



Governor's Nuclear Advisory Board

Update on H Canyon

By: Allen Gunter

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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

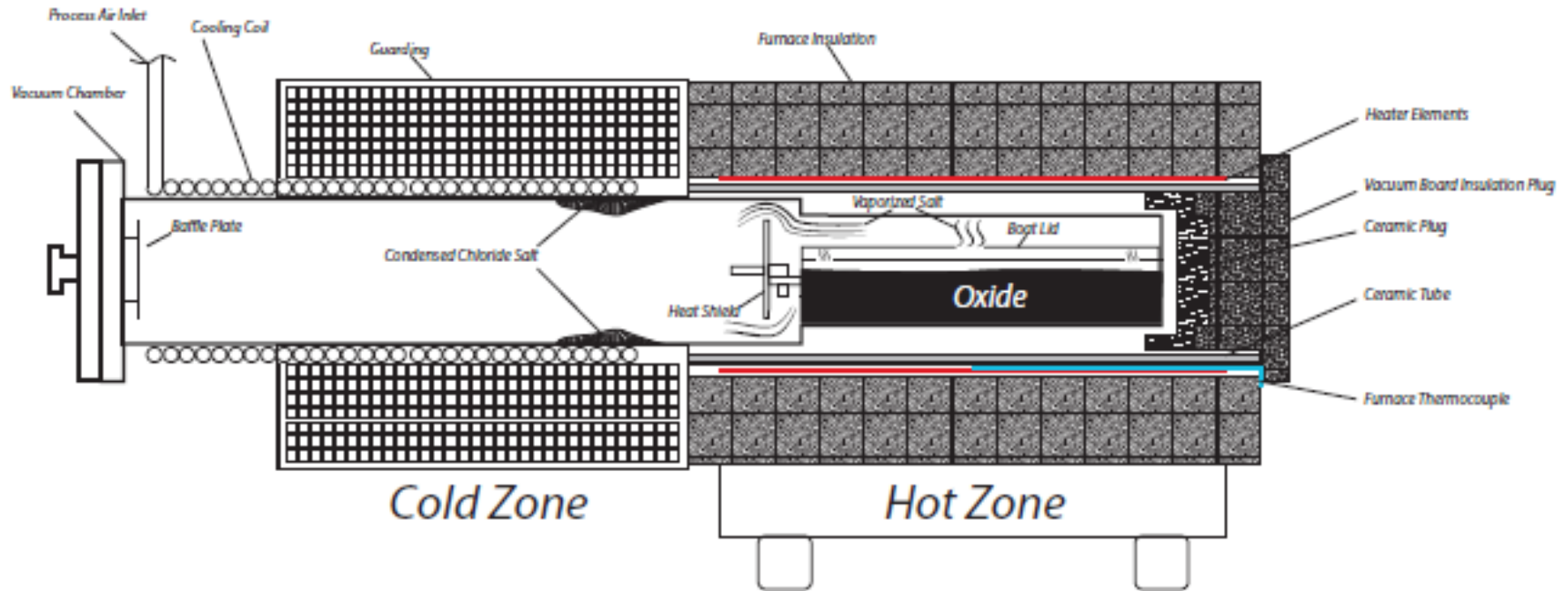
Disposition Non-MOXable Pu to WIPP

- 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
 - Ship to E Area for WIPP certification and loading into TRUPAC II container
 - Prepared 33 Pipe Overpack Containers 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 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