National Nuclear Security Administration

National Technology and Engineering Solutions of Sandia, LLC

Performance Evaluation Report

Contract No. DE-NA0003525

Sandia Field Office

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through September 30, 2024

December 13, 2024

Controlled by: National Nuclear Security Administration,
Sandia Field Office, Contract Administration and Business Management,
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Executive Summary

This Performance Evaluation Report (PER) provides the National Nuclear Security Administration's (NNSA) assessment of the performing entity, National Technology and Engineering Solutions of Sandia, LLC (NTESS), performance of the contract requirements for the period from October 1, 2023, through September 30, 2024, as measured against the applicable 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 NTESS' performance, as required by Federal Acquisition Regulation (FAR) Subpart 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 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 NTESS' performance against the PEMP and provides the basis for determining the amount of award fee earned by NTESS. NNSA took into consideration all inputs provided (e.g., contractor assurance system, program reviews) from NTESS and NNSA Program and Functional Offices both at Headquarters and in the field.

NTESS earned an overall rating of Excellent and 93 percent of the award fee during this performance period. NTESS earned an Excellent rating for Goals 2, 3, and 5 and Very Good for Goals 1 and 4.

NTESS effectively supported multiple weapon modernization programs by delivering numerous weapon components and systems. NTESS quickly addressed rate production issues at NNSA production sites to enable on-time delivery of the B61-12 to the United States Air Force (USAF). NTESS completed life-of-program production for all W88 Alteration (ALT) 370 hardware six months ahead of schedule. NTESS successfully executed W93 Phase 2 development activities, including leading and hosting the Customer Requirements Exchange to review and validate stakeholder program requirements. NTESS successfully requalified W80-1 components, achieving a cost avoidance of approximately $10 million (M). NTESS completed all core surveillance and technical basis studies for the B83 program, including an additional fiscal year (FY) 2025 test ahead of schedule. In support of Digital Transformation, NTESS led the development and implementation of Model-Based Systems Engineering capabilities across the Nuclear Security Enterprise (NSE). NTESS exceeded expectations in developing, maturing, and applying innovative strategies and technologies to sustain a robust stockpile. NTESS did not consistently deliver (b)(7)(F) component/system definitions and hardware on schedule that delayed product realization activities at other sites, though efforts are underway to recover program schedule. NTESS missed a key (b)(7)(F) Firing Set Assembly (FSA) design requirement until late in production readiness activities, incurring a schedule delay at the Kansas City National Security Campus.

In the global nuclear security mission area, NTESS significantly contributed to enhancing radiological and nuclear security through its extensive subject matter expertise across various domains, including physical protection, communications systems, uncrewed aerial systems, and innovative analytics. NTESS hosted the International Physical Protection Advisory Service mission at Sandia National Laboratories (Sandia), marking the first International Atomic Energy Agency mission to assess an NNSA facility. NTESS successfully delivered the Global Burst Detector flight systems to the U.S. Space Force, enhancing the Nation's space-based nuclear detection capabilities. This achievement involved rigorous testing and review processes essential for space systems. Additionally, NTESS demonstrated exceptional responsiveness by supporting the early launch of the Global Positioning System III-07 space vehicle, which required thorough pre-launch verifications of the payload that had been in storage. NTESS successfully led the first collaborative monitoring and verification exercise with the United States-United Kingdom-Norway-Sweden Quad Nuclear Verification Partnership. NTESS significantly advanced

technologies and knowledge in nuclear counterterrorism, counterproliferation, and forensic science capabilities for the Counterterrorism and Counterproliferation and the Nuclear Emergency Support Teams (NEST). NTESS provided substantial logistical support aimed at enhancing nuclear and radiological emergency preparedness and response capabilities, particularly for Ukraine and its surrounding region.

