

# Hanford's Double-Shell Tank AY-102 Recovery Project

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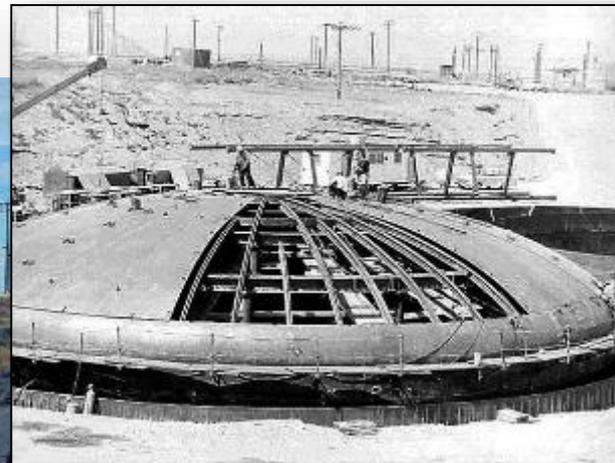
**March 6, 2017**





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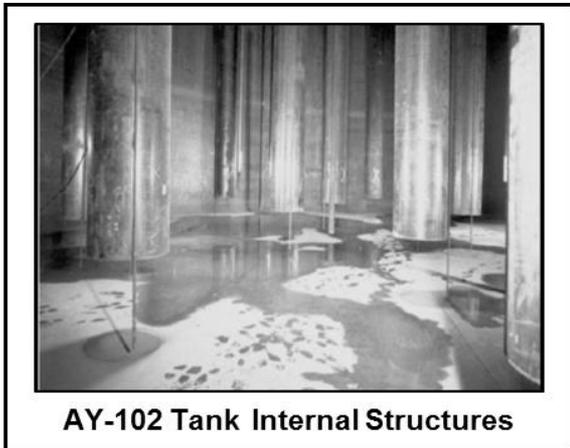
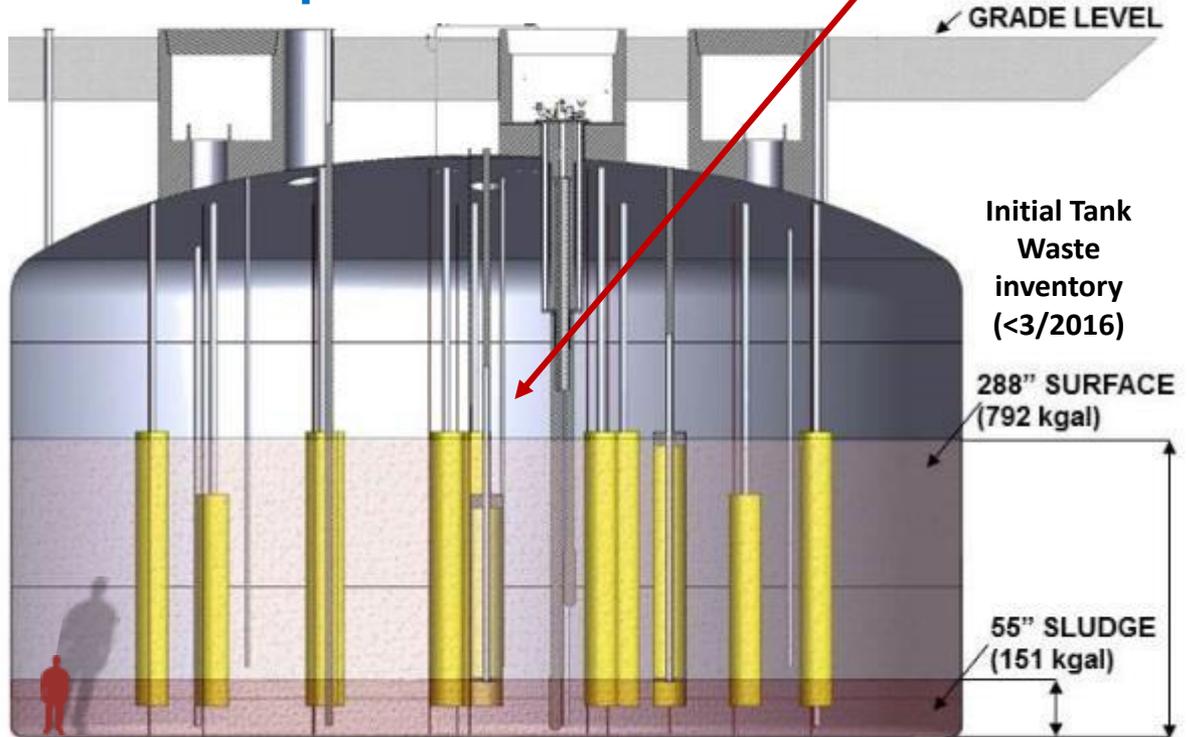
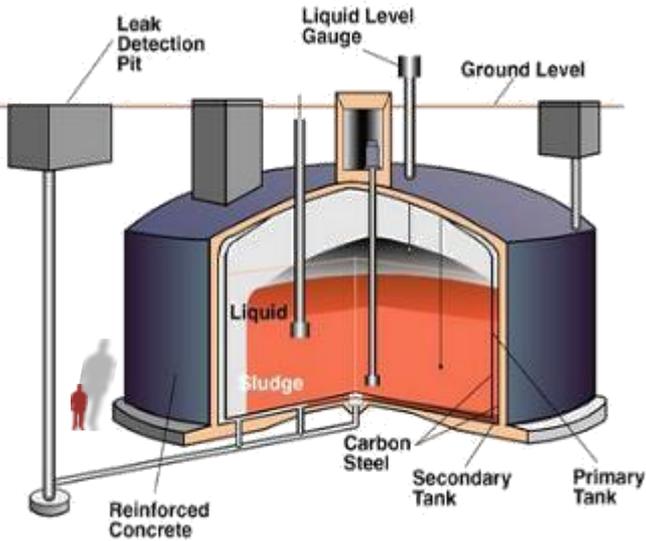
# AY-102 Tank Construction/Background





