Joint Testimony Statement of
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Chairman Fischer, Ranking Member King, and Members of the Subcommittee, thank you for the opportunity to provide an update on the Department of Energy's (DOE) National Nuclear Security Administration (NNSA). NNSA appreciates the Subcommittee's ongoing support.

NNSA performs national defense and public safety and security missions that exist nowhere else in the U.S. Government. In addition to maintaining the U.S. nuclear stockpile and powering the Navy's nuclear fleet, NNSA is responsible for preventing the spread of nuclear weapons to foreign states and terrorists and responding to life-threatening nuclear emergencies. Over the last year, NNSA continued to deliver modernized nuclear weapons to the Department of Defense (DoD) while sustaining stockpile systems and minimizing or securing nuclear and radioactive materials around the globe to stop threats as far from the U.S. homeland as possible. This work is being carried out every day by the dedicated and highly talented women and men across the nuclear security enterprise's federal and contractor workforce.

NNSA is executing these missions against the backdrop of an increasingly complex and volatile international environment that presents significant, often overlapping, challenges. China represents a unique threat as it rapidly modernizes and expands its nuclear arsenal while continuing to be an economic peer. At the same time, Russia maintains the world's largest nuclear arsenal, continues to expand its capabilities, and has revised its nuclear use doctrine, expanding the set of circumstances under which it may launch a nuclear attack. The need to deter Russia and China simultaneously presents a new deterrence challenge distinct from the Cold War and presents a possible future where the U.S. must counter two nuclear peers.

We are also witnessing growing threats from regional actors like Iran and North Korea. Iran continues to take steps to reduce the amount of time it would take to produce a nuclear weapon. North Korea is committed to developing long-range, nuclear-armed missiles capable of posing a direct threat to the United States, its allies, and critical assets across the Indo-Pacific region.

Finally, we are seeing growing levels of military and economic cooperation between Russia, China, Iran, and North Korea, including technology sharing. As the 2025 Annual Threat Assessment of the U.S. Intelligence Community noted, "These primarily bilateral relationships, largely in security and defense fields, have strengthened their individual and collective capabilities to threaten and harm the United States, as well as improved their resilience against U.S. and Western efforts to constrain or deter their activities."

In this challenging strategic environment, the U.S. nuclear stockpile remains safe, secure, reliable, and effective. However, we recognize that deterrence is not static; new and modern capabilities and options for the President are necessary to not only maintain but strengthen deterrence.

NNSA is also challenged by aged and fragile infrastructure across the nuclear security enterprise. It is becoming more challenging to reliably meet deterrence needs in decades-old production facilities and science and technology infrastructure. NNSA is working to maintain existing facilities to meet current stockpile demands while simultaneously investing in modern infrastructure.

Considering the compounding challenges facing the enterprise, I am proud to report on some of NNSA's recent accomplishments. In a major milestone, the first war reserve (WR) diamond-stamped plutonium pit for the W87-1 warhead was produced at Los Alamos National Laboratory (LANL) last October, reestablishing a previously dormant manufacturing capability essential for our enduring stockpile. Last year, NNSA completed the Last Production Unit (LPU) of the B61-12 Life Extension Program (LEP). The successful execution of this program saw the consolidation of multiple B61 variants with updated non-nuclear components and improved safety, reliability, and accuracy metrics that will extend its service life for at least another 20 years. By taking advantage of existing B61 production lines, NNSA now anticipates producing the first B61-13 almost a year ahead of schedule.

The unmatched scientific capabilities we use every day to design, certify, and assess our stockpile have made further groundbreaking advances, which are foundational to our confidence in the nuclear deterrent. Last year, Lawrence Livermore National Laboratory installed *El Capitan*, our first exascale computing system for national security. With the capability to perform 2.79 quintillion calculations per second at peak performance, it has been benchmarked as the world's fastest supercomputer and is currently running classified, full 3D nuclear weapon simulations in support of nuclear stockpile stewardship activities. Additionally, the National Ignition Facility (NIF) has now repeated its seminal 2022 fusion ignition breakthrough numerous times and continues to see increased yields and net energy gains. On April 7, NIF achieved a record fusion energy yield of 8.6+MJ, demonstrating the first gain greater than 4 times. Fusion ignition provides unparalleled insights into the exceptionally high pressures and temperatures present inside a nuclear explosion. The ability to successfully replicate ignition at higher yields and greater net energy gains improves our ability to maintain confidence in the nuclear stockpile.

Over the past year, NNSA has also achieved significant accomplishments across the full range of its nonproliferation, counterterrorism, and emergency response activities, significantly contributing to U.S. security by eliminating or mitigating nuclear security threats before they affect the homeland, our interests overseas, or our allies. NNSA has worked to improve the United States' space-based nuclear detection capability in partnership with U.S. Space Force through the delivery of Global Burst Detector III payloads. These sensors are integrated into satellites in support of the nuclear warfighting mission and treaty verification. Additionally, NNSA has replaced or is in the process of replacing almost 90 percent of the cesium-based blood irradiators in the United States with devices that do not use radioactive sources, permanently reducing the risk of a "dirty bomb" attack on American soil.

