U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

SRS Spent Nuclear Fuel Management Alternatives

Presentation to the Nuclear Waste Technical Review Board

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Current Management Approach

- Continue Safe Wet Storage
- Process up to 1000 bundles and 200 High Flux Isotope Cores
- Continue Operations of L-Basin evaluated by SRNL for safe usage of L-Basin up to an additional 50 years

Processing in H-Canyon

- Successfully completed the Sodium Reactor Experiment Fuel Campaign in August 2014
  - 147 bundles of SRE and High Aluminum Fuels
  - No recovery of Uranium due to U-232
- Amended Record of Decision allows :
  - Processing up to 1000 bundles and 200 High Flux Isotope Cores
  - 15 bundles completed through October 20, 2014
- H-Canyon continued processing of the Aluminum Cladded Fuel in L-Basin is possible but no decision has been made to pursue this at this time
- H-Canyon cannot process the Stainless and Zircaloy cladded fuels stored in L-Basin (~ less than 10% of the inventory)

Idaho/SRS Fuel Exchange

- Exchange is currently suspended
  - Aluminum cladded fuel from Idaho would be shipped to SRS
  - Non-aluminum cladded fuel from SRS would be shipped to Idaho
- Repackaging of the Non-aluminum cladded fuel for transportation would be required at SRS
  - Majority of this fuel is known to be compromised (pitted/corroded)
  - Would require an isolation system for repackaging to ensure integrity of the basin water chemistry
- Transportation packaging would have to be identified to work at both locations

Dry Storage

- SRS lifecycle assumes dry storage
  - No decision on processing
  - It is the more costly option for capturing liability costs
- Dry Storage Study was conducted in 2012
  - Included information from both Hanford and Idaho
  - Direction was to include as much "commerically available" options as possible
  - Direction was also to assume the final configuration of the fuel was "road ready" (for shipment to a repository)
- Concerns regarding the drying of Aluminum Fuel need to be addressed:
  - How long to dry, how fast to dry to ensure no generation of hydrogen or hydrides

Dry Storage (continued)

- Storage Pad
  - Dry Storage Report envisioned the pad located in L-area
  - Another report is evaluating the use of a multi-use storage pad

- Multi-use storage Pad
  - Very preliminary study
  - Storage of both Vitrified Glass logs in concrete overpacks as well as dry fuel in concrete overpacks
  - Considers a Central location within the site
  - Major driver for multi-use pad is potentially reduced transportation costs and shared storage costs
  - Difficult to determine any cost savings due to the potential need for fuel drying in a different location from L-Area.

Summary

- Fuel is Safely Stored in L-Basin
- Some processing of Fuel is occurring in H-Canyon
- Alternatives to wet storage have been evaluated
- Departmental Decision needed on future direction of fuel storage versus processing