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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, 2020 –  
September 30, 2021

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December 9, 2021

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Department of Energy review required before public release.

Name/Org: Cory L. Price, NNSA/SRFO

Date: October 15, 2021

Guidance: Exemption 5

## 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, 2020 – September 30, 2021, as evaluated against the Goals defined in the Performance Evaluation and Measurement Plan (PEMP). The NNSA took into consideration all input (e.g., Contractor Assurance System (CAS), Program Reviews, etc.) obtained 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 (FY) 2021. 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 FY 2021 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 1.7 and 1.8 below.

SRNS earned an overall rating of Very Good during this performance period. SRNS earned Excellent ratings for Goals 1, 1.7, 1.8, 2, and 6, and a Very Good rating for Goal 5. Specific observations for each Goal are provided in the following pages.

**Goal 1: Mission Execution: Nuclear Weapons (\$14,846,828 At-Risk Available)**

Under this goal, SRNS earned a rating of Excellent and 92 percent 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. SRNS met performance expectations within expected cost towards the completion of Defense Programs' high priority items listed in the Getting the Job Done list. SRNS had significant accomplishments in tritium extractions and supporting achievement of Savannah River Plutonium Processing Facility (SRPPF) project Critical Decision (CD)-1 that greatly outweighed issues and no significant issues in performance exist.

SRNS completed tritium extractions from four production runs earlier than the planned date, accomplishing seven extractions in FY 2021 and meeting a goal of conducting eight extractions in a 13-month period. This is the highest number of extractions the facility has ever accomplished.

SRNS met expectations for each of the stockpile weapons systems' maintenance and Limited Life Component Exchange (LLCE) deliverables with Gas Transfer System (GTS) fills and shipments consistent with the Limited Life Component (LLC) Program Control Document. SRNS consistently supported weapon system planning to support the Department of Defense's (DoD) turnaround schedule by maintaining flexibility in their planning in the face of continued COVID-19 challenges, DoD schedule changes, and an unplanned steam outage at the Savannah River Site (SRS) plant. SRNS met the challenging W88 LLCE to satisfy both Navy legacy W88 and PX ALT370 GTS needs. SRNS maintained its ability to manage and execute all scheduled stockpile systems surveillance activities, deliverables, and requirements.

SRNS effectively supported Life Extension Program (LEP) work activities. SRNS completed W80/B61/B83 LLC commitments and continuously partnered with Kansas City National Security Complex to meet program demands. SRNS exceeded expectations implementing B61-12 ALT 941 production and planning effort providing expertise that enabled seamless production. SRNS completed all B61 surveillance activities and worked effectively to integrate and execute additional scope identified by LANL. SRNS completed W76-0/1 component surveillance, all W80 surveillance deliverables, W78 surveillance and maintenance activities, and W87-0 surveillance and maintenance activities. SRNS met the schedule for the W80-4 Boost Gas Transfer System (bGTS) Pre-Production Engineering Gate (PPEG) forecast.

SRNS worked to improve supply chain execution and exceeded expectations by looking for efficiencies across the stockpile management program to maximize resources for material procurements. SRNS executed simplified acquisition contracts to procure increased amounts of material supporting the stockpile. SRNS performed a Kaizen Improvement Project for Gas Transfer Systems to improve quality and delivery between sites.

SRNS began operating a new diffuser/stacking system at the Tritium Extraction Facility (TEF) in December 2020, thus increasing capacity and decreasing waste gas. SRNS loaded and sampled three He-3 byproduct cylinders with excess helium-3 byproduct and is meeting tritium availability requirements to support national security needs. SRNS completed glovebox stripper open

glovebox maintenance (OGM) in support of ramp up of extractions. SRNS operators successfully executed an innovative idea that reduced radiation exposure to workers performing cutter head maintenance in Tritium Extraction Facility. SRNS Tritium Recycle and Recovery (TRR) program met a stretch goal by processing and shipping not one, but two empty AL-M1's to the Weapons Engineering Tritium Facility (WETF) at LANL during FY 2021.

