Purpose

Provide FY18 update to CAB on Defense Waste Processing Facility (DWPF) and Glass Waste Storage Building (GWSB).
Outline

- Overview of Liquid Waste (LWO) & DWPF
- LWO Outage Integration
- Summary of Melter 2 Replacement Outage
- DWPF Facility Outage
- Melter 4 Fabrication
- Canister Double Stack
- Q&A
Liquid Waste Program (with current status)

Legend:
- ARP: Actinide Removal Process
- BWRE: Bulk Waste Removal Efforts
- DWPF: Defense Waste Processing Facility
- MCU: Modular Caustic Side Solvent Extraction Unit
- TCCR: Tank Closure Cesium Removal
- SWPF: Salt Waste Processing Facility

Operational Goals:
- Radionuclides to glass
- Chemicals to Saltstone
- Tanks cleaned and operationally closed

Legacy Liquid Waste

8 Tanks Cleaned and Closed
- <1% radionuclides remain in tanks

43 tanks
- 35 Mgal
- 249 MCi

Salt waste
- 9.8 Mgal treated

Sludge waste
- 4.2 Mgal treated

Glass Waste Storage
- Most radionuclides to glass
- Poured 4,173 cans of projected 8,170
- 61.1 million curies immobilized in glass

Saltstone Disposal Facility
- >>1% radionuclides to saltstone
- 22.0 Mgal grout dispositioned containing 471 kCi

Recycle

51 Tanks
- 8 grouted & operationally closed
- 1.2 million curies immobilized in grout
- 5 BWRE complete
- 67% empty or grouted (old style)
- 23% empty (new style)

DWPF
- ARP
- MCU

8 Tanks Cleaned and Closed

Salt Processing
- TCCR

Spent Columns
- (TBD)

51 Tanks
- 8 grouted & operationally closed
- 1.2 million curies immobilized in grout
- 5 BWRE complete
- 67% empty or grouted (old style)
- 23% empty (new style)
An Integrated System
Vitrification Process

Tank Farm

Glass Waste Storage

Transporter

DWPF Chemical Processing

Chemical Addition

Hg

MFT  SME  SRAT  LPPP Sludge Tank

Glass Melting & Canister Closure

Canister Cleaning

Welding
Melter 2 Removal Preparations

- **Cell Cover Cleanup for Melter 2 Exit Route**
  - 4 containers of equipment removed from cell covers
    - 2 containers to E area for disposal
    - 2 containers staged for reuse

- **Cranes & Railroad**
  - Cranes – MPC, FESV, Mobile
    - Completed Preventive/Corrective Maintenance, Inspections, Modifications, & Functional Checks

- **Rail System**
  - Engine + 5 spacer cars + Melter Railcar
  - Rail Replacement (5 sections)
  - Switch (38) & Cross (621) Tie Replacement
Melter 2 Removal

• Melter 2 (14 years of service)
  – Jumper & component removal (93 total)
  – Post-mortem inspection & evaluation
  – Melter blowdown
  – Melter rad dose evaluation
  – Mockup for lid management
  – Contamination control preparations
    • Railroad Well (RRW)
    • Melter Storage Box (MSB) & Melter Railcar
  – Management Checklist to confirm readiness
  – Removal of Melter from the facility
    • Melt Cell to RRW
    • RRW to FESV
  – Melt Cell cleanup using robotics
  – Jumper inspections
Melter 2 Removal

- Melter 2 inside Melter Storage Box
- Melter Storage Box Lid Installation
- Additional Glass Contaminated Equipment Placed in MSB
- Melter Storage Box en route to Vault
- Melter Storage Box being lowered into Vault
- Fixative Application for Contamination Control

Excellence in ISMS & ALARA: 45 workers received a collective dose of 179 mrem!
Melter 3 Installation Scope

- **Melter 3**
  - Transport Melter 3 to DWPF
  - Repeat inspection & checkout process in the Railroad Well
    - *Perform electrical testing / checkout*
  - Melt Cell cleanup
  - Jumper inspections/gasket replacement
  - Preparations for moving Melter 3 to the Melt Cell
  - Management Checklist to confirm readiness to fly Melter 3 to the Melt Cell
  - Melter 3 re-assembly
  - Melter 3 startup & test
  - Begin feed and pour
  - Bubbler replacement 8/3/18
  - New electrode power supplies in startup testing.
In addition to the outage forced by SWPF tie-in and Melter replacement, four deficiencies were identified with the liquid waste Safety Bases that required action:

