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NONPROLIFERATION • ENVIRONMENT

SRNS℠

We make the world safer.

Nuclear Materials Recovery and H Canyon

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Environmental Management Operations

Citizens Advisory Board – Aiken, SC

March 2026

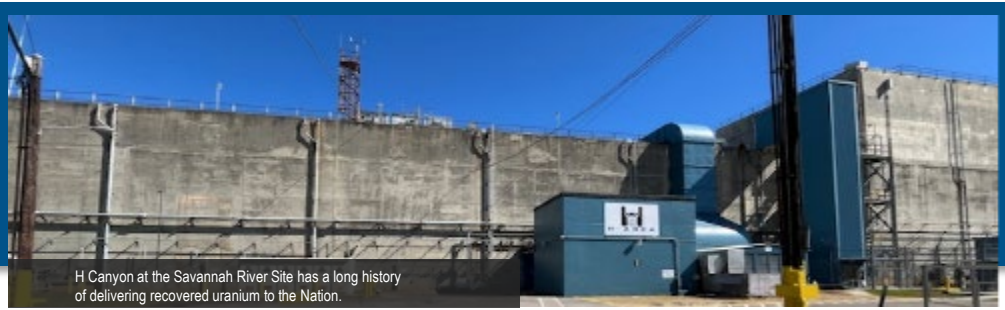
Agenda

- **Purpose**
  - Update the CAB on the H Canyon Mission Change
- **H Canyon FUEL Mission – *The Return to Recovery***

H Canyon

- **H Canyon is the only production-scale, radiologically shielded chemical separations facility in the United States**
- **H Canyon has historically recovered uranium and neptunium from Used Nuclear Fuel**
  - Historically produced 301 MT of Low Enriched Uranium for commercial reactor fuel
    - *Equivalent to 40.2M MT of coal and enough to power ALL of Aiken County for 56 years*

H - AREA
THE TEAM WITH SOLUTIONS



H Canyon at the Savannah River Site has a long history of delivering recovered uranium to the Nation.

Allocating [American Made] HALEU material will help [deploy] advanced reactors with materials sourced from secure supply chains, marking an important step forward… to revitalize America's nuclear sector.

- Energy Secretary Chris Wright

Executive Order 14302 - Reinvigorating the Nuclear Industrial Base

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The WHITE HOUSE

Nation's nuclear fuel cycle infrastructure has severely atrophied, leaving the United States heavily dependent on foreign sources of uranium…These trends cannot continue. – President Donald Trump

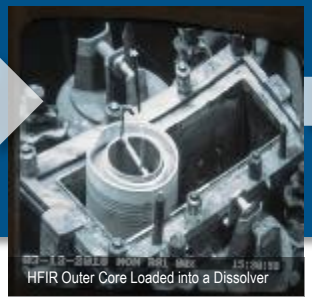
- Purpose: provide affordable, reliable energy to the American people, power advanced nuclear reactors, build secure supply chains, and maximize the efficiency of nuclear fuel through recycling/reprocessing

- Strengthening the Domestic Nuclear Fuel Cycle by
  - Recommendation for the efficient use of the uranium recovered through recycling/reprocessing
  - **Reevaluation of nuclear reprocessing, separation, and storage facilities that are identified as having valuable materials, equipment, operations, or experienced workers that may have potential fuel cycle benefits**
  - Develop a plan to expand domestic enrichment capabilities sufficient to meet projected reactor needs for low enriched uranium (LEU), high enriched uranium (HEU) and high assay low enriched uranium (HALEU)

High Assay Low Enriched Uranium

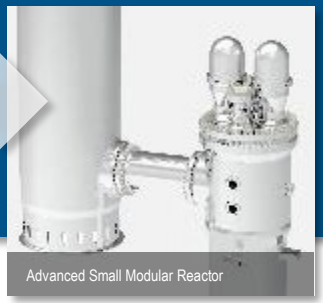
- **As the United States reinvigorates the nuclear industry base, HALEU is KEY for advanced reactors and next generation nuclear plant designs**
  - Smaller designs, longer operating cycles, increased fuel efficiency, less waste
- **HALEU is enriched uranium between 5 wt.% and 20 wt.% U-235**
  - Today's nuclear power fleet runs on 3 – 5 wt.% U-235 (LEU)
- **High enriched uranium produced in H Canyon can be downblended and shipped to Industrial Partners for use**