# Tank AY-102 Overview

- **1 Million Gallons Capacity**
- **Ø75 feet x 30 feet high, 15 feet below grade**
- **Wastes from historic B Plant operations and strontium/cesium extraction processes**



AY-102 Tank Internal Structures

View of the primary tank only

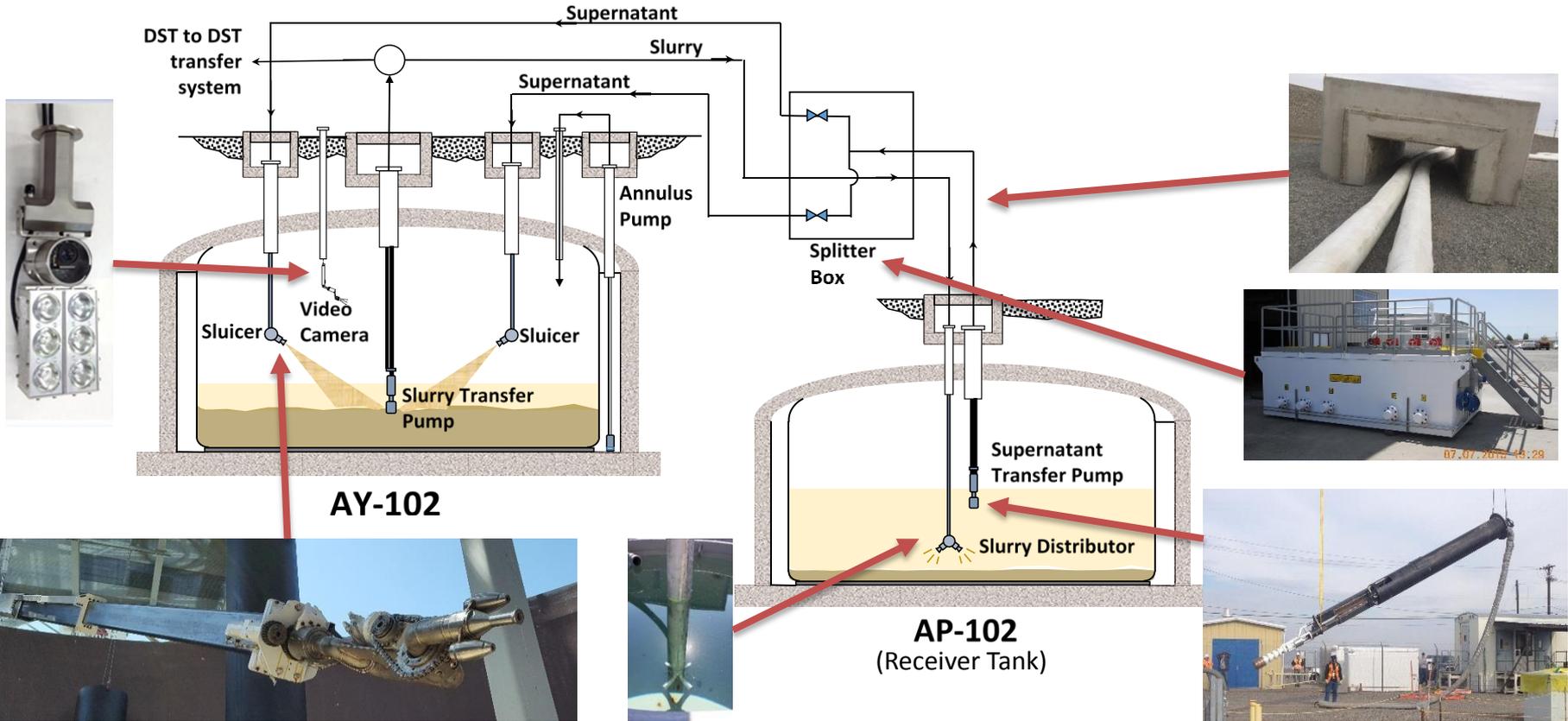


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# AY-102 Annulus Waste Accumulation