SRNS showed excellent initiative in using opportunities to develop advanced technologies that could accelerate production and qualification timelines. SRNS Surety Technology completed the FY 2021 testing and evaluation of a titanium tritide controlled temperature storage project. SRNS completed metallurgical characterization of two aluminum development vessels in FY 2021. SRNS packaging program has been operating effectively to support mission needs and communicating participation with the pit production mission and planning regarding packaging needs. A revision to a Safety Analysis Report for Packaging to support Advanced Gas Reactor work was completed with good quality and on time with consistent, positive Design Agency (DA) collaboration.

Triad and SRNS collaborated on establishing NNSA's ability to produce 30 pits-per-year at Los Alamos National Laboratory (LANL) and 50 pits-per-year at Savannah River Site (SRS) by working together on potential equipment design and layouts, and developing strategies to effectively onboard and train personnel including ensuring training facilities are available. SRNS continued coordinating the long-lead Special Facility Equipment (SFE) working groups, engaging LANL Subject Matter Experts, and SRNS to develop data for the Technical Specifications and Requirements, and to support design activities.

The SRPPF project is considered above expectations because the project is under budget/on schedule and achieved CD-1 approval by the Deputy Secretary on June 24, 2021. The SRPPF package was acknowledged as one of the best Major System CD-1 submittals ever assembled.

## **Goal 2: Mission Execution: Global Nuclear Security (\$3,798,995 At-Risk Available)**

Under this goal, SRNS earned a rating of Excellent and 95 percent of the award fee allocated to this goal. Despite the impacts of COVID-19, 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. SRNS was successful in its performance under this contract as described below and is meeting performance expectations within expected cost. SRNS' accomplishments greatly outweighed issues and no significant issues in performance exist.

SRNS continued to successfully perform technology development work in support of the Molybdenum-99 Program as well as Mo-99 collaboration with the South African Nuclear Energy Corporation (NECSA). SRNS provided strong technical support on numerous cross-cutting activities for the U.S. High Performance Research Reactor (USHPRR) Project and supported the silicide and international fuel development efforts as well as the Proliferation Resistance Optimization (PRO-X) program.

SRNS provided excellent technical and project management support for future Highly Enriched Uranium (HEU) and plutonium minimization efforts from Japan, Canada, and Europe, as well as preparation and execution of Mobile Plutonium Facility (MPF) exercises.

SRNS continued to make excellent progress in plutonium downblend operations. SRNS implemented four-shift downblend operations in the K-Area Interim Surveillance (KIS) glovebox three months ahead of the milestone date. Achieving this key objective is a culmination of more than two years of hiring, training and qualifying a cadre of approximately 100 staff while managing the impacts associated with attrition and COVID, including security clearance and Human Reliability Program processes. SRNS also met all processing objectives for the year, demonstrating a ramp up in plutonium downblending, the maximum SRNS has produced in one year. Meeting these objectives are critical for the Department to demonstrate progress toward commitments made to the State of South Carolina, and SRNS is directly supporting delivery of these commitments.

SRNS successfully managed the construction of the K-Area Characterization and Storage Pad minor construction project. In April, SRNS turned over the facility to K-Area Complex facility operations. Facility readiness assessment activities were completed successfully in May, and initial storage activities began in June. Also in June, SRNS settled the contract dispute with the pad construction subcontractor, which was necessary to demonstrate cost control of the project. While rework issues associated with the TRUPACT-II Loading Platform remain unresolved, SRNS provided detailed planning and control to ensure the planned work remains within the Total Estimated Cost of the project and meets program schedule objectives. SRNS successfully initiated startup and qualification activities for the characterization equipment, and planned for all external audits and reviews to certify the system in the coming year. SRNS coordinated with the Carlsbad Field Office' Characterization and Certification Program to complete all planned Non Destructive Assay Batch Data Collection activities and successfully passed the Performance Demonstration Program (PDP). While cost control of this project was a major concern at the beginning of the performance period, by the end of year SRNS demonstrated assurance of successful completion of the project.

