.2

LLNS completed Engineering Evaluations at KCNSC to support W80-1 JTA component production requalification activities resulting in direct improvement to production efficiencies and allowed for streamlined processing. The first mark quality additively manufactured components were delivered for an existing program. LLNS is meeting deliverables for Sentinel integration, despite Sentinel delays. LLNS supported key technical exchanges and engineering evaluations for W84 known state activities keeping the program on schedule.

Objective 1.3

LLNS collaborated with KCNSC and LANL to re-establish pit production capabilities resulting in FPU of the W87-1 pit. LLNS used modeling and simulation results to revise requirements that resolved production challenges and successfully delivered the final QER ahead of schedule. LLNS worked aggressively to balance risks to FPU, including reallocating resources and adjusting schedules to maximize the opportunities for success. LLNS supported the LANL production agency with rapid reviews of QER data, adjudication of design definition updates, and disposition of nonconformances necessary to achieve FPU.

LLNS worked in conjunction with KCNSC to enhance production processes and quickly resolve production challenges. LLNS' W80-4 team decided to evaluate On-Machine Inspection (OMI) by generating OMI scan files to use during its prints. This serves as an example of not only targeting future production enablement but also the exciting application of an OMI technology to a program well within Phase 6.4.

LLNS and KCNSC polymers enclave team partnered to mature technologies and modernize various production processes to raise production yields on Direct Ink Write (DIW) cushions at KCNSC. Close-knit collaboration resulted in the first NNSA accepted DIW part. A PRT was established to include W87-0 program and the polymers enclave team to address process yield challenges. The team successfully achieved FPU in 28 months and met critical near-term programmatic needs.

With LLNS participation, the Direct Cast Technology Realization Team has completed a TRL casting campaign, and the Electron Beam Cold Hearth Melt (EB CHM) TRL team has completed the wrought forming of CHM ingots for two shapes, and parameter optimization for alloy production. LLNS' W87-1 team collaborated with Y-12 on modernizing multiple production capabilities, with a focus on technology transfer for special materials. Recent successes have demonstrated pressing multiple components in a single run, which can enhance throughput of special materials at Y-12. Notably,

W87-1 successfully achieved FPU on its first component within five years.

Objective 1.4

LLNS delivered excellent performance in support of the Research Development Test and Evaluation program throughout FY 2024 with several notable accomplishments. LLNS continues to make progress in achieving the capability to generate robust and predictable multi-MJ yields at NIF achieving a target gain of 2.4 using a thicker capsule. This represents a 1.5 times improvement over the first 2.2 MJ shot in 2023. This milestone will provide benefits to multiple lines of effort in understanding opacities, ejecta, and equations of state. All five FY 2024 ignition experiments have reached fusion yields of 1 MJ or greater with one experiment reaching a yield record of 5.2 MJ.

LLNS successfully executed the twin peaks subcritical experiment with excellent results. Analysis of the data is ongoing and sponsoring programs are utilizing the data to inform its design decisions. Due to device coupon fabrication issues, the Nob Hill experiment is now planned for FY 2025, resulting in incomplete delivery of milestone 8999. LLNS established a path forward for the coupons that is being implemented to support the execution date.

LLNS made excellent progress in preparation for Phase 1 advanced concepts studies. After remediating the cause of failures from last year, the second high-speed sled-track test was completed including completion of validation experiments and the development of diagnostics and survivable data storage systems.

LLNS demonstrated excellent technical leadership and collaboration for leading development of the draft FY 2027 Stockpile Capability Delivery Schedule Pegpost on Alternate Materials, partnering with LANL, Sandia National Laboratories, the Nevada National Security Site (NNSS), and the United Kingdom Atomic Weapon Establishment partners on opacity diagnostics development, and teaming within the Tri Lab to complete the Combined Environments Ranking Table. LLNS modeling efforts developed tools to predict the response of a payload in flight environments that inform assessments of the warhead. LLNS evaluated several launch providers against system requirements to address challenges in flight testing. Using the Department of Energy's (DOE) Facility for Rare Isotope Beams, LLNS successfully demonstrated a new method to constrain challenging neutron-induced reactions resulting in a new approach to determine unknown cross sections.

Key Outcome 1.1

LLNS, in partnership with Triad National Security, LLC and NNSA, achieved W87-1 Pit FPU. The team overcame various challenges in production and certification, compressing schedules, deconflicting key activities, and ramping up the pace of operations to meet this milestone. LLNS led the Pit PRT in expert navigation of late-breaking design changes and material issues, the resolution of which has resulted in FPU ahead of schedule, and higher manufacturability throughout production.

Key Outcome 1.2

LLNS successfully installed El Capitan and completed the El Capitan Compute Node Integration L2 milestone confirming that all El Capitan hardware and software is installed and functional. System acceptance tests are underway. LLNS is on track for a transition to programmatic use on the classified network in calendar year 2025.

Key Outcome 1.3

LLNS delivered essential weapon survivability data to support stockpile design, certification and assessment. LLNS successfully completed two applications of MJ yield experiments in FY 2024. The first experiment tested new radiation effects diagnostics. The second experiment fielded Sandia samples. In both experiments, more than 1 MJ of yield was delivered, and data was successfully collected. The experiments provided data for survivability assessments, in addition to serving as important steps toward fielding plutonium samples on future experiments.