# Retrieval Transfer System Overview



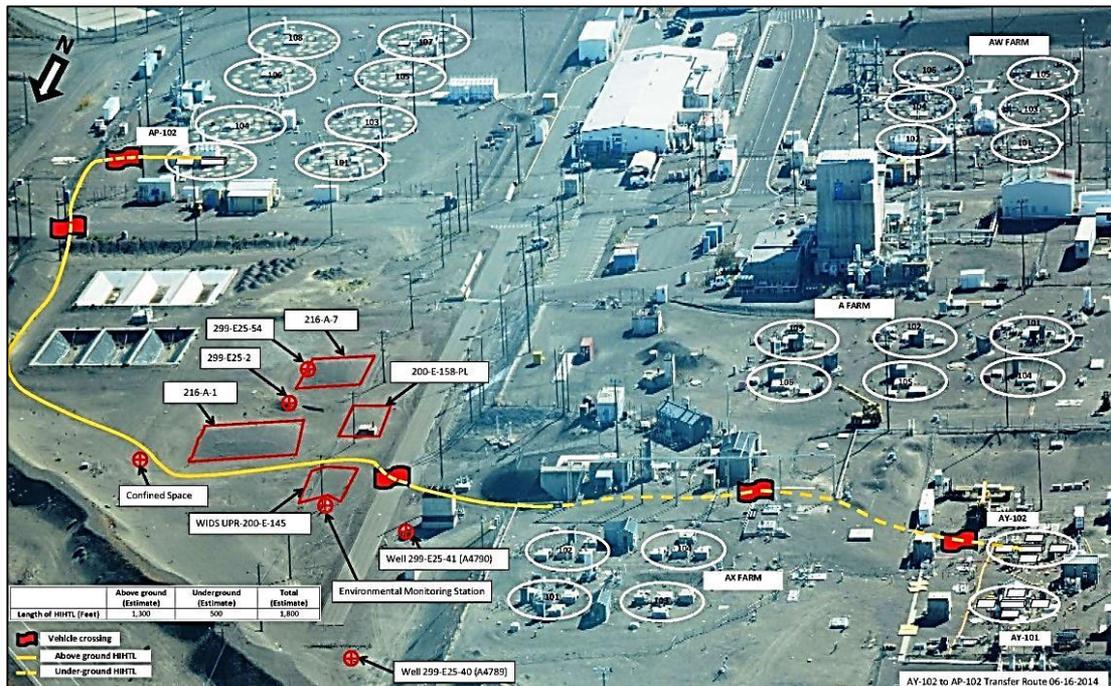


- **24 months from design to readiness!**
- **Numerous risks realized:**
  - Receiver Tank Selection
  - Transfer Structure Shielding
  - Infrastructure and Equipment Upgrades
  - Availability Retrieval Equipment
  - Pump Design Updates
  - Ventilation System Capability
  - Tank Vapor Issue Evolution
  - Overall Project Execution



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# Conceptual Sketch and Aerial Photo of the Waste Transfer Route





