Storage of Vitrified HLW
Savannah River Site

Brenda Green
Savannah River Remediation

Savannah River Site Citizens Advisory Board
November 18, 2014
Projected Canister Production Rates

- Canister Production Rate Based on System Plan 19
  - FY15 156
  - FY16 136 with 4 month melter outage
  - FY17 168
  - FY18 160 with 4 month outage for transition to SWPF operation
  - FY19 276
  - Beyond 276

- Canisters Produced To Date (Sept 30, 2014) 3,877
- Estimated Total Canister Production 8,582
- Canisters Produced (% of Total) 45.2
- Canister Production Exceeds Canister Storage in FY19
Supplemental Canister Storage

- **No 3rd Glass Waste Storage Building (GWSB) (∼ $130 million)**
  - Large upfront cost & future D&D cost
- **Glass Waste Storage Project (GWSP) Being Developed to Provide**
  - Supplemental Canister Storage in above ground storage containers similar to commercial Spent Nuclear Fuel (SNF) storage
  - Loading Station for Shielded Canister Transporter (SCT) transfer of canister to storage containers
  - Storage pad for storage containers
  - Storage containers procured to support canister production
  - Allow future construction of canister transportation capabilities
- **GWSP Deferred Until FY18 Line Item**
- **Interim Canister Storage Required**
  - Double Stack of Canisters in GWSB1 increases capacity from 2,254 to 4,508
Two canisters per location (vs. one can per location,
Lower canister on support on vault floor (vs. cross bar support 3’ off floor)
Upper canister placed directly on top of lower canister
Upper canister extends into operating deck floor, but remains below grade
Shield plug redesigned for equivalent radiological protection
• Inside vault looking across rows of canister supports
• Inside canister storage location
  • Minimum Opening in floor is 27 inch ID
  • Cross Bar Assembly is 1 ½ inch x 3 inch galvanized carbon steel bars
  • Cross Bar Assembly~ 18 ft down with 30 inch OD
  • 2 sets of guides (3 tabs each) to guide canisters
  • Bottom guides sit 5 inches above cross bar assembly
Proposed Modifications

- Plug Replaced
- Crossbar Removed
- Tapered Plug
- Floor Plate Added

Single Stack (Current)

Double Stack (Modified)
Impact of ICS-DS on Canister Storage Space

Available Canister Storage Positions

Assumptions:
- 300 ICS-DS Modifications Per Year
- GWSB1 Storage Increases to 4508
- Adequate Space Through FY26
• Heat Model supports canisters produced to date and future sludge batch forecast
• Seismic/Structural calculations support adequate margin for static and seismic performance category and canister integrity
• Cutting tool technology exists
• Radiological calculations support acceptable dose rates during modification w/o emptying vault
• GWSB1 remains Underground Radioactive Material Area posting
• No safety basis or fire hazard concerns – implementation actions only
Canister Storage Summary

- Technical Feasibility Evaluation Supports Double Stacking GWSB1
- Use Interim Canister Storage – Double Stack to Bridge Canister Storage Gap
- Increases GWSB1 capacity to 4,508 canisters
- Provides adequate storage through FY26