HFIR Used Nuclear Fuel at Oak Ridge


HFIR Outer Core Loaded into a Dissolver


H Area A Line Converts HEU into HALEU


TRISO Fuel Particle

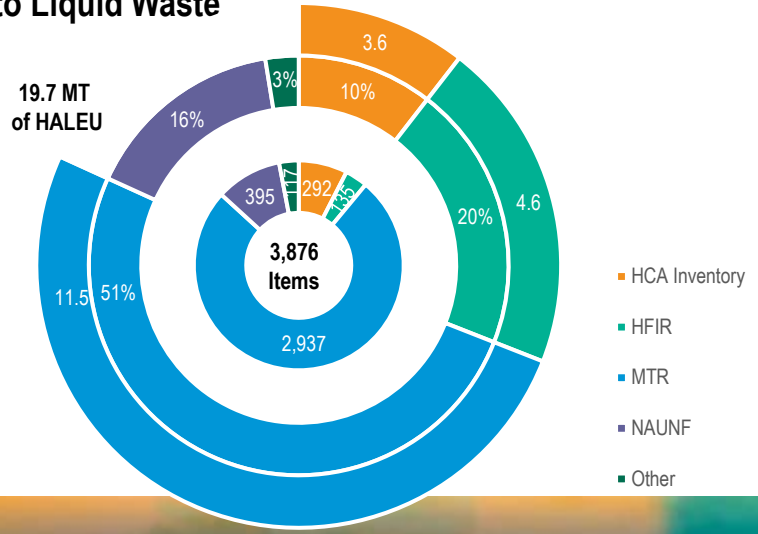

Advanced Small Modular Reactor

HFIR – High Flux Isotope Reactor Facility at Oak Ridge
TRISO – Tri-Structural Isotopic Nuclear Fuel

HALEU Demand

- **DOE-NE has currently identified 26 MTU of HALEU in the DOE complex for distribution, but up to 49 MT has been requested**
  - Most of the existing HALEU is from recovery and downblending of material from INL, NNSA partners, and **SRS**
    - ***SRS is providing 3.1 MT of HALEU***
- **H Canyon could produce an additional 19.7 MT of HALEU from the uranium contained in 80% of the Basin inventory and ABD material not yet transferred to Liquid Waste**

LR-230 transportation package suitable for uranyl nitrate shipments



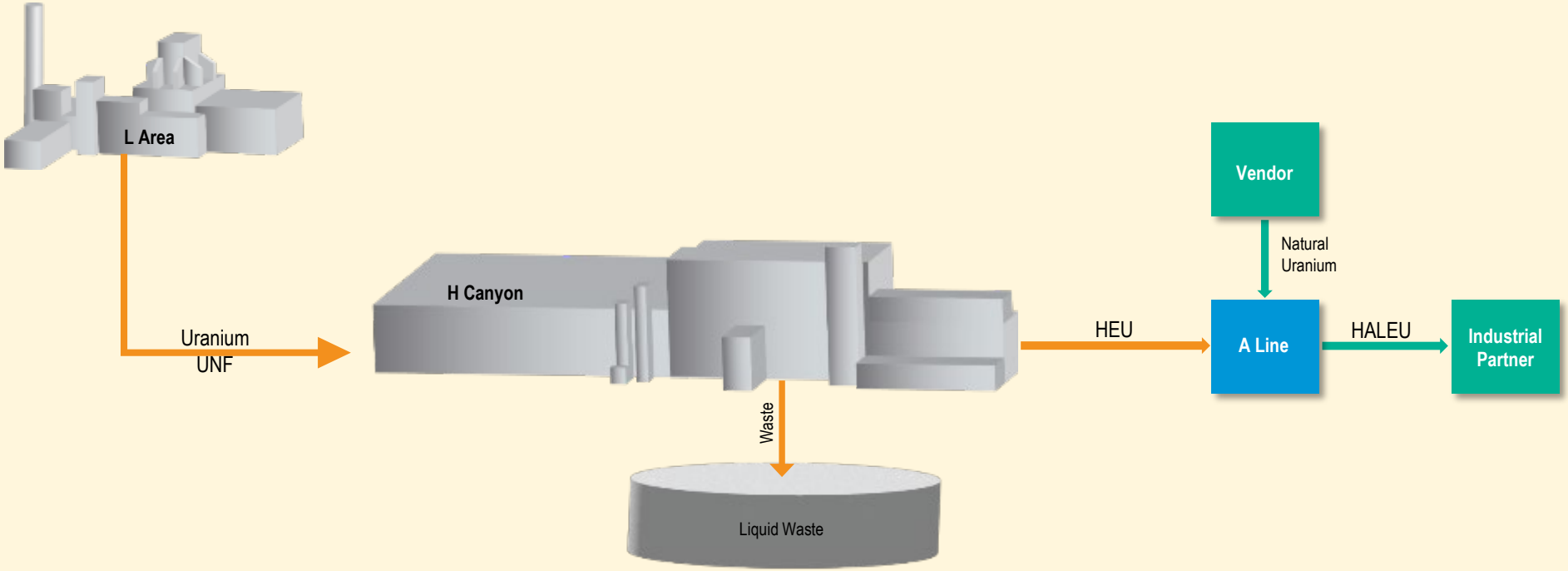
Fuel Utilization, Extraction & Leverage (FUEL) Mission

H Canyon is a reliable resource providing the immediate answer for the nation!