# Tanks AY-102 and AP-102 Equipment Removal and Pit Refurbishment



- Removed 5 obsolete pumps from AY-102 and AP-102
- Rehabilitated and upgraded 7 pits to receive new equipment



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# Equipment Installation

Designed, fabricated, installed and tested 3 new pumps

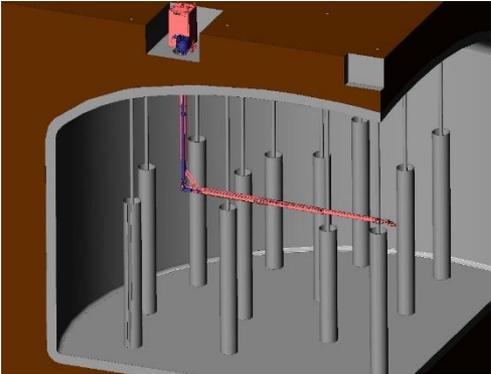
- Slurry pump and annulus pump in AY-102
- Supernatant pump in AP-102



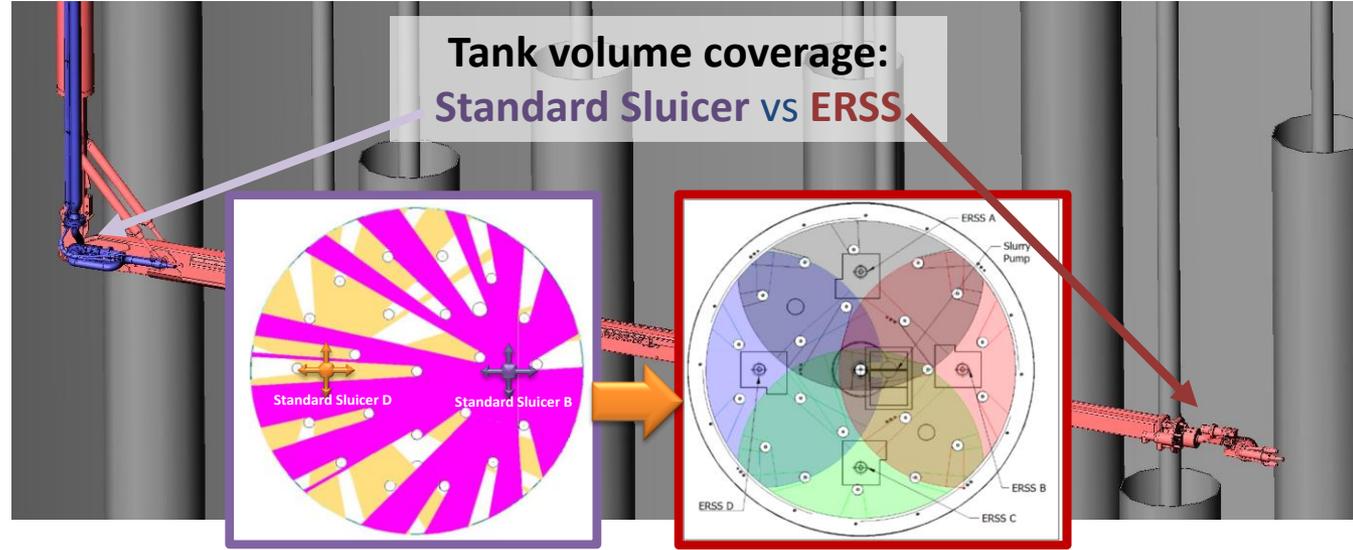
AY-02A slurry pump installation in November 2015



