



Department of Energy
 National Nuclear Security Administration
 Washington DC 20585

OFFICE OF THE ADMINISTRATOR

December 4, 2018

MEMORANDUM FOR WILLIAM. S. GOODRUM
 MANAGER
 LOS ALAMOS FIELD OFFICE

FROM: WILLIAM I. WHITE [REDACTED]
 ASSOCIATE PRINCIPAL DEPUTY ADMINISTRATOR

SUBJECT: Los Alamos National Security, LLC (LANS),
 DE-AC52-06NA25396 Fiscal Year 2018 Award Fee Determination

The National Nuclear Security Administration (NNSA) has completed its assessment of Los Alamos National Security, LLC (LANS) performance of the contract requirements for the period of October 1, 2017, through September 30, 2018, as evaluated against Clause B-4, Leadership Performance, as defined in the Performance Evaluation and Measurement Plan (PEMP). Based on assessments provided in the NNSA Performance Evaluation Report, incentive fee amounts are as follows:

	<u>At Risk %</u>	<u>Available</u>	<u>Final</u>	<u>Percent</u>
B-4: Leadership Perf. Evaluation	100%	\$8,786,750	\$6,590,063	75%

In addition, the fixed fee and total fee summaries are provided below for your information:

Fixed Fee	\$35,146,999	\$35,146,999
SPP (Fixed Fee)	<u>\$6,176,502</u>	<u>\$6,176,502</u>
Total Fixed Fee	\$41,323,501	\$41,323,501
Total Summary	\$50,110,251	\$47,913,564





National Nuclear Security
Administration

Los Alamos National
Security, LLC
Performance Evaluation
Report (PER)

NNSA Los Alamos Field Office

Evaluation Period:
October 2017 – September 2018

December 3, 2018

(a) Achieving site mission deliverables while supporting and enabling the overall DOE/NNSA mission.

This Performance Evaluation Report (PER) provides the National Nuclear Security Administration (NNSA) review of Los Alamos National Security, LLC (LANS LLC) performance for the period from October 1, 2017 through September 30, 2018 as measured against the Performance Evaluation and Measurement Plan. NNSA took into consideration all input provided (e.g. Contractor Assurance System (CAS), Program Reviews, etc.) from NNSA Program and Functional Offices, as well as LANS LLC's formal input, awarding an adjectival grade of Good. This report references many exceptional contributions from the world-class scientists, engineers, technicians and support staff at the Laboratory, but this report focuses LANS LLC leadership performance.

Performance in core Weapons, Global Security and Science, Technology and Engineering functional areas was very strong, with some challenges in mission support areas, including operational waste management, environmental permitting and compliance, and communication across the enterprise. Strides were made in improving safety culture, with attention to first line supervisor training and discipline, an improved focus on lessons learned and metrics, and reengineering of some key safety programs; however, instances continued where staff did not follow proper conduct of operations.

The Laboratory was effective in forecasting staffing needs and in meeting macro-level hiring targets with very good performance in diversity metrics, but staffing in some key mission critical safety and production support areas remains a concern. Strong performance was delivered in infrastructure sustainment, including environmental projects performed as part of a settlement with the State of New Mexico, while cost, scope, and schedule challenges impacted many smaller-scale construction projects.

The Laboratory continued as a world-leader in Science, Technology, and Engineering, receiving broad and frequent external recognition for innovation and discovery. In terms of effective, efficient, safe, and secure operations, management of major capital projects improved. Important pit production operations were resumed after an extended pause, and an excellent pilot program Counter-Unmanned Aircraft Systems for enhanced security was launched. Several operational shortcomings are also noted, including Material Controls and Accountability below standards, adversely impacted operations. The number of Incident of Security Concern were exceptionally high, and challenges remain in criticality safety, safety basis, and quality assurance.

