Mission: Safely manage Hanford’s 56 million gallons of liquid radioactive tank waste, while designing, constructing, commissioning and operating the Waste Treatment Plant until the mission is complete.
Department of Energy Offices

Office of River Protection
Established by Congress in 1998

Richland Operations Office

Pacific Northwest Site Office
Office of River Protection Overview

Established in 1998 by an Act of Congress
Responsible for managing all aspects of the tank waste clean up at Hanford

Tank Farms

- 177 total underground storage tanks
  - 149 single-shell tanks, 28 double-shell tanks
  - 56 million gallons of radioactive/chemical waste
- 176 million curies of radioactivity
- 240,000 tons of complex chemicals

Waste Treatment Plant

- Four processing facilities designed to turn radioactive waste into glass
  - Pretreatment Facility, High-Level Waste Facility, Low-Activity Waste Facility, Analytical Laboratory
- Twenty support structures
  - Balance of Facilities
- Will treat all of Hanford’s high-level waste and 40-60% of its low-activity waste
Tank Farms Update – Base Operations

242-A Evaporator

222-S Laboratory

Tank Farm Operations
Focused on Safe C Farm Retrievals
Aging Waste Tanks
Waste Treatment Plant Overview

- Low-Activity Waste Facility
- Analytical Laboratory
- Pretreatment Facility
- Balance of Facilities
- High-Level Waste Facility

June 2012
Pretreatment Facility

Construction on hold (technical issue resolution under way)

* Percent complete data is being re-evaluated due to re-planning and re-baselining efforts and resolution of technical issues
High-Level Waste Facility

*Construction resuming in areas not impacted by technical issues*
Low-Activity Waste Facility

Exterior

Overhead pipe racks for steam and glass formers

Carbon bed adsorber

Transfer Tunnel

Melter
Analytical Laboratory

Exterior

Fume hoods

Air-handling systems
Balance of Facilities

18 support buildings for the Balance of Facilities

Overhead pipe racks for steam and glass forming materials

Glass former piping

Glass former silos
Selected Topics Specifically for the Hanford Advisory Board
Current ORP Cleanup Priorities

- Base Operations/Minimum Safe
- Technical Issue Resolution
- Waste Treatment Plant completion of:
  - Low-Activity Waste Facility
  - Analytical Laboratory
  - Balance of Facilities
- Tank Retrievals
- Waste Feed Delivery
- High-Level Waste Facility Completion
  - Interim Hanford Storage Facility
- Pretreatment Facility Completion & Waste Feed Delivery
- Tank Closure
Secretary of Energy Dr. Ernest Moniz Visited Hanford June 19, 2013
### Office of River Protection Funding Summary

<table>
<thead>
<tr>
<th>PBS</th>
<th>PBS Title</th>
<th>FY 2013 Full Year CR</th>
<th>FY 2014 President’s Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORP-0014</td>
<td>Radioactive Liquid Tank Waste Stabilization and Disposition</td>
<td>$409,223</td>
<td>$520,216</td>
</tr>
<tr>
<td>ORP-0060</td>
<td>Major construction - Waste Treatment Plant</td>
<td>$680,506</td>
<td>$690,000</td>
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<tr>
<td><strong>Total - ORP</strong></td>
<td><strong>Office of River Protection Funding Summary</strong></td>
<td><strong>$1,089,729</strong></td>
<td><strong>$1,210,216</strong></td>
</tr>
</tbody>
</table>

*Amounts in thousands*
Single-Shell Tank C-105 Dome Cut
C Farm Alert – C-101 Sluicer
AY-102 Design and Construction

Welding of Tank AY-102 Secondary Tank Bottom (8051-1-Photo)
AY-102 Status – Refractory Slot
AY-102 Status – Riser 83, Annulus Floor
Double-Shell Tank AY-102 Leak Detection Pit
Contact-Handled Transuranic (TRU) Waste

- Federal Register notice published on March 11, 2013 identifying preferred alternative
- DOE submitted a Class 2 permit modification change to New Mexico
- New Mexico has requested a Class 3 permit change
- DOE is conducting a regulatory assessment on waste designation
Defense Nuclear Facilities Safety Board Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2010-2</strong></td>
<td>Pulse Jet Mixing may not function adequately when scaled</td>
</tr>
<tr>
<td><strong>2011-1</strong></td>
<td>Management behaviors may be negatively impacting the safety culture of the Waste Treatment Plant</td>
</tr>
<tr>
<td><strong>2012-2</strong></td>
<td>DOE needs to update the double-shell tank ventilation systems along with other safety related instrumentation at the Tank Farms</td>
</tr>
</tbody>
</table>