NNSA's Naval Reactors program continues to ensure the U.S. Navy's competitive warfighting edge and secure the sea-based leg of the nuclear triad with unmatched submarine technology. The reactor for the new *Columbia*-class ballistic missile submarines and reactor designs for the next generation of fast-attack submarines are in progress. The S8G Prototype reactor at the Kesselring Site completed its refueling overhaul last July, providing an additional 20 years of training, research, and development opportunities. The Spent Fuel Handling Recapitalization Project at the Naval Reactors Facility also continues to progress, and with the near-term award of the last major construction subcontract, the Project retires a significant amount of risk and will be entirely in execution mode through completion. The project has completed its heavily reinforced concrete foundations, continued erecting structural steel for the main process building, and started construction of the spent fuel pools.

Finally, to help plan the modernization and recapitalization of NNSA's aged and fragile infrastructure, NNSA published its Enterprise Blueprint which outlines a 25-year plan to align the construction of specialized infrastructure with demands across the nuclear stockpile, global security, and naval nuclear propulsion missions. The United States can no longer rely on decades-old production facilities and science and technology infrastructure to meet deterrence needs. The nuclear security enterprise must re-establish eliminated capabilities; replace buildings that are failing; and meet modern safety, security and environmental standards. While the Enterprise Blueprint provides a roadmap to modernize and recapitalize NNSA's specialized infrastructure, we recognize that as an enterprise we must reliably deliver projects on time and within cost parameters if we are to successfully deliver a modern infrastructure capable of delivering a modern stockpile for our nation's defense.

These accomplishments demonstrate NNSA's determination to fulfill our national security missions while remaining clear-eyed about the scale of the work ahead. We intend to move forward with urgency and precision.

Weapons Activities

NNSA's Weapons Activities portfolio covers activities including stockpile management; production modernization; stockpile research, technology, and engineering; infrastructure and operations; defense nuclear security; secure transportation; and information management and cybersecurity.

Stockpile Management

Stockpile Major Modernization

NNSA is executing an expanded program of record to meet extant and emerging DoD requirements. We are delivering seven major stockpile modernization programs which are at different stages of design, engineering, and production simultaneously. The modernization programs cover all three legs of the nuclear triad and introduce new options and capabilities for the President.

In December 2024, NNSA achieved the LPU for the B61-12 LEP just three years after the announcement of the First Production Unit (FPU) in FY22. In FY26, the program will transition to Stockpile Sustainment.

NNSA is also building the B61-13, which strengthens deterrence and assurance by providing the President with additional options against certain harder and large-area military targets. The program will be in Phase 6.6, (*Full-Scale Production*). Appropriated funds in FY24 for the B61-13, allowed NNSA to leverage active B61-12 production capabilities. NNSA appreciates the support from Congress to authorize and appropriate these funds in FY24. This has improved efficiency and enabled NNSA to quickly meet an emerging DoD need. NNSA plans for a system level FPU in FY 25, significantly ahead of our previous FY26 timeline.

The W88 Alt 370 Program will remain in Phase 6.6 (*Full-Scale Production*) and is scheduled to reach LPU in the final quarter of FY25. The W88 warhead has been deployed in the stockpile for more than 30 years. The W88 Alt 370 modernizes the arming, fuzing, and firing subsystem; improves surety; and replaces the conventional high explosive and associated materials.

The W80-4 LEP will remain in Phase 6.4, (*Production Engineering*), and reached a major milestone with reacceptance of the WR plutonium pit. The program has also reached FPU for multiple components. It remains on track for system FPU in FY27, aligned with the Long-Range Standoff Weapon and the Air Force's schedule for initial operational capability.

In accordance with Section 1640 of the FY24 National Defense Authorization Act (NDAA), NNSA and DoD added the Nuclear-Armed Sea-Launched Cruise Missile (SLCM-N) to the program of record. The program entered a tailored Phase process which combined Phase 6.2 (*Feasibility Study and Option Down-Select*) and 6.2a (*Design Definition and Cost Study*) in June 2024. In January 2025, NNSA's SLCM-N federal program office down-selected the warhead to the W80 family and continues to coordinate with DoD as missile options are evaluated.

The W87-1 Modification Program is currently in Phase 6.3 (*Development Engineering*). The program is replacing the W78 warhead, currently one of the oldest in the stockpile. It will be the first weapon to receive newly manufactured plutonium pits. This program took a critical step forward last year when the first WR plutonium pit for the W87-1 was diamond stamped at LANL. NNSA continues to closely coordinate with the Air Force's Sentinel Program, and the FPU for the W87-1 is scheduled to be delivered in the early 2030s.