Key support was delivered on NNSA priorities and improvements to the Contractor Assurance System (CAS) were made; but consistent, rigorous application of CAS to build a culture of continuous learning and improvement has not been achieved. The corporate parent organizations contributed focused oversight activities, philanthropic community engagement, and reach-back to home offices for support on important challenge areas including project and construction management.

The Laboratory exceeded expectations for Defense Programs mission deliverables during the fiscal year. With one Level 1 and 160 Level 2 milestones assigned; at year end four Level 2 milestones were red, 2 ungraded, and 157 blue (complete). Contributions to the safety, security, and effectiveness of the Stockpile included Design Agency stockpile surveillance and maintenance activities that informed the Annual Assessment process. Production Agency accomplishments included six pit surveillance events and Final Design Review for the W88 Alt 940, including development of alternatives to overcome Production Agency constraints. The Laboratory performed diamond stamping of three power supply trainers, supported safe operations at the Pantex Plant with timely weapons response analysis, and supported Y-12's Direct Cast and Electron Beam Additive Manufacturing efforts.

The Laboratory achieved significant successes in both B61-12 Life Extension Program and the W88 ALT 370 program, developing workarounds for production constraints at other sites, and improved production processes, achieving Qualification Engineering Release for many components more than a year in advance of milestone requirements. The Laboratory advanced knowledge of the stockpile, including successful closure of the 2018 Predictive Capability Framework Level-1 Milestone on Primary Initial Conditions for Boost, and executed 14 integrated hydrodynamic experiments under the National Hydrotest and National Sub-Critical Experiments Plans, including the successful Vega Subcritical Experiment. Modernization of RDT&E included construction start on the Exascale Class Computer Cooling Equipment and Enhanced Capabilities for Subcritical Experiments projects, including the Neutron Diagnosed Subcritical Experiments sub-project.

Strategic Materials capabilities supporting Plutonium Sustainment were advanced, as evidenced by production of four development unit pits, and substantial post-assembly operations on a fifth development pit. Material Recycle and Recovery program goals were exceeded, including accelerated vault cleanout, confinement vessel disposition, and Chemistry and Metallurgy Research de-inventory.

The Laboratory exceeded expectation for Defense Nuclear Nonproliferation (DNN) priorities such as the Warhead Measurement Campaign, the Source Physics Experiment, and space-based detector system delivery. Success in High Explosive Science, Olympic Marmot, and the Low Yield Nuclear Monitoring ventures provided valuable DNN capabilities. Contributions in work with international partners included radiation portal monitor implementation and the development and execution of training courses for the International Atomic Energy Agency. Off-Site Source Recovery program goals were met by reclaiming 2,433 radioactive sources (75 international), production of 100 kg of plutonium oxide, certification the 100 kg of plutonium oxide produced in a previous period, and consolidation of the material inventory at the NNSA Device Assembly Facility (DAF) to create space for high priority NNSA mission activities.

Nuclear Counter Terrorism and Counter Proliferation support included design and conduct of a Nuclear Incident Response Technical Drill, publication of the Lincoln Blue Book Work planning tool, and process on Standoff Disablement. Environmental permitting and compliance issues persisted, impacting mission performance. Inadequate implementation of Material Accountability requirements resulted in adverse mission impacts.

(b) Improving safety culture.

Significant improvements were made in safety culture, but challenges in uniform workforce adoption of these practices remain. Laboratory leaders communicated that all levels of staff are accountable for safe, secure and compliant work, with zero tolerance for retribution against those calling for safety. In several instances staff did not follow proper conduct of operations. Root cause analyses of these occurrences were conducted to promote learning. A user-friendly Lessons Learned system, OPEXatLANL, was developed and deployed and is being considered for expansion throughout the NNSA. Safety culture improvement tools included a Technical Leadership Program and Safe Academy for Excellence immersion workshops.