Goal 2: Mission Delivery: Global Nuclear Security
LLNS Amount of At-Risk Fee Allocation: $4,809,708

Goal 2 Summary

LLNS earned a rating of Excellent, and 95 percent of the award fee allocated to this goal. LLNS exceeded almost all of the Objectives and Key Outcomes and generally met the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. During the year, accomplishments significantly outweighed issues, and no significant issues in performance existed.

Objective 2.1

LLNS provided key nuclear and radiological security expertise with international partners, including conducting outreach to promote the replacement of high-activity radioactive sources with non-radioisotopic alternatives. LLNS developed numerous training courses and provided excellent technical expertise on security infrastructure, nuclear forensics, and laboratory sample exchanges. LLNS provided significant support to IAEA engagements, regulation/inspection activities, technical and policy advances in nuclear forensics, and technical consultancies to detect illicit movement of nuclear material. LLNS also served as Strategic Advisor for Office of International Nuclear Security's bilateral cooperation program.

Objective 2.2

LLNS continued to provide significant advanced capabilities in support of U.S. nuclear nonproliferation and security goals and delivered critical project management performance as the lead for Low Yield Nuclear Monitoring (LYNM), Tritium Detection and Evaluation for Nuclear Threats (TRIDENT) multi- lab venture, the Adaptive Computing Environment and Simulation (ACES) project, and the LYNM venture, which successfully executed Physics Experiment 1A to improve capabilities to detect and characterize low yield, evasively conducted underground nuclear explosions. LLNS' excellent leadership resulted in its selection as TRIDENT Venture Manager and Coordinator. Under ACES, LLNS delivered an optimized modeling and simulation tool, performed iterative forward and inverse predictions evaluating material production scenarios for interagency partners, and sustained a multi-disciplinary staff of thirty-four people of which eight have gained in-depth knowledge of enrichment processing. LLNS also provided exceptional leadership while serving as the venture manager for Vulcan that culminated in a month-long campaign.

Objective 2.3

This Objective was not funded by the Program in FY 2024.

Objective 2.4

LLNS continued to provide integral support to the 10 Code of Federal Regulations (CFR) Part 810 Program in the form of end-user reviews. LLNS provided high-quality support to safeguards technology projects, including developing tools and techniques to measure IAEA inspection samples with significant advantages over existing methods and preparing a prototype scanner array to verify fuel assemblies inside spent fuel storage casks. LLNS successfully planned and executed the Malaysian Strategic Trade Summit and provided vital support to the Philippines Strategic Trade Management Summit. LLNS experts provided valuable contributions toward U.S. support of the Preparatory Commission for Comprehensive Nuclear Test Ban Treaty Organization and multilateral discussions, while also providing excellent leadership and support to the Nuclear Compliance Verification Program through the Approach Inspection Exercise and a collaborative exercise with Defense Threat Reduction Agency (DTRA).

Objective 2.5

LLNS successfully supported Counterterrorism and Counterproliferation (CTCP) Post Detonation Forensics Operations and Device Assessment, Pre-Detonation Device, and Nuclear Forensics-Material Analysis Program (NF-MAP) activities. LLNS maintained operational readiness for its nuclear forensics' response

teams and capabilities, including DOE Forensics Operations (DFO), Disposition and Forensic Evidence Analysis Team (DFEAT), Post Detonation Device Assessment Team, and the Pre-detonation Material Analysis capability. LLNS participated in key events, including a major DFO training event in Idaho; DFEAT exercise Diamond Thunder at NNSS; and NF-MAP analytical exercise Epic Shadow. In addition, LLNS successfully conducted nuclear forensics Ukraine-related studies in design heritage and addressed NNSA and other partners' requests for information. Lastly, LLNS developed and delivered a methodology for assessing the impacts of artificial intelligence Large Language Model to the CTCP mission.

LLNS provided excellent NEST operational support for multiple exercises, notably the Asia Pacific Economic Cooperation summit, Super Bowl LVII, National Guard's Civil Support Teams and Federal Bureau of Investigation Stabilization Level V sustainment, Democratic and Republican National Conventions, and Marble Challenge. LLNS provided training to broad partners, including two three-week sessions for the DoD Explosive Ordinance Disposal team, and continued development of modeling capabilities. LLNS offered excellent support to the NEST Standards and Training Program in the execution of Nuclear Security Council directed Capability Forward initiatives. Finally, LLNS provided significant and timely support to DOE/NNSA's Ukraine Task Force for multiple exercises intended to demonstrate modeling capabilities to international partners.

Key Outcome 2.1

LLNS successfully executed high-quality analytical laboratory activities to maintain accreditation as an Organization for the Prohibition of Chemical Weapons designated laboratory. LLNS also provided essential technical assessments to the Warhead Verification Program on Chemical Weapons Convention implementation matters and delivered important technical expertise to support Nonproliferation and Arms Control Advancement initiative.

Key Outcome 2.2

LLNS successfully completed readiness and engineering reviews and conducted precursor experiments that evaluated key features, demonstrating essential progress to meet FY 2025 milestones. LLNS worked with stakeholders to mitigate critical path risks and has made steady progress towards its goal of experiment execution at NNSS, including completing a partial test plan validation in advance of integrated experimental activities.

Goal 3: Mission Innovation: Advancing Science and Technology
LLNS Amount of At-Risk Fee Allocation: $7,214,561

Goal 3 Summary

LLNS earned a rating of Excellent, and 100 percent of the award fee allocated to this goal. LLNS exceeded almost all of the Objectives and generally met the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. During the year, accomplishments significantly outweighed issues and, no significant issues in performance existed.