The W93 program will be in Phase 2a, (*Design Definition and Cost Study*), with efforts focused on ascertaining the cost and schedule associated with development and production of the W93/Mk7. The W93 will meet DoD requirements to enhance operational effectiveness of the U.S. ballistic missile submarine force. The W93 program is being undertaken in parallel with the UK A21/Mk7 or Astraea warhead program, continuing coordination through the U.S.-UK Mutual Defense Agreement.

Stockpile Sustainment and Weapon Dismantlement and Disposition (WDD)

Stockpile Sustainment supports maintenance, sustainment, and surveillance activities to ensure the existing U.S. nuclear deterrent remains safe, secure, and effective. Stockpile Sustainment directly executes maintenance, limited life component exchanges, minor alterations, surveillance, assessment, surety studies and capability improvements, management activities, and support of weapons until they are dismantled for all enduring weapons systems in the stockpile. WDD also provides material and components from dismantled weapons for reuse in the current and modern stockpile and provides for safe and secure dismantlement of nuclear weapons, components, and critical materials for the stockpile, production modernization, and other stakeholders across the nuclear security enterprise.

Production Operations (PO) and Nuclear Enterprise Assurance (NEA)

PO provides the unique foundation for site-specific, production-enabling capabilities to execute weapons production, including process improvements and investments focused on increased efficiency of production performance. Scope covers recruitment and development of skilled labor required for nuclear weapon systems capabilities that enable individual weapon production and are not specific to one material stream. PO also provides production equipment maintenance and calibration services for manufacturing operations to meet DoD WR requirements. In addition to these activities, NEA prevents, detects, and mitigates potential consequences of subversion across the enterprise, both to the stockpile and to the associated capabilities to design, produce, and test nuclear weapons.

Production Modernization

The production modernization program re-establishes and modernizes the manufacturing capabilities for nuclear weapons that degraded or were eliminated after the Cold War. This includes modernization of unique materials production capabilities across the enterprise including plutonium, uranium, lithium, high explosives, tritium, non-nuclear components, weapons assembly/disassembly and special materials. All of these materials and capabilities require modern infrastructure to ensure reliable production capabilities at required capacities.

Plutonium Pit Production

NNSA's highest production modernization priority is re-establishing the ability to produce new plutonium pits at scale, a capability that has been absent since Rocky Flats ceased operations in 1989. Although the W87-1 and W93 programs are setting the pace and quantity for pit production now, NNSA's long-term stewardship of the nuclear stockpile, including future weapons systems, will require newly produced pits. We recognize, fundamentally, that as long as nuclear weapons exist, we will need a pit production capability. To achieve the requisite pits per year (ppy) necessary for current and future stockpile needs, NNSA is pursuing a two-site strategy at LANL and the Savannah River Site (SRS). The two-site strategy is a key component of NNSA's development of a modern nuclear security enterprise, with an emphasis on flexibility and resilience.

NNSA's pit production plan includes a redesign and refurbishment of plutonium facilities at LANL to support a production capacity of no fewer than 30 ppy while simultaneously increasing the production of WR qualified pits for the W87-1. This work achieved a major breakthrough when the first diamond stamped WR plutonium pit for the W87-1 was produced last year. We anticipate Los Alamos achieving the capability to produce 30 ppy by 2028, with increased manufacturing rate confidence as additional equipment is installed into the early 2030s. In the coming year, NNSA is planning to conduct engineering evaluations for Los Alamos pit production in concert with increased equipment purchases, installation activities, and removal of legacy equipment in pursuit of rate production. Our ability to execute work on the pit production line while producing qualified plutonium pits for the W87-1 is a testament to our adaptability as an organization and the urgency around reconstituting this vital capability.

NNSA is also making progress on the Savannah River Plutonium Processing Facility (SRPPF) to establish the capacity to produce at least 50 ppy. The SRPPF Main Process Building is on track to reach 90 percent design completion in calendar year 2026 and NNSA aims to establish a cost and schedule baseline for the project in FY 2026. Demolition and removal of equipment and commodities from the interior of the Main Process Building at SRPPF was completed in 2024 with over 2,500 gross tons of material sent off-site for recycling. We have also completed design in areas such as road construction and other required site preparations to accelerate the start of construction.

As NNSA ramps up efforts to bring on the workforce necessary to operate SRPFF, SRS is also bringing new facilities online that will be essential for training specialized machinists and operators, such as the Machining Training Center, established last year. Once SRPPF construction is finished, NNSA will introduce nuclear material and begin the manufacturing process for pits and reach rate production as soon as possible. We recognize the aggressiveness of SRPPF's schedule and appreciate congressional support for construction and long-lead procurements.

NNSA expects to make progress on the final design of the overall SRPPF project and the beginning of construction of the High-Fidelity Training Center, Main Process Building and the Operations Center. These subprojects are being pursued in parallel with ongoing execution of long-lead procurement such as production equipment, gloveboxes, and bulk material.

