



U.S. DEPARTMENT OF
ENERGY



H-Canyon Mission Updates at the Savannah River Site

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Nuclear Material Processing Facilities (PBS 11C)

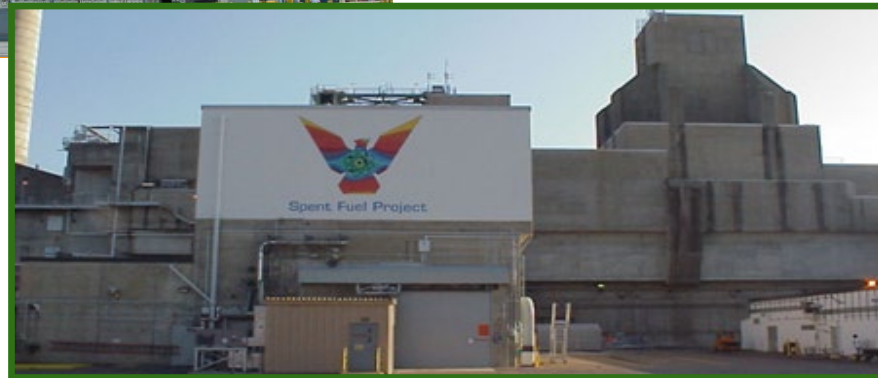


- **H-Canyon/HB-Line**
 - Safely dispositions:
 - *Uranium and Plutonium*



- **K-Area**
 - Safely receives, stores and dispositions:
 - *Plutonium*

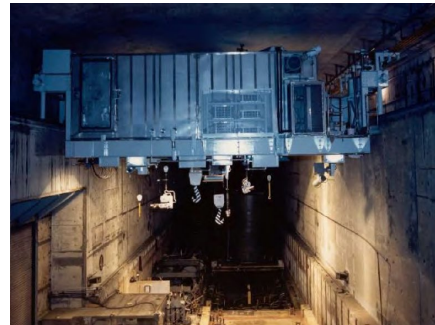
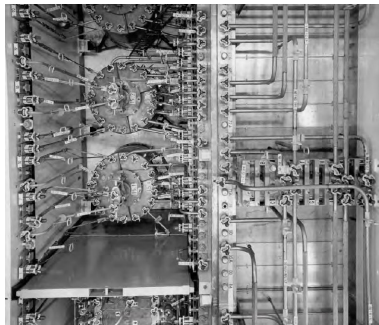
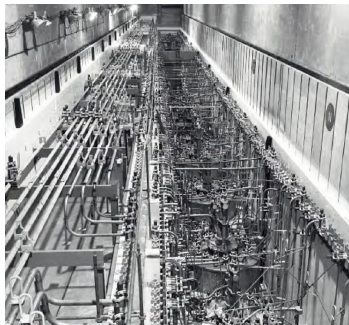
- **L-Area**
 - Safely receives and stores:
 - *Spent Nuclear Fuel from:*
 - Domestic and Foreign Sources



H-Canyon/ HB-Line

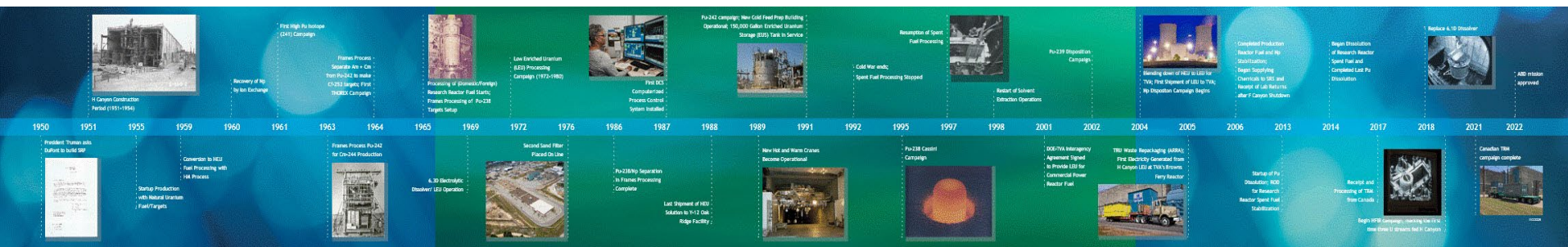


HB-Line



Mission Changes through time

- **H-Canyon started as production recovery facility for plutonium in the 50's.**
 - Mission transitioned to Highly Enriched Uranium (HEU) fuel processing in 1959
 - Several plutonium isotope campaigns
 - *First Pu (241) campaign in 1961*
 - *Pu (235) / Neptunium separation campaign in 1986*
 - *Pu (238) Cassini campaign in 1995*
 - *Pu (239) disposition campaign 2002*
 - *Fast Critical Assembly (FCA) campaign currently in progress*
 - Domestic and foreign research reactors fuel processing starts in 1965
 - Blend down of HEU to Low Enriched Uranium (LEU) from 2004 to 2012
 - Processed Canada's Target Residue Material (TRM) from 2017 to 2021
 - Current mission is Accelerated Basin De-inventory started 2022

