Citizens Advisory Board
Update on H Area Operations

Mike Swain
Director, H-Area EM Operations
Savannah River Nuclear Solutions, LLC
August 28, 2012
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
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 Experimental Fuel) in H Canyon
• Initiated Alternate Feed Stock 2 (AFS-2) Plutonium Processing with Dissolution in H Canyon
• Preparing HB Line for AFS-2 Pu Oxide Production
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
H Canyon/HB Line – Pu Oxide Production

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 per timetable and 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 and required modifications, including implementation of DOE Std 3009 compliant DSA/TSR for HB-Line
- Proceed under “Interim Action” approval
H Canyon/HB Line – Pu Oxide Production

**HB-Line Phase III**
- Unload 9975
- Remove 3013 and Repack
- Dissolvable Cans

**H-Canyon**
- Waste Tanks
- Product Tanks
- Dissolver
- Waste Tanks
- Filtrate Waste

**HB-Line Phase II**
- Purify
- Precipitate
- Oxide Conversion
- Product Packaging

- AFS-2 from K-Area
- Solid
- Liquid
- Filtrate Waste
- H-Tank Farm
- Pu Oxide to K-Area

- 9975
- 3013
- Dissolver
- Product Tanks
- Waste Tanks
- Purify
- Precipitate
- Oxide Conversion
- Product Packaging

- Column Waste
- Solid
H Canyon/HB Line – Pu Oxide Production

Progress/Current Status:

– Completed multiple safety basis changes, procedure changes, training, etc. and initiated AFS-2 repackaging and dissolution
– Safety Basis changes for Oxide Production in HB Line are pending DOE review/approval
– When approved, Operations procedures will be finalized and SRNS/DOE readiness assessments will be completed
– Expect to begin HB Line oxide production later this Fall
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 shipments 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 remediation
• Blending down “Non-MOXable” Pu for disposition to WIPP
• Enterprise SRS team evaluating other mission opportunities
H Canyon Complex