Laboratory metrics indicate an increase in worker self-reporting and instances of proactive corrective actions following a beryllium safety event were favorably recognized in an NNSA Safety Advisory. The rate of electrical safety events trended downward, more importantly, the event severity index is substantially down. Additionally, the Laboratory's Electrical Safety Committee produced excellent field guide job aids for craft workers, planners, and managers. The Laboratory drove electrical safety awareness and safety culture improvements locally and in the broader DOE complex through revision of the DOE Electrical Safety Handbook and through the promulgation of best practices. The Laboratory injury/illness rates (recordable events and severity) are at a historical low and best comparable industry averages in the state, complex, and nation.

The plutonium facility initiated a conduct of operations improvement program in response to NNSA input. More than 85% of the planned improvements have been completed and four of five major actions were completed with some benefit to mission operations noted. However, progress has not been consistent to improve conduct of operations in maintenance and construction throughout the facility. The Laboratory improved crane maintenance, the performance of Nuclear Criticality Safety analysts supporting nuclear operations, implementation of all radiation protection requirements, and packaging and transportation programs

(c) Maintaining critical skills and infrastructure.

The Laboratory took many proactive steps to address critical skills, but some challenges in key specialties remain. These are being realized in environmental compliance and permitting, safety programs including criticality safety management, fire protection, industrial safety, and radiation protection.

Human Resources (HR) efforts succeeded in meeting overall hiring targets tied to

Laboratory attrition estimates, mission growth, and work plans. Key areas of notable progress included increases in disabled worker outreach, improved hiring rates for Veterans and in other EEO categories; minorities in Science, Technology, Engineering, and Mathematics (STEM) pipeline program development, and overall increases of women and minorities at the graduate student level. In addition, the Laboratory successfully applied market adjustments that allowed the Laboratory to maintain a more competitive position in the market, supporting retention of critical and highly skilled employees.

The Laboratory made substantial progress in executing the work scope identified in the Watershed Enhancement and Sampling and Monitoring Supplemental Environmental Project (SEP) agreements. However, the Laboratory was unable to meet negotiated deadlines

The Laboratory provided valuable input to the NNSA Master Asset Planning process and supported completion of the NNSA to EM TA-54 Transfer, as well as several dispositions, meeting the footprint reduction target of 10,000 square feet. Deferred maintenance (DM) on site assets dropped, although repair needs (RN) increased. Total site spending on DM and RN continued below the 2%-4% replacement plant value goal. Preventative Maintenance completion was excellent, 99.5%, but Corrective Maintenance backlogs continue to grow. Improvement is needed on Facility Information Management System (FIMS) compliance to ensure adequate planned attention. The Laboratory continued to experience challenges in real property planning and execution, lease acquisition package quality, and transparency and planning for minor construction projects, including project baseline management and waste generation during construction.

(d) Advancing Science, Technology & Engineering (ST&E), including Laboratory Directed Research and Development (LDRD) and Tech transfer.

The Laboratory remains a national leader in ST&E, demonstrating leadership and partnering with federal, academic, and industry stakeholders, aligned with national priorities and DOE/NNSA strategic goals and objectives. Nine 2018 R&D 100 submissions were selected as finalists, the most in Laboratory history and the most for any DOE or NNSA Laboratory in 2018.

The Laboratory continued to successfully support the innovation required for DOE strategic mission success. Three Laboratory scientists were awarded prestigious DOE Early Career Research Awards; 60% of NNSA's recipients and 10% of the DOE total. The Laboratory continued to provide significant national leadership and contributions to DOE's environmental, energy security and Science strategic objectives by leadership of several Environmental Management, Nuclear Energy, and Office of Science Research Centers and consortia. Additionally, the Laboratory led a multi-laboratory analysis for a special Energy Deputy Secretary request on emerging biological threats.

The Laboratory's ST&E FY 2018 cycle of capability reviews provided critical feedback essential to continuous improvement of the quality of the Lab's ST&E and its ability to support national priorities and DOE/NNSA strategic objectives in six key areas: Engineering; Information Science and Technology; Materials for the Future; Weapons Science and Engineering; Science of Signatures; and Nuclear & Particle Futures.

