



U.S. DEPARTMENT OF  
**ENERGY**

# Citizens Advisory Board Update on H Canyon

By: Allen Gunter

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**EM** *Environmental Management*  
safety ♦ performance ♦ cleanup ♦ closure

# Current Status H Canyon/HB-Line

- Completed the flushing of the HB-Line facility to improve the safety posture of the facility
- Completed the dissolution and processing of highly enriched uranium (HEU) materials to meet the current HEU blend down commitments to Tennessee Valley Authority (TVA)
- Completed the last shipment of low enriched uranium solutions to Nuclear Fuels Services to meet the current TVA commitments
- Performed operator proficiency runs to ensure the retention of operator qualifications and equipment operability
- Continue Vacuum Salt Distillation R&D in HB-Line
- Continue dispositioning non-MOXable plutonium
- Continue remediation of legacy TRU waste in H Canyon
- Continue receipt of Savannah River National Laboratory and F Area Analytical Laboratory samples for disposition



# Disposition Non-MOXable Pu to WIPP

- Current Operations

- Utilizing one of the existing glovebox lines and ventilation system in HB-Line
- Blend the plutonium oxide with inert material to less than 10% plutonium
- Package the blended material into Pipe Overpack Containers (POCs)
- Ship to E Area for WIPP certification and loading into TRUPAC II container
- Prepared 33 POCs in FY11
- Plan to ship to WIPP in FY12
- Approved Interim Actions to allow the disposition up to ~ 585 kgs Pu
- The Plutonium Disposition Supplemental Environmental Impact Statement is under development and required to support remainder of campaign

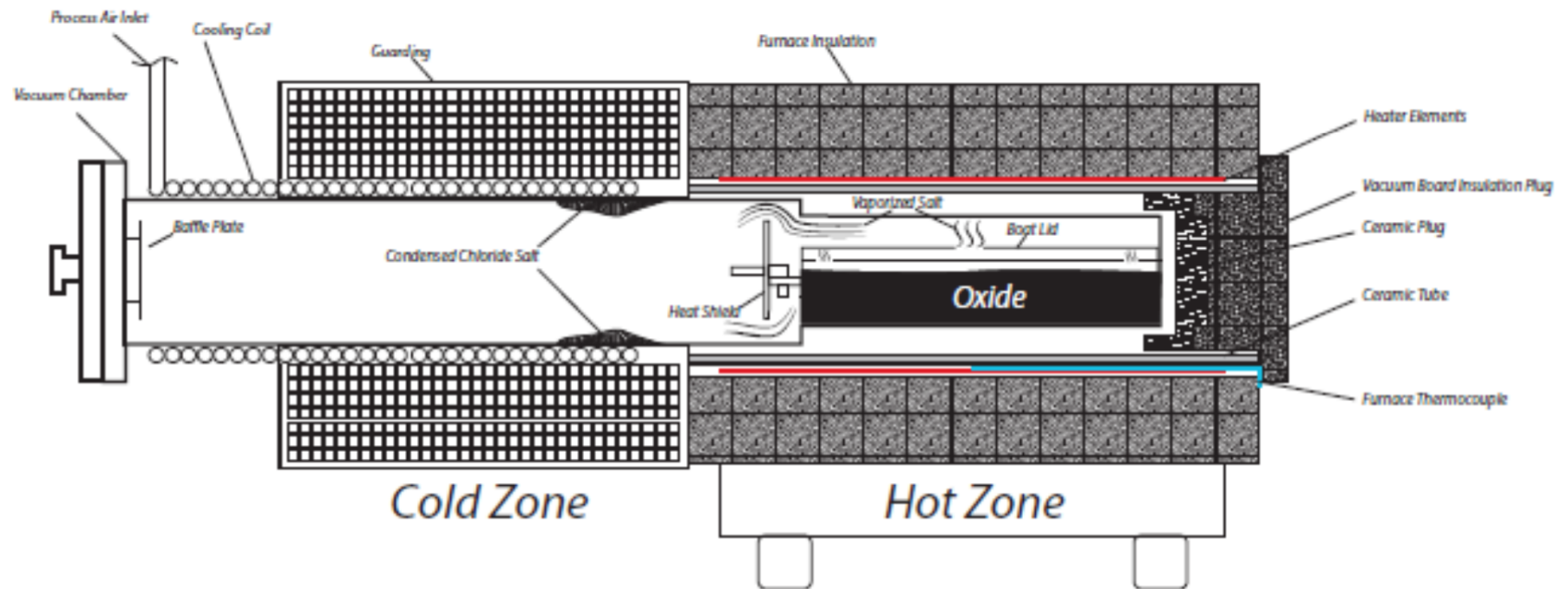


# Vacuum Salt Distillation R&D

- Some non-MOXable Pu oxides are contaminated with a variety of chloride and fluoride salts.
- SRS has demonstrated the direct removal of chloride salts in HBL converting non-MOXable Pu to MOXable.
- Synthetic testing has demonstrated fluoride salts can be removed converting non-MOXable Pu to a MOXable Pu.
  - Demonstrate fluoride salt removal at the “Engineer Scale” in HB-Line in FY12



# Vacuum Salt Distillation



Vacuum Salt Distillation removes corrosive chloride salts from DE3013 oxides. Salts are vaporized and condensed, resulting in clean oxide product and salt waste.



# New Mission Direction

- August 26, 2011, SR issued a letter of direction to SRNS
  - Potential new National Nuclear Security Administration mission requiring H Canyon/HB-Line to operate at higher capacity
    - Process plutonium material to make suitable as feed for the Mixed Oxide Feed Fabrication Facility (MFFF)
    - Retain ~ 90 personnel above base operations
- November 10, 2011, SR issued letter of direction
  - Assigned the new mission to H Canyon/HB-Line
  - Assume up to 3.7 MT of plutonium material to purify and convert to oxide to make suitable as feed to MFFF
  - Requires restart HB-Line Phase II
    - Produce plutonium oxide beginning no later than October 2012
    - Oxide production ramping up to 1 MT per year within 3 years



# New Mission Direction (cont)

- SRNS continues to evaluate under water storage of UNF in L Basin
- SRNS initial evaluation has identified the Sodium Reactor Experimental (SRE) UNF as more vulnerable to long term wet storage
  - Fuel has been declad and stored in sealed cans
  - Metallic thorium based fuel which is reactive in contact with water
- November 22, 2011, SR issued a letter of direction to SRNS
  - Make required preparations to allow the potential disposition of the SRE fuel
    - Documented Safety Analysis Revisions
    - Onsite Safety Analysis to support shipment of fuel from L Area to H Canyon
    - H Canyon procedure revisions
    - Operator training
    - Identify enough high aluminum content fuel, along with depleted uranium to dilute the dissolved SRS to allow transfer to waste system and minimize waste generation
      - Thorium material is trixotropic (peanut butter consistency) in caustic solution
  - Letter does not authorize the dissolution of the SRE or the high aluminum UNF



# Potential Missions Under Discussion

- Advanced safeguards
  - Development of new instrumentation and monitoring capability to detect potential diversion in chemical reprocessing facilities
- Recovery of Am-241
- Purification and oxidation of Pu-238
- Advanced fuel cycle R&D
- Additional plutonium processing for MFFF feed





# Summary

- H Canyon remains a national asset
- We are not shutting down H Canyon
- We are working with program offices within the Department to identify missions the canyon can support
- Before proceeding with any reprocessing campaigns the Department awaits the Blue Ribbon Commission's final report and recommendations