NTESS continued to advance science and technology capabilities through its innovative research and development investments, harnessing cutting-edge science expertise and state-of-the-art facilities to address some of the most pressing challenges facing the Nation and the world. By fostering collaboration across various disciplines, including engineering, computing, materials, biology, earth science, and cybersecurity. NTESS not only drove breakthroughs in defense, nonproliferation, energy, and environmental sustainability but also cultivated a highly skilled workforce dedicated to pushing the boundaries of knowledge. Through its commitment to excellence and culture of innovation, NTESS continued to be at the forefront of transforming scientific discoveries into practical solutions that enhanced national security. NTESS achieved major technical advances in science, technology, and engineering through its Laboratory-Directed Research and Development (LDRD) program that directly supported DOE/NNSA mission priorities. In support of the U.S. Navy Conventional Prompt Strike Hypersonic Weapons program, NTESS aggressively pivoted to successfully launch the all-up round within an unprecedented 5-month schedule. NTESS supported the Cybersecurity and Infrastructure Security Agency (CISA) in developing language for Executive Order 14110 on the safe, secure, and trustworthy development and use of Artificial Intelligence (AI). NTESS successfully completed a 3-year DOE-sponsored project to create a roadmap for Puerto Rico's clean energy future, providing a path to achieving grid resiliency and energy security and independence. In collaboration with DOE, NTESS developed the Energy Exascale Earth Systems Model, earning the Gordon Bell Prize for Climate Modeling for development of an unprecedented global atmospheric modeling capability for global climate change research.

NTESS effectively and efficiently managed the safe and secure operations of Sandia while maintaining an NSE-wide focus. NTESS exceeded expectations in proactively preparing for future stockpile mission needs by significantly enhancing its readiness review process for the startup and restart of nuclear operations and facilities. This enabled NTESS to restart specific Annular Core Research Reactor capabilities after almost a decade of being inactive. NTESS continued to exceed expectations in meeting sustainability and carbon pollution-free energy objectives, implementing its Net-Zero plans by supporting NNSA on executing two Energy Savings Performance Contracts at both the Sandia California and New Mexico sites. (b)(4), (b)(7)(F) NTESS experienced issues with its Event Management Program as evidenced by the reoccurrence of similar events and insufficient or abandoned corrective actions. NTESS completed a corrective action plan to address deficiencies across its infrastructure project portfolios, though additional time is required to implement the actions.

NTESS displayed exceptional leadership in cultivating a performance excellence culture and improving responsiveness to issues and opportunities for continuous improvement internally and across the NSE. NTESS supported the Enhanced Mission Delivery Initiative (EMDI) by partnering with NNSA to streamline the earned value management reporting requirements for post-First Production Unit programs, achieving a combined $2.2M cost avoidance for the B61-12 and W88 ALT 370 programs. (b)(4), (b)(7)(F) NTESS completed over 250 improvement projects through its performance excellence culture program known as Unleash Excellence,

saving 400,000 labor hours annually with an estimated annual cost impact of $46M. NTESS did not consistently self-identify issues in accordance with its contractor assurance processes and communicate early with NNSA, specifically in the areas of project execution, packaging and transportation, hazardous material management, and occurrence reporting.

Goal 1: Mission Delivery: Nuclear Weapons
NTESS Amount of At-Risk Fee Allocation: $4,041,306

Goal 1 Summary

NTESS earned a rating of Very Good, and 90 percent of the award fee allocated to this goal. NTESS exceeded many 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 greatly outweighed issues, and no significant issues in performance existed.

Objective 1.1

NTESS continued to rapidly respond to B61-12 technical challenges. NTESS addressed rate production issues at NNSA production sites to enable on-time delivery of the B61-12 to the USAF, including support to the USAF to enable field retrofits using Enhanced Level Maintenance. NTESS completed life-of-program production for all W88 ALT 370 hardware six months ahead of schedule.

NTESS completed several system-level mechanical and functional tests on the W80-4 development hardware, providing critical technical data for validating component design and performance in a stockpile-to-target environment. NTESS further coordinated with the nuclear design and missile enterprise to deliver and test a system-level Ground Test Unit, providing key data of the integration between the warhead and missile that will allow a critical flight test event to proceed.

NTESS successfully executed W93 Phase 2 development activities, including leading and hosting the Customer Requirements Exchange to review and validate stakeholder program requirements. NTESS effectively collaborated with the U.S. Navy (USN) to update the USN Re-Entry Body specification. NTESS executed system design maturation activities while effectively coordinating and integrating with other Design Agencies, including a major USN contractor, to complete two significant system design releases.

NTESS did not consistently deliver (b)(7)(F) component/system definitions and hardware on schedule that delayed product realization activities at other sites, though efforts are underway to recover program schedule.

Objective 1.2

NTESS successfully requalified W80-1 components, achieving a cost avoidance of approximately $10M. NTESS also developed a Missile Integration Test unit to support a critical Joint Test Assembly and system-level flight testing.

