



DEPARTMENT OF ENERGY

Office of River Protection

HANFORD SITE

November 1, 2012

***Agency Update to
Hanford Advisory Board***
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Tank Farms Project



Office of River Protection

Fiscal Year 2013 Priorities

#1 – Base Operations

#2 – Resolution of Technical Issues

#3 – Interim Measures

#4 – Low-Activity Waste, Analytical Laboratory, and Balance of Facilities

#5 – Tank Retrievals

#6 – High-Level Waste and Pretreatment Facilities

#7 – Projects

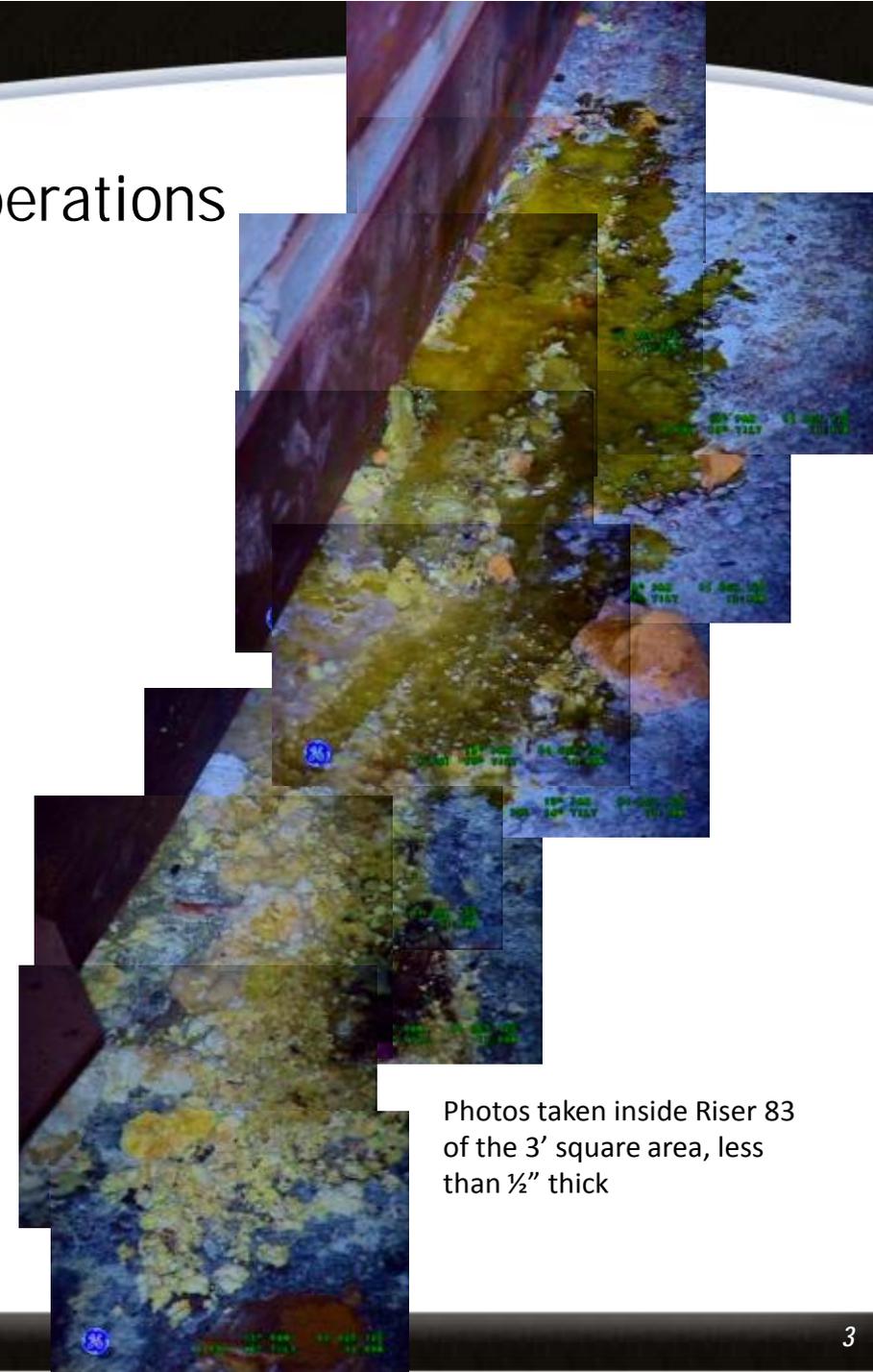


1 – Base Operations

Double-Shell/Single-Shell Tank operations, surveillance, monitoring and maintenance:

