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**We make the world safer.**

# **L-Area: Spent Fuel Project (SFP)**

## **Overview**

Kiran Karanth

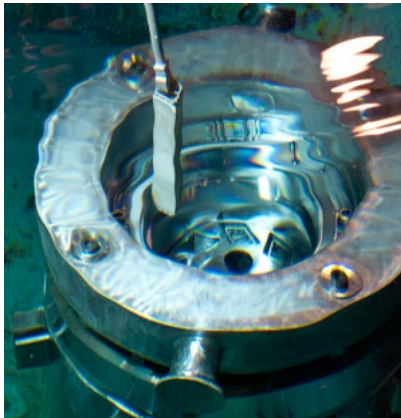
Savannah River Nuclear Solutions

*September 17, 2024*

# Mission



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



Offsite Fuel Receipt



Safe Storage



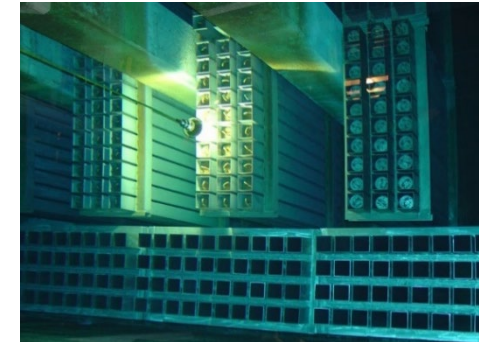
Transfer to H-Canyon for processing



# 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 Basin Fuel Racks

## ➤ L Area Inventory (SNF)

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



Dry stored fuel

## ➤ Storage Capacity

- MTR: 85% (full)
- HFIR 54% (full)



Heavy Water in drums

## ➤ Basin Chemistry

L-Area Facility monitors basin water activity and minimizes the potential for corrosion of fuel and equipment stored in the L-Area Disassembly Basin.

- Water Sampling
  - Monitored Weekly: Cs-137, Conductivity, pH, Temperature
  - Monitored Monthly: Alpha
  - Monitored Quarterly: Disassembly Basin Bubblers (Tritium), Chloride, L-Area and K-Area +148 Level Stacks, C-Area Tritium Bubblers
  - Monitored Biannually: Metals (Cu, Fe, Hg, Al), Tritium (Basin Water), Total Organic Carbon (TOC), Microbials (corrosion monitoring)
- 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)

# Mission: Offsite Fuel Receipts

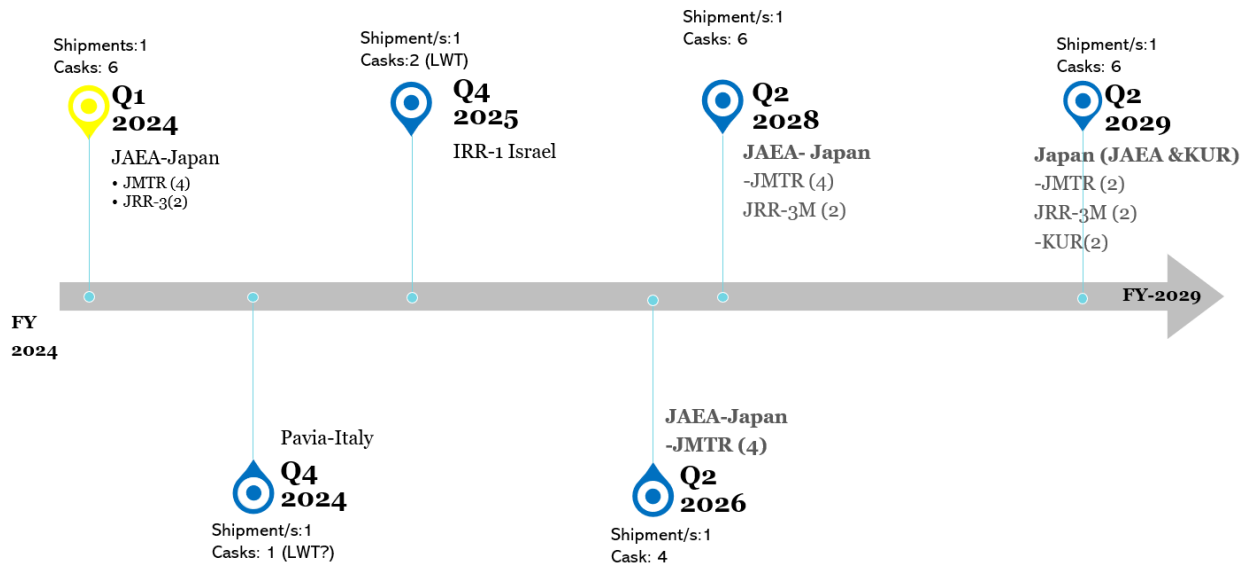
## Foreign Research Reactor Receipts (FRR)

### ➤ Total FRR receipts

- Number of Shipments to date: 120
- Transportation casks: 310
- SNF Assemblies: 9358
- Countries: 27 + Taiwan



