



U.S. DEPARTMENT OF
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OFFICE OF
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Citizens Advisory Board

Integrated Waste Treatment Unit Update

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IWTU Context

- What is the waste involved? - Sodium Bearing Waste (SBW), approximately 900,000 gallons of liquid radioactive waste stored in three 300,000 gallon underground storage tanks.
- What are the potential risks to the public and environment? – The waste is stored in stainless steel underground tanks with leak detection. It is highly radioactive and is shielded to protect workers and the public.
- What does the 1995 Idaho Settlement Agreement require for this waste stream?
 - Requires waste to be treated by 12/31/2012 (deadline missed).
- How is this waste treated and disposed?—The Integrated Waste Treatment Unit would treat the sodium bearing waste using a steam reforming process, which turns the liquid into a more stable, solid powder-like waste form.
- What is the current year budget? -- \$60 million.

IWTU Summary

- Completed three simulant runs
 - December 2014-January 2015;
 - August 2015-September 2015;
 - November 2015-December 2015.
- Our focus continues to be on the successful commissioning and safe operations of IWTU:
 - Simulant runs provide valuable plant and operations data.
 - Commencement of “hot operations” will be based on that data.
- Inspections and maintenance activities, planned as “Outage G,” began in January 2016 and are expected to complete in April.

Inspection Results - Update

- Detailed inspection after removal of the materials from the DMR revealed wear on the ring header. Repairs have been made in preparation for the next simulant run.
- Replacement ring header is being fabricated and will be installed during a future outage.



Inspection Results (cont.)

- Wall scale – referred to as “bark,” was found on the internal surfaces of the DMR, and in the bed material after the previous simulant runs.
- “Chemistry Summit,” featuring experts from IWTU, other national laboratories, and industry, held Feb. 12 -18, 2016, to address bark issues.
- Proposed actions from the Chemistry Summit are under evaluation and will be incorporated in the next simulant run.



Wall scale taken from DMR in December, 2015.



Auger-grinder has been redesigned to better handle large rocks.

Inspection Results (cont'd)

- During the required periodic inspection of the IWTU Super Heater, deformation of the inlet chamber and defects in all three heat exchangers were discovered.
- A qualified vendor is currently making the necessary repairs to return the pressure vessel to code compliance, with oversight by DOE and CWI, as well as the authorized inspector.
- When repairs are complete, the vessel will be reinstalled for use at IWTU.



Inspection Results (cont.)

- Auger-grinder was modified to improve processing of small rocks and clinkers and increase material flow through the DMR.
 - Re-design completed
 - Fabrication completed
 - Testing of auger-grinder completed
 - Re-installed in DMR.
- Testing of the auger-grinder demonstrated acceptable performance.



Re-designed auger-grinder.



- Transition from CWI to Fluor is underway.
Fluor contract execution date of June 1, 2016.
- A Fluidization Workshop was held on April 12, 2016 with experts from IWTU, Fluor, other national laboratories and industry. The focus of this workshop was erosion and fluidization issues in the DMR.
- Workshop participants spent the next two weeks reviewing the data, formulating concepts and recommendations for improvements and options for further testing and operations.

Upcoming Activities (cont.)

- Fluidization workshop participants are gathering this week to identify possible changes and improvements that the project could implement to improve performance of the DMR.
- Conduct another simulant run to test revised flowsheet from the Chemistry Summit and Fluidization Workshop in the late spring/early summer timeframe.
- Carry out maintenance and inspection “Outage H.”

Progress Over the Last Year

- Simulant runs continue to yield valuable information on the reliability of the process and equipment. Testing and simulant runs have provided significant hands-on experience and confidence to operate the facility.
- The decision to begin “hot operations” will be made based on data collected during the simulant runs.
- In total, we have processed simulated waste equal to more than 10 percent of the volume of actual tank waste that will be processed.
- Most of the plant equipment is operating reliably and as designed. The list of significant issues is being narrowed largely to two: bark formation and erosion, which appear to be related.
- The process to bring facility to operation mode is more well-defined.
- Safety has been and will continue to be the No. 1 priority.