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National Nuclear Security  
Administration

Savannah River Nuclear  
Solutions, LLC

Performance Evaluation  
Report (PER)

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NNSA Savannah River Field  
Office (SRFO)

Evaluation Period:  
October 1, 2019 –  
September 30, 2020

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November 25, 2020

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## Executive Summary

This Performance Evaluation Report (PER) provides the National Nuclear Security Administration (NNSA) assessment of Savannah River Nuclear Solutions, LLC (SRNS), performance of the contract requirements for the period of October 1, 2019 – September 30, 2020 as evaluated against the Goals defined in the Performance Evaluation and Measurement Plan (PEMP). The NNSA took into consideration all input obtained (e.g. Contractor Assurance System (CAS), Program Reviews, etc.) from NNSA Program and Functional Offices both at Headquarters and in the field.

The work performed for NNSA programs at the Savannah River Site (SRS) is conducted by SRNS under a Management and Operating (M&O) Contract for Fiscal Year 2020. This is a Department of Energy (DOE) Office of Environmental Management (EM) contract under which NNSA-funded and directed work is performed.

\*Note: SRNS's performance for Fiscal Year (FY) 2020 on NNSA efforts is measured against two separate PEMP's, the NNSA Corporate PEMP and a separate Office of Environmental Management PEMP for the Savannah River National Laboratory (SRNL). The NNSA Corporate PEMP consists of six (6) Performance Goals supplemented with Objectives and Key Outcomes (KOs) for each Goal. Fee is distributed among the six (6) Goals as specified in the PEMP. For SRNS, Goals 3 and 4 are not applicable and therefore have no associated fee. The work measured against the NNSA Corporate PEMP is discussed under Goals 1 through 6 below. The work measured against the EM PEMP for SRNL is discussed under SRNL Performance Goals 1.07b and 1.08b below.

Performance against the Goals summarized below, resulted in an overall rating of Very Good for SRNS. Specific observations for each Goal are provided in the following pages.



**Goal 1: Mission Execution: Nuclear Weapons (\$9,986,254 At-Risk Available)**

Under this goal, SRNS earned a rating of Excellent and 91% of the award fee allocated to this goal. SRNS exceeded almost all of the Objectives and Key Outcomes, and met the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. The contractor has continued to be successful in its performance under this contract as described below. Accomplishments significantly outweigh issues. Many issues that were identified during the year were resolved and no significant issues in performance exist. SRNS is meeting performance expectations within expected cost towards the completion of Defense Programs' high priority items listed in the Getting the Job Done list. SRNS was the only site in the Nuclear Security Enterprise to continue full operations in the COVID-19 pandemic, making all Defense Stockpile Work (DSW) deliverables on time. On the proposed Savannah River Plutonium Processing Facility (SRPPF), SRNS is on schedule to make Critical Decision (CD)-1 deliverables by end of the calendar year.

SRNS met all stockpile surveillance activities ensuring completion of stockpile assessment and Limited Life Component Exchange (LLCE) requirements. SRNS met expectations for each of the stockpile weapons systems' maintenance and LLCE deliverables. SRNS completed production programs requirements to enable production deliverables by maintaining equipment uptime throughout FY20 and identified ways to utilize efficiencies within their portfolio to address critical needs for the Defense Stockpile Work (DSW) mission. SRNS met all production and delivery requirements for the B61, W76, B83, W78, W80, W87 and W88 Gas Transfer System (GTS) units.

SRNS worked overtime to meet an immediate Department of Defense (DoD) need for B61 Group X kits that were unexpectedly required within one week and proactively managed pre-fill options to mitigate COVID-19 impacts.

SRNS met all B61-12 production expectations and achieved their First Production Unit early in support of the Pantex First Production Capability Unit at Consolidated Nuclear Security (CNS) Pantex.

SRNS completed all W76-1 GTS surveillance deliverables on time and obtained approval for the new 214 fill for W88 use, (b)(7)(F)

SRNS successfully conducted all W80-4 gates for the Boost Gas Transfer System (bGTS) and Work GTS by providing evidence packages in a timely manner. SRNS began processing of early HD units for the W80-4 bGTS and supported the completion of function test No. 1 and 2.