Objective 3.1

LLNS' institutional investments, including Laboratory-Directed Research and Development (LDRD), produced high-impact, innovative results and capabilities that are well aligned with LLNS and DOE/NNSA missions and elevated the caliber of the workforce. LLNS' research achieved excellence in core capabilities and supported DOE/NNSA missions, produced new intellectual property resulting in high impact publications, enabled workforce development and staff retention, and expanded the frontiers of Science, Technology, and Engineering (ST&E).

Objective 3.2

LLNS continues to conduct research that is relevant, enables to the national security missions, and benefits DOE/NNSA and the Nation. Building on the historic fusion ignition experiment recently highlighted on the cover of *Physical Review Letters*, the NIF set a record for laser energy by firing 2.2 MJ of energy for the first time on an ignition target. Ignition, as defined by the National Academy of Science, has been exceeded five times at NIF and LLNS achieved a target gain greater than two for the first time. NIF is the only laser system in the world that operates above the damage threshold.
Other improvements include a new anti-reflective coating, vapor treatment, and increased capacity in the Optics. LLNS researchers and collaborating scientists have completed a first-of-its-kind high-resolution assessment of carbon dioxide removal in the U.S. The report, *Roads to Removal: Options for Carbon Dioxide Removal in the United States*, charts a path for the United States to achieve a net zero greenhouse gas economy by 2050.

Objective 3.3

LLNS researchers designed and built a high-purity germanium (HPGe) gamma-ray sensor that was launched aboard the SpaceX Falcon Heavy rocket carrying NASA's Psyche spacecraft. The HPGe gamma-ray sensor is an essential part of a larger gamma-ray spectrometer built in collaboration with researchers from Johns Hopkins Applied Physics Laboratory. It is part of a suite of instruments set to make the first-ever visit to Psyche, the largest metal asteroid in the solar system. A multi-institutional team involving LLNS researchers has combined an artificial intelligence (AI)-backed platform with supercomputing to redesign and restore the effectiveness of antibodies whose ability to fight viruses has been compromised by viral evolution. The computational approach has the potential to significantly accelerate the drug- development process and improve pandemic preparedness. Published in *Nature,* research showcases a novel antibody design platform comprising experimental data, structural biology, bioinformatic modeling and molecular simulations driven by a machine-learning algorithm. The LLNS team computationally optimized an existing SARS-CoV-2 antibody to restore its effectiveness to emerging SARS-CoV-2 Omicron subvariants, while ensuring continued efficacy against the then-dominant Delta variant (with funding from the Department of Defense's Generative Unconstrained Intelligent Drug Engineering program).

Objective 3.4

LLNS continued to excel in maintaining an inclusive and vibrant research environment while nurturing a healthy workforce pipeline. A LLNS scientist was named as one of the American Institute for Chemical Engineering's (AIChE) "35 Under 35" award winners for 2023. The 35 scientists AIChE chose under the age of 35 "embody what it is to be an accomplished chemical engineer" and "will pave the way for future generations, serving as role models and innovators." Two Livermore scientists were named 2023 American Physical Society fellows. One was selected "for pioneering research in optimizing metal three-dimensional printing and laser materials processing" and the other was chosen "for original theoretical and computational contributions on the frontiers of fundamental properties of non-ideal plasmas, and for exceptional leadership in the national boost initiative, including mentoring and educating the broader high energy density physics community." A LLNS-led effort that performed an unprecedented global climate model simulation on the world's first exascale supercomputer won the first-ever Association for Computing Machinery Gordon Bell Prize for Climate Modelling. The Simple Cloud Resolving E3SM Atmosphere Model team, including researchers from seven other DOE national laboratories, received the prestigious prize at the International Conference for High Performance Computing, Networking, Storage and Analysis.

Objective 3.5

LLNS performed well in innovation and technology transfer to industry through partnerships that include both Cooperative Research and Development Agreement and licensing agreements. In a substantial milestone for supercomputing-aided drug design, LLNL and BridgeBio Oncology Therapeutics (BridgeBio)

announced clinical trials have begun for a first-in-class medication that targets specific genetic mutations implicated in many types of cancer. The development of the new drug – BBO-8520 – is the result of collaboration among LLNL, BridgeBio, and the National Cancer Institute's RAS Initiative at the Frederick National Laboratory for Cancer Research. Researchers from LLNL and Verne, a San Francisco-based start-up, have demonstrated a hydrogen storage system that can support heavy-duty vehicles, such as semi-trucks. This is the first time cryo-compressed hydrogen storage has been demonstrated at a scale large enough to be useful for semi-trucks, a milestone in high-density hydrogen storage. Livermore scientists and engineers earned three awards among the top 100 inventions worldwide with the announcement by the trade journal *R&D World Magazine.* The three awarded projects include a spectral beam combining optic enabling a single, high-power beam with unparalleled compactness and damage resistance; a powerful open-source memory-mapping library; and a user-level file system for high-performance computing systems. The Accepted Manuscript (AM) submissions for FY 2023 is 85.3 percent and FY 2024 is 74.1 percent, both are on track with the full compliance target from the DOE Office of Scientific and Technical Information.

