RETRIEVAL OVERVIEW

• Tank Contents (pre-retrieval)
  • 593,000 gallons of supernate (~216 inches)
  • 151,000 gallons of sludge/interstitial liquid (~55 inches)

• Supernate removal to AW-105 on March 3, 2016 (550,000 gal)

• Sluice Cannon Retrieval
  • Initiated March 25 and concluded April 30, 2016
  • Removed remaining supernate and 112,000 gallons of sludge
  • 41,000 gallons total waste remaining (primary and annulus)

• Extended Reach Sluicer System Retrieval
  • Initiated December 10, 2016 and concluded February 15, 2017
  • Removed 25,000 gallons of sludge
  • ~19,000 gallons of total waste remained in February
Observations

- Annulus level increase was greatest when operating Sluicer 1 in the vicinity below the AY-02B pit
- Annulus level increases were minimized when directing Sluicer 1 away from AY-02B pit
- Leak rate was significantly reduced when operating Sluicer 2
- No indication that waste leaked to environment
ERSS OBSERVATIONS

• Similar annulus level behavior
• Sluicing near suspected leak site resulted in annulus level rise
• Indication of leakage from one location

• Residual primary tank solids are mobile
• ERSS effective at mobilizing the solids
• Pump incapable of removing remaining solids

• Leak Site Cleaning
• Last shift focused on clearing solids from suspected leak site
• High-pressure water, followed by supernate sluicing
PRIMARY TANK LEAK BEHAVIOR
RISER 63 POST-RETRIEVAL SCAN
INSPECTION PHASE – PATH FORWARD

• Project retrieval scope completed February 2017

• Key Settlement Agreement decision made:
  • The post-retrieval conditions determined to allow for inspection (some “cleaning” still needed)
  • Additional retrieval of waste from the primary tank determined not to be necessary to facilitate inspection

• Initial Approach: Visual Inspection
  • High-definition camera in the primary tank to evaluate failure type
  • Collecting visual data to assist USDOE in making determination on whether to pursue tank repair or closure
HIGH-PRESSURE WATER OPERATIONS VIDEO

- Applied high-pressure water to the suspected leak site area to further clear residual settled solids in preparation for visual examination
- ~10 gpm at ~5,000 psi discharge pressure
- Nozzle ~1 foot above surface
- Bubbles observed at two sites near perpendicular weld seams
- Provided confirmation of two primary tank failure points
High-definition video camera installed on 6/8/2017

Repositioned in-tank lights and performed initial examination on 6/19/2017

Enhanced imagery of the residual waste and the two confirmed primary tank leak sites

Weld seams visible

Shallow liquid layer remained
HIGH-DEFINITION VIDEO

- Confirmed leak sites (bubble sites) located within discontinuities along weld seams, appearing as depressions
  - Leak Site 1 appears to be within a ~2-inch-wide area
  - Leak Site 2 appears to be within a ~4-inch-wide area
THEORIZED FAILURE MECHANISM

- Panel of external experts in the field of corrosion (Tank Integrity Expert Panel) reviewed the information to-date.
- Based on tank operational history and post-retrieval examinations, the following opinions were put forth:
  - The metallurgical leak cause appears to be internal pitting corrosion coincident with welds.
  - Corrosion testing of AY-102 early-life waste simulants indicates pitting as a likely degradation mechanism.
  - Pitting corrosion due to early-life waste composition would not be localized.
  - External corrosion cannot be eliminated as a contributing factor without additional inspection.
  - The inspection to-date does not assure that all leak sites have been identified.
Primary objective is to fulfill the requirements of the Settlement Agreement with State of Washington, including:

• Completing an inspection to determine the cause of the leak
• Inspection results will aid in a decision to repair or close the tank

Waste tank sample planned to assess the residual concentration of species contributing to groundwater risk

Additional HD video is anticipated with enhancement to the lighting conditions and following further evaporation

Implementing field changes to allow residual annulus waste to be pumped to an alternate DST
QUESTIONS?