SRNS made significant progress on the two K-Area Complex Entry Control Facility (ECF) minor construction projects. For the Perimeter ECF, SRNS completed final design; completed early site preparation construction; awarded contracts for the ECF structure, diesel generator, and security equipment; and completed 85 percent of the ECF structure construction. NNSA authorized the Material Access Area (MAA) ECF in January 2021. SRNS continues to perform design activities and initiated procurement of the personnel support trailer. SRNS also completed and obtained DOE-SR approval of the updated K-Area Complex Vulnerability Assessment.

SRNS completed Phase I of the K-Area Material Tracking System, which will be used to track material and commodities in the highly dynamic plutonium downblend process. SRNS managed fire testing of 3013 containers and completed the preliminary analysis of the results, which will provide benefits in the safety basis analysis for K-Area and the Surplus Plutonium Disposition (SPD) project. SRNS, with SRNL support, refurbished 9975-85 shipping packages to meet future program needs for transporting plutonium.

SRNS initiated a new Technology Management Strategy and established a Technology Management Council. This program will be used to screen and manage new technologies being developed in support of the SPD Program. Examples of the initial technologies being managed include Automation and Robotics, and Material Tracking System (MTS).

SRNS provided excellent support to the International Program. SRNS prepared documentation to convey the downblend and characterization process to NA-24, the International Atomic Energy Agency (IAEA), and other United States government agencies. SRNS provided excellent input and support to the technical exchanges with the IAEA to initiate the establishment of a protocol for maintaining safeguards of material under the Voluntary Offer Agreement as disposition is pursued.

SRNS provided excellent support to NNSA during development of the National Environmental Policy Act (NEPA) Amended Record of Decision (AROD), which is required to process the Fast Critical Assembly (FCA) fuel. NNSA approved the NEPA AROD in March 2021.

SRNS continues to integrate program activities with the other sites via integration meetings and routine schedule reviews and variance analyses. This integration function including managing an integrated schedule of all sites supporting the plutonium disposition program, complex-wide cost variance and complex-wide risk management and assessment. Overall, SRNS has focused limited resources on and added resources as appropriate to ensure the overall plutonium disposition program objectives were achieved.

SRNS did not complete development of the MMC system this fiscal year due in large part to the COVID-19 pandemic; however, SRNS continued to work with the integration vendor for the MMC system to finalize the design components. SRNS also progressed installation and modification of the utility interfaces at the SRS 645-N Complex.

SRNS provided training, operational, and preventive radiological/nuclear detection (PRND) support to: Cobb County (Georgia) Joint Hazard Response Team, Federal Bureau of Investigation (FBI) Stabilization Training Hazardous Device School (HDS), U.S. Coast Guard training, FBI Columbia, SC Joint Terrorism Task Force (JTTF), Green Day US-Israeli cooperative agreement, 43rd Civil Support Team Training, and Federal Emergency Management Agency (FEMA) Region IV Regional Assistance Committee.

### **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)**

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 (\$11,187,494 At-Risk Available)**

Under this goal, SRNS earned a rating of Very Good and 80 percent of the award fee allocated to this goal. SRNS 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. SRNS was 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.

The Savannah River Tritium Enterprise (SRTE) Environmental Stewardship, Safety and Health (ESSH) organization continues to meet expectations, overall. SRTE personnel have experienced one Total Recordable Cases (TRCs), and 11 first aid cases. The Worker Safety and Health program has adequately supported routine operations, facility outages, and project work via health and safety support of work through Assisted Hazard Analysis (AHA) review, facility walkdowns and work oversight. SRTE ESSH has performed extensive, proactive activities in response to the COVID-19 pandemic. There have been a few procedural adherence issues reported when interfacing with SRNS PM&CS and Subcontractor entities that continue a potential trend in Hazardous Energy Control.