Objective 3.6

LLNS researchers are coupling computing capabilities and manufacturing methods to rapidly develop and experimentally validate modifications to a shaped charge and this work was published in the *Journal of Applied Physics*. The use of additive manufacturing, or three-dimensional printing, made it possible for researchers to rapidly realize even the most radical AI-designed components that would otherwise be considered "impossible" to create using traditional manufacturing methods. A LLNS-led team has developed a method for optimizing application performance on large scale graphics processing unit (GPU) systems, providing a useful tool for developers running on GPU-based massively parallel and distributed machines.

Goal 4: Mission Enablement
LLNS Amount of At-Risk Fee Allocation: $9,619,415

Goal 4 Summary

LLNS earned a rating of Very Good, and 85 percent of the award fee allocated to this goal. LLNS exceeded many of the Objectives and Key Outcomes and generally met the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. During the year, accomplishments greatly outweighed issues, and no significant issues in performance existed.

Objective 4.1

LLNS' Environment, Safety, and Health programs supported mission execution in an effective, efficient, and responsive manner as demonstrated through strong operating experience, positive performance metrics, and continuous improvement initiatives. LLNS conducted over a thousand construction safety observations with a 99.5 percent compliance rate. LLNS is behind schedule on its Lock Out Tag Out (LOTO) Corrective Action Plan, but it is undergoing revitalization. LLNS has not completed its Packaging and Transportation Safety Quality Assurance Plan (QAP) which was due in January after multiple extensions. LLNS recertified in ISO 14001, Environmental Management Systems, with zero deficiencies.

LLNS made progress on addressing legacy Quality Assurance (QA) issues. The DOE Office of Enforcement issued an Investigation Summary to LLNS regarding deficiencies in its implementation of the Department of Energy's 10 CFR Part 830, Subpart A, *Quality Assurance Requirements.* LLNS improved safety basis submittal quality and was proactive in involving LFO for more complex Potentially Inadequacies in Safety Analyses (PISA); however, improvements in implementation of the PISA process are needed.

LLNS performed best-in-class analysis of radiological operating experience.

LLNS completed the Site Sustainability Plan and made progress on sustainability goals, which trended positively except for potable water and energy use intensity. While electricity costs have doubled in five years, LLNS only metered 64 percent of the site-wide electricity at the building level and is not meeting expectations to operate and maintain the advanced electric metering system installed in 2012.

LLNS supported one transuranic waste shipment to the Waste Isolation Pilot Plant. LLNS shipped for disposal 100 percent of the volume of low-level waste received into the Waste Storage Facilities in FY 2023. LLNS met all regulatory cleanup commitments to date while managing an approximate 15 percent Long-Term Stewardship budget reduction in FY 2024 that has severely curtailed the majority of its discrete activities.

Objective 4.2

LLNS successfully executed a portfolio of 241 projects with a total project cost of $722M while maintaining an overall schedule performance index at 1.12 and a cost performance index at 1.01. LLNS successfully completed construction of seven new facilities, B143 LEP Warehouse, B144 Stockpile LEP Office Building, B449 Design-Certification Science Support Office, B226 Joining Capabilities & Vapor Deposition, B265 ES&H Office Building, B266 Experimental Science Office Building and B183 Multi- Program Office Buildings. LLNS also completed several large extension and major renovation projects including the B654 Expansion for Stockpile Science, B341 Electrostatic Discharge Facility, B191 HEAF Atrium-Conversion, and the infrastructure water distribution and expansion project at Site 300.

LLNS selected a contractor that didn't possess an adequate QAP to perform work in Hazard Category 2 and 3 facilities. Projects in those facilities were delayed six months which resulted in delayed and or unrecoverable schedules. LLNS conducted a lesson learned review of the procurement and instituted procedures to prevent a reoccurrence. The Cooling and Heating Asset Management Program successful executed 20 projects totaling $42.4M. LLNS exceeded expectations on contract negotiations and data deliveries for utility contracts by supporting NNSA in the development of four major utility contracts. LLNS developed two new Indefinite Delivery/Indefinite Quantity contracts to improve contracting timelines for small projects.

LLNS BUILDER team significantly improved the enterprise data quality and consistency and ensured infrastructure renewal decisions are based on the most accurate, data-driven, risk-informed metrics available. LLNS developed a new tool that significantly streamlined infrastructure planning and execution and serves as a model for other NNSA/DOE AI projects/programs. LLNS successfully transferred scope to indirect funding and worked with Defense Programs to obtain the remaining $21.3M needed to enable critical Operations and Maintenance program work.

LLNS supported planning and execution of EM demolition projects, however, the following areas in project execution need improvement: providing current period data for earned value management reporting, providing more timely document reviews for EM demolition contractors, expediting hazards removal at B212/LS212 and, communication between LLNS and programmatic staff.

Objective 4.3

LLNS delivered efficient and responsive safeguards and security and executed the DNS program funding effectively. LLNS made improvements in several MC&A areas, but more improvements are needed. LLNS formed an MC&A multi-disciplinary team and partnered with external subject matter and parent company experts to execute a comprehensive action plan and completed cross-training on MC&A fundamentals and requirements. LLNS worked with NNSA to develop and successfully executed a plan to accelerate a critical portion of the inventory under stringent time constraints to best support the strategic deterrence mission needs. LLNS has been struggling to complete nuclear material accounting and analysis due to operational inadequacies in staffing and equipment.

Strategic Deterrence management effectively allocated the limited facility capacity to the complex's highest priority, enabling execution of key pit certification activities and FPU of the W87-1 pit. Several issues remain including verification of readiness prior to scheduled inventory reviews and communication of roles and responsibilities within LLNS.