NTESS completed all core surveillance and technical basis studies for the B83 program, including an additional FY 2025 test ahead of schedule. NTESS developed additional Electrostatic Discharge (ESD) testing capabilities to support a potential B83 Weapon Response update as well as core stockpile programs.

NTESS supported the early restart of nuclear explosive operations for the W78 program at Pantex.

NTESS missed a key (b)(7)(F) Firing Set Assembly (FSA) design requirement until late in production readiness activities, incurring a schedule delay at the Kansas City National Security Campus.

NTESS continued to investigate the cause of an anomaly in the Cable Pull-Down equipment, which has temporarily delayed (b)(7)(F) surveillance activities and reliability assessments.

Objective 1.3

In support of Digital Transformation, NTESS led the development and implementation of Model-Based Systems Engineering capabilities across the NSE, which enabled real-time collaboration between sites in various areas, such as weapons requirements, architecture, and qualification plans.

NTESS worked closely with NSE partners on the stockpile dismantlement and disposition mission, which included completing numerous engineering evaluation action items and conducting critical testing and analyses to achieve the Authorization Basis for Known State operations.

Objective 1.4

In support of the Nuclear Enterprise Assurance (NEA) program, NTESS successfully conducted an Operational Technology Assurance (OTA) pilot assessment on a stockpile surveillance tester, developed digitally complex OTA tools for countermeasure efforts, and created an NEA training curriculum for the NSE workforce.

NTESS exceeded expectations in developing, maturing, and applying innovative strategies and technologies to sustain a robust stockpile. NTESS completed temperature measurements that demonstrated the capability to obtain critical data from shock-compressed metallic samples, completing an important step in establishing a path for plutonium aging experiments at the Z Machine Facility. NTESS successfully demonstrated coupled, multi-application workflows on the Crossroads High Performance Computing system, informing Phase I prototyping design concept decisions for future weapon systems. In collaboration with Lawrence Livermore National Security, LLC (LLNS), NTESS successfully conducted a high yield shot at the National Ignition Facility to investigate device survivability evaluation differences between high energy density test facilities.

Goal 2: Mission Delivery: Global Nuclear Security

NTESS Amount of At-Risk Fee Allocation: $1,010,327

Goal 2 Summary

NTESS earned a rating of Excellent, and 97 percent of the award fee allocated to this goal. NTESS 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 2.1

NTESS significantly contributed to enhancing radiological and nuclear security through its extensive subject matter expertise across various domains, including physical protection, communications systems, uncrewed aerial systems, and innovative analytics. NTESS supported partner countries in the operation and maintenance of counter nuclear smuggling systems, as well as in evaluating their detection capabilities.

A notable collaboration with the International Atomic Energy Agency (IAEA) led to the development of a communications network that integrates radiation detectors with frontline officers' cell phones. This network facilitates efficient management of large public events and detection operations, allowing for real-time in-field measurements.

In a landmark event, NTESS hosted the International Physical Protection Advisory Service mission at Sandia, marking the first IAEA mission to assess an NNSA facility. This initiative underscored the U.S. commitment to international transparency in the protection of nuclear and radioactive materials.

NTESS demonstrated leadership in physical protection workshops, engaging government, industry, and international partners to discuss technological advancements and nonproliferation strategies for advanced reactors. NTESS also made significant strides towards the Agency Priority Goal in the Cesium (Cs) Irradiator Replacement Projects, which address vulnerabilities associated with Cs-137 based irradiators by replacing them with non-radioactive based technologies. NTESS successfully secured 16 agreements from irradiator organizations, surpassing the FY 2024 goal of 15 and contributing to the multi-lab replacement of 25 irradiators in FY 2024.

Objective 2.2

NTESS successfully delivered the Global Burst Detector flight systems to the U.S. Space Force, enhancing the Nation's space-based nuclear detection capabilities. This achievement involved rigorous testing and review processes essential for space systems. Additionally, NTESS demonstrated exceptional responsiveness by supporting the early launch of the Global Positioning System III-07 space vehicle, which required thorough pre-launch verifications of the payload that had been in storage.

