



## SRNL Support to NNSA

### Broad Programmatic Support to National Nuclear Security Administration Across Programs Within NA-20, NA-40, NA-50 and NA-80

#### NA-21: Global Material Security

SRNL supports the NA-21 by providing technical advice to secure nuclear and radioactive material worldwide and to detect and deter trafficking of this material. Specifically, SRNL provides subject matter experts in the areas of non-destructive and destructive assay methods/equipment and in nuclear material accounting and control.

#### NA-22: Defense Nuclear Nonproliferation R&D

SRNL performs cutting edge research and development (R&D) projects in support of the NA-22 missions to reduce the threat to national security posed by nuclear weapons proliferation/detonation or the illicit trafficking of nuclear materials. SRNL's primary support falls within:

- Uranium, Plutonium, and other Nuclear Materials Detection
- Safeguards, Treaty Verification and Monitoring
- Nuclear Weaponization and Detonation Detection
- Remote Sensing
- Data Science
- Emergency Response

#### NA-23: Material Management and Minimization

SRNL supports the NA-23 mission to reduce the risk of hostile states and non-state actors acquiring nuclear material for an improvised nuclear device by working with partners to minimize the need for, presence of, or production of weapons-usable nuclear material around the world. SRNL's primary support falls within:

- Technical and Program Leadership of NA-23's Irradiated HEU (high enriched uranium) and plutonium removal and in-country elimination programs including gap plutonium receipts and foreign spent fuel returns
- Innovation in developing nuclear material processing systems on



NA-22: Fieldable gas collection and concentration systems

mobile, modular platforms including:

- Mobile Plutonium Facility for rapid recovery of plutonium materials from foreign weapons programs
- Mobile Melt Consolidate technology for minimization of HEU materials through melt processing
- Technical expertise in supporting conversion of research reactors and isotope production from HEU to LEU fuel and support of technology development for domestic medical isotope producers
- Developing and applying new technologies in Surplus Plutonium Disposition (SPD) that helps to improve safety, exposure, and lifecycle cost/schedule.



NA-23 Mobile Plutonium Facility

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## NA-24: Nonproliferation and Arms Control

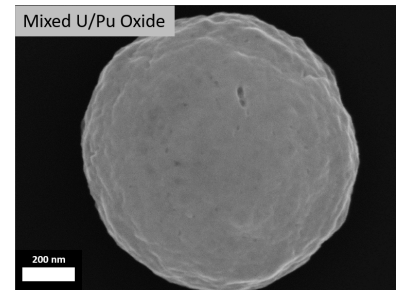
SRNL supports the NA-24 mission to strengthen nonproliferation and arms control regimes to prevent proliferation, ensure peaceful nuclear uses, and enable verifiable nuclear reductions.

Areas of SRNL support include:

- Technical review of export licenses and technology for proliferation risk
- R&D for next generation safeguards
- Technical expertise and program management for U.S.-Russia Plutonium Production Reactor Agreement
- Co-lead of the Plutonium Verification Team
- Support to the International Atomic Energy Agency's Network of Analytical Laboratories to aid in the early detection of misuse of nuclear material and provide credible assurances that States are honoring their safeguards obligations



NA-24: U/Pu feedstock and particle production operational setup



NA-24: Reference particulate material for target QA/QC needs

## NA-50: Safety, Infrastructure and Operations

SRNL supports NA-532 (Office of Nuclear Materials Integration) by helping to determine the best approach and technologies to disposition or recover nuclear materials needed by DOE, including preserving rare national asset isotopes that will never be produced again.

Specifically, SRNL is actively working to recover a rare plutonium isotope (Pu-244) from irradiated Mark 18A target assemblies from the SRS reactor era.

Also, SRNL led the development of the Disposition Pathways Study seeking to find the optimum disposition paths for all excess and future excess nuclear materials across program offices.

Additionally, SRNL develops unique NNSA-certified shipping packages for NA-531 (Office of Packaging and Transportation) for the transport of plutonium, tritium and uranium.



NA-50: Nuclear Materials Cask and Mock-up Facility for Pu-244 Recovery Mission

NA-80: Fuel Slugs from the X-10 Reactor that are a candidate for the Nuclear Material Archive



## NA-80: Counterterrorism and Counterproliferation

SRNL supports the NA-80 mission to counter the threats of stolen or misplaced radioactive materials, a nuclear weapon out of the control of a nation-state, or an improvised nuclear device.

As a part of this mission, SRNL supports the National Nuclear Materials Archive (NNMA) that catalogs nuclear materials for forensics and attribution purposes.