Objective 4.4

LLNS delivered efficient, effective, responsible and transparent financial management operations and systems. LLNS proactively submitted a draft Hybrid Implementation Plan for the new FY 2025 DOE Internal Control Program requirement, the only NNSA site to do so. LLNS leveraged its Internal Controls and Data Analytics expertise by supporting three DOE Chief Financial Officer Working groups to help develop on-going DOE-Wide Internal Control Program Strategy. LLNS' second period FY 2024 performance trended consistently relative to the prior period, with a "Pass" on all NNSA Office of Management and Budget measures. LLNS underspent the Q1 cost plan by 3.1 percent, a lower variance than the sitewide average variance of 11.7 percent.

Objective 4.5

The Office of General Counsel (OGC) exercised sound judgment and effectively represented the laboratory in challenging legal matters such as complicated employment law and its approach to claims resulting from recent wildfires. The OGC also made significant strides in reducing the current backlog by over 50 percent.

Objective 4.6

LLNS met or exceeded expectations for 33 of 35 Information Technology (IT) implementation factors and effectively handled associated technical and fiscal challenges with remarkable contributions to enterprise applications. LLNS met expectations in cybersecurity on unclassified and classified programs. LLNS' contributions to the NSE specific to advanced cloud services, enterprise classified computing, secure collaboration and identity management were significant. LLNS did not meet expectations on two IT implementation factors surrounding AI inventorying and implementing Internet Protocol version 6 for IT applicable information systems. LLNS did not meet three Cybersecurity implementation factors associated with unclassified/classified environments.

Objective 4.7

LLNS successfully managed a multi-day response to the June 2024 Corral Fire, a wildland fire that fully tested and validated emergency plans and procedures. LLNS' response to the fire was rapid, resulting in an immediate emergency response organization callout and emergency operations center activation/operation during off-normal hours, and demonstrated an integrated emergency response capability and effective interface with mutual aid partners. LLNS supported several NNSA-sponsored initiatives to improve emergency management readiness and preparedness locally and across the Complex. LLNS developed and implemented a risk-based model for its drill and exercise program to assess infrequently tested capabilities. LLNS contributed significant effort to Office of Emergency Management (NA-40) initiatives in support of the NNSA Emergency Management Enterprise. Initiatives included NA-40 Integrated Project Team support for the DOE Order (O) 151.1, *Comprehensive Emergency Management System*, rewrite and developing and reviewing content for multiple online courses to create modern, interactive DOE Emergency Management training. LLNS struggled throughout the year to execute some DOE Order 151.1D requirements following a re-organization. The re-organization was implemented without sufficient planning to adequately address the continuity of key programmatic functions and was impacted by staff departures and position vacancies.

Objective 4.8

LLNS partnered with NNSA and the NSE on a critical research and development procurement for Chlorotrifluoroethylene Vinylidene Fluoride Copolymer. In support of EMDI-9, LLNS implemented pilot

initiatives to reduce lead times and achieve efficiencies on lower risk procurements. Of the six small business goals, LLNS is above expectations in five categories and below expectations in HUBZone.

LLNS' achievements overall are considered excellent and has made good faith efforts to accomplish all requirements of the small business subcontracting plan. Additionally, LLNS successfully delivered an efficient and effective personal property system, reducing risk to the government and accounted for over 99 percent of its property. LLNS missed key deliverables to implement a Self-Insured Workers Compensation program by October 2024.

Key Outcome 4.1

LLNS mobilized and started construction for the B256 Digital Infrastructure Capability Expansion line- item project.

Key Outcome 4.2

LLNS, despite meeting the Key Outcome, has executed behind schedule (SPI 0.61) and under budget (CPI 1.04) for the ASD project. Schedule delays are associated with late award of subcontracts/procurements for the Solid-State Pulsed Power LRU; LLNS is tracking these procurements in alignment with its recovery plan. Despite the delays, the LRU220 procurement is not on critical path for the Integrated Test Stand and is not driving delays to the overall program. LLNS completed lifetime testing (200,000 shots of four pulses each) of the LRU 24, demonstrating the robust unit design and successes of the technology development plan. The Estimate at Completion for the ASD project increased more than $200M due to poor estimating at CD-2/3 and addition of scope. LLNS along with the other three partners provided excellent support in responding to draft non-compliances from DOE-PM-30, which resulted in a significant reduction in the findings.

Goal 5: Mission Leadership
LLNS Amount of At-Risk Fee Allocation: $7,214,561

Goal 5 Summary

LLNS earned a rating of Excellent, and 91 percent of the award fee allocated to this goal. LLNS exceeded almost all of the Objectives and generally met the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. During the year, accomplishments significantly outweighed issues, and no significant issues in performance existed.

Objective 5.1

LLNS launched the EMDI 2.0 pilot project with LFO to demonstrate the practicality and feasibility of managing risks cross-functionally in the Superblock Facility. The W80-4 Life Extension Program received the first Mark Quality stamp from LFO for the Nightwatch Digital Product. The Mark Quality program enables the Laboratory to serve as a Production Agency in the qualification of Digital Products including LLNS-developed weapon/weapon related software and firmware in support of the W87-1 and future programs.

LLNS leadership of the DOE Office of Science nEXO collaboration has been effective. The nEXO Project Team documented the conceptual design requirements, interfaces, and project plan for the Director's review in anticipation of the planned Critical Decision-1 Integrated Project Review.

