

C-105 Retrieval Update

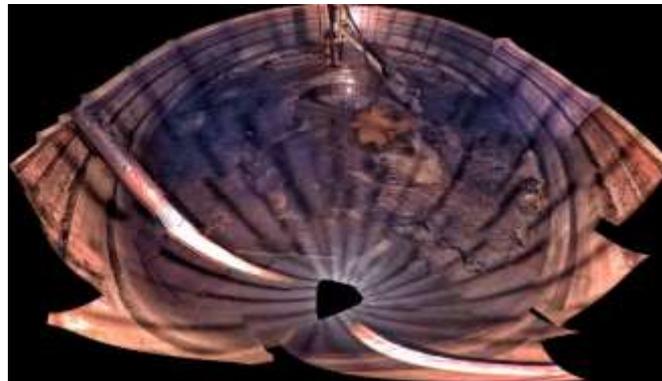
Hanford Advisory Board Tank Waste Committee

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Above:
Installation and
operation of
Extended Reach
Sluicing System
Left: Composite
photo of C-105
residual waste
to be removed



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C Farm History

- 1 of 4 original Hanford single-shell tank farms built to support the war effort.
- C Farm has 4, 55,000-gallon tanks and 12, 530,000-gallon tanks. C-105 is one of the larger tanks.
- Constructed and operated from 1943 to the 1980s. Used to store uranium recovery and PUREX process wastes.
- Pumpable liquid wastes were removed as part of the Interim Stabilization Project in the 1990s to reduce the environmental risk associated with aging SSTs.
- Retrieval of the sludge and “hard heel” waste in C Farm began 1998.
- So far 15 of the 16 tanks have been retrieved. C-105 will be the last tank.





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C-105 Background

- First phase of retrieval using MARS-V
- Removed 92,000 gallons between June 2014 – September 2015
- Retrieval was slow due to more difficult waste conditions than expected; low waste recovery rates using MARS-V
- Retrieval terminated when a MARS-V end-effector hose ruptured. Cause determined to be end of equipment service life
- System engineering study completed. The decision was made to complete retrieval using sluicing technology with high pressure water and chemical dissolution (caustic)
- Construction of new retrieval system started December 2015; complete in July 2017



In-Tank View of new C-105 Extended Reach Sluicer

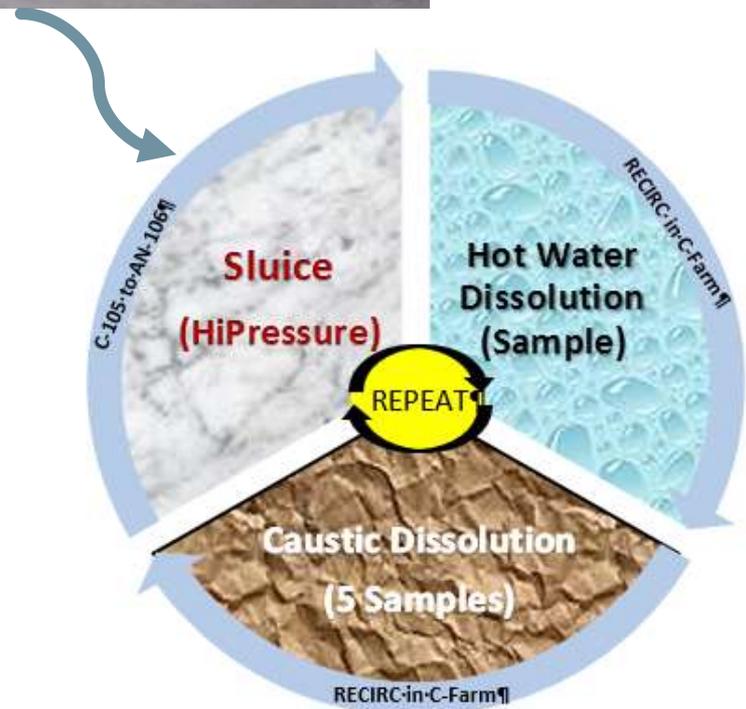


New C-105 Slurry Pump next to obsolete MARS-V Equipment



C-105 Retrieval Operational Plan

- 30,375 gallons waste remain
- Grab sample obtained and analyzed
- Laboratory testing and modeling indicates difficult-to-retrieve physical/chemical waste form
- Operations start in August 2017
 - Goal is to complete retrieval before winter



Process control plan

Step 1 – Sluicing Cycle #1 with Supernatant (C-105 – AN-106)

Step 2 – Hot Water Addition #1, Recirculate, and Transfer to AN-106

Step 3 – Sluicing Cycle #2 with Supernatant (C-105 – AN-106)