Environmental and waste management programs met expectations for FY 2021. SRTE maintained compliance with National Pollutant Discharge Elimination System (NPDES) effluent requirements for the H-02 outfall station and received no notice of violations (NOVs) from the South Carolina Department of Health and Environmental Control (SCDHEC). Air emissions monitoring of the five Tritium exhaust stacks resulted in no known exceedances of the total radioactive release guide during the fiscal year. SRTE environmental compliance personal also prepared numerous radiological NESHAP (National Emission Standards for Hazardous Air Pollutants) evaluations to support a wide range of Tritium projects, including a complex analysis to facilitate shutdown of the 232-H ventilation system.

Throughout this past year Radiation Protection (RP) and Health Physics (HP) supported the Tritium facilities as needed, and the HP group actively continues to look for ways in which equipment specific to our facilities can be maintained more autonomously along with supporting other NNSA sites across the complex with technical support and equipment. This past year, there have been several items that continue to need additional focus as identified areas for improvement, such as radiological barricades and postings along with following proper controls identified in Radiological Work Permits. Overall, with the numerous distractions due to Covid-19 complications along with a larger population of less experienced staff, Radiation Protection and Health Physics continue to strive for working as safely as possible while adapting to these changing environmental impacts along with an increase in mission demands.

SRNS continued to demonstrate progress in the management of Tritium small projects. They have taken positive steps to improve performance of project execution, to include leadership changes. SRNS is executing small projects within overall cost and technical performance requirements and has shown improvement compared to prior years. SRTE executed 49 percent of the NA-50 Recapitalization project spending which is an improvement from FY 2020's 36

percent. SRNS completed 92 percent of the FY 2021 Recap G2 milestones, which is an improvement from FY 2020's 74 percent. SRNS struggled to follow the Real Asset Management Program (RAMP) guidance and provide complete documentation in submitting requests for documents (RFDs) with multiple iterations of comment and reviews causing delays in submission of documentation for further screening. Due to COVID-19, SRNS saw delays in forecast recapitalization project completion of greater than four months since the start of the FY, giving an average slip of just over 100 days for all active SRS projects. SRNS completed satisfactory testing and start-up activities for Project #Y789 Electric Discharge Machine (EDM), finalized CD/estimate for unit installation; key components were received but SRNS experienced delayed installation execution; fabrication of remaining items underway.

SRNS security program maintained their focus on completing Argus installation, had an excellent security awareness program, and managed the security resources to meet NA-70's target carryover. SRNS also established a security program at SRPPF and is working tirelessly to resolve security requirements for the plutonium mission.

SRNS reissued the Combined Tritium Facility Safety Basis, and the Department approved the documents in December 2019. The Combined Tritium Facility DSA and TSR contains appropriate safety controls that emphasize identifying engineering over administrative controls. SRNS administratively reduced tritium inventories. The inventory reduction procedures were formalized in the Tritium Facility's 2020 Mid-Year Update and approved by the Department in November 2020 and implemented.

SRNS actively worked the Co-located Worker Risk Reduction scope per the schedule. SRNS continued working on the oxidation analysis efforts and provided status updates for NNSA. SRNS implemented annual updates for both the Tritium Facilities and the Tritium Extraction Facility Safety Bases, which formalized the administratively reduced tritium inventory limits. SRNS recognized and questioned the validity of a calculation referenced in the safety basis. SRNS addressed this Potential Inadequacy of the Safety Analysis effectively and concluded that no Unreviewed Safety Question exists for either the Tritium Facilities or the Tritium Extraction Facility. SRNS worked with NNSA to resolve comments during the review of issued structural calculations.

In FY 2021, SRNS experienced challenges in stabilizing Conduct of Operations (ConOps) performance. This resulted in two Technical Safety Requirement (TSR) violations. After a brief period where it appeared that ConOps issues had decreased, observations demonstrated ongoing concerns in this area resulting in the Field Office issuing a letter of concern noting eight ConOps incidents. SRNS has implemented several corrective actions to reverse this negative performance trend to include Tiger Team, Advancing CONOPS Excellence (ACE) team, and procedure error reduction efforts. The success of these new initiatives will be closely monitored in the next fiscal year.