The Laboratory exceeded expectations in support of Strategic Partnership Project customers government-wide, particularly for the Department of Defense (DoD) by successfully developing, producing, and delivering multiple high-priority special products and through selection as lead Laboratory for the development of novel sensor technology for two US Command surveillance and reconnaissance missions. Additionally, the Laboratory supported NASA by delivering fueled clad product to support NASA's Mars 2020 Mission.

The Laboratory continued to successfully execute the Laboratory Directed Research and Development (LDRD) program to enhance fundamental science at the Laboratory, instituting a new initiative to perform final appraisals of completed Directed Research projects to capture and assess project execution progress and outcomes to inform program and science leadership on potential enhancements to the LDRD and science programs.

The Laboratory initiated 23 cooperative research and development agreements, 223 Strategic Partnership Agreements, 32 Non-Federal Entity Agreements, 47 Strategic Partnership Project closeouts, 112 SPP no cost extensions, and 136 Strategic Intelligence Partnership Program proposals, and 83 Field Work Proposals, reflecting a broad scope of work for external customers. Of note is the selection of a Laboratory/Westinghouse partnership for DOE Technology Commercialization Fund award to advance nuclear innovation projects to commercialization.

(e) Operating the Laboratories effectively, efficiently, safely, and securely to meet current mission requirements and to accomplish additional Strategic Investments that enhance or develop new capabilities, address long-standing challenges, or respond to new or emerging threats.

The Laboratory had successes in addressing operational challenges that impact mission outcomes, but many challenges require significant further improvement as evidenced by an increase in the number of events warranting extensive investigations by the Laboratory, NNSA, and DOE. These included improper actions that resulted in injuries and unsafe responses to operating risks or alarms.

The Laboratory was not fully effective in supporting the transition of legacy waste responsibility to a new operator on site, a top DOE priority. Examples include inappropriately restricting access to environmental management tools, leading to compliance issues and damaged external stakeholder relationships; and sluggishness in eventually providing partner services, including IT systems. With respect to the M&O Transition, the Laboratory collaborated and partnered with NNSA and with the new M&O operator to enable a smooth start to the transition, and implemented lessons learned from previous transitions.

Nuclear Criticality Safety program improvements continued to meet expectations. Criticality safety evaluation quality has improved. However, inconsistent limit sets remain in place based on legacy evaluations, creating challenges for field implementation and efficient programmatic operations. Identified issues in formality of operations adversely impacted program implementation at the facility level. Novel approaches to systems-level evaluation show promise for accelerating closure of legacy deficiencies, but remain incomplete at this time. Radiation Protection, Criticality Safety, and Safety and Health services continue to provide essential support to program accomplishments ensuring mission success. The Laboratory worked collaboratively with NNSA to enhance oversight and tracking of safety basis documents through the preparation and approval phases; and evaluated novel technologies to improve institutional chemical management, coming nearer to industrial hygiene and emergency management requirements. The Laboratory provided effective engineering support on credited systems for capital projects and existing facilities; managing staffing and training needs and leveraging Vital Safety System Assessments and System Health Reports timely and transparently.

A 23 gram sample of High Explosive initiated during pressing operations; an event that was foreseen but not planned for. In response, the Laboratory was proactive and coordinated with the NNSA explosives community to identify the root cause of the event. Corrective actions and lessons learned were shared broadly.

Laboratory performance on seven line-item projects overall met expectations. Five projects were rated at meeting expectations, two rated below expectations. CD-4 on the Radiological Liquid Waste Treatment Facility - Low Level Liquid Waste (LLW) project was achieved by contract closeout within the approved baseline. Due to successful negotiation of a global settlement in which the operator agreed to absorb \$4.4M of subcontractor costs, the project was completed within the revised baseline costs. The TRP III project was also rated at below expectations as the proposed CD-1 package was deficient.