SRNS supported all W87-1 6.2 activities and tasks and worked with design agency/product realization teams on trade studies and down-selects, implemented lessons learned, and supported data request and information calls.

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SRNS effectively executed the pre-publication initial Operational Technology Assurance (OTA) Guidebook against a real-world issue, providing excellent feedback to enable publication.

SRNS deployed the Denodo Data Virtualization Framework in order to exchange H-1616 container status with the rest of the complex via Pantex's Enterprise Logistics Management System (ELMS).

SRNS completed one extraction and commenced implementation of the Argus system at the Tritium Extraction Facility (TEF).

Despite the COVID-19 pandemic, SRNS made progress towards accomplishing the established work authorization milestones and deliverables required to support CD -1 for SRPPF. In April, NNSA provided SRNS direction to extend the CD-1 submittal from June 2020 to December 2020 to allow the team to further mature the Conceptual Design and incorporate recent contractor identified scope opportunities. SRNS proactively developed the scope opportunities resulting from discussions with NNSA in January 2020, presented them to NNSA in early April, and incorporated the opportunities as directed by NNSA. SRNS has continued to partner with the Federal Integrated Project Team (IPT) in maturing the CD-1 documentation and SRNS systems, processes, and procedures to enable the approval of the CD-1 package in FY21. There continue to be inefficiencies within SRNS due to the lack of appropriate project experienced personnel and project centric systems, processes, and procedures. The project's CD-1 working performance baseline is near the budget plan and is a couple of weeks behind schedule.

Triad and SRNS have successfully collaborated on establishing NNSA's ability to produce 80 pits per year. The two organizations have cooperated in areas such as design reviews, CD-1 re-plan activities, System Design Descriptions (SDDs), and Special Facility Equipment (SFE) Conceptual Design Packages. Additionally, the Knowledge Transfer Program (KTP) was approved and currently nine participants are in place at Los Alamos National Laboratory (LANL).

## **Goal 2: Mission Execution: Global Nuclear Security (\$6,657,503 At-Risk Available)**

SRNS exceeded almost all of the Program Objectives earning a rating of Excellent and 95% of the award fee allocated to this goal, as accomplishments significantly outweighed issues in performance. SRNS is meeting performance expectations within expected cost and no significant issues in performance exist. SRNS completed all assigned milestones for work within their control, as well as met overall cost, schedule, and technical performance requirements. Due to COVID-19, the site experienced various impacts in the form of cost, scope, and schedule during the Period.

SRNS made significant progress in advancing dilute and dispose technologies. SRNS successfully developed technical criteria for the procurement of equipment and supplies

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used in the dilution process and established a supply chain to meet the program needs. These actions were impacted by the pandemic and required adjustments to previous planning. SRNS coordinated the effort to establish technical criteria for adapting remote monitored sealing array technology to unique needs of the disposition program and coordinated multiple field tests to gauge reliability.

SRNS K-Area facility management continued to provide outstanding coordination for program activities, managing multiple field activities through site suspension and recovery planning due to the pandemic. SRNS safely and successfully completed the downblend process optimization Minor Construction (MC) project, restarted downblend activities in the K-Area interim surveillance glovebox, and despite impacts associated with the COVID-19 pandemic, regained lost schedule. The K-Area characterization and storage pad MC Project progressed but encountered delays in the project design and field construction due to February weather followed by partial stop work order/restart due to the pandemic. The pad building has been constructed but project completion is delayed due to subcontractor safety, quality, and schedule issues. SRNS's effort to mitigate subcontractor performance issues has been commendable, resulting in no impact to the critical program objectives for storage and shipments to WIPP.

SRNS completed development of preconceptual cost and schedule package for construction of a new K-Area Perimeter entry control facility (ECF) resulting in NNSA approval to execute the minor construction project. SRNS continued preconceptual design for expansion of the existing material access area ECF, proposing a revised layout in response to NNSA and DOE EM comments. While these efforts have been negatively affected by the pandemic, completing these activities is necessary to ensure the expanded ECFs are available to support increases in operational and construction staffing in K-Area.