The Tritium Maintenance Organization (TMO) successfully completed several outages and supported several major projects that helped improve facility infrastructures, maintain current facility capabilities, and increase facility capabilities. Preventative maintenance and corrective maintenance deferrals are improving and SRNS has formed an Emergent Work Group Team to



increase efficiencies in priority work. Program improvement areas included continued implementation of Reliability Centered Maintenance (RCM) initiatives and continued support for implementation of the NA-50 SAFER Metric Dashboard.

SRTE Engineering has provided substantial support in the TEF Glovebox Stripper Blower motor failures. Engineering held a briefing with NNSA management discussing various options which included near-, short- and long-term paths which allowed for multiple successful extractions on a single blower. Engineering supported the July 13th DNFSB Public Hearing as well as the DNFSB electrical review including the development of responses to the Lines of Inquiry (LOI)s and follow-up discussions.

SRNS performed well in developing a revised FY 2022 execution budget, incorporating unplanned financial changes related to pension funding, SRNL contract transition, and cyber support cost. In all other areas SRNS met expectations for business operations and financial management.

SRNS legal provided support for NNSA capital projects including the monumental effort leading up to Record of Decision approval in November 2020 for the SRPPF Project. Also, SRNS legal contributed to the TFF Environmental Assessment finalized in Spring 2021. Both efforts were needed for the projects to continue uninterrupted.

The SRNS Enterprise Cyber Security Operations (ECSO) and Tritium Process Control provided good support for NNSA Cyber Security and Information Technology (IT) programs. Despite the continuing challenges of maintaining a safe work posture per the COVID-19 pandemic guidelines, SRNS met the expectations of all 40 of the IT PEG implementation factors (IFs). SRNS exceeded the expectations of one (1) portion of a Cyber PEG IF (implement CSSP policies) and met the expectations of eight (8) applicable Cyber PEG IF deliverables, and three (3) portions of Cyber PEG IF deliverables. SRNS continues to support SRPPF through the “build on what you got” concept for NNSA missions at SRS.

Savannah River Tritium Enterprise (SRTE) demonstrated effective management of the Emergency Management Program while continuing to deal with the complications and challenges associated with the COVID-19 Pandemic. The SRTE Senior Leadership Team was the only team on site to continue to conduct Emergency Management drills and exercises. SRTE was very proactive in ensuring that COVID precautions were in place and implemented the addition of a COVID observer roll to focus on mitigative actions.

The Mixed Oxide Fuel Fabrication Facility Termination & Transition (MOX-T) projects is rated above expectations because it met major NNSA milestones and are under budget/on schedule. The MOX-T has dispositioned all of the Government property as planned and concluded all physical MOX project work by the end of FY 2021 under budget. 10.7 million units of personal property valued at approximately \$900 million were dispositioned in 18 months. All on site real property and laydown yards were transferred off the project ahead of schedule. In addition, a property disposition strategy resulted in emptying the Barnwell warehouse prior to the need for a lease extension avoiding \$1 million in rental costs.

The Tritium Finishing Facility (TFF) project meets performance expectations because it is on budget/on schedule. SRNS successfully achieved, ahead of plan, all eight milestones listed in the NNSA FY 2021 Implementation Plan issued by NA-19. The SRNS TFF project management team utilized sound fiscally responsibility in managing the limited funds available for the project.

The Surplus Plutonium Disposition (SPD) project did not meet expectations because it is over budget/behind schedule. The SPD project reported several quality issues including: a lack of engineering quality and design integration that led to a two-day Engineering Pause; additional construction execution issues lead to a project root cause analysis and where the contractor continues to work on finalizing corrective actions. The SPD project did not meet expectations in the area of quality. The SPD Replan Baseline Change Proposal (BCP) changed from May 2021 to November 2021 due to the amount of project management issues resulting in SRNS underestimating the extent of effort and time needed to develop a quality BCP. SRNS managed the SPD project with a deficient Integrated Master Schedule (IMS) that is missing scope and not logically linked resulting in unreliable data to manage the project.