Objective 5.2

LLNS effectively applied lean initiatives by cultivating a problem-solving culture that supports continuous improvement as highlighted in its Integrated Health of Program reviews, which notes strengths, growth, and opportunities where the laboratory can mature its Contractor Assurance System implementation. Despite

these accomplishments, ongoing issues and management concerns persist regarding timely completion of corrective actions in formal plans to address findings and deficiencies.

LLNS conducted several Functional Management Reviews that focused on the LOTO Corrective Action Plan status, the Injury Case Management process, the Welding Safety Program, the IT Roadmap, maintenance of non-nuclear facilities, and Human Resources. LLNS established a distributed network of Enterprise Risk Management (ERM) Coordinators throughout the organization and contracted for enterprise risk consultant services to assist with implementation and maturation of the ERM program.

LLNS utilized parent company expertise for mentoring of Operations staff within Superblock and to evaluate the quality of documentation and support the development of additional operation and maintenance plans. An improvement to the Integrated Health of Program regimen interfaced with the enterprise risk management system to heighten risk-based thinking across laboratory operations. LLNS needs to improve corrective action implementation to maintain a robust and timely resolution process for issues.

Objective 5.3

LLNS leadership supported several partnerships within the NSE that enabled mission success including transformation of the stockpile and enterprise. The Pit PRT successfully overcame a key production challenge to deliver three of the best pits made to date and significantly reduced technical risk for FPU efforts and restore pit production capabilities to the nation. LLNS completed the QER for the intended FPU pit, and the Los Alamos Field Office applied the diamond stamp that officially made this the FPU build. LLNS senior leaders partnered with Pantex to focus on challenges in warhead assembly/disassembly and accelerating information transfer and high explosive (HE) production. LLNS is leading the development of a common vision for near- and long-term HE challenges. LLNS participated in a Bottoms Up Estimate Cost Estimate Review of the Savannah River Plutonium Processing Facility and was requested to advise on the NNSA Site Development Plan for the Savannah River Site to share best practices on modeling, evaluation, and planning.

LLNS led the application architecture for the enterprise product data management (ePDM) application, the most consequential component of the PRIDE NSE-wide Digital Thread and NNSA's Digital Transformation. LLNS also led the overall architecture for the PRIDE NSE-wide Digital Thread, and successfully transitioned the NSE-wide PRIDE Chief Architect role to KCNSC.

Modernization program teams are working to resolve supply chain issues. Leadership should continue to drive programs to a more focused and disciplined approach to resolving lingering design issues on multiple components and avoid program schedule impacts for the W80-4.

Objective 5.4

LLNS leadership supported the NNSA EMDI and Model Contract initiatives and partnered with NNSA to streamline contract requirements as well as internal policies and procedures. Successful contract streamlining projects include the acceptance of Cal/Occupational Health and Safety Administration construction requirements, with implementation planning underway. The implementation of a pilot program for special pay allowances is in progress. Successful internal streamlining projects include deploying a purchasing pilot system to increase the contract review board threshold and eliminate sole-source justification for small businesses, and special pay allowances. LLNS is making significant progress on an effort to streamline and improve training effectiveness with a goal of returning 1M hours of time to the workforce. LLNS identified and implemented 500,000 hours of time to return.

LLNS made progress with the deployment of NNSA's first exascale computing capability, El Capitan. This reporting period demonstrated the effectiveness of a critical partnership with the vendor partner as delivery and installation of much of the core infrastructure was completed, including racks, cooling, networking, and storage, and testing/code runs and commissioning underway. LLNS leaders also partnered with commercial industry in the development of a path toward Secret/Restricted Data cloud capabilities for the NNSA

enterprise. LLNS worked with DOE laboratories and Headquarters to develop an alternative to DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, that is better suited for R&D projects and supporting the Frontiers in Artificial Intelligence for Science, Security, and Technology initiative to advance AI in the DOE/NNSA.

Objective 5.5

LLNS leadership was slow to respond to issues in two areas that resulted in some operational upset. The MC&A program continues to underperform due to several factors, including underlying issues in intra-laboratory communication and investment in measurement/analysis capabilities, as well continued reliance on assistance from the Strategic Requirements, Program Review, and Evaluation Division and inter-laboratory experts to complete material inventories. LLNS leadership participated in the DOE Office of Enforcement (OE) investigation, while also self-assessing the QA program and implementing a Corrective Action Plan and a two-year QA Improvement Plan. LLNS developed augmented resources for nuclear quality assurance to enhance the program's oversight effectiveness.

Objective 5.6

LLNS' leadership efforts in recruitment and retention of employees achieved very good results. LLNS worked to provide incentives, new or improved benefits, to engage new and existing employees while collaboratively engaging partners and parent company resources. In addition, LLNS focused on building candidate pipelines for hard-to-fill positions and LLNS representatives attended 192 events in FY 2024, including conferences, career fairs, information sessions, and resume/interview workshops. These efforts resulted in 611 hires and a 21.5 percent decrease in time-to-fill to 103 days. Retention improved with voluntary resignations reduced to 6 percent in FY 2024. LLNS implemented a new Performance Management process to provide consistent standards for goal-setting and regular conversations between the employee and supervisor for career long success. LLNS also implemented a new Merit Matrix process to determine merit increases that aligns with industry best practices and other NNSA sites while also increasing consistency and transparency. LLNL received its 5th Glassdoor Employees' Choice Award, recognizing the Best Places to Work in 2024. The Employees' Choice Award is based solely on the input of employees who provide anonymous feedback. In addition, the Laboratory was recognized as a 2024 Top Hispanic Employer by *DiversityComm* magazine, a Top 2024 Indigenous STEM Workplace by *AISES Winds of Change* magazine, and a 2024 Best Place to Work for Disability Inclusion by the *Disability Equality Index*.