□ Double-Shell Tank AY-102 – What We Found:

- Recent inspection determined that there is a slow leak of chemical and radioactive waste from the inner tank into the annulus space
- Waste is contained within the annulus and no indication of waste in the leak detection pit, no waste has leaked into the environment
- Sample analysis confirmed:
 - 2 ft. by 2 ft. by 8 inch mound is soil - near Riser 90
 - Suspected soil fell into annulus during construction repairs to the ventilation system
 - 40 square foot area, less than ¼ inch thick – Riser 90 is waste
 - 3 square foot area, less than ½ inch thick – Riser 83 is waste



Photos taken inside Riser 83 of the 3' square area, less than ½" thick



1 – Base Operations

Double-Shell/Single-Shell Tank operations, surveillance, monitoring and maintenance:

❑ Double-Shell Tank AY-102 – Next Steps:

- Continue to perform visual inspections, using a camera, near Riser 83
- Continue to monitor liquid level in primary tank and annulus
- Perform visual inspections of six DSTs with similar construction, as well as operating and processing histories
- Work collaboratively with Ecology on path-forward



10-1-12



10-18-12



10-21-12



10-25-12



1 – Base Operations

Tank Integrity Inspections:

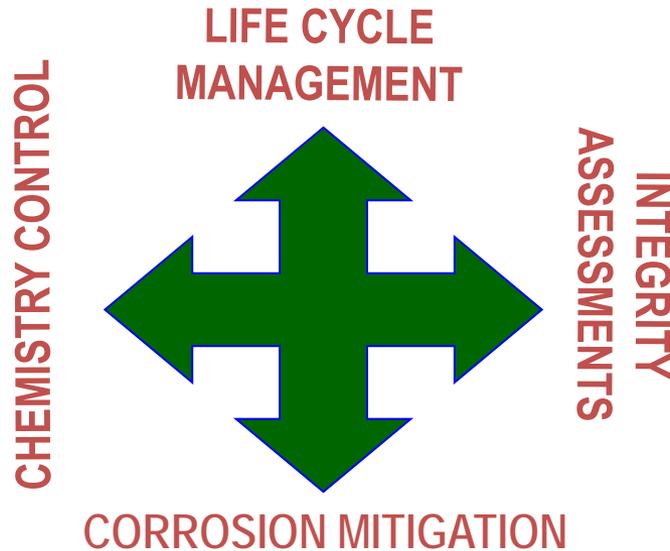
- ❑ Assure continued tank integrity
 - Completed Ultrasonic Testing (UT) and Visual Inspection Baseline of Double-Shell Tanks (DSTs)
 - Completing UT examination of tanks for a second time
- ❑ Provide sufficient assurance of tank integrity to allow for repair or replacement
 - Independent Qualified Registered Professional Engineer has certified the DST systems as fit for use until 2016 (RPP-28538)
 - Developed and implemented new technologies for examining tanks and monitoring corrosion
 - Extensive use of international expertise through expert panels, academia, and corporate involvement
- ❑ Defense Nuclear Facilities Safety Board Recommendation 2012-02
 - Ventilation of DSTs to ensure removal of flammable gas
 - Review and response to recommendation currently underway



Double-Shell Tank Integrity Project (DSTIP)

- Regulatory Certification of DST System
- Expert Panel Recommendations
- Structural Analysis using Finite Element Analysis

- Chemical Additions
- Tank Chemistry Sampling
- Corrosion Testing
- Corrosion Probe Data Collection and Analysis



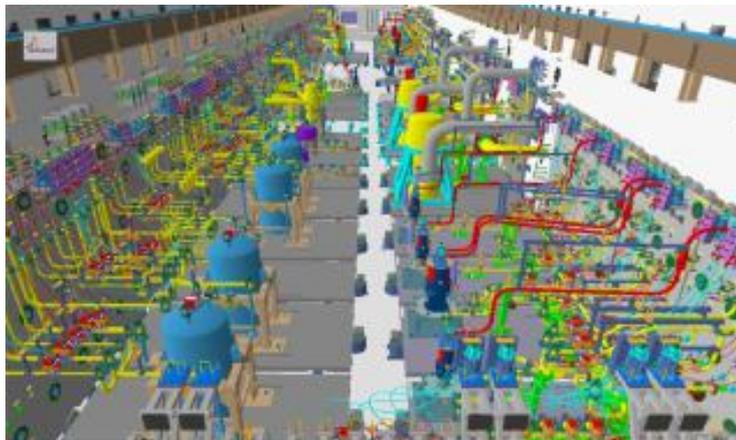
- DST UT/Visual
- DST System Videos

- Operating Specifications for Chemistry Control
- Annulus Ventilation System Operation
- Corrosion Probe Development
- Laboratory Testing

