Citizens Advisory Board – Combined Committees Meeting

SRNL-STI-2012-00351
Purpose

- To fulfill Nuclear Materials Committee 2012 Work Plan topic
Interim Storage of DOE Fuel
Fuel Storage at SRS

• The site has an inventory of DOE-owned fuel, primarily from research reactors, awaiting disposition
  – Fuel is currently in wet storage at L-Basin
  – Includes both Al-clad and non-Al (stainless steel or Zr) clad fuels
  – Much of the fuel contains highly enriched uranium (up to 93% enrichment)

• Potential strategies include combination of technologies:*  
  – Melt & dilute for disposal in a geologic repository
  – On-site processing (H Canyon) of Al-clad fuel for uranium recovery, and shipment of non-Al clad fuel to Idaho National Laboratory
  – Construction of a new Dry Storage Facility for extended storage, and subsequent disposal

*DOE is currently reviewing the final BRC recommendations and will reply to Congress later this year
Near-term Objectives

• A program has been initiated to demonstrate and evaluate pad-based storage for a selected set of DOE fuels:
  – Similar to commercial industry practice
  – Utilizes SRNL research to establish the technical basis for safe, long-term dry storage of Al-clad fuel
  – Provides a cost-effective alternative to a large, greenfield dry storage facility
  – Establishes dry storage at SRS, providing an alternative to long-term basin storage for DOE fuels

The Blue Ribbon Commission has recommended dry storage as a necessary and important element for extended storage of used nuclear fuel

“Meet high standards of safety and security for the multi-decade-long time periods that they are likely to be in use”
Program Objectives

• The program would provide a phased, optimized dry-storage approach for DOE used nuclear fuel
  – Phase I: Dry Storage demonstration – DOE fuel in three casks
  – Phase II: Future receipts (equivalent) of DOE owned fuel from foreign and domestic research reactors
  – Phase III: DOE owned spent fuel currently stored in L-Basin

The program demonstrates the scientific basis for extended storage and establishes safe, secure pad storage of fuel in a “road-ready” condition for a range of DOE nuclear materials.
Where are we today?

- Alternatives have been developed for preparation and transfer of selected fuels to dry storage
  - Proposed equipment and operations will be integrated with current facility operations
- Meetings held with industry representatives to describe the scope, test objectives, and challenges presented by fuels selected for the demonstration
- Soliciting vendor input to evaluate technical feasibility and use of standardized products to cost-effectively implement the demonstration
- Have launched the pre-project planning phase for a dry storage pilot project (Phase I)
Next steps

• Complete pre-conceptual design by October 2012 (FY12 funding)
  – Estimate of scope, cost, and schedule
  – Acquisition plan
• Evaluate synergy with similar project for extended storage of vitrified high level waste at the Defense Waste Processing Facility