SRNS continues progress with the hiring, training, and security clearances of K-Area staff to support an increase to four-shift downblend operations in the K-Area Interim Surveillance (KIS) glovebox. SRNS is currently on track to have four shifts implemented to support program needs.

During the first quarter, SRNS was late in providing supporting procurement information to the NNSA Contracting Officer for tasking to Sandia National Laboratory (SNL), delaying the DOE-STD-3013 container fire testing intended to benefit the 3013 container users across the complex and more urgently, support improvements for the Surplus Plutonium Disposition (SPD) Project. That work has since progressed to complete in FY21. SRNS developed change trends, provided the annual Surplus Plutonium Liability estimate, and aided NNSA in responding to questions from the auditors.

SRNS provided a Technical Maturation Plan for development/application of robotics for autonomous criticality control overpack (CCO) movement/receipt inspections. Additionally, SRNS developed a K-Area Six-Year Automation Plan which will allow for longer range planning to implement automation in the operational processes and reduce worker dose. SRNL collaborated to successfully complete the refurbishment of twenty-five 9975 shipping containers to support future program needs, despite delays due to the pandemic.

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SRNS hosted UK participation in the U.S. 3013 Surveillance and Monitoring Program review in February 2020, including breakout discussions and future areas of U.S./UK collaboration. Ongoing virtual meetings with the UK included topics covering operator training, material tracking, robotics and uses of virtual/augmented reality systems. SRNS provided an annual report for expansion of U.S.-UK collaboration building on established Plutonium Management Users Group (PMUG) framework.

SRNS supported the SPD Project team with development and implementation of the SPD Tailoring Strategy which was approved by NA-1 October 23, 2019 and the NNSA review and approval process (Conceptual Design Formal Design Review (FDR), Formal Baseline Review (FBR), Independent Cost Estimate (ICE) and reconciliation) for CD-1 (Alternative Selection and Cost Range) and CD-3A Phase 1 (Early Site Preparation) approval by the NNSA Project Management Executive. SRNS implemented the Tailoring Strategy for completing design early by awarding and managing three subcontracts for the designs in parallel with SRNS design efforts. During FY20 the glovebox design was completed after SRNS completed a series of reviews for Phase 2 (Long Lead Equipment). For CD-2/3, SRNS made significant progress advancing design from 30% to 60% design. NOTE: Key Outcome 2.2 of the PEMP includes an objective to complete 60% design of early civil construction scope in FY20 however, the PEMP was approved prior the NA-1 approval of the SPD Tailoring Strategy which shifted schedule to advance construction and procurement of Long Lead Equipment (LLE). Rather than revise the PEMP, it was agreed to document the change in this PER.

For the SPD Project, SRNS completed implementation of the K-Area Design Safety Authorization (DSA) one month ahead of schedule for Phase 1. Construction was temporarily suspended while measures were put in place to meet the Center for Disease Control COVID-19 guidelines. Construction successfully completed tie-ins to the facility systems which required close coordination with the facility and other projects and COVID-19 related schedule changes. Issues arose late in the year on the installation of the first safety class component causing rework. For Phase 2, SRNS completed design, cost estimate, schedule, and risk assessment which were then reviewed by NNSA. SRNS developed a Commercial Grade Dedication process for this procurement, conducted vendor visit, and obtained quotes for estimate. SRNS supported the independent cost estimate (ICE) and reconciliation for Phase 2. For Phase 3 (Additional Site Preparation), SRNS completed 60% design.

### Goal 3: DOE and Strategic Partnership Projects Mission Objectives

This goal is N/A for Savannah River.

### Goal 4: Mission Execution: Science, Technology, and Engineering (ST&E)

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All work under this Goal is covered in a separate Office of Environmental Management (EM) PEMP for the Savannah River National Laboratory.