ATTACHMENT 1 – FY 2024 Performance Evaluation and Measurement Plan (PEMP)

Goal 1

Successfully execute the cost, scope, and schedule of the Nuclear Stockpile mission work for Defense Programs work in a safe and secure manner in accordance with DOE/NNSA priorities, Work Authorizations, and Execution/Implementation Plans.

Objective 1.1

Work as a team across the Nuclear Enterprise on stockpile program scope to 1) achieve and maintain program delivery schedules; 2) lower risk to achieving First Production Unit (FPU), Initial Operational Capability (IOC), and Final Operational Capability (FOC); 3) improve manufacturability and supply chain execution; and 4) control costs.

Objective 1.2

Execute stockpile maintenance, surveillance, assessment, and development studies/capability improvement requirements and meet transportation and weapon container schedules.

Objective 1.3

Work as a team to support and execute production modernization processes and activities to sustain and improve production capabilities, equipment, and infrastructure for 1) War Reserve production; 2) components (particularly pit production); 3) strategic materials capabilities; 4) improve safety margins, technology maturation strategies, and qualification, logistics, and security plans collaboratively across the NSE; and 5) Triad and SRNS collaborate on establishing NNSA's ability to produce 30 pits-per-year at LANL and 50 pits-per-year at the Savannah River Site, including Knowledge Transfer supporting training for SRNS personnel, integrating with SRPPF for glovebox/equipment procurement strategies, and sharing experiences and lessons learned on equipment design, fabrication and installation.

Objective 1.4

Provide the knowledge and expertise to maintain confidence in the nuclear stockpile without additional nuclear explosive testing by developing, maturing, and applying innovative strategies and technologies to sustain a robust stockpile and improve science and engineering capabilities, facilities, and essential skills to support existing and future nuclear security enterprise requirements. Triad, LLNS, NTESS, and MSTS will collaborate to execute subcritical experiments relevant for obtaining data for developing predictive models for improving production, assessing the current stockpile and certifying the future stockpile in accordance with milestone schedules.

K.O. 1.1

Triad and LLNS complete all necessary engineering evaluations and obtain production QERs required in FY 2024 to submit for WR product stamping.

K.O. 1.2

LLNS will support managing the experimental and computational programs that enable performance predictions without underground testing. Specifically, LLNS will install, integrate, and accept El Capitan.

K.O. 1.3

LLNS will utilize a MJ yield platform on the NIF to deliver data needed for weapons survivability assessments.

Goal 2

Successfully execute the cost, scope, and schedule of the authorized global nuclear security mission work in a safe and secure manner to include the Defense Nuclear Nonproliferation, Nuclear Counterterrorism and Counterproliferation, and Incident Response missions in accordance with DOE/NNSA priorities, Work Authorizations, and Execution/Implementation Plans.

Objective 2.1

Support efforts to secure, account for, and interdict the illicit movement of nuclear weapons, weapons-useable nuclear materials, and radioactive materials.

Objective 2.2

Support U.S. national and nuclear security objectives in reducing global nuclear security threats through the innovation of technical capabilities to detect, identify, and characterize: 1) foreign nuclear weapons programs, 2) illicit diversion of special nuclear materials, and 3) global nuclear detonations.

Objective 2.3

Support efforts to achieve permanent threat reduction by managing and minimizing excess weapons- useable nuclear materials and providing nuclear materials for peaceful uses.

Objective 2.4

Support efforts to prevent proliferation, ensure peaceful nuclear uses, and enable verifiable nuclear reductions to strengthen the nonproliferation and arms control regimes.

Objective 2.5

Sustain and improve nuclear counterterrorism, counterproliferation, and forensic science, technology, expertise and associated Nuclear Emergency Support Team (NEST) capabilities; execute response missions, implement policies and procedures in support of response and forensics missions, and assist international partners/ organizations.

K.O. 2.1

Maintain certification requirements to support U.S. compliance with the Chemical Weapons Convention (CWC) and to support international investigations of alleged use of chemical weapons as a designated laboratory for the Organization for the Prohibition of Chemical Weapons (OPCW).

K.O. 2.2

Execute Nuclear Threat Science plans for integrated experimental campaign activities to study specific materials of interest.

Goal 3

Successfully advance national security missions through innovation by expanding the frontiers of Science, Technology, and Engineering (ST&E). Execute transformative and leading-edge Research and Development (R&D) by creating a vibrant, creative, environment that leverages effective partnerships (including SPP) and technology transfer endeavors. Effectively manage high-impact DOE Work and Laboratory Directed Research and Development (LDRD or PDRD) and Technology Transfer, etc. in a safe and secure manner consistent with DOE/NNSA priorities, Work Authorizations, and Execution/Implementation Plans.

Objective 3.1

Execute a research strategy that is clear and aligns discretionary investments (e.g., LDRD) with Laboratory strategy and supports DOE/NNSA priorities.

Objective 3.2

Ensure that research is relevant, enables the national security missions, and benefits DOE/NNSA and the nation.