NTESS surpassed performance expectations in advancing the Defense Nuclear Nonproliferation Research and Development (R&D) mission, significantly contributing to U.S. nuclear nonproliferation and security objectives. NTESS demonstrated exceptional leadership in collaborative projects, including the Find, Observe, Confirm, Understand, and Surveil initiative and the Low Yield Nuclear Monitoring program. These efforts culminated in the successful execution of the multi-lab Dynamic Networks Experiment 2, STEEL THREAD, and Analytic Discovery Ventures, which integrate and analyze diverse data streams to enhance detection capabilities for proliferation activities and underground testing in challenging environments.

Additionally, NTESS excelled in overseeing the concept, design, and construction phases of the Signals Exploration Testbed, while also managing the multi-lab and university Osiris Venture. This initiative focuses on characterizing the interaction and propagation of manufacturing and weaponization signatures in increasingly complex settings.

Objective 2.3

NTESS delivered exceptional support for the design improvements and post-closure analysis of the Criticality Control Overpack. NTESS enhanced the Transport Remotely Monitored Sealing Array system through simultaneous software performance upgrades and hardware modifications, ensuring robust safeguards for both the Surplus Plutonium Disposition (SPD) and the IAEA Voluntary Offer Agreement programs. These efforts significantly boosted SPD shipments from the Savannah River Site to the Waste Isolation Pilot Plant, making progress toward the NNSA Integrated Strategic Priority for the program.

Objective 2.4

NTESS made significant contributions to nuclear security and export controls, providing essential technical expertise to the Office of Nuclear Export Controls. NTESS' support has been vital for the Department of Commerce and the Department of State in addressing dual-use microelectronics and nuclear, chemical, and biological interdiction efforts. NTESS played a key role in formulating policies aimed at protecting critical semiconductor manufacturing equipment from adversarial exploitation.

In advancing arms control verification capabilities, NTESS collaborated with the United Kingdom through exchange agreements to share verification and monitoring technologies for future nonproliferation and arms control initiatives. NTESS successfully led the first collaborative monitoring and verification exercise with the United States-United Kingdom-Norway-Sweden Quad Nuclear Verification Partnership.

NTESS also spearheaded the development of innovative monitoring and verification technologies, including the Third Generation Trusted Radiation Identification System. Other notable technologies include the Neutron Ratio Meter, the Wired Chain of Custody Item Monitor, and the

CONFIDANTE/COGNIZANT system. Additionally, NTESS applied its laboratory capabilities and expertise to support a multi-agency team in validating the physical security of U.S.-obligated nuclear material at foreign facilities. NTESS conducted assessments across various countries to identify necessary physical and training upgrades to meet IAEA standards.

To further enhance usability for fieldworkers, NTESS customized Gamma Detector Response and Analysis Software for IAEA safeguards applications. Through these comprehensive efforts, NTESS continued to strengthen international nuclear security and nonproliferation initiatives.

Objective 2.5

NTESS significantly advanced technologies and knowledge in nuclear counterterrorism, counterproliferation, and forensic science capabilities for the Counterterrorism and Counterproliferation mission and the NEST. These efforts include the development and qualification of device defeat tools, delivery of high-fidelity training devices, and advancement of AI and Large Language Model capabilities. This technical expertise has been instrumental in helping the NSE and the broader U.S. Government agencies manage AI-related risks, while identifying secure pathways for integrating these technologies.

NTESS maintained operational readiness and demonstrated its expertise through participation in major events, exercises, and real-world responses. Notable activities include involvement in two Disposition and Forensic Evidence Analysis Team Diamond Thunder Exercises, the Federal Bureau of Investigation's Stabilization Level V City Sustainment training, the Asia Pacific Economic Cooperation Summit, the North Atlantic Treaty Organization Summit, and various other public events. NTESS' real-world responses have included the recovery of stolen radioactive equipment and the management of abandoned radioactive materials. Additionally, NTESS successfully executed logistics and capacity-building training for international partners.

In support of international training and equipment initiatives, NTESS provided substantial logistical support aimed at enhancing nuclear and radiological emergency preparedness and response capabilities, particularly for Ukraine and its surrounding region. NTESS also conducted critical monitoring and analysis of an internationally deployed sensor system designed to detect potential nuclear detonations in combat environments. NTESS worked to improve this sensor technology by addressing significant power challenges, refining system algorithms and detection criteria, and enhancing response protocols. Through these comprehensive efforts, NTESS continued to strengthen global nuclear security and emergency response capabilities.