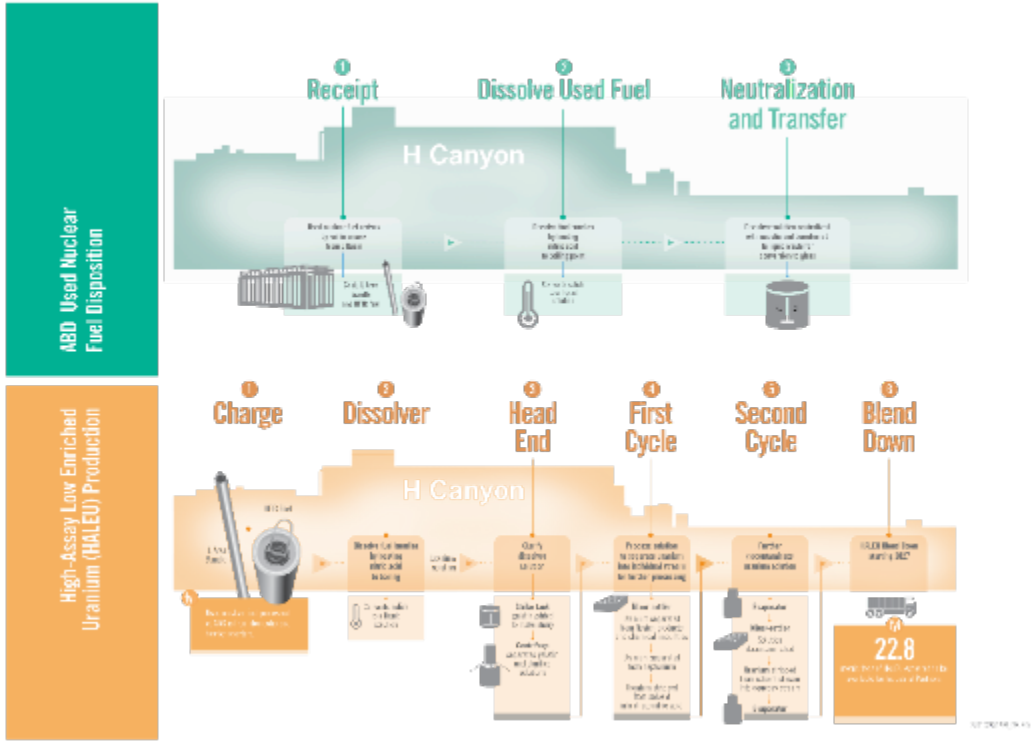
- **Under the FUEL Mission Used Nuclear Fuel is dissolved in nitric acid, and the uranium is recovered by removing impurities through solvent extraction cycle operations. The uranium is mixed with natural uranium to "blend down" the material to the desired enrichment specification.**

ABD
ACCELERATED BASIN DEINVENTORY

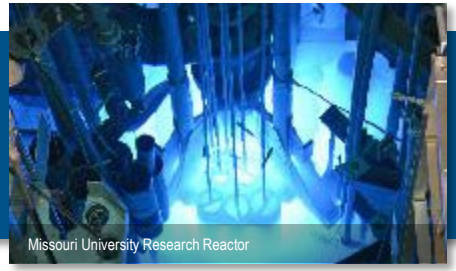
Process Flow Path



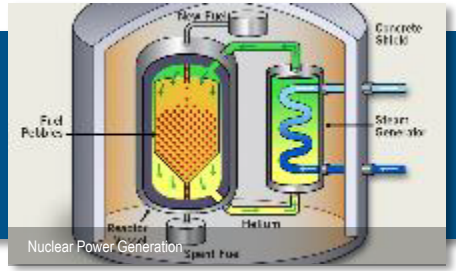
Returning H Canyon to Recovery



Mission Importance


Missouri University Research Reactor


H Canyon at SRS



Nuclear Power Generation

Next-Gen Nuclear Energy at SRS

- **Supplies 22.8 MT of domestic HALEU**
  - Sufficient to power ALL of Aiken County homes for 17 years
  - Equivalent to over 116K rail cars of coal
- **Supports research, development, and startup of next generations advanced nuclear reactors**
  - Annual production capable of supplying 1 – 2 small modular reactors or multiple micro reactors
- **Reduces foreign dependence, insulating American energy from geopolitical disruption**