Objective 3.3

Ensure that research is transformative, innovative, leading edge, high quality, and advances the frontiers of science and engineering.

Objective 3.4

Maintain a healthy and vibrant research environment that enhances technical workforce competencies and research capabilities.

Objective 3.5

Research and develop high-impact technologies through effective partnerships, and technology transfer mechanisms that support the Laboratory's strategy, DOE/NNSA priorities and impact the public good; and ensure that reporting, publishing, and information management requirements of federally funded scientific research and development are implemented (via DOE's Public Access Plan) and per DOE's Scientific and Technical Information Management directive (DOE O 241.1B).

Objective 3.6

Pursue and perform high-impact work for DOE that strategically integrates with the DOE/NNSA mission, and leverages, sustains and strengthens unique science and engineering capabilities, facilities, and essential skills.

Goal 4

Effectively and efficiently manage the safe and secure operations of the Laboratory in accordance with cost, scope and schedule while maintaining an NNSA enterprise-wide focus; demonstrating accountability for mission performance and management controls; successfully executing cyber, technical, informational, and physical security requirements, and assure mission commitments are met with high-quality products and services while partnering to improve the site infrastructure. Performance will be measured by the contractor's assurance system, NNSA metrics, cost control, business and financial operations, project baselines, implementation plans, assessment, and audit results, etc., with a focus on mission enablement.

Objective 4.1

Deliver effective, efficient, and responsive Environment, Safety, Health (ES&H), Quality (including weapon quality), and radioactive waste management. Advance DOE/NNSA's climate resiliency and sustainability goals with a focus on maximizing energy efficiency and supporting Carbon Pollution-Free Electricity (CFE) objectives.

Objective 4.2

Deliver mission capabilities through the planning, design, acquisition, operation, maintenance, recapitalization, and disposition of facilities and infrastructure. Execute design and construction projects to achieve the scope on schedule, on budget, and in alignment with the 30 pits-per-year mission.

Objective 4.3

Deliver effective, efficient, and responsive safeguards and security, including assigned enterprise initiatives.

Objective 4.4

Deliver efficient, effective, responsible, and transparent financial management operations and systems including financial integration reporting; budget formulation and execution; programmatic cost estimates; and internal controls.

Objective 4.5

Deliver efficient and effective management of legal risk and incorporation of best legal practices. Deliver timely and actionable recommendations and analysis to Freedom of Information Act and Privacy Act requests.

Objective 4.6

Deliver effective, efficient, and responsive information technology systems and cybersecurity that provides for a comprehensive mission and functional area delivery through the execution of the implementation factors established in the NA-IM IT and Cybersecurity Program Execution Guidance, and adaptive day-to-day IT and cybersecurity operations to support, protect, and defend mission/business systems and networks.

Objective 4.7

Deliver effective, efficient, and responsive site emergency management programs in support of the DOE/NNSA Emergency Management Enterprise.

Objective 4.8

Deliver efficient, effective, and compliant business operations including, but not limited to, procurement, human resources, and property systems, in support of NNSA missions. Focus areas to include achievement of small business and socioeconomic goals; timely and high-quality subcontract actions; support provided to the NSE Workforce Recruitment Strategy; and strategic management of integrated recruiting, retention, and diversity programs.

K.O. 4.1

Mobilize and start construction for the B256 Digital Infrastructure Capability Expansion (DICE) line-item construction projects.

K.O. 4.2

Plan and execute the Enhanced Capabilities for Subcritical Experiments portfolio projects in accordance with the approved scope, baselined costs, schedule milestones, management plan, and project practices for cost estimation and cost control.

Goal 5

Successfully demonstrate leadership in supporting the direction of the overall DOE/NNSA mission, cultivating a Performance Excellence Culture that encompasses all aspects of operations and continues to emphasize safety and security, improving the responsiveness of Triad's leadership team to issues and opportunities for continuous improvement internally and across the Enterprise, and parent company involvement/commitment to the overall success of the Laboratory and the Enterprise.

Objective 5.1

Define and implement a realistic strategic vision for the Laboratory, in alignment with the NNSA Strategic Vision, which demonstrates enterprise leadership and effective collaborations across the NNSA enterprise to ensure DOE/NNSA success.

Objective 5.2

Demonstrate performance results through the institutional utilization of a Contractor Assurance System and promoting a culture of critical self-assessment, transparency, and accountability through the entire organization, while also leveraging parent company resources and expertise.

Objective 5.3

Develop and implement a National Security Enterprise-wide partnership model that enhances collaboration, reinforces shared fate, and enables mission success including transformation of the stockpile and the enterprise.

Objective 5.4

Exhibit professional excellence in performing roles/responsibilities while pursuing collaborative opportunities for continuous organizational and enterprise learning and demonstrated improvements that will improve productivity, grow the capacity to execute mission, and manage, rather than avoid, risk.

Pursue innovations to increase agility and resilience while controlling costs. Advance the operational capabilities of the National Security Enterprise (NSE) by identifying and employing latent capacity existing in the NSE.

Objective 5.5

Demonstrate leadership in driving enhanced and sustainable formality and rigor of operations through proactive implementation of effective and efficient measures to minimize operational upsets that have potential to impact mission.

Objective 5.6

Leadership takes decisive action, as a cooperative partner of NNSA, to attract and retain the workforce needed to achieve the nuclear security enterprise missions, with particular emphasis on critical and under-resourced skill sets, reaching back to parent company resources as necessary.