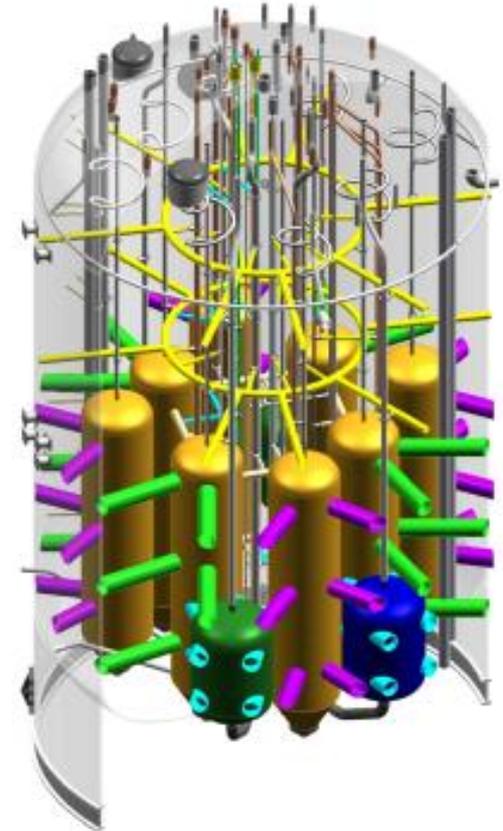


#2 – Resolution of Technical Issues

- ❑ August 2012, Secretary of Energy Steven Chu assembled a group of independent technical experts to assess the Waste Treatment Plant (WTP) black cells
- ❑ The review involves the WTP's capability, as designed, to detect equipment failure and to repair failed equipment inside the black cells



Pretreatment Facility hot cell



Pretreatment Facility pulse jet mixer



#3 – Interim Measures

- ❑ Tri-Party Agreement (TPA) Milestone M-45-92 establishes interim measures to build barriers over tank farms that are scheduled for retrieval in outer years to prevent increased mobility of contaminants in the soil
- ❑ TPA milestone was revised in spring 2012 to include a contaminant removal demonstration at SX Farm in lieu of building two barriers
 - PNNL is developing the process for a field demonstration in SX Farm using Pore Water Extraction – a process that resembles work that successfully removed contaminants from the soil at BC Cribs
 - A work plan is being developed and is due December 31, 2012
- ❑ The field demonstration at SX would both benefit risk reduction by removing contaminants from the soil and show cost savings



T Farm Barrier Aerial



#4 – Low-Activity Waste, Analytical Laboratory, and Balance of Facilities

Low Activity Waste

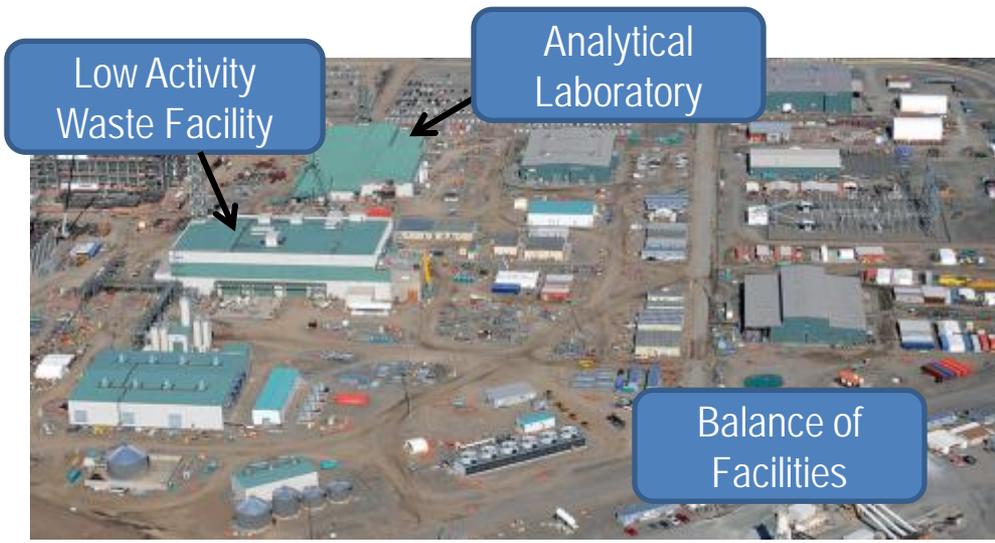
- Completed installation activities for sealing melter bay #3 floor openings leading to elevation -21' with steel plate shielding and framing structural steel in the fire riser room
- Confirmed Erosion/Corrosion Evaluation calculation for the High and Low Pressure LAW Steam Lines
- Installed partition wall to isolate the spare pour cave and equipment for the Container Finishing Handling (LFH) system

