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L-Area: Spent Fuel Project (SFP) Overview

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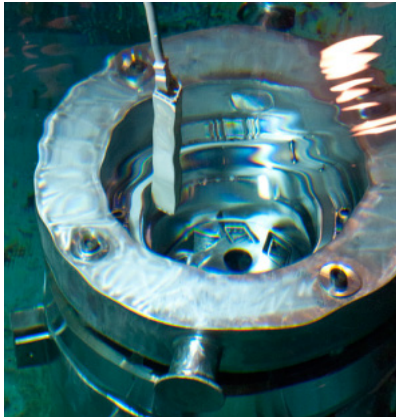
September 2026

SRNS-MS-2026-01066

Current Mission



Mission – *One of only two operating facilities in the nation, for the safe receipt, storage, handling, and shipment of Used Nuclear Fuel (UNF) and other Special Nuclear Material (SNM).*



Offsite Fuel Receipt



Safe Storage



Transfer to H-Canyon for processing

Current Mission: Safe Storage

➤ L Area Material Storage Facility:

- The disassembly Basin is a 3.4-million gallon basin with depths from 17 feet to 50 feet.
- Capable of handling wide variety of fuel sizes, shapes, enrichments and fuel conditions
- Limited Dry storage
- Rail or Trailer Access for Casks

➤ L Area Inventory (UNF)

Fuel Clad	Storage Containers (approx.)	Fuel Assemblies (approx.)	MTHM *	H-Canyon Disposition Pathway	Additional Handling
Aluminum Clad	3000	13000	9.2	Chemical Dissolver	None
Non-Aluminum Clad	395	2000	20	Electrolytic Dissolver	Repackage

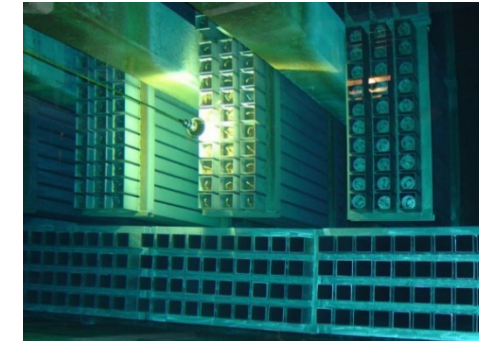
*Metric Tons of Heavy Metal

○ Storage Capacity

- Materials Testing Reactor (MTR): 83% (full)
- High Flux Isotope Reactor (HFIR): 69% (full)

➤ Heavy Water

- Heavy water stored at SRS was used in the five production reactors built and operated onsite
- ≈ 6,800 Stainless Steel Drums
- ≈350,000 gallons. Total ~530,000 gallons in C,K and L Areas
- Average H-3 activity of all heavy water is 1,000 µCi/ml
- Request for Information on Domestic Reuse and Repurposing of Savannah River Site Heavy Water Inventory (response due by 09/21/26)



L Basin Fuel Racks



Dry stored fuel



Heavy Water in drums

➤ Basin Chemistry

L-Area Facility Technical Safety Requirements (TSR) Administrative Program established to control/monitor basin water activity and minimize the potential for corrosion of fuel and equipment stored in the L-Area Disassembly Basin.

- Routine Water Sampling
- Corrosion monitoring done by periodic analysis of aluminum and stainless steel corrosion coupons (aluminum and stainless steel simulate material of fuel storage racks and equipment in L Basin)

➤ Augmented Monitoring and Condition Assessment Program (AMCAP)

- Monitors and verifies the condition of materials required for the successful long-term storage of SNM in L Basin (including the following)
 - Analysis of L Basin concrete structure
 - Video inspection of Al-clad UNF in a controllable environment
 - Corrosion monitoring of UNF assemblies previously stored in Foreign Research Reactor (FRR)s prior to receipt in L Basin and containers used to store non-aluminum clad UNF
 - Includes in-situ visual examinations of outer surfaces of aluminum bundles containing non-aluminum fuel and boroscope camera inspections of the inside of bundles

Foreign Research Reactor Receipts (FRR)