The contractor is continuing to mature the implementation of EVMS requirements adequately. SRNS has established a senior management EVMS steering committee to oversee and lead the implementation for EVMS certification. The contractor's SPD project performance has been affected by the lack of implementation and having a quality EVMS.

### **Goal 6: Mission Leadership (\$7,458,329 At-Risk Available)**

Under this goal, SRNS earned a rating of Excellent and 92 percent of the award fee allocated to this goal. SRNS exceeded almost all of the Objectives and Key Outcomes, and generally met the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. SRNS's accomplishments significantly outweigh issues and no significant issues in performance exist. SRNS was successful in its performance under this contract as described below and is meeting performance expectations within expected cost.

SRNS continued to successfully perform work in a COVID-19 environment. Although, managing a workforce in a changing COVID-19 environment continued to present challenges, SRNS worked to manage and mitigate impacts with continued emphasis on program/project management and meeting program office execution instructions. The SRTE Senior Leadership Team was the only team on site to continue to conduct Emergency Management drills and exercises.

SRNS leadership took ownership to perform multiple consecutive Tritium extractions after a thorough risk assessment and through a collaborative effort among multiple organizations. These extractions were completed in a disciplined manner and with increased senior management oversight. SRNS management is also evaluating a longer-term project to address the TEF glovebox stripper blower motor issue. SRNS identified program efficiencies to free up resources for key material procurements. SRNS leadership remains engaged in the potential FY 2025 HCN/TCAP outage ensuring NNSA is aware of changes and integrated planning activities.

SRNS leadership excelled in collaboration efforts with other NNSA sites in the accomplishment of NNSA missions. This included holding four knowledge transfer sessions over a two-week period with LANL for manufacturing and digital collection systems and placing 15 knowledge transfer employees to work alongside LANL personnel and bring back pit production expertise. SRNS explored opportunities for accelerating the project and program timeline to War Reserve production. SRNS supported a three-day workshop with participation from LANL and Lawrence Livermore National Laboratory (LLNL) covering lab peer review comments, CD-4 to War Reserve schedule acceleration opportunities, and the SRPPF Training Operations Center. SRNS conducted a dose assessment benchmark through submittal of Lines of Inquiry to EFCOG members from Idaho, Argonne, Oak Ridge, and Los Alamos National Laboratories and the Hanford Site.

SRNS demonstrated collaboration with all sites to develop and execute the B61-12 First Production Capability Unit (FPCU) is an accomplishment and required activity engagement between site leadership during the continuing COVID-19 crisis. SRNS provided timely input on GTS disposition strategies and emerging requirements (e.g., pressure bottle disposition) so NNSA can develop enterprise strategies.

SRNS progressed in the management of small projects with aggressive steps taken to improve the performance of project execution including leadership changes, which increased accountability and transparency at all levels. SRNS placed additional emphasis on managing replacement projects using a project planning and estimating team.

SRNS NNSA Capital Projects (NCP) Management Organization leadership continued to represent NCP interests and lead SRNS organizational and process changes in support of NNSA Project execution. Leadership should continue to focus on expediting the transformation to support Engineering, Procurement and Construction (EPC) centric organization with appropriate systems, processes, and procedures to support NNSA capital line item projects (proposed SRPPF, Tritium Finishing Facility (TFF), and SPD).

### **SRNL Goal 1.7 - NNSA Defense Programs (\$709,995 At-Risk Available)**

Under this goal, SRNS earned a rating of Excellent, and 95 percent of the award fee allocated to this goal. SRNS 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. SRNS performance was evaluated through transition to the new Savannah River National Laboratory contractor on June 21, 2021. SRNS met performance expectations within expected cost.

The PDRD program met expectations. The process was properly administered, meeting all reporting and budget requirements. There was good collaboration between the tritium facility and SRNS and individual projects were properly executed and help to advance technology and science.

SRNL provided technical support to Tritium Engineering and Operations personnel involving the

first tritium unload of reservoir to validate the unload process well ahead of anticipated field returns at end-of-life.