Balance of Facilities

- Completed walk downs for WTP switchgear building, continuing punch list work-off

Analytical Laboratory

- Completed placement of self-contained AC units to support the LAB server room
- Continued installation efforts for the hot cell trolley motor assemblies
- Continued testing of the Low Pressure Steam and Condensate Return systems
- Began installing electrical equipment for the Process Controls System in the LAB server room



Low-Activity Waste Facility

- 76% design complete
- 83% procurement complete
- 58% construction complete

Analytical Laboratory

- 72% design complete
- 81% procurement complete
- 75% construction complete

Balance of Facilities

- 75% design complete
- 60% procurement complete
- 69% construction complete



#5 – Tank Retrievals



New Pump for AN-101



C-105-05B Pump Pit Removal

Single-Shell Tank Retrievals:

- C-107 Mobile Arm Retrieval System – bulk retrieval began in October 2011, completed July 2012. Hard heel completion now planned for January 2013
- C-105 completed a mock up practice of the 55" diameter dome cut on September 28, 2012. Mock up utilized a water jet cutting tool that was developed specifically for the C-105 operations
- C-101 waste retrieval expected to begin the third week of November 2012, Tank contains approximately 88,000 gallons of sludge material
- C-102 waste retrieval expected to begin the first week of December 2012,. Tank contains approximately 316,000 gallons of sludge material



#6 – High-Level Waste and Pretreatment Facilities

High Level Waste:

- ❑ Installed rinse bogie and decontamination vessel in the canister rinse tunnel
- ❑ Set and aligned the seismic rails
- ❑ Poured 25% of the concrete in the 58 ft elevation walls
- ❑ Completing all concrete slabs on the 37 ft level by December 2012

Pretreatment Facility:

- ❑ Completed medium scale testing on the Process Vessel Ventilation (PVV) system. Preliminary results for both the small and medium scale tests resulted in an entrainment coefficient smaller than expected, which supports less extensive modification to the PVV system design
- ❑ Completing the remaining Hydrogen Generation Rate calculations in support of resolving the Hydrogen in Piping and Ancillary Vessels in November 2012.



High-Level Waste Facility

- 89% design complete*
- 81 procurement complete*
- 43% construction complete*



Pretreatment Facility

- 85% design complete*
- 56% procurement complete*
- 43% construction complete*

**Percent complete data is being re-evaluated due to replanning and rebaselining efforts and resolution of technical issues*



#7 – Projects

- ❑ Continue design and procurement activities of the AY and AZ Farm Ventilation System Upgrades
- ❑ Continue Technology Development activities to support Mixing and Sampling
- ❑ Conduct Technology Development to Support a Supplemental Treatment Decision
 - Submit a one-time Hanford report by October 31, 2014
 - Describes additional treatment facilities and technologies, and cost (in combination with Waste Treatment Plant) to vitrify all of Hanford tank waste
- ❑ Develop scenario definition by DOE and Ecology for System Plan 7
 - Modeling, analysis and reporting will be completed during FY 2014
 - System Plan Revision 7 issued by October 31, 2014



Tank Closure and Waste Management Environmental Impact Statement

- ❑ Final Tank Closure and Waste Management Environmental Impact Statement (TC&WM EIS) going to the printers first of November 2012
- ❑ Final report distributed to the TC&WM EIS mailing list late November 2012
- ❑ Notice of Availability will be published in the Federal Register mid-December 2012
- ❑ Work with the Board to provide them with an overview briefing on the Final EIS



ORP 2012 Budget Closeout

*** \$ in 000's throughout presentation ***

PBS	PBS Title	FY 2011 Uncosted	FY 2012 Obligated	FY 2012 Appropriation	FY 2012 Total Funding	FY 2012 Actual Costs	FY 2012 Uncosted
ORP-0014	Radioactive Liquid Tank Waste Stabilization and Disposition	\$26,300	\$441,800	\$441,800	\$455,100	\$424,500	\$30,600
ORP-0060	Major construction – Waste Treatment Plant	\$162,613	\$740,000	\$740,000	\$902,613	\$733,852	\$168,761
Total ORP	Office of River Protection	\$188,913	\$1,181,800	\$1,181,800	\$1,357,713	\$1,158,352	\$199,361



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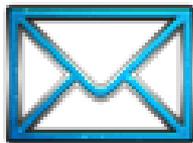
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