### ➤ FRR Program will end in FY-29, receipts from Japan is expected to continue beyond 2029



FRR Projected Receipts

# Mission: Offsite Fuel Receipts

## Domestic Research Reactor Receipts (DRR)

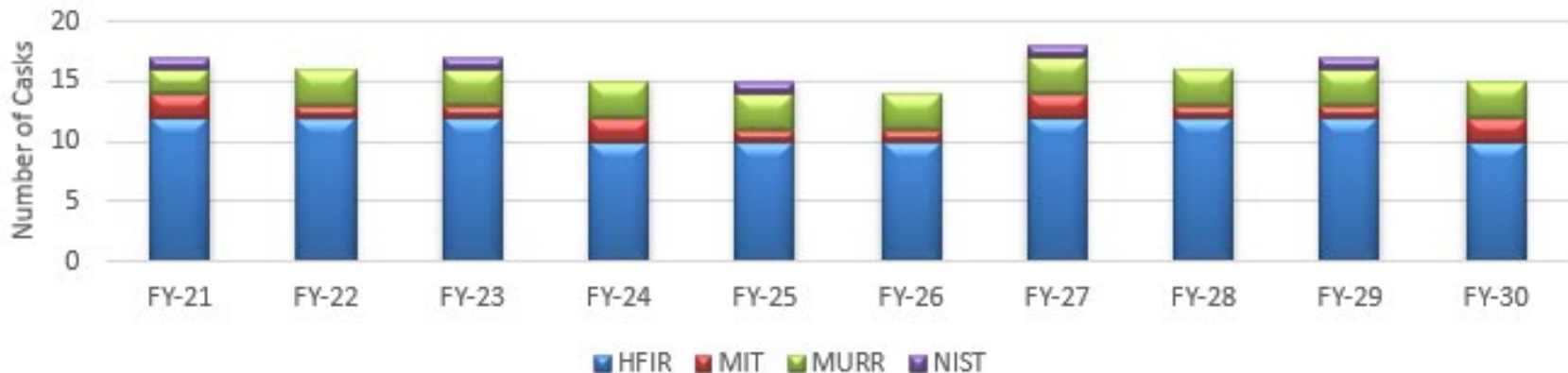
### ➤ Domestic Reactor Receipts

Support U.S. research reactor operations by continuous:

- Support of Reactor Operations to produce therapeutic and diagnostic isotopes to the Nuclear Medicine community (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 till FY-32, all domestic reactors are working on Low Enriched Uranium (LEU) conversion and may continue to ship spent fuel to SRS.



DRR Receipt Sites



DRR Projected Receipts

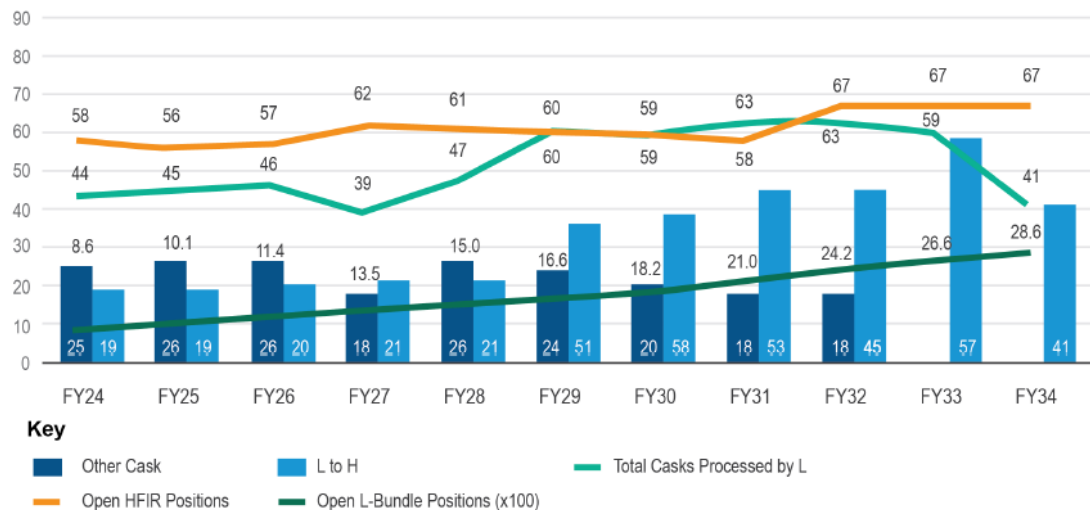
# Mission: Transfer to H Canyon



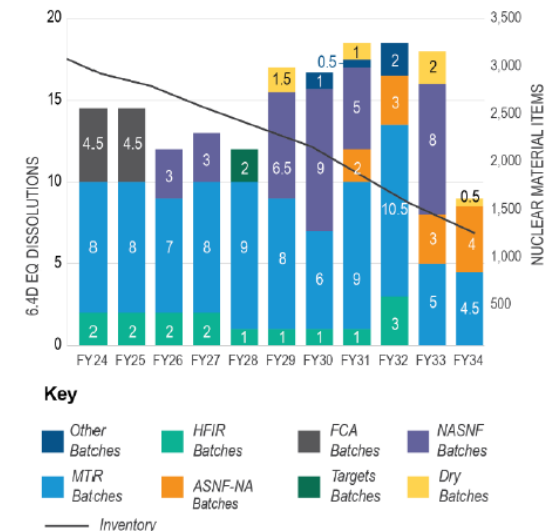
## L-Area ABD Transition

The Department has transitioned to Accelerated Basin De-inventory(ABD), to expedite L Area SNF shipments to H-Canyon for dissolution and disposal. In support of ABD, an increase in operational tempo is expected in L Area. This level of activity will result in increased:

- Fuel Handling
- Re-packaging/Re-Bundling of Non-Aluminum SNF
- Crane operations
- 70-Ton cask loading and shipments to H-Canyon



L Area Cask Handling



H Canyon Material Processing



- Continue to Receive and store fuel from both Domestic and Foreign research reactors
- ABD mission ramp up
  - Increased transfers to H Canyon ( Al-clad fuel)
  - Non-Aluminum clad campaign-1
  - Rebundling Capability for Non-Al clad material





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