The Laboratory received a strongly favorable rating from NNSA in Chief Financial Officer performance, and was further recognized for commendable business operations this year. Highlights include cost reporting improvements, renegotiation of State tax issues, and complex-wide leadership on overhead and support cost analysis. Procurement continued to substantially exceed most small business and socio-economic targets through aggressive use of the NNSA Supply Chain Management Center and other proactive measures; with \$42M in strategic sourcing savings. External and NNSA reviews of consulting agreements identified contact management and execution weaknesses.

The Laboratory did a superb job supporting the NNSA's Enterprise Counter Unmanned Aircraft System (CUAS) project by developing counter threat measures specific to unmanned aerial vehicles for critical nuclear facilities. Immediate and effective leadership and has set the standard moving forward to implement the CUAS program enterprise-wide. Positive comments have been received from the House Armed Services Committee, Chief, Defense Nuclear Security and the Federal Aviation Administration.

The Laboratory met programmatic requirements for Cyber Security and Information

Technology. Program strengths include implementation of an automated vulnerability network scanning and blocking tool, Voice over Internet Protocol infrastructure, and establishment of a dedicated network penetration testing team considered to be a best practice by DOE. Despite strengths in the cyber security program, NNSA is concerned about the potential elevation of risks to information systems and resources. Deficiencies include the absence of annual risk assessments for accredited information systems, and inadequate identification of risks associated with partially implemented security controls. The Laboratory has challenges addressing configuration change control processes, web servers, integrated control systems, safety software, and validation of general user access ensuring a continued need to know for specific data.

A baseline review of the Laboratory's Material Control & Accountability (MC&A) program identified that aspects of the approved MC&A plan were not being followed. Issues included a failure to perform required assessments, unresolved calculation differences, and resumption of operations without completing the physical inventory. Programmatic concerns included the loss of operational work weeks in the plutonium facility due to issues such as poor housekeeping and poor operational work practices, which were avoidable with the proper management of the program.

The Laboratory was not proactive in responding to MC&A programmatic shortcomings, failing to conduct an in depth analysis to support successful resolution and missing several milestone dates for reconciliation of inventory periods.

The Laboratory experienced an increase in reportable Category A Incidents of Security Concern (IOSC). Incident types include unauthorized transmissions of classified information, post runs, escorting lapses, and prohibited and controlled articles issues. The Laboratory has taken several steps to mitigate and educate staff in this area; however, the incident rate remains problematic.

Metrics in the area of Institutional Quality Assurance to include Software Quality Assurance, Measuring & Test Equipment Status, Management/Independent Assessment, and Weapon Quality Assurance continue to mature. Internal assessments were performed across Quality areas with some positive results, although challenges remain, many arising from the non-standard approach employed as the majority of issues appear to be managed in isolation, as opposed to being evaluated across institution. The Laboratory developed multiple improvement plans (e.g., Performance Assurance Improvement Plan, the Supply Chain Quality improvement plan, the Nonconformance Reporting Improvement Plan, and an Assessment Program improvement plan); however, evidence of early intervention on high priority concerns is unconvincing. The Laboratory Product Accepted Trouble Free (PATF) for FY 2018, as calculated by NNSA, was 100% for delegated weapons product, 100% for NNSA accepted weapons product (1/1), and 67% for the Radioisotope Power System product, with an overall computed PATF of 78%.

The Laboratory accredited a new Weapons Analysis Center to support secure program work for key programs. The Legacy Argus Field Panel project deliverables were met within cost and on schedule; and National Background Investigations Bureau staff were hosted o-

site to reduce the large security clearance backlog.

The Laboratory continued to improve emergency management execution by introducing formality and standardization to the exercise program in response to external audits, moving toward a self-critical approach. Specifically, improvements included exercise tools, a Corrective Action Plan template to standardize the review of exercise findings, and enhanced emergency operations center effectiveness through new positions and position specific job aids. The Laboratory also made progress on a training course and site awareness campaign to educate employees on protective actions during emergencies.