Uranium

Alongside pit production, the Uranium Processing Facility (UPF) at the Y-12 National Security Complex is a top infrastructure modernization priority. Current uranium processing is carried out in Building 9212, a Manhattan Project-era facility well past its design life. By contrast, UPF will relocate casting, special oxide production, and salvage and accountability capabilities into a new, modern, more efficient, and safe facility. The construction of the overall UPF project is now over 70 percent complete. We expect construction to be finished in 2027 with transition to operations to complete no later than 2032. The current UPF cost estimate is $10.35B. While UPF is under construction, NNSA continues to maintain legacy facilities to produce weapons components.

Along with UPF, NNSA is advancing its development of one or more gas centrifuge technologies for domestic uranium enrichment. Our nearest-term priority is to produce unobligated low-enriched uranium (LEU) to fuel tritium production. Over the long-term, we will need to produce unobligated highly enriched uranium (HEU) for the Naval Nuclear Propulsion Program. For almost ten years, NNSA's efforts have been focused on research and development at Oak Ridge National Laboratory to advance the Domestic Uranium Enrichment Centrifuge Experiment (DUECE) gas centrifuge technology. This past August, NNSA contracted with BWXT-Nuclear Fuel Services to conduct a year-long engineering study that will help us plan our acquisition approach for a pilot plant using the DEUCE technology. The next step will be to contract for the design and licensing to deploy this pilot plant at the beginning of FY26.

To reduce risk to meeting domestic uranium enrichment program objectives, NNSA is also exploring the feasibility of a second centrifuge technology, the AC100. This past December, NNSA released a Request for Information for industry input on an AC100 deployment that would provide a limited early production capability and demonstrate one of the available centrifuge technologies. NNSA is on track to contract for an AC100 project execution plan at the beginning of FY26.

Lithium

Lithium handling, packaging, and processing are key capabilities in the nuclear weapon production mission. NNSA requires specialized, weapon-specific forms of lithium for the production of nuclear weapon components. NNSA currently processes lithium in Building 9204-02 at the Y-12 National Security Complex, which is 82 years old and suffers from structural degradation. In 2023, NNSA broke ground on the Lithium Processing Facility (LPF). NNSA will ensure the continuity of critical lithium processing capabilities during the transition to LPF.

Tritium

Tritium gas, a critical component of nuclear weapons systems, decays over time and must be continually replenished to maintain stockpile effectiveness. NNSA produces tritium by irradiating Tritium Producing Burnable Absorber Rods (TPBARs) at two Tennessee Valley Authority (TVA) reactors before transferring them to SRS for extraction, purification, and loading into gas transfer system reservoirs, or for other national security needs. During this past year, NNSA, in coordination with the TVA, pursued and received Nuclear Regulatory Commission (NRC) approval to increase the per-reactor operating cycle maximum TPBAR limit from 1,792 to 2,496. This represents a 39 percent increase in TPBARs and by extension, a similar increase to the Watts Bar Nuclear (WBN) reactor site tritium production capacity. The increase will enhance programmatic flexibility and capacity to meet demand fluctuations or recover from a potential realization of programmatic risks. NNSA continues to support an increasingly reliable, resilient, and flexible tritium supply chain to meet the growing nuclear security enterprise mission.

High Explosives and Energetics

NNSA is currently working on two major construction projects that support our high explosives capability. The High Explosives Science and Engineering (HESE) facility at the Pantex Plant will consolidate 15 aging facilities into three new, more efficient ones to conduct science, technology, engineering, and production activities. We anticipate HESE completion in 2028. Additionally, at Pantex, the High Explosives Synthesis, Formulation, and Production Facility (HESFP) will replace 11 deteriorating World War II-era formulation facilities and establish an in-house high explosives manufacturing capability. NNSA is working to achieve the operational start date for HESFP as required by the FY24 NDAA. While NNSA executes these major capital projects within the complex, we are also working closely with partners in DoD to establish main charge insensitive high explosives production at Holston Army Ammunition Plant, and with the Naval Surface Warfare Center Indian Head Division for HE formulation. Additionally, to ensure a sufficient supply of critical FK-800 binder needed to manufacture these high explosives, NNSA successfully contracted with 3M to procure up to 32,000 pounds of remaining FK-800 supply, which is anticipated to be delivered by the end of FY25. NNSA is also formulating new insensitive high explosives to replace existing formulas that use FK-800.

Non-Nuclear Components

The overwhelming majority of a nuclear weapons package consists of highly specialized non-nuclear components. NNSA designs most of the non-nuclear components at Sandia National Laboratories and produces them at the Kansas City National Security Campus. The need to execute seven weapon modernization programs simultaneously presents a production capacity challenge at Kansas City, as the current manufacturing complex was designed for a requirement of one weapons system in development and one system in production. Changes in the program of record have resulted in a significantly increased need for non-nuclear components, and therefore a doubling of the workforce since 2014. To meet expanded production, facility, and workforce needs, NNSA launched the Kansas City Non-Nuclear Expansion Transformation (KCNExT), a multi-phase real estate acquisition approach, allowing the utilization of each phase immediately upon completion while construction continues elsewhere. NNSA broke ground on Phase One last year and a Topping Out Ceremony for Phase One occurred in February.