**Action**
- Recommendation accepted and implementation plan put into place on 11/10/2011
- Revised Implementation Plan is expected to be completed later this year
- Recommendation accepted on 01/07/2013 – Tank Farms Documented Safety Analysis is complete, and an implementation plan was approved on 06/06/2013
Tackling Safety Culture Improvement

- Instituted an ORP Safety Culture Council

- Updated the Safety Culture Improvement Plan in collaboration with ORP senior management

- Working towards more interactions between council members and respective divisions

- Conducted manager training in July 2013

- Anticipate a follow-up Health, Safety and Security (HSS) review with report due by February 2014
Office of River Protection Mission

Grand Challenges
Hanford Advisory Board

The Department of Energy appreciates the HAB’s continued interest in the cleanup and closure activities at Hanford. Each year you provide us with your values and insight into the many decisions we are facing. You provide input into the development of our budget requests. You understand the complexity of the budget preparation and planning process we go through each year.

Advice #260 – Integrated Safety Management
Advice #262 – 2013 State of the Site Meetings
Advice #263 – Double-Shell Tank Integrity
Advice #265 – Independent Evaluation of Procedures and Industrial Hygiene Equipment Used to Monitor Tank Vapors and Flammable Gas
Advice #266 – 2014 – 2015 Budget Priorities
HAB Letter – Board Diversity and Other Effectiveness Issues
HAB Letter – HAB Values White Paper
HAB Letter – Tank Closure and Waste Management Final Environmental Impact Statement

Your Advice Matters
Our Common Objective
Backup Slides
Final Tank Closure and Waste Management Environmental Impact Statement

- Final Tank Closure and Waste Management Environmental Impact Statement issued January 2013
- Awaiting issuance of Record of Decision(s)
Single-Shell Tank Level Decreases

149
ALL SINGLE-SHELL TANKS SCREENED FOR FURTHER EVALUATION

83
SINGLE-SHELL TANKS DETERMINED TO HAVE SOME LEVEL OF DECREASING LIQUID LEVELS

20
SINGLE-SHELL TANKS FLAGGED FOR FURTHER EVALUATION
LEVEL CHANGES IN 63 TANKS ARE BELIEVED TO BE CAUSED BY OTHER PHENOMENA SUCH AS WATER INTRUSION OR EVAPORATION

6
SINGLE-SHELL TANKS IDENTIFIED AS HIGH PRIORITY TANKS
VIDEO INSPECTIONS ARE COMPLETE
FORMAL ASSESSMENT COMPLETION BY THE END OF FY2013

T-111  TY-105  T-203
B-204  T-204  B-203
Tank T-111 Adjusted Surface Level
Assumed Leaker per HNF-EP-0182 R 262

Multiply regression line slope by 365.25 to give change in inches/yr. Change was -0.884 inches/yr from 1/1/11 to 12/12/12.

Level (Inches)

Date

0 kgal retained gas
0 kgal supernate
0 kgal saltcake + liquids
446.7 kgal sludge + liquids
Top solids layer mostly sludge
7.77 E+03 Ci $^{90}$Sr
1.66 E+01 Ci $^{99}$Tc
1.95 E+02 Ci $^{137}$Cs
2.61 E+02 Ci $^{239}$Pu

$y = -2.5750E-03x + 2.7436E+02$
241-AY-102 Pumping Plan

- Provided initial pumping plan to Ecology for review and comment
- Proceeding with the planning, procurement and installation of out-of-tank equipment
- Pump installed in 241-AY-102 that could be used to remove supernatant from the primary tank
- Procuring equipment to transfer sludge
Technical Issues

- T1 - Hydrogen Gas Release from Vessel Solids
- T2 - Criticality in Process Vessels
- T3 - Hydrogen in Piping and Ancillary Vessels
- T4 - Pulse Jet Mixer Vessel Mixing Assessment
- T5 - Erosion/Corrosion Risk Assessment
- T6 - Failure-Mode, Effects, and Criticality Analysis (FMECA) and In-Service Inspection (ISI)
- T7 - Vessel Structural Integrity
- T8 - Facility Ventilation