- Hydrogen generation rate due to organic thermolysis (3 separate PISAs)
- Use of non-conservative dose estimates for zone 1 effluent onsite consequences
- Event progressions with lube oil pool fires (2 PISAs)
- Seismic event crushed canister consequences

A separate facility outage scope included preventive and corrective maintenance to numerous plant systems

Examples included:

- Electrical
- Melter Cooling Water
- Plant Cooling Water
- Process Water
- Off-Gas
- Steam
- Nitrogen
- Shielded Canister Transporter
- DWPF Lab
- Process Chilled Water
Outage Activities

- SMECT Scrubber
- Pump Installation
- Off-Gas Remote HEPA Replacement
- Lab shield window removal for sample cell upgrades
DWPF Melter 4 - Status

• Final Melter assembly initiated June 2018, overall duration of ~18 months and ROM ~$4M

• Near-term scope:
  – Electrodes
  – Dome heaters & transformers
  – Riser/pour spout heater

• Current schedule supports Melter 4 completion in early 2020
Canister Double Stack Modifications

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

Single Stack (Current)

Double Stack (Modified)
SRR Developed Remote Cutting Tool

1. Tool capable of removing 1 ½ inch x 3 inch galvanized steel
2. Control amount of water and carbon steel particles
3. Minimum efficiency of 2 storage locations per shift

Crossbar Cutting Tool in Field

First Canister Support Crossbar Removed

Completed Crossbar Cut

Shield Plug Replacement
Status:
1. Completed position modifications in GWSB #1 vault A (546 positions). Completed 270 position modifications in vault B.
2. Completed double stacking 529 canisters.

Overall goals for Interim Double Stack:
• Increase GWSB #1 Capacity from 2,262 to 4,524
• Overall GWSBs Capacity Increased to 6,864 providing space through FY 29
Questions And Comments?
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALARA</td>
<td>As Low As Reasonably Achievable</td>
</tr>
<tr>
<td>ARP</td>
<td>Actinide Removal Process</td>
</tr>
<tr>
<td>BWRE</td>
<td>Bulk Waste Removal Efforts</td>
</tr>
<tr>
<td>CY</td>
<td>Calendar Year</td>
</tr>
<tr>
<td>DSA</td>
<td>Documented Safety Analysis</td>
</tr>
<tr>
<td>DWPF</td>
<td>Defense Waste Processing Facility</td>
</tr>
<tr>
<td>ETP</td>
<td>Effluent Treatment Project</td>
</tr>
<tr>
<td>FESV</td>
<td>Failed Equipment Storage Vault</td>
</tr>
<tr>
<td>GWSB</td>
<td>Glass Waste Storage Building</td>
</tr>
<tr>
<td>HEPA</td>
<td>High Efficiency Particulate Air Filter</td>
</tr>
<tr>
<td>HLW</td>
<td>High Level Wastes</td>
</tr>
<tr>
<td>ISMS</td>
<td>Integrated Safety Management System</td>
</tr>
<tr>
<td>LPPP</td>
<td>Low Point Pump Pit</td>
</tr>
<tr>
<td>MCU</td>
<td>Modular Caustic Side Solvent Extraction Unit</td>
</tr>
<tr>
<td>MFT</td>
<td>Melter Feed Tank</td>
</tr>
<tr>
<td>MSB</td>
<td>Melter Storage Box</td>
</tr>
<tr>
<td>PISA</td>
<td>Potential Inadequacy in the Safety Analysis</td>
</tr>
<tr>
<td>RRW</td>
<td>Railroad Well</td>
</tr>
<tr>
<td>SCT</td>
<td>Shielded Canister Transporter</td>
</tr>
<tr>
<td>SDU</td>
<td>Salt Disposal Unit</td>
</tr>
<tr>
<td>SME</td>
<td>Slurry Mix Evaporator</td>
</tr>
<tr>
<td>SMECT</td>
<td>Slurry Mix Evaporator Condensate Tank</td>
</tr>
<tr>
<td>SRAT</td>
<td>Sludge Receipt and Adjustment Tank</td>
</tr>
<tr>
<td>SWPF</td>
<td>Salt Waste Processing Facility</td>
</tr>
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<td>TCCR</td>
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</tbody>
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