- Support National Nuclear Security Administration (NNSA's) non-proliferation effort
- FRR Program plans to receive UNF up to 2040
- Expected future FRR Receipts
 - Japan-JAEA
 - Italy
 - Japan-KUR



Current Mission: Offsite Fuel Receipts



Domestic Research Reactor Receipts (DRR)

➤ Domestic Reactor Receipts

Support U.S. research reactor operations by continuous:

- Support of Reactor Operations to produce therapeutic and diagnostic isotopes to the Nuclear Medicine community (Missouri University Research Reactor (MURR))
- Advance Science in dynamics of matter, applied research, industrial, and research isotope production. (HFIR)
- Support nuclear materials and in-core research programs to support advanced power reactors (MURR, MIT, NIST)
- Domestic receipts are planned through FY-32.



DRR Receipt Sites

	Enrich	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035
HFIR	HEU	12	12	5	6	6	6	6	6	6	6	6
MIT	HEU	1	1	2	1	1	2	1	1	2	1	1
MURR	HEU	3	3	3	3	3	3	3	3	3	3	3
NIST	HEU	0	0	1	0	1	0	1	0	1	0	1
RINSC	LEU	0	0	0	0	0	1	0	0	0	0	0
DRR TOTAL CASKS		16	16	11	10	11	12	11	10	12	10	11

DRR Projected Receipts

L-Area support to H Canyon Material Recovery

Executive Order 14302, titled "*Reinvigorating the Nuclear Industrial Base*," introduces directives to promote the efficient utilization of uranium, plutonium, and other recoverable materials through recycling and reprocessing. This directive has prompted a strategic shift in H Canyon's operations—from a "dissolve and discard" approach to a "dissolve and recover" model.

In support of the recovery mission, an increase in operational tempo is expected in L Area. This level of activity will result in increased:

- Fuel Handling
- Crane operations
- 70-Ton cask loading and shipments to H-Canyon

	FY27	FY28	FY29	FY30	FY31
FRR	0	7	7	0	0
DRR	11	9	10	11	11
MTR	2	12	10	10	0
HFIR	0	1	1	2	0

L Area Cask Handling Projections

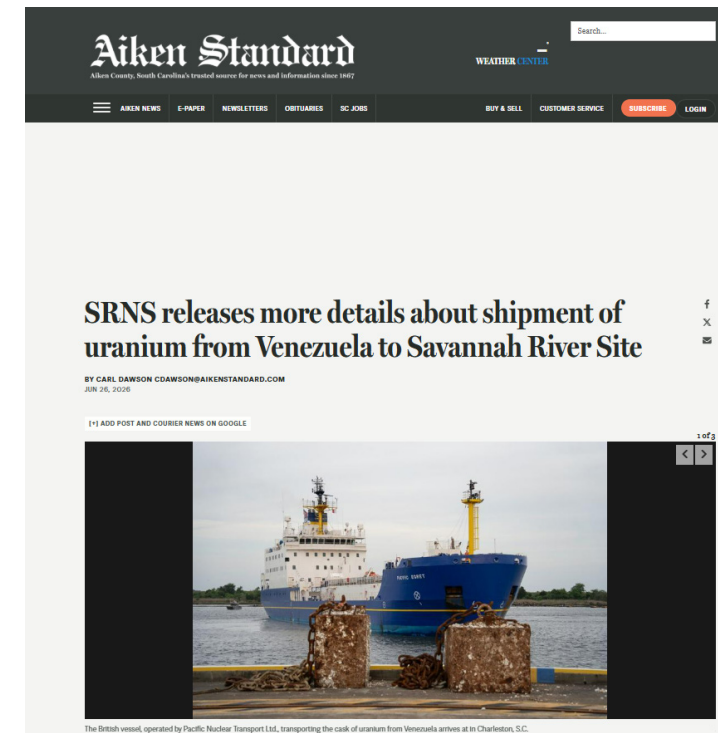
FY-26 Overview

1. Fuel Receipts

FY26: L Area Casks, Rev 1 10/1/25 - 9/30/26				
Program	Reactor	Location	Cask Type	Actual Casks
DRR	MURR	Missouri	BRR	3
DRR	HFIR	Tennessee	GE2000	11
FRR	JMTR	Japan	18.5T	4
FRR	JRR-3M	Japan	20T	2
FRR	RV-1	Venezuela	NAC-LWT	1
			Grand Total	21



Venezuelan Cask being offloaded at the port



2. Fuel Transfer for Processing (H-Canyon)

L-Area continue to load/transfer MTR and HFIR SNF to H-Canyon for disposition. Due to change in mission, only 1 MTR batch (24 bundles) transferred to H-Canyon for FY26.