22.8 MT of HALEU

~$456M Total Value for HALEU sold at $20K/kg

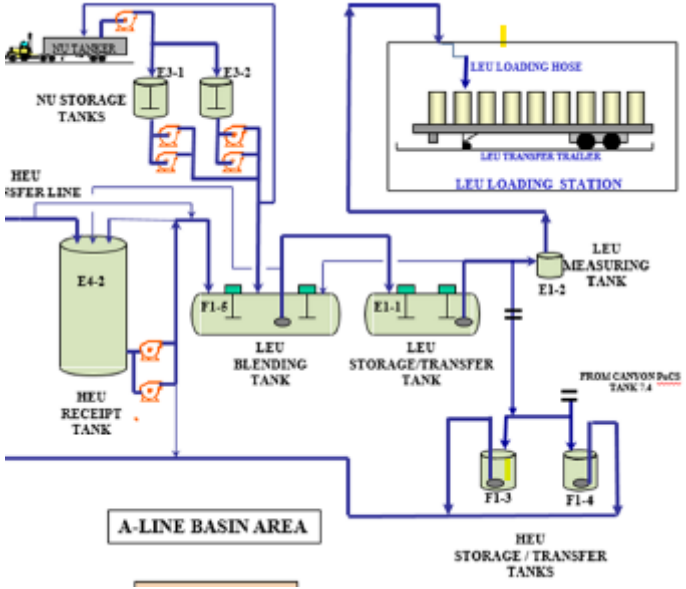
Environmental Stewardship at Work

The FUEL Mission supports the Nation, while simultaneously dispositioning long-term environmental stewardship materials

- **Decreases EM liability associated with managing, storing, and dispositioning Used Nuclear Fuel**
  - Reduces the L Area Used Nuclear Fuel Inventory by 80%
- **Repurposes material for beneficial reuse**
- **Creates storage space for incoming Used Nuclear Fuel**
- **Minimizes impact on Liquid Waste Operations**
  - Reduces the number of High Level Waste canisters produced by ~200, equivalent to nearly a year of lifecycle savings
- **Creates additional jobs and provides an enduring mission**