In addition, all weapons require trusted, warhead strategic radiation hardened microelectronics (WSRH). These can only be designed and manufactured at the Sandia National Laboratories' Microsystem Engineering, Science, and Applications (MESA) complex. Strategic radiation hardened microelectronics are essential components of a nuclear weapon's arming, fuzing, and firing system, which provides the signals that initiate the nuclear explosive chain. Production of WSRH components at MESA is considered high risk due to high downtime rates of old equipment that is no longer supported by the manufacturer.

Stockpile Research, Technology, and Engineering (SRT&E)

The SRT&E program provides the foundation for science-based stockpile decisions; delivers advanced capabilities to support DoD requirements and counter emerging threats; and innovates across the nuclear security enterprise to improve productivity, efficiency, and responsiveness. For

more than 30 years, NNSA's unrivaled scientific enterprise has provided the decisive edge to maintain confidence in the stockpile without the need for explosive testing. Thanks to the tireless work of a generation of scientists and engineers, we now have a better understanding of a nuclear weapon than at any time in the atomic era.

Within SRT&E, the Advanced Simulation and Computing program supports the subject matter experts, integrated design codes and other physics and engineering models, along with the enabling infrastructure represented by *El Capitan* and other computational systems. These capabilities provide unprecedented modeling and simulations essential for certifying the nuclear stockpile and also provide support for NNSA's nonproliferation and counterterrorism missions.

As Secretary Wright has said, AI is the next Manhattan Project. NNSA is taking decisive action to leverage advantages offered by AI. We believe this technology can be applied to every aspect of our nuclear deterrent mission, accelerating the time needed to solve some of the nation's toughest science challenges. That is why NNSA is already starting to harness our premier computing power to support AI to analyze diagnostic data, optimize experimental designs, and improve our facility operations. NNSA will not only use AI to support the critical Stockpile Stewardship Program (SSP) with data those who created the program did not know was possible, but will also use it to provide valuable insights into the potential for AI to advance similar non-NNSA defense missions and assess our adversaries' military activities.

The Inertial Confinement Fusion program gives NNSA experimental access to extreme temperature and pressure regimes characteristic of nuclear weapons explosions to support design, certification, and assessment of the nuclear stockpile. While commercial fusion energy facilities are being designed and built, LLNL's NIF remains the only location on Earth capable of achieving fusion ignition. NIF's ability to repeatably provide multi-megajoule fusion yields allows stockpile scientists to test the survivability of U.S. stockpile systems when exposed to hostile environments, improve the predictive capability of NNSA's simulations, develop high-fidelity diagnostics and advanced experimental platforms, and better understand the outputs of nuclear explosions. As modernization decisions will be reliant on the certification of new materials, components and systems not previously fielded in the stockpile, the capability to generate fusion yield in the laboratory is a critical tool that is unique to the U.S. nuclear complex.

The Weapon Technology and Manufacturing Maturation program develops agile, affordable, assured, and responsive technologies and capabilities for nuclear stockpile sustainment and modernization. This action accelerates the nuclear weapons lifecycle by rapidly developing, building and testing prototypes through ground and flight test demonstrations. The Engineering and Integrated Assessments program ensures system-informed survivability in present and future stockpile-to-target sequences and ensures a responsive nuclear deterrent through collaborative partnerships, proactive integration, disruptive innovation, and assessments. NNSA is supporting two Phase 1 system studies for early exploration of concept assessments for hard and deeply buried target defeat and non-ballistic reentry systems in response to Nuclear Weapons Council requests for joint studies of future weapon and nuclear security enterprise capabilities. NNSA will continue to support our DoD partners and harness the creative and dynamic capabilities of our labs, plants, and sites to rapidly address the shifting threat environment.

A critical infrastructure investment to support the design, certification, and assessment of the current and future stockpile, NNSA is constructing the Enhanced Capabilities for Subcritical Experiments (ECSE). The current focus is on the expansion and construction efforts at the Principal Underground Laboratory for Subcritical Experimentation (PULSE) at the Nevada National Security Site. ECSE includes development of the Z-Pinch Experimental Underground System (ZEUS) and Advanced Sources Detectors (ASD) Scorpius instruments. Experiments with these tools at PULSE will allow NNSA to conduct system-level plutonium aging experiments by the end of the decade, providing an important capability to assess system designs. Importantly, they will support certification of the W80-4, W87-1, and W93 programs.