Loaded and transferred 2 70-ton casks containing MTR fuel to H Canyon

3. HFIR Carrier Swap

The design and materials of construction used in the outer HFIR carrier led to high probes in H-Canyon and longer dissolution times when dissolving HFIR cores. To reduce dissolution times, SRNS implemented a new design of both the inner and outer HFIR carriers.

L Area completed swapping a total of 60 HFIR Carriers in FY-26

4. Fuel Transfer to SRNL

- 3 Mk-18A Targets to SRNL
- 1 INL Drum for processing

5. L Area Infrastructure Upgrade

- Air Dryer
- Steam line repairs



5. RBOF Cask Pad Cleanup

Dispose of all legacy and excess equipment on pad in support of decommissioning the cask pad and turn over to Area Closure Project (ACP).

- FY-25: Packaged and Removed high-risk Low-Level Waste (LLW) containers from the Cask Pad area
- FY-26: Package and remove additional 18 containers



Aerial picture of RBOF Cask Pad 2003



Aerial picture of RBOF Cask Pad 2025

1. Fuel Receipts

FY27: L Area Casks 10/1/26 - 9/30/27				
Program	Reactor	Location	Cask Type	Forecast Casks
DRR	MURR	Missouri	BRR	3
DRR	HFIR	Tennessee	GE2000	6
DRR	MIT	Massachusetts	BRR	1
DRR	MURR	INL	BRR	1
			Grand Total	11

2. Fuel Transfer for Processing: H-Canyon

Load and transfer 2 70-ton casks containing MTR fuel to H Canyon

3. Fuel Transfer to SRNL

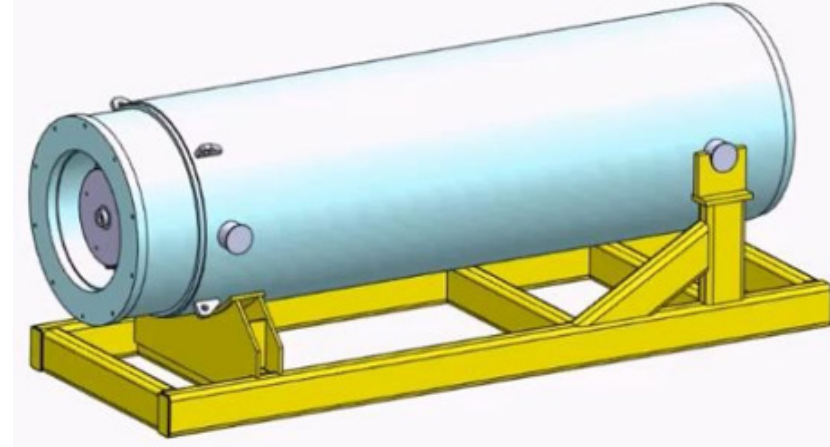
- 4 Mk-18A Targets to SRNL
- 1 Mound Drum for flowsheet development (Project Athena)
- 1 FNR assembly to demonstrate Pu recovery (Project Athena)

4. L Area Infrastructure Update

Upgrade air compressor system

Other Missions

- HFIR Drying Pilot
- UNF Receipt from INL
- Project Athena: Transfer of fuel assembly to SRNL for Pu recovery (pilot)



- Continue to safely receive and store fuel from both Domestic and Foreign research reactors
- Recovery mission ramp up
 - Increased transfers to H Canyon (Al-clad fuel)
 - AMCAP Inspections for Non-Aluminum clad
- Continue Facility Infrastructure Upgrades: Expect long term storage of non-recovery fuel and the continued receipt of domestic and foreign research reactors



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