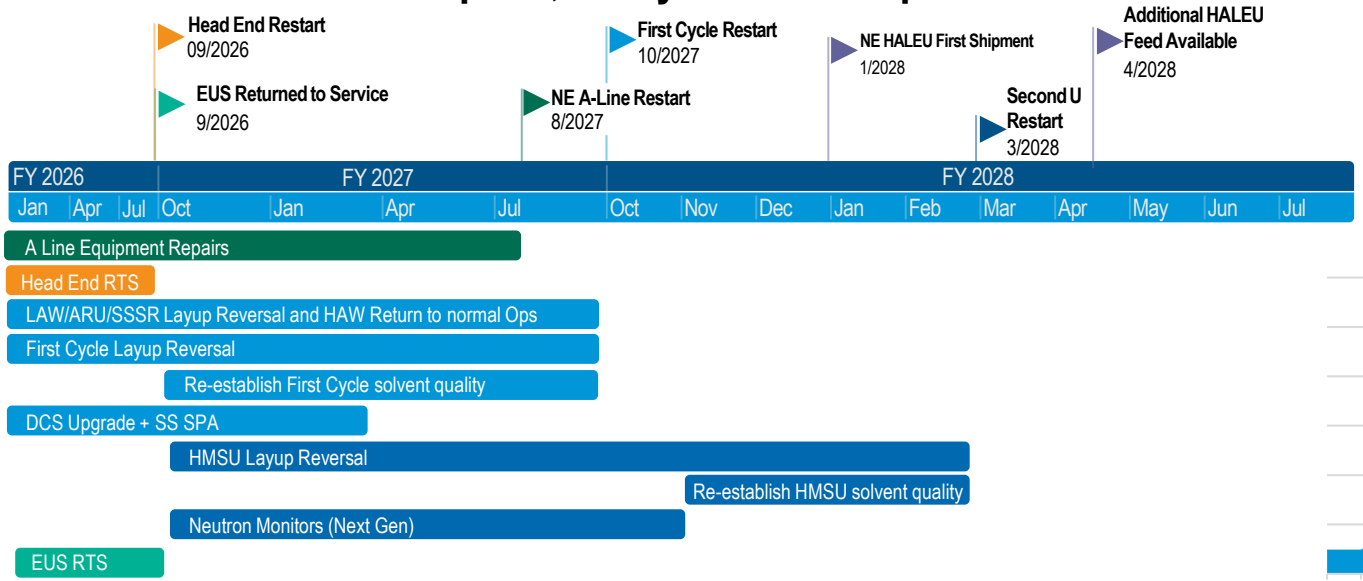
Current NE HALEU Mission

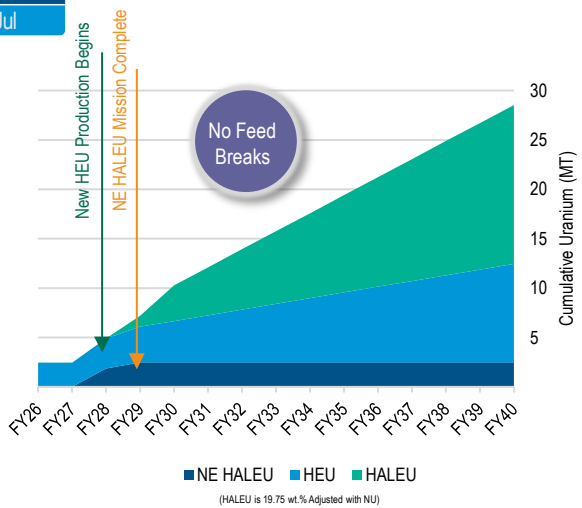
- Current HALEU mission is to use the existing process to blend the Highly Enriched Uranium (HEU) liquid in storage with natural uranium (NU) to produce HALEU
- The inventory of HEU and NU will produce 3.1 MT of HALEU
- HALEU will be shipped to a conversion facility in Oak Ridge Tennessee to be converted into fuel
- The Oak Ridge facility is scheduled to receive the first shipment in January of 2028



Pathway to Additional HALEU Production

- **HEU will be stockpiled, ready for HALEU production**





ARU – Acid Recovery Unit
DCS – Distributed Control System
EUS – Enriched Uranium Storage (Tank)
HAW – High Activity Waste

HEU – Highly Enriched Uranium
HMSU – H-Modified Second Uranium Cycle (Second U Cycle)
LAW – Low Activity Waste
NE – (DOE Office of) Nuclear Energy

NU – Natural Uranium
RTS – Return to Service
SSSR – Sump, Solvent Wash, and Sample Returns

Conclusion

- **H Canyon has a long history of success, and plans to continue that during the FUEL Mission and beyond**

Legacy of Delivery

Ready to Serve the Nation


TVA's Browns Ferry Nuclear Plant

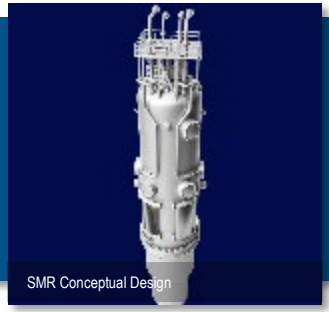
Low Enriched Uranium

Created 301 MT of LEU for commercial power reactor fuel at Tennessee Valley Authority


GWSB at SRS

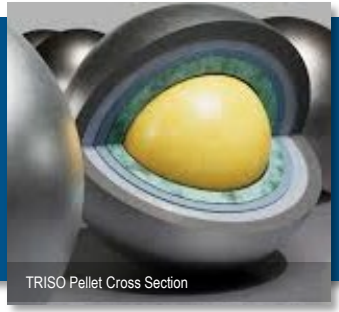
Accelerated Basin Deinventory

Dissolved 1 MT of Used Nuclear Fuel and dispositioned 0.5 MT of the resulting High Enriched Uranium solution to Liquid Waste


SMR Conceptual Design

Office of Nuclear Energy HALEU

Producing 3.1 MT of HALEU in 2027 from remaining stockpile of purified High Enriched Uranium solution currently stored in H Area


TRISO Pellet Cross Section

FUEL Mission: Fueling the Future

Recover, purify, and downblend uranium from Used Nuclear Fuel to produce an additional 19.7+ MT of HALEU


Valuable Isotopes Could Provide Heat for Space Programs

Isotope Recovery

Recovery of valuable isotopes from Used Nuclear Fuel possible

GWSB – Glass Waste Storage Building
LEU – Low Enriched Uranium
SMR – Small Modular Reactor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