

## Savannah River Site (SRS) H-Canyon

### Background

- H-Canyon is the Nation's only hardened Spent Nuclear Fuel (SNF) treatment facility. As such it:
  - Dispositions DOE's aluminum-based SNF inventory currently held in L-Basin at SRS,
  - Supports mission-critical DOE and national programs including acceptance of Foreign Research Reactor (FRR) spent nuclear fuel for the National Nuclear Security Administration (NNSA), and Domestic Research Reactor (DRR) spent nuclear fuel for the Department of Commerce and the DOE Offices of Science and of Nuclear Energy.
  - Is an important capability for critical nuclear materials to meet specific national requirements.
- H-Area's primary missions have been to process aluminum-based SNF to recover Uranium-235, Neptunium-237, and recover and purify Plutonium-238 targets.
- H-Canyon facilities are versatile with large shielded areas amenable to a variety of activities.
- Federal law (Title 50, Section 2633 of the United States Code) requires the Secretary of Energy to continue operations and maintain H-Canyon in a high state of readiness and to provide technical staff necessary to operate and maintain the facility.
- Currently the Office of Environmental Management (EM) is solely responsible for funding H-Canyon. With current funding, the facility operates at about 1/3 its capability.
- Funding to support efficient full operations of H-Canyon has not been available in the past several years.

### Current Activities

H Canyon is currently:

- Processing 1,000 Material Test Reactor (MTR) bundles and 200 High Flux Isotope Reactor (HFIR) cores per a DOE 2013 Amended Record of Decision (AROD)
  - Ensures enough storage in L-Basin for future receipts
  - Reduces the proliferation concern
  - Preserves the energy in the material by down blending the enriched uranium and shipping it to the Tennessee Valley Authority (TVA) to be used as fuel in their light water reactors for power production
- Processing and down blending US origin Highly Enriched Uranium (HEU) from Canada to Low Enriched Uranium (LEU) to be used as feed for commercial light water reactor fuel

### Planned Activities

- Initiate LEU blend down operations
  - Allows the reuse of Uranium from the SNF for commercial electricity production via a TVA reactor

- Install and operate an electrolytic dissolver to process Fast Critical Assembly (FCA) Material
  - Reestablishes a capability in H Canyon that hasn't been used since the 1980's
  - Supports U.S. nonproliferation goals

### **Issue**

The duration and pace of operations at H-Canyon will determine the amount of SNF that remains in L Basin when and if H-Canyon operations are concluded. Any remaining SNF would then need an alternate disposal mechanism. One such option would be to place the SNF in dry storage awaiting disposal in a Federal Repository. A research and development project is in progress to examine the viability of a dry storage alternative.

While the alternative dry storage disposition path is being examined, the amount of SNF to be dispositioned could be reduced by *increasing the rate of processing at H-Canyon*. Currently, the facility processes 5 batches, or 60 bundles, of SNF per year. With additional funding of \$150M, the facility could process 15 batches, or 180 bundles per year.

Current funding provides enough resources to meet the minimum requirements of 50 USC 2633, but essentially maintains constant the amount of material in L-Basin, as only enough material to accommodate future receipts is processed. Increased funding to enable operating H-Canyon at full capacity would permit processing of all SNF by about 2040. Dry storage will require retention of the fuel until a geologic repository becomes available.

### **Benefits of Additional Funding**

To optimize the facility an additional \$150M above the FY19 funding level is necessary.

Additional funding:

- would support increased staffing and infrastructure to go to parallel operations as the facility was designed, maximizing the facility's capabilities
- accelerates disposition of SNF stored in SRS's L-Basin, allowing L-Basin to be decommissioned
- supports removal of SNF from Idaho (INL) in accordance with their BATT agreement