Step 4 – Caustic Dissolution #1, Recirculate, Add water and Transfer to AN-106

Step 5 – Hot Water Addition #2 Recirculate, and Transfer to AN-106

Step 6 - Sluicing Cycle #3 with Supernatant (C-105 – AN-106)

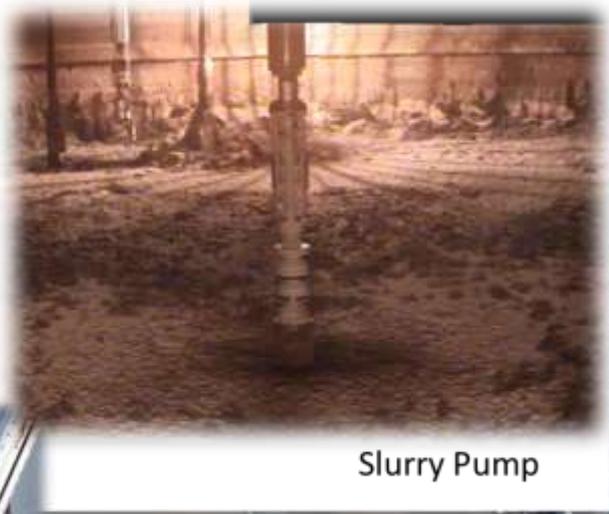
Step 7 – Decant AN-106 to AP-102

Step 8 – Caustic Dissolution #2, Recirculation and Transfer to AN-106

Step 9 – Triple Rinse with Water; Fines Recovery to AN-106

Retrieval System Overview

ERSS
Demonstration



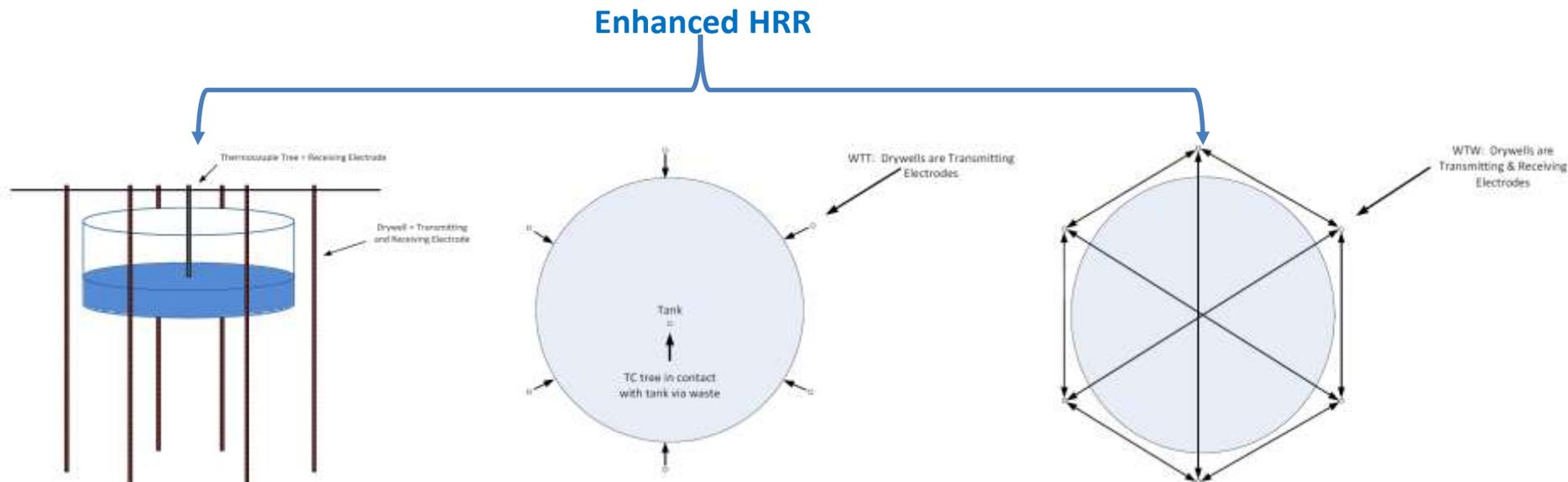
Slurry Pump



Caustic Delivery

C-105 Enhanced Leak Detection

- High Resolution Resistivity (HRR) system measures soil resistance changes to detect a potential leak
- C-105 ERSS Retrieval Enhancements
 - Additional data analysis of soil resistance changes
 - Additional leak potential values calculated
 - An additional analysis of a smaller group of electrodes reduces any dampening of leak potential values that might occur if calculations include resistance measurements made away from the suspect area
 - Leak potential values reviewed daily
 - Retrieval suspended pending further analysis if potential leak identified



- Pre-retrieval communication with Hanford Advisory Board and other stakeholders
- Daily project progress/Industrial Hygiene readings summary
- Environmental Safety & Health updates on abnormal conditions



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Questions?