### **Goal 5: Mission Enablement (\$9,986,254 At-Risk Available)**

Under this goal, SRNS earned a rating of Very Good and 80% of the award fee allocated to this goal. SRNS exceeded many of the Objectives and Key Outcomes, and is generally meeting the overall cost, schedule, and technical performance requirements of the contract under this Goal. SRNS has continued to be successful in its performance under this contract as described below and is meeting performance expectations within expected cost. SRNS's accomplishments greatly outweighed issues and no significant issues in performance exist.

SRNS continued to demonstrate progress in the management of Tritium small projects. Leadership changes have been implemented to improve small project performance by increasing accountability and transparency at all levels. These leadership initiatives will take time to see positive changes in project execution and SRNS continues to struggle with executing recapitalization projects planned in prior years within cost estimates and schedule. SRNS's New Exhaust project increased by \$8M, nearly doubling the original Total Project Cost (TPC). The project was not adequately planned or estimated initially, and until a formal conceptual design was completed and an accurate estimate developed, the full cost of the project was unknown. Savannah River Tritium Enterprise (SRTE) developed a list of projects impacted by COVID-19 delays and submitted these to SRFO and NA-50 which re-baselined affected G2 milestones. It is reasonable to assume that most of the milestones would have been accomplished on time prior to the COVID-19 pandemic issues.

SRNS's Conduct of Operations (ConOps) performance has improved substantially from 2019. There have been some procedural adherence/ConOps issues reported; however, they have not been at the level they were during the last half of 2019 and there have been no Technical Safety Requirement (TSR) violations since January 2019. SRTE was one of the few in the Nuclear Weapon Complex to remain fully operational and meet all DoD mission deliverables during the ongoing COVID-19 pandemic. The Conduct of Operations Improvement Plan is being implemented. Strong Operations leadership during this period guided the facilities and its personnel through numerous challenges and distractions. Significant accomplishments for the Fiscal Year include demonstrated operational flexibility to meet DoD expedited delivery, completion of a major process system refurbishment ahead of schedule with no incident, and significant planning and controls deployed to ensure continuity of operations for primary mission essential functions.

SRNS reissued the Tritium Facility combined Documented Safety Analysis (DSA) and Technical Safety Requirements (TSRs) and the Department approved the documents in December 2019. The Tritium Facility DSA and TSR contains appropriate safety controls that emphasize identifying engineering over administrative controls. SRNS administratively reduced tritium inventories when it was realized that new analysis would increase dose consequences. The inventory reduction procedures are being formalized

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with the Mid Year Update to the currently implemented Tritium Facility Safety Analysis Report and TSR, currently with the NNSA SRFO for approval.

SRNS is actively working the Co-located Worker Risk reduction scope. Significant progress has been made on the structural evaluations of both the 233-H and 264-H/264-2H buildings as it relates to reducing the seismic loss of confinement risk.

SRNS has coordinated the COVID-19 response with Environmental Management and HQs leading to a smooth continuation of tritium operations. One effect of the COVID-19 response during the period was postponement of emergency management drills at the Tritium Facilities. SRNS partnered with NA-40 to co-create the Emergency Management Readiness Assurance Program (EMRAP), which provides NNSA leadership insight into the health of emergency management programs across the Enterprise for the first time.

Despite COVID-19 restrictions, SRNS completed scheduled maintenance activities including required preventative and priority corrective maintenance, thereby reducing risk to mission from unplanned evolutions. The Tritium Maintenance Organization (TMO) completed major maintenance efforts this year such as the TEF Module Stripper Open Glovebox Maintenance (OGM) activity while maintaining Preventative Maintenance (PM) deferrals, PM delinquency, and Corrective Maintenance backlog metrics in good standing. Three of four oxygen monitor upgrades have been completed this FY and two more upgrades are in progress. TMO Management collaborated with the complex via the Maintenance Management Working Group (MMWP), NA-50 SAFER Metric Dashboard, and helped develop a Proactive Maintenance Policy. SRTE has now developed and approved a Reliability Centered Maintenance (RCM) Charter.

SRTE Radiation Protection Department (RPD) contributed significantly to the NNSA and DOE-EM Radiological Waste Peer Review with several positive acknowledgements being made by the team about how SRTE conducts business along with their relationship with federal counterparts.