Goal 3: Mission Innovation: Advancing Science and Technology

NTESS Amount of At-Risk Fee Allocation: $1,515,490

Goal 3 Summary

NTESS earned a rating of Excellent, and 100 percent of the award fee allocated to this goal. NTESS 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

NTESS continued to advance science and technology capabilities through its innovative research and development investments, harnessing cutting-edge science expertise and state-of-the-art facilities to address some of the most pressing challenges facing the Nation and the world. By fostering collaboration across various disciplines, including engineering, computing, materials, biology, earth science, and cybersecurity, NTESS not only drove breakthroughs in defense, nonproliferation, energy, and

environmental sustainability, but also cultivated a highly skilled workforce dedicated to pushing the boundaries of knowledge. Through its commitment to excellence and culture of innovation, NTESS continued to be at the forefront of transforming scientific discoveries into practical solutions that enhanced national security.

In alignment with its research strategy, NTESS made key discretionary investments in LDRD that directly supported DOE/NNSA mission priorities. NTESS partnered with Triad National Security, LLC (Triad) and LLNS to successfully plan and execute the first year of Interlaboratory LDRD collaborative projects in the strategic focus areas of High Energy Density Physics, Materials Science, Bioscience, and Climate Science. The Interlaboratory LDRD collaboration has set the pathway for the three NNSA laboratories to work with two additional DOE laboratories and Mission Support and Test Services, LLC (MSTS). NTESS also selected two new LDRD Grand Challenge projects for FY 2025 that will focus on critical national security needs.

Objective 3.2

Through the Beyond Fingerprinting Grand Challenge LDRD project, NTESS discovered new methodologies for rapidly characterizing materials of national security importance. Given the high interest in this new capability, the DOE Advanced Research Projects Agency-Energy and several DoD entities have partnered with NTESS in follow-on research and development projects.

Objective 3.3

NTESS' research continued to be transformative in advancing the frontiers of science and engineering. In collaboration with a university partner, NTESS developed a honeycomb-like foam that absorbs six times more energy than standard foam and 25 percent more than other honeycomb designs, creating potential applications in helmet safety and shipping crates. In collaboration with another university partner, NTESS proved that phonons can be used to transmit radiofrequencies by combining semiconductor materials with piezoelectric materials. This breakthrough demonstrated new possibilities for more efficient and powerful wireless devices.

Objective 3.4

NTESS maintained a healthy research environment that enhanced technical workforce competencies and research capabilities. By integrating theory, computational simulation, and experimental discovery and innovation, NTESS gained insights into environments and systems that were previously unattainable. For example, NTESS demonstrated the largest pressure and longest pulse duration ever reported from the 300-foot blast tube tests.

Objective 3.5

Leveraging its expertise and early strategic investments in AI capabilities, NTESS supported the CISA in developing language for Executive Order 14110 on the safe, secure, and trustworthy development and use of AI. NTESS delivered a mission essential strategy that CISA adopted to allow increased use of AI applications with appropriate security mitigations. In support of the U.S. Navy Conventional Prompt Strike Hypersonic Weapons program, NTESS aggressively pivoted to successfully launch the all-up round within an unprecedented 5-month schedule. The first Sandia-designed, industry-produced, glide body proved successful with astounding accuracy. In support of the national priority of rapidly developing and maturing hypersonic technology, NTESS successfully demonstrated revolutionary technologies.

NTESS published AI assessment reports that were the most subscribed by the community of practice in FY 2024 and were lauded by high-level U.S. Government agency officials for their impactful contributions to the adoption and secure use of this emerging technology. Additionally, the microelectronics assessment series informed Principal-level National Security Council deliberations, leading to a briefing for the President.

Objective 3.6

NTESS significantly exceeded expectations in its assessments of foreign nuclear security threats, providing critical data and information to inform high-consequence national security decisions.

NTESS achieved significant progress towards the development of the Generation 3 Particle Pilot Plant solar tower to advance the next-generation solar thermal technology for efficient power generation and industrial applications. NTESS successfully completed a 3-year DOE-sponsored project to create a roadmap for Puerto Rico's clean energy future, providing a path to achieving grid resiliency and energy security and independence. In collaboration with the DOE Office of Science, NTESS developed the Energy Exascale Earth Systems Model, earning the Gordon Bell Prize for Climate Modeling for innovation and development of an unprecedented global atmospheric modeling capability for global climate change research.