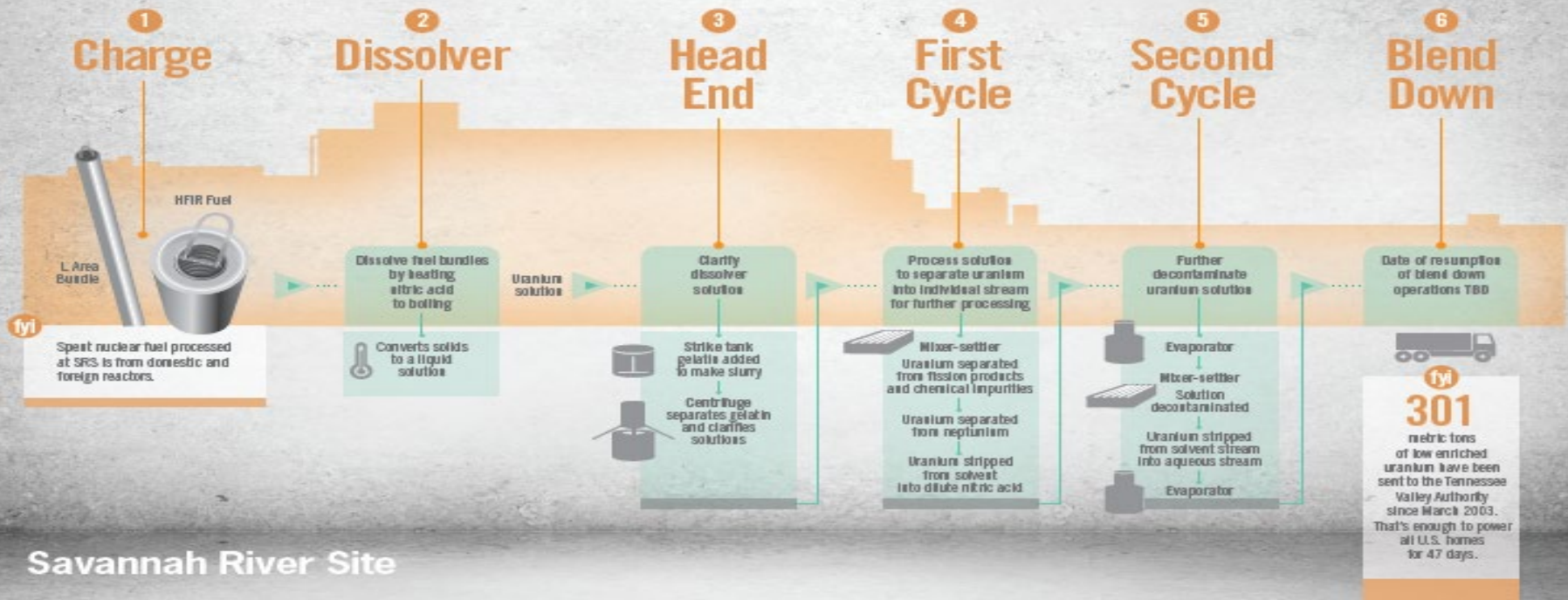


H-Canyon Uranium Extraction Process



H Canyon

Highly enriched uranium process operations



Modified H-Canyon Process



H Canyon Accelerated Basin Deinventory (ABD) Process Spent Nuclear Fuel Disposition

1 Receipt

Spent nuclear fuel arrives
by rail in a cask
from L. Basin



Cask, L. Area
bundle
and HFIR fuel



2 Dissolve Spent Fuel

Dissolve fuel bundles
by heating
nitric acid
to boiling point



Converts solids
to a liquid
solution

3 Neutralization and Transfer

Dissolver solution neutralized
with caustic and transferred
to liquid waste for
conversion to glass



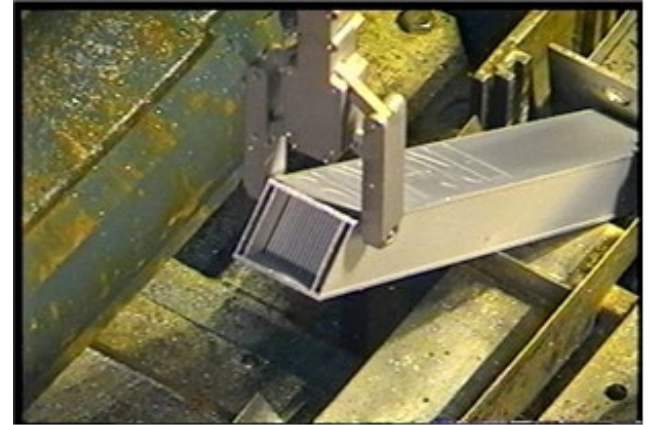
Accelerated Basin De-inventory (ABD)

- **Milestones for Fiscal Year 2024.**

- H-Canyon has dissolved 7 batches of Aluminum SNF.
- No discards of dissolved fuel to H-Tank Farm have been made this year. A total of 394 kilograms of fissile material have been added to sludge batch 11 during previous discards from H-Canyon.

