Environmental Management Cleanup Program
Performance Measures for Fiscal Year 2017

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DOE-Savannah River

Strategic & Legacy Management Committee

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Purpose

• Fulfill a Strategic & Legacy Management (S&LM) Committee Work Plan requirement to periodically provide Environmental Management (EM) performance updates.

- Review Fiscal Year 2017 actual performance results
The EM Cleanup Program for the SRS started in the 1990’s.

Performance Measures have been developed to track progress towards end state targets.
SRS Cleanup Program – Major Areas

- Radioactive Liquid Waste
  - Insoluble Waste (Sludge)
  - Soluble Waste (Salt)
  - Tank Closures

- Solid Waste
  - Transuranic (TRU) Waste
  - Mixed & Low Level Waste

- Nuclear Materials
  - Nuclear Materials Disposition

- Soil, Water & Facilities
  - Waste Site Remediation
  - Facilities Deactivation & Decommissioning

- Spent Nuclear Fuel Receipt, Storage & Disposition

- Nuclear Materials Disposition

- Waste Site Remediation

- Facilities Deactivation & Decommissioning
SRS Cleanup Program

“How did we do in FY 2017?”

Answer: Continued progress but with challenges
FY17 Challenges

- **LW System-wide outage**
  - Defense Waste Processing (DWPF) Facility Melter 3 Installation which impacted DWPF and Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit (ARP/MCU) operations
  - Realized Evaporator failure risk - 241-25H (3H) Evaporator Pot leak discovered
  - Realized Tank Farm Infrastructure failure risk - Evaporator 241-16H (2H) operations limited due to underground chromate cooling water and compressed air line failures
  - ARP/MCU forced into an outage - Failed Strip Effluent Decanter (SED) Aqueous Pump
Highlights of FY 17 SRS Cleanup Program

- Vitrified 52 Canisters of Radioactive Liquid Waste
- Completed Bulk Waste Removal Efforts in one Liquid Waste Tank (Tank 15) meeting FFA milestone
- Processed 397,000 gallons of salt solution in ARP/MCU
- Initiated tie-in of Salt Waste Processing Facility to existing LW systems – on schedule

- Continued recovery of uranium from dissolution of Foreign & Domestic Research Reactor fuel in H-Canyon (80 bundles in Fy17 with a total of 200 bundles out of the 1000 authorized)

- Continued to prepare plutonium for disposition

- Continued receipt, safe storage and shipment of Nuclear Materials, including Spent Nuclear Fuel, and began receipt of the Canadian Target Residue Materials

- Continued receipt and disposition of Nuclear Materials, including Spent Nuclear Fuel in H-Canyon
- Completed modifications and began receipt of Canadian Target Residue Material in H-Canyon
Canister Production

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Unit of Measure</th>
<th>Actual FY16</th>
<th>Target FY17</th>
<th>Actual FY17</th>
<th>Cum To Date</th>
<th>End State*</th>
<th>% Compl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitrify Insoluble Waste (Sludge)</td>
<td>Canisters Produced</td>
<td>136</td>
<td>100</td>
<td>52</td>
<td>4,158</td>
<td>8,170</td>
<td>51%</td>
</tr>
</tbody>
</table>

Note: Production was limited due to Melter Replacement

*Based On System Plan Rev 20
## Liquid Waste: Saltstone Processing

### Saltstone Production Facility

Located on the Savannah River, in Aiken and Barnwell counties in South Carolina.

### Saltstone Disposal Unit (SDU-6, SDU-3 & 5)

*Based on System Plan Rev 20*

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Unit of Measure</th>
<th>Actuals FY16</th>
<th>Target FY17</th>
<th>Actual FY17</th>
<th>Cum To Date</th>
<th>End State*</th>
<th>% Compl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Salt Solution</td>
<td>K Gallons Processed</td>
<td>1,506</td>
<td>1,250</td>
<td>170</td>
<td>12,398</td>
<td>158,932</td>
<td>8%</td>
</tr>
</tbody>
</table>
**Liquid Waste: Tank Closure**

### Grouting of Tank 12

![Photo of grouting equipment](image)

<table>
<thead>
<tr>
<th>Performance Measure</th>
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<th>Actual FY16</th>
<th>Target FY17</th>
<th>Actuals FY17</th>
<th>Cum To Date</th>
<th>End State</th>
<th>% Compl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close Tanks: Old Style</td>
<td>Tanks Closed</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>24</td>
<td>33%</td>
</tr>
<tr>
<td>Close Tanks: New Style</td>
<td>Tanks Closed</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>0%</td>
</tr>
</tbody>
</table>