# Sluicing Equipment Comparison... Two-Stage Retrieval



Following first phase of retrieval, the retrieval system was reconfigured with four Extended Reach Slucifiers



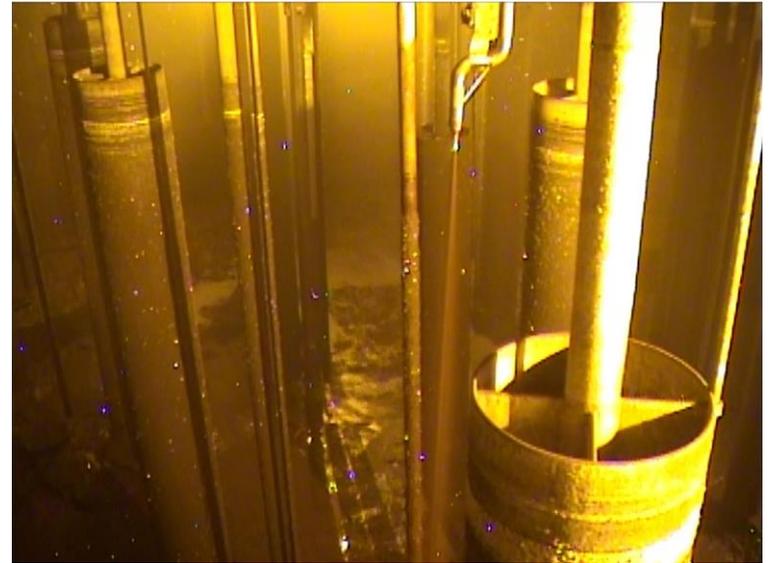
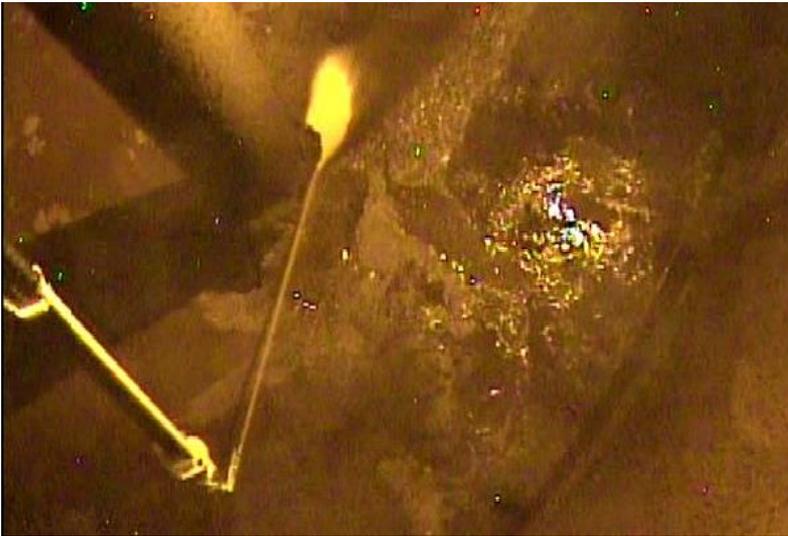
Full-scale mockup of the AY-102 primary tank at the Cold Test Facility with a prototype ERSS to train retrieval operators