Infrastructure and Operations

As NNSA's workload increases in response to the global threat environment, the enterprise urgently requires modernized infrastructure. A significant portion of NNSA's critical facilities is operating beyond its 40-year life span while other capabilities must be reestablished. Recapitalizing and restoring these capabilities is critical for on-time delivery of the weapons modernization program of record.

While new facilities are under construction, NNSA must continue to maintain and operate in legacy facilities to enable weapons modernization at an increased pace as well as meet global nuclear security requirements, including counterterrorism, counterproliferation, and nuclear emergency response. As noted previously, the need to operate legacy facilities while also constructing new ones places additional financial and workforce strain on NNSA and requires our adaptability and flexibility.

The Enterprise Blueprint issued last year is the plan for surmounting this challenge. It provides a roadmap for the next quarter-century of NNSA programmatic construction to carefully manage the overlapping requirements of weapons delivery schedules, legacy facility maintenance, and new facility construction by employing new approaches to improve performance in delivering projects. Even so, we are clear-eyed that reform must come from within, and NNSA must keep costs and schedules within appropriate levels as part of our responsibility to Congress and the American people.

Infrastructure modernization goes beyond the construction of new facilities. It also delivers modern capabilities and efficient technologies that take advantage of revolutions in production over previous decades while promoting higher safety and security standards for our workforce and the communities in which we operate. The overall aim of our infrastructure modernization effort is to make the nuclear security enterprise scalable and flexible to meet non-linear mission demand over the coming decades.

Secure Transportation

NNSA's Secure Transportation program includes the Mobile Guardian Transporter (MGT) acquisition program, leading-edge communication systems and recruitment, retention, and training for our highly qualified Federal Agents. MGT is the next generation secure trailer system and with our highly qualified Federal agents, will ensure the safety and security of existing and

planned cargoes, meet nuclear explosive safety standards, and protect the public. Due to the rigorous screening and training required for these federal agents, maintaining a steady cadence of Federal Agent Training Courses is essential, and NNSA appreciates support for continuing to onboard new agents.

The Secure Transportation Asset (STA) Program, which provides this capability, has a record of 100 percent safe and secure shipments without compromise, loss of components, or release of radiological material.

Defense Nuclear Security

Defense Nuclear Security provides protection for NNSA personnel, facilities, weapons, and materials from a full spectrum of threats ranging from minor security incidents to acts of terrorism in a rapidly evolving technology threat landscape.

As NNSA's overall mission set continues to grow, NNSA is enhancing security capabilities through the acquisition and employment of innovative physical security technology to improve risk mitigation and promote more efficient security operations. Additional personnel, larger facility footprints, and larger quantities of sensitive materials require additional shifts and potential return to 24/7 operations at some locations. Furthermore, rapidly evolving technology presents novel security challenges that require novel solutions.

One of the most complex and rapidly evolving security threats NNSA faces is from drones and other uncrewed aircraft systems. NNSA is making substantial investments in next-generation counter-uncrewed aircraft systems (CUAS) while updating hardware and software of current platforms. In partnership with Idaho National Laboratory, NNSA is using the lab's dedicated CUAS range to conduct testing and evaluation of future-generation CUAS acquisitions, assisting security planners in identifying future generation solutions to improve NNSA's existing CUAS platforms.

Information Technology and Cybersecurity

NNSA faces a growing array of IT and cybersecurity challenges and is responding through strategic modernization of its IT and cybersecurity environments to include more resilient and flexible capabilities. These investments focus on enterprise-scale cybersecurity infrastructure, operational technology security, Nuclear Enterprise Assurance requirements, zero trust architectures, and commercial cloud-based technologies for both classified and unclassified networks. Additional investments include integrated communications and innovative collaboration services. These actions are geared toward making NNSA systems more secure in an increasingly digital world.

NNSA continues to invest in its digital transformation and digital engineering efforts. In July 2024, NNSA launched Enterprise Secure Network (ESN) Hub, a centralized classified computing environment that will connect partners and collaborators across the enterprise in new ways, increasing productivity while keeping our work secure. For the first time, NNSA mission personnel can access a common enterprise-wide computing infrastructure from secure locations

across the enterprise at any time. This effort is just one part of NNSA's broader digital transformation initiative that will streamline and optimize efficiency across the enterprise through new tools and revised work processes.

Defense Nuclear Nonproliferation

The work conducted under Defense Nuclear Nonproliferation creates a multilayered defense to prevent, counter, and respond to the threat of nuclear and radiological terrorism, as well as the threat of hostile countries acquiring nuclear weapons. This work makes America safer by both protecting American citizens and interests overseas and keeping threats as far from the U.S. homeland as possible. These activities are a powerful and necessary component of strategic deterrence.

NNSA's nonproliferation programs also facilitate the global deployment of U.S.-developed nuclear reactors that incorporate the highest standards of nuclear safeguards, security, and proliferation resistance. NNSA's work in this area is a "win-win" that helps unleash the American nuclear renaissance while also keeping America safe from the threats of nuclear proliferation and terrorism.