* Based on System Plan Rev 20
## Transuranic Waste (TRU) Shipment to WIPP

### Solid Waste Disposal: Transuranic Waste

**Note:** WIPP Shipments Resumed on April 12, 2017

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Unit of Measure</th>
<th>Actual FY16</th>
<th>Target FY17</th>
<th>Actual FY17</th>
<th>Cum To Date</th>
<th>End State</th>
<th>% Compl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRU- Legacy Shipped (in storage prior 2009)</td>
<td>Cubic Meters</td>
<td>0</td>
<td>0</td>
<td>54.9</td>
<td>10,450</td>
<td>11,062</td>
<td>95%</td>
</tr>
<tr>
<td>TRU- Newly Generated Shipped</td>
<td>Cubic Meters</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>177</td>
<td>TBD</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

**Note:**

WIPP Shipments Resumed on April 12, 2017.
<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Unit of Measure</th>
<th>Actual FY15</th>
<th>Target FY16</th>
<th>Actuals FY16</th>
<th>Cum To Date</th>
<th>End State</th>
<th>% Compl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>M&amp;LL-Legacy (Prior to April 2008)</td>
<td>Cubic Meters</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>103,171</td>
<td>103,171</td>
<td>100%</td>
</tr>
<tr>
<td>M&amp;LL-Newly Generated</td>
<td>Cubic Meters</td>
<td>Met</td>
<td>&lt; 400*</td>
<td>Met</td>
<td>&lt; 400</td>
<td>&lt; 400</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

* Accumulation of M&LL not to exceed 400 Cu Meters at anytime
### Spent Nuclear Fuel (SNF) Bundle stored in L-Basin

### SNF being sent to H Canyon via 70 Ton Cask

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Unit of Measure</th>
<th>EOY Actual FY16</th>
<th>EOY Target FY17</th>
<th>EOY Actual FY17</th>
<th>End State</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L-Basin Additions</strong>: New Receipts</td>
<td>Bundles</td>
<td>76</td>
<td>134</td>
<td>132</td>
<td>-</td>
</tr>
<tr>
<td><strong>L-Basin Removals</strong>: Packaged for Transfer to H Canyon</td>
<td>Bundles</td>
<td>0*</td>
<td>80</td>
<td>80</td>
<td>-</td>
</tr>
<tr>
<td><strong>L-Basin Inventory</strong></td>
<td>Bundles</td>
<td>3,036</td>
<td>3,090</td>
<td>3,088</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Cores</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>0</td>
</tr>
</tbody>
</table>

* Fuel was pre-shipped in FY15 to support Canyon processing in FY 16
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<tbody>
<tr>
<td>HEU Dissolved (SNF from L-Basin)</td>
<td>Bundles Cores</td>
<td>40</td>
<td>0</td>
<td>80</td>
<td>0</td>
<td>200</td>
<td>1,000*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>75</td>
<td>75</td>
<td>745</td>
<td>20595**</td>
<td>0%</td>
</tr>
</tbody>
</table>

* AROD approved amounts of dissolution of Material Test Reactor Bundles and HFIR Cores in H-Canyon Dissolution

** AROD approved disposition of 6MT Pu that is not suitable for MOX (performing Down Blend in K-Area)
### Soil, Water & Facilities

**D Area Ash Project**
488-2D and 488-4D

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</thead>
<tbody>
<tr>
<td>Remediation of Waste Sites</td>
<td>Waste Site</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>408</td>
<td>515</td>
<td>79%</td>
</tr>
<tr>
<td>Facilities D&amp;D*</td>
<td>Facilities</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>292</td>
<td>1,127</td>
<td>26%</td>
</tr>
</tbody>
</table>

*Deactivation & Decommissioning*
• DOE-SR will continue to track & monitor performance measures for the key operational areas of EM cleanup operations.

• Suggestions from the CAB for any additional improvements are welcomed.
AROD: Amended Record of Decision
ARP: Actinide Removal Process
CCO: Criticality Control Overpack
D&D: Deactivation & Decommission
DWPF: Defense Waste Processing Facility
FFA: Federal Facility Agreement
HEU: Highly Enriched Uranium
LLW: Low Level Waste
MCU: Modular Caustic Side Solvent Extraction Unit
MLLW: Mixed Low level Waste
Pu: Plutonium
RCRA: Resource Conservation & Recovery Act
SNF: Spent Nuclear Fuel
SRE: Sodium Reactor Experiment
SWPF: Salt Waste Processing Facility
TRU: Transuranic Waste
WIPP: Waste Isolation Pilot Plant