SRTE Engineering supported the Independent Verification Review (IVR) for TEF direct stacking. This project will allow discharge of waste gas at TEF versus processing through the New Manufacturing Facility. The IVR was completed with only minor issues identified. Engineering provided excellent support for a planned Defense Nuclear Facilities Safety Board (DNFSB) public meeting (that was deferred due to COVID-19 concerns), holding multiple briefings and preparation meetings to support readiness. Engineering also supported development of responses for an extensive line of inquiry list from the DNFSB on the Tritium Finishing Facility (TFF) project. The effort has been well organized and will support an interface meeting with the Board in October.

SRTE successfully implemented a corrective action plan to improve Budget, Planning and Execution of the Cyber and Defense Nuclear Security Future Years National Security Programs. The corrective actions addressed financial analysis and communication of Program activities.

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SRNS assumed management responsibility of the TFF project following CD-1 in December 2019 and worked to enhance the Integrated Master Schedule for the outyears. SRNS met expectations for TFF as the project team began staffing up and initiating preliminary design activities. Despite the given funding profile, SRNS progressed the site prep subproject design only to realize the critical path should be design of the process buildings instead of design of the subproject. This resulted in a late BCP due to last minute changes in the schedule for execution of the subproject.

SRNS completed all milestones on or ahead of schedule for the SPD Project, however, schedule performance has trended downward. Some of the major milestones completed include: the implementation of K Area DSA for Site Preparation Work; the 90% Design review for the Phase 2; the installation of the 391 security door; and the demolition and removal of the gabion wall.

The SRNS Mixed Oxide (MOX) Termination & Transition team matured the MOX property screening process enough that other non-DOE/NNSA organizations and agencies are benefitting from the MOX Project excess property. In addition, 316,017 units of property were provided to SRS Community Reuse Organization for community benefit; donated to local schools; and items sold through auction. In FY20, SRNS finished entering over 10 million units of property into the screening process, a key part of the disposition process. The project is under budget by approximately \$16M when compared to the original spend plan to date and is on schedule.

#### **Goal 6: Mission Leadership (\$6,657,503 At-Risk Available)**

Under this goal, SRNS earned a rating of Excellent and 91% of the award fee allocated to this goal. SRNS exceeded almost all of the Objectives and Key Outcomes, and is generally meeting the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. SRNS's accomplishments significantly outweigh issues and no significant issues in performance exist. SRNS has continued to be successful in its performance under this contract as described below and is meeting performance expectations within expected cost. Issues that were identified during the year have been resolved and are no longer of concern.

SRNS demonstrated excellent leadership during the COVID-19 pandemic. SRNS took actions to rapidly develop and implement initiatives to protect the workforce, while closely collaborating with Environmental Management, Defense Programs (NA-10), Defense Nuclear Nonproliferation (NA-20), The Associate Administrator for Infrastructure and Environment (NA-50), and The Office of Counterterrorism and Counterproliferation (NA-80) customers to ensure mission critical and time-sensitive work continued. SRNS quickly balanced strategies to accomplish NNSA mission critical work while maximizing telework as appropriate. SRNS avoided reductions or restarts in important mission operations due to their proactive response. SRTE only experienced a small number of COVID-19 cases and did not miss any mission deliverables. In response to constraints imposed by COVID-19 site

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access restrictions, SRNS initiated several studies to (a) maximize productivity, (b) benefit future projects, and (c) provide development opportunities for new/recent hires with limited non-laboratory and/or unclassified work scope.

SRTE has improved its communication and was more responsive and focused overall, especially in conduct of operations and the management of Tritium small projects. Leadership focus on conduct of operations has led to improvements despite distractions from COVID-19. Leadership changes have been implemented to improve small project performance by increasing accountability and transparency at all levels. SRFO recognizes that these leadership initiatives will take time to see positive changes in project execution.

The SRTE Continuous Improvement (CI) Program provided emphasis and incentives to the staff as long as they identified opportunities for improvement leading to time savings and/or cost avoidance. During FY20, their efforts led to the completion of six CI projects, three lean projects, and several quick hits.