# AY-102 Sluicing Operations

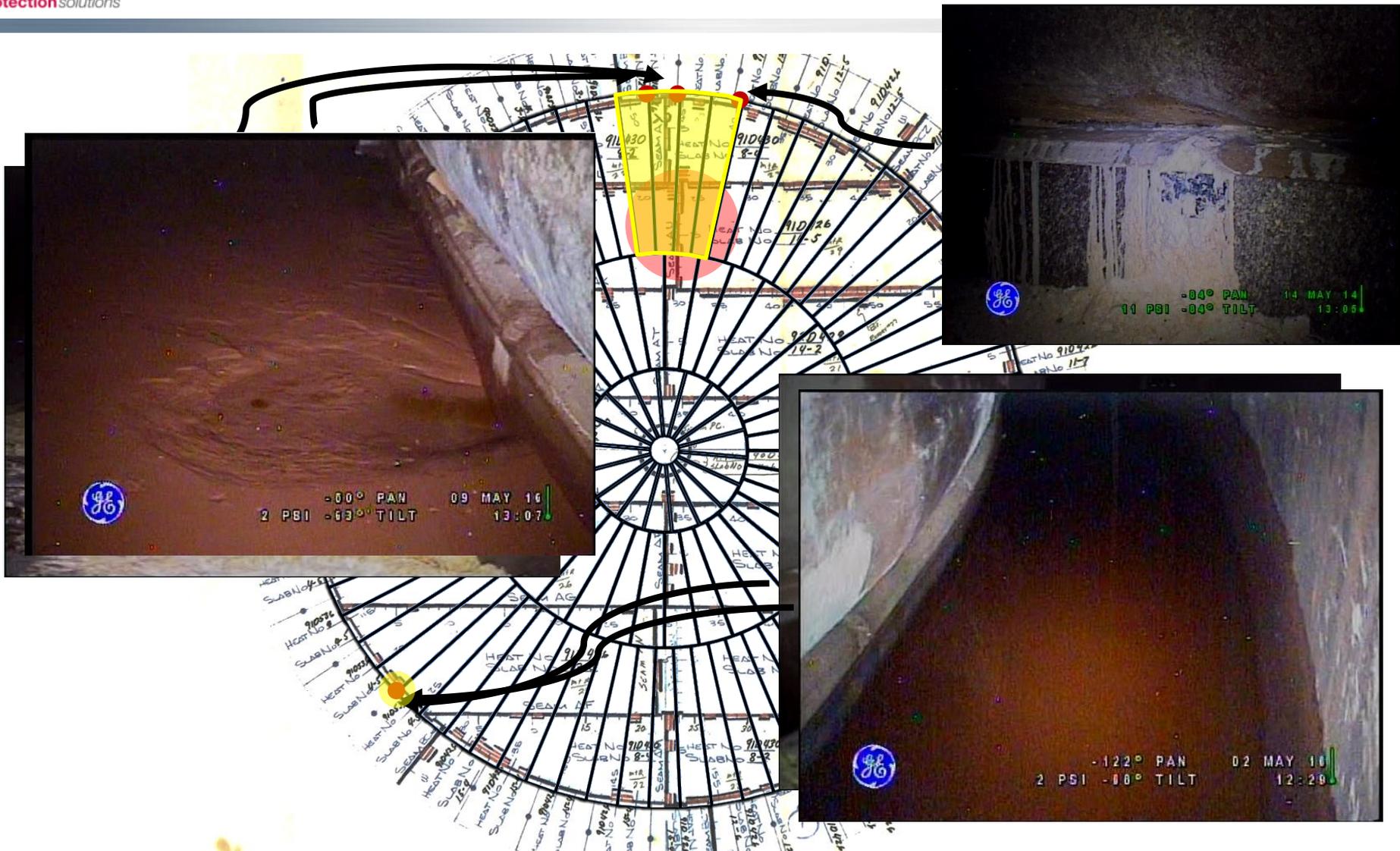
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# Primary Tank Leak Behavior





# Retrieval Progress

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January 2017

## Sluiced for approximately 490 hours

- Standard Sluicers operated for 305 hours
- Extended Reach Sluicers operated for 185 hours
- Recycled 2.7 million gallons of supernate

## Removed over 725,000 gallons of waste

- 590,000 gallons of supernate
- 135,000 gallons of sludge

**Estimate 18,000 gallons of total waste remaining**