Material Management and Minimization

The Office of Material Management and Minimization works to prevent hostile state or non-state actors from acquiring weapons-usable material for use in an improvised radiological or nuclear device by eliminating it or replacing it with less attractive material.

NNSA is successfully executing a recovery project for high-assay low-enriched uranium (HALEU). This activity removes unusable scrap HALEU materials from Y-12's aging 9212 facility and processes it into an oxide form. Once produced, the material is being provided to DOE's Office of Nuclear Energy to support advanced reactor demonstrations. In addition to the benefits to industry, this project will support a more efficient transition to UPF. To date, NNSA has produced over 300 kg of oxide and is on track to produce more over the next two years.

NNSA also works with partners in the United States and with countries around the world to convert research reactors and medical isotope production sites away from HEU to LEU or HALEU. These conversions allow for critical research and business activities to continue while eliminating the associated proliferation risk. Most recently, NNSA's partnership with Japan achieved the conversion of the first of two reactor cores at Kyoto University's Critical Assembly from HEU to HALEU. This marks the 110th research reactor or medical isotope facility that NNSA has helped convert to a proliferation resistant fuel or otherwise verified as shutdown.

Additionally, NNSA works with partner countries around the world to eliminate excess inventories of HEU and plutonium. To date, NNSA has eliminated over 7,345 kg of HEU and plutonium, the material equivalent of several hundred nuclear weapons.

Global Material Security

The Office of Global Material Security makes America safer by working in the United States and internationally to secure and prevent the smuggling of radioactive and nuclear materials that could be used in an attack against the United States or its interests.

Global Material Security also works with U.S. industry to advance U.S. competitiveness, prosperity, and security. The program currently works with nine U.S. advanced reactor vendors on security by design to increase global competitiveness and exportability. It also supports the development of groundbreaking technologies to replace radioactive materials, such as cesium-137 and cobalt-60 across a broad spectrum of medical, agricultural, and industrial applications. This includes a congressional mandate to eliminate all cesium-137 blood irradiators in the United States by 2027. To date, NNSA has eliminated 400 such devices. Eliminating these materials ensures that they can never be used in a radiological device that poses a threat to the United States, its citizens, or interests. Global Material Security also deploys American radiation detection equipment in countries around the world to build partner-country capacity to stop radiological and nuclear smuggling. This forward-leaning approach disrupts illicit smuggling supply chains and halts threats before they can reach the homeland.

Nonproliferation and Arms Control

Dating back to the Eisenhower Administration, it has been U.S. policy to support the safe and peaceful use of nuclear energy. Today, that growth is larger than at any point in history. In 2023, there were more than 410 nuclear reactors in operation across 30 countries. Today, more than 40 countries are considering expanding their civilian nuclear fleets or adopting nuclear power. Many of these countries are nuclear newcomers who lack the sophisticated technical experience and safeguards regime to ensure the safe use and operation of these power plants and their material. China and Russia also dominate the field of nuclear reactor construction. Of the 52 reactors that have started construction since 2017, 48 are of either Chinese or Russian design.

To balance longstanding U.S. support for expanded nuclear power use and the potential known and unknown proliferation risks associated with that expansion, the Nonproliferation and Arms Control program undertakes a wide array of activities, including building the capacity of the International Atomic Energy Agency and its Member States to implement international nuclear safeguards; strengthening domestic and global capacity to detect and prevent illicit transfers of prohibited materials, equipment, and technology; provide technical assistance to the Department of State on the negotiation and implementation of nuclear cooperation agreements and implement the nuclear export control regulations at 10 CFR Part 810, under which the Secretary of Energy authorizes U.S. companies to export unclassified nuclear technology and assistance.

Nuclear Nonproliferation Research and Development

Defense Nuclear Nonproliferation Research and Development directly contributes to nuclear security by developing U.S. capabilities to detect and characterize global nuclear security threats, specifically foreign nuclear material production and weapons development activities, movement, and illicit diversion of special nuclear materials and global nuclear detonations. Irrespective of

existing arms control agreements, these capabilities provide the U.S. with the ability to independently detect and verify foreign nuclear weapons development and activities around the world and in outer space.

Current programmatic focus is on the production of nuclear detonation detection satellite payloads in line with the schedule established with the U.S. Space Force; continued development of technical approaches, including remote sensing and AI, to drive early detection of nuclear proliferation; and ongoing infrastructure recapitalization activities to meet future mission objectives and anticipate threats through demonstration and validation in representative environments.

Nuclear Counterterrorism and Counterproliferation (CTCP)

The CTCP program counters nuclear terrorism and nuclear proliferation and responds to any nuclear or radiological threat, incident, or accident worldwide. CTCP acts in an expanded counterterrorism and counterproliferation environment given the growing use and reach of nuclear and radiological material, potential risks inherent in emerging technologies like AI that lower the barrier to access nuclear technical expertise, and the nuclear emergency response implications of a deteriorating global security environment. CTCP harnesses DOE's decades of experience with nuclear weapons and materials, directs it toward understanding substantial and unresolved scientific challenges associated with nuclear threats posed by any adversary, and maintains the capability to respond to those threats in fulfilment of key national security and public safety missions.

