Update on Hanford’s Tank Farms
Hanford Advisory Board – Tank Waste Committee

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January 8, 2014
C-Farm Progress

- Eleven single-shell tanks (SSTs) retrieved with C-110 the most recent
- C-101 is under review
- Two tanks in retrieval, C-107 and C-112
- C-102 tank is in readiness
- C-105 tank is in construction and readiness
- Waste Management Area C Performance Assessment has resumed and is underway

C-107 slurry pump removal
Single-Shell Tank Waste Retrieval Status

- Consent Decree milestone requires DOE to retrieve 10 C-Farm tanks by Fiscal Year (FY) 2014
- To date, 10 of the 16 tanks in C-Farm have been retrieved to regulatory standards
- Six tanks have been retrieved under the Tri-Party Agreement
- Four Consent Decree tanks have been retrieved to date
- One tank has been retrieved in S-Farm

Aerial photograph of C-Farm with graphical overlay that depicts current status of each single-shell tank
Tanks With Level Decreases

- Eighty-three tanks with interstitial liquid level and/or surface level data decrease less than -0.001 inches per year
- Twenty tanks were recommended for initial evaluation
- Six tanks had level decreases that were believed to be of the most concern in February 2013: T-111, TY-105, T-203, T-204, B-203, B-204
Tank 241-T-111

Close up of T-111 waste surface and tank wall

T-111 central pool
Tank T-111 Estimated Evaporation and Liquid Loss Rates

Evaporation rate of 48 gallons per year at the headspace relative humidity is far below average liquid loss rate from December 2009 to April 2013. Conclusion is that tank was leaking.

Average liquid loss rate from December 1, 2009 to April 5, 2013 assumes 8% of surface is liquid, porosity of 0.105 for waste at interstitial liquid level.

Line shows most likely headspace relative humidity of 86%.
SST Level Decrease Evaluations – 20 Tanks

- T-111 only tank found to be leaking
- Enhanced monitoring practices and procedures

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**Tank B-203 Estimated Evaporation and Liquid Loss Rates**

- Estimated evaporation rate: -23.1 gallons per year at assumed breathing rate and headspace relative humidity. Evaporation rate exceeds liquid loss rate. There is no evidence to indicate the tank is leaking.
- Estimated liquid loss rate, 100% of surface is liquid.
- Line shows most likely headspace relative humidity of 92%.
## Tank Level Decrease Evaluations

<table>
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<tr>
<th>Tank</th>
<th>Description</th>
<th>Evaluation Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-203</td>
<td>Assumed Leaker</td>
<td>Evaporation accounts for level decrease</td>
</tr>
<tr>
<td>B-204</td>
<td>Assumed Leaker</td>
<td>Evaporation accounts for level decrease</td>
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<tr>
<td>T-111</td>
<td>Assumed Leaker</td>
<td>Active leak</td>
</tr>
<tr>
<td>T-203</td>
<td>Sound</td>
<td>Evaporation accounts for level decrease</td>
</tr>
<tr>
<td>T-204</td>
<td>Sound</td>
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</tr>
<tr>
<td>TY-105</td>
<td>Assumed Leaker</td>
<td>Evaporation accounts for level decrease</td>
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</tbody>
</table>
Tank AY-102 – Condition and Plans
Tank AY-102 Layout and Annulus Conditions
How are we monitoring AY-102 for change?

- Weekly Inspection Summaries
  - Double-Shell Tank (DST) AY-102 Riser 83
  - DST AY-102 Riser 87
  - pH readings of leak detection pit liquid

- DST AY-102 Monthly Status
Tank AY-102 – Leak Detection Pit and Drain System
Leak Detection Pit – Cs-137/Sr-90 Ratio
Tank AY-102 Transfer Readiness

- Tank Mitigation Project in place/step necessary to transfer supernatant completed June 28, 2013
- Maintenance checks completed on supernatant pump
  - Pump is installed and standing by
- Retrieval method selected for sludge removal
  - Modified sluicing using vertical reach sluicers
- AY-102 Pumping Plan
  - Submitted to the State of Washington Department of Ecology on June 14, 2013
    - Nineteen months required to plan, procure and install out-of-tank equipment
DST Structural and Leak Expert Panel Review

- Three meetings scheduled to conduct review
  - Tank AY-102 Leak Assessment (Complete)
  - Extent of condition and structural and leak integrity
  - Post retrieval forensic and non-destructive analysis of tank AY-102
- Eight panel members
Future Inspections
Electromagnetic Acoustic Transducers (EMAT) Non-Destructive Examination Development

- Fiscal Year 2014 development of EMAT capability for primary tank wall inspection
- Application of proven technology to improve wall inspection speed and efficiency