Goal 4: Mission Enablement
NTESS Amount of At-Risk Fee Allocation: $2,020,653

Goal 4 Summary

NTESS earned a rating of Very Good, and 89 percent of the award fee allocated to this goal. NTESS 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

NTESS continued to exceed expectations in meeting sustainability and carbon pollution-free energy objectives. NTESS effectively implemented its Net-Zero plans by supporting NNSA on executing two Energy Savings Performance Contracts at both the Sandia California and New Mexico sites. NTESS continued to be a leader in Building Commissioning and Deep Energy Retrofits and served as a speaker in two DOE webinars.

NTESS developed and executed a plan to ship rocket motors in a higher state of assembly to reduce the workload required at launch fielding locations. This innovative effort enabled personnel to work in their regular work environment using familiar safety controls, which not only fostered a culture of work/life balance by reducing work stress and time away from home, but also shortened each launch campaign by two weeks and reduced costs by approximately $150,000 to $300,000. This improvement is a major step toward a "ship and shoot" approach that minimizes time at the launch range and accelerates launch cadence needed to meet the objectives of the Department of Defense (DoD) Multi-service Advanced Capability Hypersonic Test Bed program. Culminating 4 years of planning and coordination, NTESS achieved a significant NNSA waste milestone by successfully shipping the four classified trailers offsite, thereby eliminating the associated security risks and surveillance support.

NTESS experienced issues with its Event Management Program as evidenced by the reoccurrence of similar events and insufficient or abandoned corrective actions. Specifically, NTESS did not consistently and properly categorize events within the required timeframes, evaluate events to determine actual causes, and implement appropriate corrective actions.

(b)(7)(F)

Objective 4.2

NTESS exceeded expectations in proactively preparing for future stockpile mission needs by significantly enhancing its readiness review process for the startup and restart of nuclear operations and facilities. This enabled NTESS to restart specific Annular Core Research Reactor capabilities after almost a decade of being inactive.

After numerous delays due to site conditions and restrictions, NTESS achieved significant progress by completing the 2nd Street 13.8kV power re-routing, which is the most significant power and communications re-route work of the West End Protected Area Reduction project.

Though NTESS completed a corrective action plan to address deficiencies across its infrastructure project portfolios, additional time is required to implement the actions. In the interim, NTESS has not defined mission risk and established compensatory measures to mitigate baseline cost, scope, and schedule concerns.

While NTESS completed corrective actions to address deficiencies in National Environmental Policy Act deliverables, improvements have yet to be realized.

Objective 4.3

NTESS hosted the first IAEA International Physical Protection Advisory Service mission for NNSA, demonstrating the Nation's commitment to strengthening national nuclear security regimes, systems, and measures.

NTESS provided outstanding support to the NNSA Material Control and Accountability (MC&A) Academy by conducting laboratory tours and hands-on demonstrations for academy members to learn how Physical Security integrates with MC&A.

NTESS developed a non-conforming storage procedure and alternate physical security techniques for supporting tests of full-scale weapon systems at the Thermotron Walk-in Chamber, achieving an annual cost savings of $1.95M and reducing wait times by several months.

Objective 4.4

NTESS demonstrated efficient, effective, responsible, and transparent financial management operations and systems by passing all NNSA performance measures. NTESS was also instrumental in facilitating the successful Internal Controls Workshop that greatly benefited the DOE/NNSA internal controls community.

Objective 4.5

NTESS delivered efficient and effective litigation management, supported workforce recruitment efforts, and implemented improvements in its *Freedom of Information Act* program calculated to reduce average processing time.

Objective 4.6

(b)(4), (b)(7)(F)

(b)(4), (b)(7)(F)

(b)(7)(F)

(b)(7)(F)

Objective 4.7

NTESS significantly improved its Emergency Management capabilities by leading the planning and execution of the NNSA Cyber Shock 24 exercise, testing the new Emergency Management Communications Center and Emergency Operations Center, and enhancing the Mass Notification System.

Objective 4.8

NTESS led the EMDI-9 Phase II efforts to streamline/standardize the procurement cycle through innovative approaches, reducing time to award and mitigating supply chain risk.

NTESS partnered with NNSA to launch the Simplified Purchasing Pilot to streamline commercial firm-fixed price procurements, achieving a reduction in procurement cycle time ranging from 20 to 60 percent.