SRNS leadership fully supported the SRS Governance Peer Review ensuring full participation. The responsiveness and availability of the SRNS team supported a successful review. The peer review team noted excellent working relationships between the site office, SRNS leaders, and the SRNS corporate board. SRNS leadership continues to promote improvements in the Contractor Assurance System (CAS) with additional focus on leading indicators allowing for proactive resolution of problems.

SRNS Project Management Organization leadership continued to proactively pursue contractual and organization re-alignment in support of NNSA capital line item projects (proposed SRPPF, TFF, and SPD) and the MOX termination and transition effort. NNSA and DOE experience for multi-billion-dollar projects at LANL, Y-12, Salt Waste Processing Facility (SWPF) and MOX demonstrate the necessity to have very project centric contract structure and an Engineering, Procurement and Construction (EPC) management system. SRNS leadership needs to continue to focus efforts on expediting the transformation to an EPC centric organization with appropriate systems, processes, and procedures to support the NNSA capital projects.

NNSA projects have had no schedule impacts to the critical path due to COVID-19. The SRPPF, SPD, TFF, and MOX Termination & Transition projects all met expectations. The SRPPF CD-1 submittal date changed from June 2020 to December 2020 to allow for further conceptual design maturity and incorporate design opportunities as directed by NNSA. SRNS continues to make progress towards accomplishing the SRPPF work authorization milestones to support CD-1.

The transparency and open communication style of the SPD leadership team has helped with the acceleration of the SPD project. The SPD leadership team worked diligently to institute maximum telework capabilities in order to minimize the negative impact of the COVID-19 Pandemic with no impacts to the design completion milestones in FY20, however, inefficiencies due to teleworking did become apparent during the CD-3A Phase 2 reviews. SRNS continued execution of site preparation fieldwork within the CDC guidelines by

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sequencing work to maximize social distancing where practical, implementing PPE, and providing training for craft on the proper use of PPE with no measurable impact to Phase 1 completion. SRNS leadership negatively impacted Phase 1 by not adequately preparing project personnel for Safety Significant (SS) and Safety Class (SC) construction resulting in issues with the first SC installation to which leadership did not respond to adequately. A breakdown in transparency in the handling of these issues by the SRNS leadership team further compounded the delays in execution by causing confusion within DOE and NNSA leadership.

The MOX-Termination & Transition leadership team made significant improvements in the area of project management. The project schedule includes a credible critical path that contains all project activities. Resources were managed efficiently, and costs were charged appropriately. Although slow to put in place, a plan and schedule for the removal of 34 temporary buildings was developed with several temporary buildings removed from the site. SRNS implemented a new metric based on square footage of warehouses and laydown yards which clearly communicates to stakeholders the progress of property disposition. Communication with the Federal project team was timely and transparent.

### **SRNL Goal 1.07b - NNSA Weapons Activities (\$831,111 At-Risk Available)**

Under this goal, SRNS earned a rating of Excellent, and 95% of the award fee allocated to this goal. SRNS exceeded almost all of the Objectives, and is generally meeting the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. For the year, the accomplishments significantly outweighed the minor issues; no significant issues in performance exist. SRNS is meeting performance expectations within expected cost.

SRNL continues to support mission objectives through science and research activities. Collaboration with other labs and universities continues to foster a healthy research environment. The Plant Directed Research and Development (PDRD) program continues to meet expectations.

SRNL successfully completed hydroburst testing on the first development 3X reservoir. The design agency was present and pleased with the results. SRNL personnel successfully completed the first assembly and function test of a W80-4 development GTS prototype unit supplied by SNL. Preliminary results indicate a successful test. This activity is significant because of the complexity of these units and because much of the hardware used in this assembly is completely novel and was customized to support this activity. SRNL also supported W80-4 GTS LEP by performing two tests on a D10 unit and communicating the results to SNL for evaluation.