The Laboratory improved performance in waste management operations, including the resumption of shipments to the Waste Isolation Pilot Project, full operational capacity of the Transuranic Waste Facility, and progress on operational readiness at the Radioassay and Nondestructive Testing facility. However, a declining trend in Resource Conservation and Recovery Act compliance continued, including waste characterization and accountability issues.

The Laboratory was effective in supporting environmental regulatory goals, particularly in the area of National Environmental Policy Act document production. However, the Laboratory continued to experience regulatory non-compliances, including National Pollutant Discharge Elimination System compliance. The Laboratory did not meet energy or water efficiency goals, but continued to focus on facilities with high energy use to implement cost-efficient energy efficiency programs, with targeted energy/water improvements at least 37 key facilities. The Laboratory exhibited exceptional leadership in support of Manhattan Project National Historical Park.

(f) Resolving issues and ensuring continuous improvement internally and across the DOE/NNSA while meeting Contract requirements.

The Laboratory infused new energy, direction, and rigor into the effort to build a learning organization that achieves continuous improvement, but much additional progress is required to build to reliably assure mission performance. The Laboratory self-evaluation contained some areas of rigorous self-criticism, and launched training for leaders at every level on robust assessment practices.

The Laboratory took several positive steps to begin planning for support of the top national priority of increased pit production to sustain the nuclear weapons stockpile, evaluating the current state and required state of facilities, technology, and workforce to build toward an integrated value chain that can deliver eventual mission success. An Institutional Performance Assurance Improvement Plan was developed and executed to improve Contractor Assurance System (CAS) tools and deploy them more broadly and evenly across the institution.

A large volume of institutional open issues were closed, but these closures focused on procedural compliance, rather than on effectiveness actions taken. Of note, in the closures evaluated, 92% were closed on the basis of administrative controls, which is a high proportion to address through that approach.

The Laboratory program of self-assessments and external assessments is a pillar of the performance assurance model, and shortcomings identified in the assessment rigor of the Laboratory for the MC&A program call into question the overall health of the assurance system.

The Laboratory provided significant support to the Government for the development of the 2018 Nuclear Posture Review; and also made progress in resolving operational challenges related to shipping. Transuranic waste shipments to the Waste Isolation Pilot Plant, paused since 2014, resumed. The Laboratory took proactive, constructive measures to support and stabilize the workforce during the transition to a new M&O operator. These actions included consistent senior level communications, advocacy for the legacy workforce on professional and work-life issues, effective partnering with the incoming leadership team to promote continuity of operations, and outstanding support for transition activities such as inventories, facilities walk-downs, and policy reviews.

(g) Demonstrating parent company contributions to the overall improvement of the Laboratories and the DOE.

The parent company Board of Governors (BOG) organized and executed structured committee-based oversight during the period, often providing functional managers with direction and tasking to improve operational effectiveness in areas including Project Management, Construction Management, Science, Technology, and Engineering. The BOG conducted three Functional Management Reviews covering Major Project Controls, Laboratory Continuous Learning, and Cyber Security Risk Protocols, with some specific, focused benefits noted. Science based Capability Reviews provided an additional benefit in six of the Laboratory's 25 core capability areas.

The BOG provided specific guidance and direction on the improvement of mission assurance and enterprise risk management; as well as scientific collaboration in areas such as high energy density science and mesoscale materials science. Board-led integration efforts with other Laboratories resulted in significant cost savings. The BOG Ethics and Audit Committee played an important role as the direct line supervisors of the Laboratory Ethics and Internal Audit staff, consistent with industry best practices; reversing longstanding negative trends in Laboratory executive override of internal controls and improving executive conduct. This reflects progress in migrating from its former oversight role to a performance assurance role, consistent with the Site Governance Plan and related expectations identified in NNSA's Site Governance policy.

The Board of Governors continued to support community giving, education, and economic development with a direct commitment of nearly \$1.9 million, facilitated by federally funded program staff.