NTESS exceeded its overall small business goal and all five small business category goals. NTESS continued to demonstrate its strong commitment to small businesses by promoting Sandia subcontracting opportunities during numerous small business conferences and events. Through the Mentor-Protégé Program, NTESS successfully supported its Protégés by awarding (b)(4) Contract Purchase Agreements (CPAs) valued at (b)(4) with (b)(4) subcontract tasks awarded under the CPAs valued at (b)(4) NTESS also conducted (b)(4) development workshops to help build Protégé capabilities.

NTESS achieved a total strategic cost saving rate of 7.8 percent, far exceeding the Supply Chain Management Center goal of 4.0 percent. NTESS accounted for approximately 38 percent of the NNSA total strategic cost savings, significantly contributing to the NNSA rate of 5.3 percent.

Key Outcome 4.1

NTESS achieved this Key Outcome. NTESS delivered the first three Cathode Modules, representing the first major deliveries to the Integrated Testing Site for the Scorpius project.

Key Outcome 4.2

(b)(7)(F)

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Key Outcome 4.3

NTESS achieved this Key Outcome. NTESS successfully completed the Power Sources Capabilities Project deliverables to achieve Title 1 Preliminary Design.

Key Outcome 4.4

NTESS achieved this Key Outcome. NTESS successfully awarded all critical conceptual design subcontracts for the Combined Radiation Environment for Survivability Testing conceptual design activities and the FY 2024 execution was on time and under budget by $26M.

Goal 5: Mission Leadership
NTESS Amount of At-Risk Fee Allocation: $1,515,490

Goal 5 Summary

NTESS earned a rating of Excellent, and 95 percent of the award fee allocated to this goal. NTESS 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

In support of the EMDI, NTESS partnered with NNSA to streamline the earned value management reporting requirements for post-FPU programs, achieving a combined $2.2M cost avoidance for the B61-12 and W88 ALT 370 programs.

Objective 5.2

NTESS did not consistently self-identify issues in accordance with its contractor assurance processes and communicate early with NNSA, specifically in the areas of infrastructure project execution, packaging and transportation, hazardous material management, and occurrence reporting.

Objective 5.3

(b)(7)(F)

(b)(7)(F)

Objective 5.4

NTESS continued to exceed expectations in its Criticality Safety Program, setting a benchmark for the enterprise. For instance, a team from the Naval Reactor Laboratories visited Sandia to learn about implementing NTESS' noteworthy practices, which included integration between line organizations and federal oversight as well as processes for performing assessments, analysis, and operational awareness activities.

NTESS enhanced the G-Invoicing process to improve security and efficiency NNSA-wide by providing One-NNSA solutions to standardize interagency agreement processing practices.

Selected as the only laboratory M&O partner to serve as a member of the DOE Infinity 2.0 Development Working Group for Strategic Intelligence Partnership Programs (SIPP), NTESS leveraged its extensive expertise in G-Invoicing and SIPP to develop a common SIPP review and approval approach to support the NSE and other Federal agencies.

NTESS completed over 250 improvement projects through its performance excellence culture program known as Unleash Excellence, saving 400,000 labor hours annually with an estimated annual cost impact of $46M.

Objective 5.5

NTESS met expectations.

Objective 5.6

NTESS established a new university partnership with the University of New Mexico to develop the future generation of the nuclear nonproliferation and arms control workforce.

ATTACHMENT 1 – FY 2024 Performance Evaluation 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; and 4) improve safety margins, technology maturation strategies, and qualification, logistics, and security plans collaboratively across the NSE.

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 Office of Experimental Sciences-sponsored activities 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.

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.

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

Plan and execute the Enhanced Capabilities for Subcritical Experiments portfolio projects in accordance with approved scope and baselined cost and schedule milestones; risk management; and cost estimating and cost control.

K.O. 4.2

Plan and execute the Microsystems Engineering, Science and Applications (MESA) Complex Extended Life Program (ELP) projects in accordance with federally approved scope, cost, and schedule baselines.

K.O. 4.3

Complete the Power Sources Capability project deliverables to achieve Title 1 Preliminary Design by the end of FY 2024.

K.O. 4.4

Award critical subcontracts by the end of FY 2024 to support the Combined Radiation Environment for Survivability Testing (CREST) Conceptual Design activities necessary to achieve CD-1 approval on-schedule.

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.