Citizens Advisory Board
Update on H Area Operations

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Acronyms

AFS-2 – Alternate Feed Stock 2
AI – Aluminum
ARRA – American Recovery and Reinvestment Act
DSA – Documented Safety Analysis
HEU - Highly Enriched Uranium
MFFF – Mixed Oxide Fuel Fabrication Facility
MOX – Mixed Oxide
NNSA – National Nuclear Security Administration
POC – Pipe Overpack Container
Pu - Plutonium
SRE – Sodium Reactor Experiment
TRU – Transuranic Waste
TSR – Technical Safety Requirements
U - Uranium
WIPP – Waste Isolation Pilot Plant
Purpose

To Fulfill Nuclear Materials Committee 2012 Work Plan Topic –

Nuclear Materials Reuse/Disposition

- Pu Reuse (Prep) for Mixed Oxide Fabrication Facility
- Pu Disposition to Waste Isolation Pilot Plant
- Used Nuclear Fuel Disposition via H Canyon
Waste and Material Flow Path

Savannah River Site Waste and Material Flow Path

This depiction of SRS activities shows only the general scope of the major facilities and missions. It does not represent all processes or all materials flow.

Key Terms:
- LLW: Low-Level Waste
- HLW: High-Level Waste
- TRU: Transuranic
- MOX: Mixed-Oxide
- WIPP: Waste Isolation Pilot Plant
- LLNS: Los Alamos National Security, LLC
- SRNL: Savannah River National Laboratory
- TALS: Tritium Analysis Laboratory System
- KAMS: KAI Management System
- KIS: Knowledge Information System
- KAMS/KIS: KAI Management System/Knowledge Information System
- L-Resin: Liquid-Resin Filters
- H-Canyon: Hanford-Canyon
- H-Liner: Hanford Liner
- HWW: Hanford Waste Work
- HMO: Hanford Mixed-Oxide
- E/N-Area: EN Area
- MOX Product: Mixed-Oxide Product
- Pu Prep Project: Plutonium Preparation Project
- ETP: Evaporation and Transposition Plant
- SWPF: Savannah River Nuclear Fuels Project
- H-Tank Farm: Hanford Tank Farm
- F-Tank Farm: Fuel Tank Farm
- LLW Disposal: LLW Disposal Facility
- HW/MN: Hanford Waste/Mixed Oxide
- IN-Situ Remedia: In-Situ Remediation
- In-Situ: In-Situ Remediation
- Off-Site Disposal: Off-Site Disposal
- Area Closure Projects: Area Closure Projects
- In-Situ Remediation: In-Situ Remediation
- Disposal: Soil and Groundwater Disposal
- D&D: Disassembly and Decommissioning
- LLW, MV & HW: Low-Level, Mixed Oxide, and High-Level
- C & D Landfill: C & D Landfill
- Rubble: Rubble
- Saltstone: Saltstone
- Salt Sludge: Salt Sludge
- Salt Waste: Salt Waste
- Salt Tank (TS): Salt Tank (TS)
- LLW Disposal E.g., Three Rivers: LLW Disposal e.g., Three-Rivers

ACRONYMS:
- AL: Active
- ARP: Actinide Reprocessing Process
- CDD: Construction and Development
- DDD: Disassembly, Decommissioning, and Disposal
- EPA: Environmental Protection Agency
- GDA: Geologic Disposal Alternatives
- H-WF: High-Level Waste Facility
- HF: High-Level Facility
- HW: High-Level Waste
- IIA: In-Initial/Interim
- IL: In-Initial
- INL: Idaho National Laboratory
- INPS: In-Plant Separation Plant
- KAMS: KAI Management System
- KIS: Knowledge Information System
- KAMS/KIS: KAI Management System/Knowledge Information System
- LLNS: Los Alamos National Security, LLC
- LLW: Low-Level Waste
- MOX: Mixed-Oxide
- MPP: Mixed Oxide Production Plant
- NSE: Nuclear Science and Engineering
- NWS: Nuclear Waste Science
- SRNL: Savannah River National Laboratory
- SWPF: Savannah River Nuclear Fuels Project
- TALS: Tritium Analysis Laboratory System
- TALS/LL: Tritium Analysis Laboratory System/Low-Level
- TALS/LL: Tritium Analysis Laboratory System/Low-Level
- TRU: Transuranic
- TS: Tank Storage
- U: Uranium
Current Status

- Performing proficiency runs to ensure the retention of operator qualifications and equipment operability in H Canyon
- Remediating legacy TRU waste in H Canyon
- Dispositioning non-MOXable plutonium in HB Line (WIPP Blend)
- Initiated “vulnerable” fuel dissolution campaign (Sodium Reactor Experiment Fuel) in H Canyon
- Preparing for Alternate Feed Stock 2 (AFS-2) Plutonium Dissolution in H Canyon and Oxide Production in HB Line
H Canyon – Legacy TRU

- Remediating legacy TRU waste for past 7 years in Warm Canyon...accelerated over the past few years with ARRA funding
- Rendering compliant against WIPP certification requirements
- H Canyon processing some of the most radiologically challenging materials (Large Steel Boxes, Concrete Vaults, etc.)
- Expect to complete H Area scope in Spring 2013
H Canyon – “Vulnerable” Fuel Dissolution

- Initiated Sodium Reactor Experiment (SRE) Fuel Dissolution Campaign
- Although no current issues with SRE in L Basin storage, it is considered more “vulnerable” to long term wet storage
- SRE and other Hi Al/Low U fuels campaigned as a blend to mitigate viscosity issues of thorium-based fuel (SRE) in caustic solution
- Disposition to Tank Farm
- Expect to complete in Fall 2013
In November 2011, new mission assigned to Produce Plutonium Oxide Feed for MFFF from Alternate Feed Stock 2 (AFS-2) through FY17. Specifically, directed to:

- Prepare for H-Canyon/HB-Line and support facilities for startup against MFFF feed specs
- Reconfigure process operations to allow for full ramp up to 1 MT oxide production rate by FY15
- Develop/implement all required safety basis documentation changes and required facility modifications, including implementation of a DOE Standard 3009 compliant DSA/TSR for HB-Line
- Proceed under “Interim Action” approval
H Canyon/HB Line – Pu Oxide Production

- Ready for HB Line repackaging and H Canyon dissolution operations
- DSA/TSR changes for oxide production in HB Line are pending DOE review/approval
- When DSA/TSR approved, Operations procedures will be finalized and SRNS/DOE readiness assessments will be completed
- Expect to begin oxide production over next several months
HB Line – Non-MOXable Pu Disposition

- Utilizing existing HB Line Phase I glovebox line and ventilation system
- Blending “Non-MOXable” Pu Oxide with inert agent to <10% Pu
- Packaging into Pipe Overpack Containers (POCs)
- Shipping to E Area for WIPP certification and shipment to WIPP
- Approved Interim Action for up to ~585 kgs Pu
- Recently made first shipment to WIPP
Other Missions Under Discussion

- Additional Pu processing for MFFF
- NNSA Highly Enriched Uranium (HEU) Blend Down
- Advanced Safeguards Testing
- Americium-241 Recovery
Summary

• H Canyon Complex remains unique national asset for large scale nuclear materials processing
• Maintaining operator proficiency/equipment operability
• Early stages of campaign startup for SRE fuel dissolution/disposition and AFS-2 dissolution/oxide production
• Legacy TRU waste remediation continues
• Blending down “Non-MOXable” Pu for disposition to WIPP
• Enterprise SRS team evaluating other mission opportunities
H Canyon Complex