A manifold was developed for testing of the zeolite used in Recovery Gas Dryers (RGDs) for end-of-life disposal measures, providing insight into methods which may be used to remove water and ammonia from the zeolite materials. The molecular sieve was tested through a

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series of experiments and Thermogravimetric Analysis data acquisition to determine the temperature the absorbed water and ammonia would desorb. Based on the results, several recommendations for improvements for future work have been proposed.

SRNS maintained equipment uptime and mean-time-to-repair in support of weapon program deliverables. As an example, a controller for the mass spectrometer in reservoir surveillance operations (RSO) malfunctioned. SRNL quickly responded, replacing the controller, and reprogramming the system. The system was confirmed 100% operational.

The Hydrogen Processing Demonstration System (HPDS) installation milestone was delayed due to impacts from COVID-19. The glovebox is on target to meet a revised schedule with installation to be completed by the end of FY21. The HPDS gloveboxes at SRNS will provide the capability to integrate novel hydrogen gas processing technologies in a simulated (non-tritium) environment, increasing technology readiness levels (TRLs) to TRL 5+ for the Research & Development (R&D) technology components.

Characterization of Advanced Manufacturing (AM) Materials for Tritium Service: SRNL studied five Ti-6Al alloy rods produced by AM techniques to determine their hydrogen uptake characteristics. The plan is to determine if the AM process produces significantly different behavior in this regard. Initial results indicate that behavior is not significantly different from normally manufactured alloys.

#### **SRNL Goal 1.08b - NNSA Defense Nuclear Nonproliferation (\$1,239,172 At-Risk Available)**

Under this goal, SRNS earned a rating of Excellent, and 95% of the award fee allocated to this goal. SRNS exceeded almost all of the Objectives, and is generally meeting the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. For the year, the accomplishments significantly outweighed the minor issues; no significant issues in performance exist. SRNS is meeting performance expectations within expected cost.

SRNL made excellent progress toward the development of an in-situ collection and analysis capability to be demonstrated in FY21. They will conduct an initial capability demonstration in conjunction with the Moran campaign.

Through innovative application of technology, SRNL successfully applied NA-22 funded particulate work towards pandemic tasks. SRNL provided strong technical support on numerous cross-cutting activities for the U.S. High Performance Research Reactors (USHPRR) as well as supporting the development of the new PRO-X project. SRNL oversaw the successful completion of the multi-year campaign to repatriate target residue material from Canada. SRNL successfully developed and demonstrated autonomous robotic systems to move, open, inspect, and close shipping packages associated with the SPD Program.

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SRNL provided technical support to the Molybdenum-99 (Mo-99) program which is furthering development of domestic Mo-99 production capabilities. An SRNL employee was an integral part of the Mo-99 program team that was awarded the Secretary of Energy Achievement Award for bringing the first domestically produced Mo-99 to market in 30 years.

SRNL Subject Matter Experts (SMEs) played a major role for the International Nonproliferation Export Program in development of the Chemical, Biological, Radiological and Nuclear (CBRNE) Commodity Identification Training (CIT) train-the-trainer and national enterprise outreach remote workshops, updating the CBRNE CIT course, and supporting an Analysis of Strategic Commodity Transfers workshop for Brazil.

SRNL provided very good support to the Export Control Review and Compliance/Interdiction team, including completing technical reviews of chemical/biological and nuclear related interdiction cases, and providing inputs to the annual interdiction report.

SRNL experts provided valuable contributions to projects within the Office of Nuclear Verification (NA-243) Warhead Verification Program. SRNL also did an excellent job taking over a project started by another lab and completing it to develop and document chain of custody procedures for potential arms control applications.

SRNL exercised high quality leadership as an NA-243 Plutonium Verification Team (PVT) Co-lead - provided technical guidance and substantive input to NA-243's Concept of Operation, led technical discussions with foreign counterparts, and directed an in-depth study for PVT members through Table Top Exercises (TTXs). Provided valuable support with preparation and attendance at the 1) annual U.S.-Russia Plutonium Production Reactor Agreement Joint Implementation and Compliance Commission meeting in Montenegro in February 2020; and, 2) plutonium oxide monitoring visit to Russia in October 2019.

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