- **Planned Milestones for Fiscal Year 2025.**

- H-Canyon plans to dissolve up to 6 Batches of Aluminum SNF.
- Additional fissile material will be discarded into sludge batch 11 during the next available H-Tank Farm discard window (Nov '24).



Foreign Fuel



High Flux Isotope Reactor Fuel

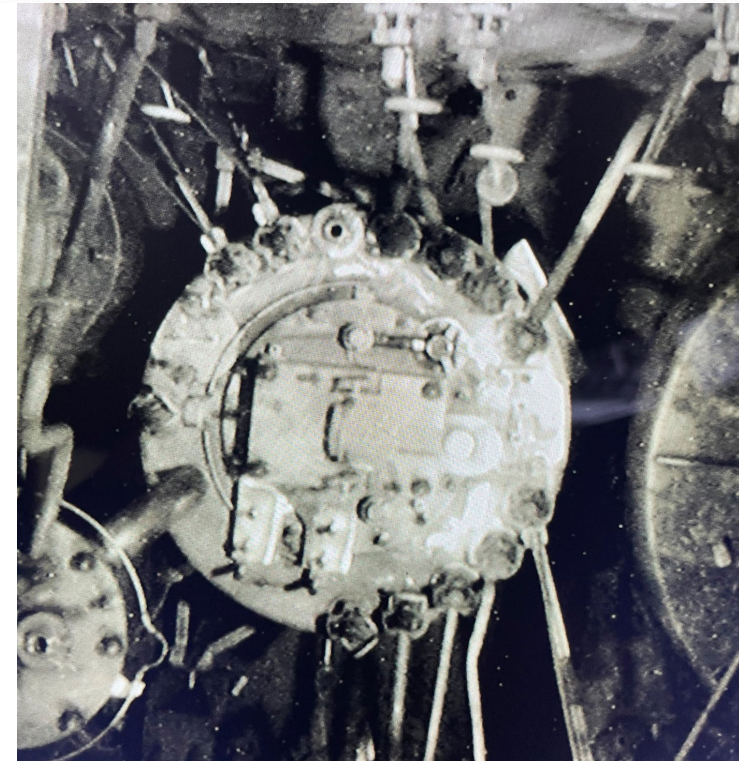
Fast Critical Assembly (FCA)

- **Milestones for Fiscal Year 2024.**

- H-Canyon has dissolved 1 batch of FCA material.
- This year the H-Canyon facility completed equipment installation, safety basis analysis, readiness assessment, and start-up of hot operations.
- Schedule delays in safety basis analysis and equipment issues resulted in processing fewer than anticipated batches (goal was 5).

- **Planned Milestones for Fiscal Year 2025.**

- H-Canyon plans to dissolve 10 batches of FCA material.
- Opportunity still exists to complete entire mission by the end of fiscal year 2025.



6.3 Electrolytic Dissolver Installed

High Assay Low Enriched Uranium (HALEU)

- **Joint effort with the Office of Nuclear Energy to supply initial HALEU supply for research reactors.**
 - Will provide approximately 2.5 metric tons of material for fuel fabrication.
 - Beneficially dispositions previously recovered High Enriched Uranium.
- **Project status:**
 - Performing facility repairs, developing procedures, training operators, and certifying transport containers.
 - Will perform start-up testing and readiness assessment in 2027 to line-up with availability of fuel fabrication facility.
 - Down-blending and shipping to occur between 2028 and 2031.



H-Area Outside Facilities



LR-230 Transport Containers

Other Mission Items

- **Fissile mass loading limit increase for Defense Waste Processing Facility glass waste canisters.**
 - Higher limit means less canisters produced.
 - Sandia is currently reviewing the proposed change and has begun drafting the results of their analysis.
- **Non-aluminum spent nuclear fuel (NASNF).**
 - Continue to develop strategies for disposition through H-Canyon.
 - Evaluating alternatives for disposition.
- **Nuclear Materials/Liquid Waste Integration.**
 - Refining chemical adjustment needs for discard material.
 - Analyzing opportunity to shift to at-tank adjustments for enrichment. Would result in reduced adjustment material needed.
- **Nuclear Materials System Plan**
 - Planned update during fiscal year 2025.