SRNL participated in two different collaborative efforts with Sandia National Laboratories. The first effort is the Material Aging and Characterization Study, which recently put the first pair of tritium-loaded units into storage at Materials Testing Facility (MTF). The second effort is the Life Storage Program for the Seal-Cap Multi-Function Valve (SCMFV). These two programs demonstrate the close collaborative relationship with SNL and are of very high importance to upcoming Gas Transfer Systems and Life Extension Programs.

### **SRNL Goal 1.8 - NNSA Global Nuclear Security (\$1,124,545 At-Risk Available)**

Under this goal, SRNS earned a rating of Excellent, and 95 percent of the award fee allocated to this goal. SRNS exceeded almost all of the Objectives, and met the overall cost, schedule, and technical performance requirements of the contract under this Goal in the aggregate. SRNS performance was evaluated through transition to the new Savannah River National Laboratory contractor on June 21, 2021. SRNS met performance expectations within expected cost.

SRNS successfully applied established expertise and capabilities in materials science and analysis to advance several projects focused on the detection of Special Nuclear Material production. SRNL coordinated assessments for plutonium and tritium foundational competencies, conducted interagency workshops, and identified infrastructure opportunities to reverse technical competency decline for nuclear operations with these two materials. SRNL established a gas sampling capability at H-Canyon which will provide unique data to several DNN R&D projects and other U.S. Government agencies. SRNL investigated novel approaches to measure forensics signatures on surfaces of nuclear material, including several emerging indicators of aging.

SRNS provided program support to SRNL and ORNL for the development and the deployment of tasks associated with the Strategic Laboratory Assessment (SLA). FY 2021 was the first year of this strategic activity and was limited to development of long-term planning activities.

SRNS supported the Office of International Nuclear Safeguards by providing excellent support for the implementation of safeguards in the United States, safeguards human capital development initiatives, and on high quality atmospheric modeling input to new environmental monitoring studies, continuing to make positive progress in creating new reference particle materials for the IAEA.

SRNS provided excellent support to the Export Control Review and Compliance/Interdiction (ECRC/I) team, including completing technical reviews of chemical/biological and nuclear related interdiction cases, and assisting with technical reviews and first sign off of dual-use export licenses. SRNS continues to enable ECRC/I to exceed its OMB metric for FY 2021.

SRNS provided excellent support to the International Nonproliferation Export Control Program (INECP). SRNL led INECP development work and dry runs for a CBRNE (Chemical, Biological, Radiological, Nuclear, Explosive) CIT (Commodity Identification Training) Train the

Trainer course and its conversion for remote delivery. SRNL SMEs also served on planning and instructor teams for two remote CBRNE CIT engagements – Algeria and Indonesia. SRNL served on the instructor team for two CASE (Commodity Analysis Supporting Enforcement) remote engagements for Canadian and Estonian Customs. The lab also supported a Department of Homeland Security virtual Counter-Proliferation Investigative Methods Training workshops for India and Pakistan, INECP remote engagement with Brazilian export licensors, and helped design and participated in a table top exercise scenario for Taiwan.

SRNS exercised quality leadership as a Plutonium Verification Team (PVT) Co-lead and provided technical guidance and substantive input to CONOPs. SRNL provided two members to the PVT and one member to the Uranium Verification Team (UVT). SRNL provided timely, high quality support to the Graphite Isotope Ratio Method (GIRM) Steering Committee.

SRNS experts provided valuable contributions to projects within the Office of Nuclear Verification (NA-243) Warhead Verification Program, including leadership of a U.S.-UK technical working group to investigate chain of custody (CoC) technologies and procedures for potential future arms control monitoring and verification, and work in support CoC tool selection and deployment as part of the Baseline Monitoring Exercise at Y-12.

At the IAEA's June 2021 Working Group Meeting Quality Control Particle Production, the IAEA reported that uranium particle standards produced by SRNL passed IAEA acceptance testing based on consistency of the isotopic compositions, size requirements, and their purity. This is an important step required to qualify as an IAEA Network of Analytical Laboratory QC Particle Laboratory.