Progress of the High Level Waste Program at the Defense Waste Processing Facility

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DWPF Process Improvement

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DWPF Progress

- 4.0 million gallons HLW treated
- 14 million pounds of glass produced representing 50 million curies
- 3600+ canisters filled (7500+ planned)
- Currently processing Sludge Batch 7; Sludge Batch 8 to start May 2013 (18 batches planned)
- Production performance for FY13 currently below target

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Canisters</th>
<th>Waste Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY08</td>
<td>225</td>
<td>33.3%</td>
</tr>
<tr>
<td>FY09</td>
<td>196</td>
<td>30.7%</td>
</tr>
<tr>
<td>FY10</td>
<td>192</td>
<td>33.0%</td>
</tr>
<tr>
<td>FY11</td>
<td>264</td>
<td>36.5%</td>
</tr>
<tr>
<td>FY12</td>
<td>275</td>
<td>38.3%</td>
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</table>
Process works to produce highly durable borosilicate wasteform.
Recent Improvements

- Extensive improvements made to increase waste throughput
  - Reduction in cycle time of melter feed preparation cycle (e.g. analytical improvements)
  - Melter bubbler installation to increase melt rate
  - Increase in waste loadings due to “tailoring” frit (i.e. more waste in each can)

Goal is to maximize waste throughput to reduce environmental risk.
Challenges and Future Work

- Growing need to provide flexibility to accommodate variability in SRR System Plan (e.g. waste feed compositions, input streams)
  - Understand and expand operating windows (simplify process to improve throughput)
  - Optimize processing windows for future waste compositions (higher waste loadings)
  - Addressing demand for higher process/equipment reliability due to closely coupled operations and increased activity in Tank Closure efforts and salt waste processing

Goal is to position facility for continuous success.

- Alternate Reductant
- Dry Frit
- System Reliability
Lessons Learned

• Lessons learned over 18 years of operation

  – Efficiency of waste qualification program
  – Success of statistical process control (versus product quality control) methodology
  – Decontamination features provide ability to perform hands-on work on critical equipment
  – Utility of maintaining research facilities and expertise throughout the DWPF production life to address immediate issues as well as forward-looking improvements
  – Synergizing ideas from multiple technology organizations
  – Continuous improvement required to accommodate changes in SRR System Plan
  – Understanding impacts of changes in processes on the physical properties of material
  – Volume management critical to vitrification production performance