To effectively respond to nuclear emergencies worldwide, CTCP is responsible for the Nuclear Emergency Support Team (NEST), an organization of on-call technical specialists trained and equipped to respond to nuclear threats, incidents, and accidents anywhere on Earth. NEST maintains a vast array of capabilities to detect, assess, defeat and attribute the provenance of loose nuclear material or improvised nuclear devices; safely resolve any accidents involving a U.S. nuclear weapon and mitigate impacts to public health and safety during a radiological or nuclear emergency of any scale. NEST executed 27 unclassified emergency response operations in 2024 and continues this steady operational tempo in 2025 while maintaining 24/7/365 readiness to respond. NNSA was proud to celebrate NEST's 50th anniversary last September, a reflection on half a century of critical, often unseen, work keeping the United States citizens and our interests around the world safe.

CTCP also engages in extensive training and coordination with local, state, and federal partners to prepare them for a potential nuclear or radiological emergency. These partners have repeatedly and successfully worked alongside NEST for the protection of large-scale national events, including presidential inaugurations, Super Bowls and the Olympics. CTCP also partners with the FBI to sustain advanced counter-WMD capabilities in 14 major U.S. cities and is building an enhanced baseline capability in each FBI field office to conduct initial counter-WMD operations.

In addition, CTCP assesses emergency response gaps and works to address these through building capable partnerships with state and local communities and international allies so they can counter and respond to radiological and nuclear incidents, accidents and terror threats. These

domestic partnerships strengthen and exercise local response coordination. Internationally, NNSA is a leader in nuclear and radiological emergency response. CTCP works to build partnerships capable of countering threats before they reach the homeland, and, should an incident occur, mitigating impacts to public health and safety to preserve American safety, security, and economic interests.

CTCP also retains extensive nuclear forensic capabilities, which deter a malign state and non-state actors from carrying out a nuclear terror attack. To maintain this deterrent, CTCP is focused on strengthening nuclear forensics capabilities to ensure decision makers receive timely assessments that support attribution in the event of a nuclear incident. As with other nonproliferation, counterterrorism and emergency management activities, robust forensics serves as a key complement to our nuclear weapons deterrent, reinforcing the certainty of an American response to any nuclear attack.

Naval Reactors

The Naval Reactors portfolio supports NNSA's close partnership with the U.S. Navy in support of the nuclear fleet. Naval Reactors is advancing naval nuclear propulsion capabilities to keep the U.S. Navy on the cutting edge of warfighting capability, maintaining the assured second-strike capability of the sea-based leg of the nuclear triad, and building the next generation of naval nuclear propulsion infrastructure for continued operational success. Last year NNSA celebrated the75th anniversary of the Naval Nuclear Propulsion Program and its unprecedented record of technological innovation and success.

Naval Reactors is currently working on four major initiatives: *Columbia*-class ballistic missile submarine reactor systems development; development of future advanced submarine technology to support next generation designs; continued progress on base technology development; and infrastructure recapitalization at program sites, including decontamination and decommissioning efforts leading to a reduction in long-term program liabilities.

These infrastructure efforts include constructing the Naval Spent Fuel Handling Facility at the Naval Reactors Facility in Idaho to recapitalize the capabilities for naval spent nuclear fuel handling that exist in the over-60-year-old Expended Core Facility.

Finally, Naval Reactors continues to support the Australia-U.K.-U.S. (AUKUS) partnership through reimbursable work with Australia and the U.K. NNSA will continue its collaboration with the Departments of State and Defense to advance the goals of the enhanced trilateral security partnership.

Federal Salaries and Expenses

NNSA's Federal workforce executes the essential government functions of the agency including mission program management, project management, budget development, contract management, and effective oversight of its management and operating contractors.

NNSA's mission is accomplished through the hard work and innovative spirit of a highly talented workforce committed to public service. NNSA is a lean organization that will continue to identify efficiencies to provide an agile and efficient organization to meet evolving mission needs.

Conclusion

These are unprecedented times for the nuclear security enterprise. Not since the Cold War have we had seven simultaneous weapons programs in the program of record, and not since the Manhattan Project have we so fundamentally overhauled our infrastructure. And never have we tried to undertake both these tasks at the same time, in an already turbulent international environment. We appreciate Congress' continuous support for our mission priorities. NNSA is committed to delivering modernized weapons on time and at pace to the DoD, safeguarding nuclear materials globally, creating the next generation of naval nuclear propulsion technology, and doing it all while modernizing our infrastructure. There is much work to be done, but I am confident in our ability to succeed. Thank you for the opportunity to appear before you today.