Transuranic Waste Processing Update

Oak Ridge Site Specific Advisory Board
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Oak Ridge Transuranic (TRU) Waste Inventory

- TRU waste is waste contaminated with man-made elements heavier than uranium with half-lives greater than 20 years
- The Oak Ridge TRU waste inventory is associated with ORNL’s research and development activities dating back to the Manhattan Project
- Primarily consists of protective clothing, tools, laboratory debris, and soils
TRU Waste Program Mission

• DOE is under a TDEC Commissioner's Order to implement the Site Treatment Plan that mandates specific requirements for the treatment and disposal of TRU waste.

• The Oak Ridge TRU Waste Program’s mission is to process, segregate, and repackage the ORNL TRU waste inventory for disposal at the Waste Isolation Pilot Plant (WIPP)
  – Mixed Low Level Waste (MLLW) and Low Level Waste (LLW) segregated from the TRU waste is disposed at DOE’s MLLW/LLW disposal facility

• Oak Ridge’s TRU Waste inventory is comprised of the following:
  – Supernate \(\sim 1610 \text{ m}^3\) (completed 2004)
  – Contact Handled (CH) Debris \(\sim 1500 \text{ m}^3\)
  – Remote Handled (RH) Debris \(\sim 560 \text{ m}^3\)
  – RH Sludge (and associated supernate) \(\sim 2000 \text{ m}^3\)
TRU Waste Processing Center (TWPC)
General Overview

- 15 acres on DOE Oak Ridge Reservation
- 44 facilities
- Operations began in 2004
- 4.5 million man hours since last lost time incident (12+ years)
- Current operations focused on TRU debris waste
- Buildouts required for Sludge retrieval and processing
Mission Accomplishments – CH Waste

• Original CH waste inventory ~1500 m³
• CH waste processing and disposal status (as of April 2014):
  – 95% processed
  – 68% shipped to permanent disposal
• CH waste inventory remaining to be processed includes difficult waste streams
Mission Accomplishments - RH Waste

• Original RH inventory ~ 560 m³
• RH waste processing and disposal status (as of April 2014):
  – 65% processed
  – 21% shipped to permanent disposal
• Remaining inventory includes some difficult waste streams (e.g. high dose neutron casks)
In Spring 2011, the WIPP Central Characterization Project (CCP) suspended activities in Oak Ridge due to funding constraints.

Oak Ridge (DOE and Contractor) responded quickly by taking over field characterization operations in Fiscal Year (FY) 2011 to support continued waste processing at TWPC:

- Repackaged, characterized, and staged TRU waste for future CCP certification and shipment
- Segregated, repackaged, and permanently disposed of LLW/MLLW

CCP returned to the TWPC on October 1, 2013, as planned.

Approximately 3,000 CH waste drums in backlog awaiting certification and shipment when CCP returned.
Suspension of Operations at WIPP

- WIPP is currently investigating the second of two operational events that drove the suspension of operations
  - Salt truck fire (Feb 5)
  - Contamination release (Feb 14)
• The cause of the WIPP contamination release is under investigation
• The duration for the suspension has not yet been determined
• Impacts to the OR TRU waste program are being evaluated
• Oak Ridge’s preliminary plan maximizes continued progress and utilization of existing resources to process and certify wastes
  – Continue processing of CH waste and low dose RH waste casks
  – Leverage utilization of existing legacy TRU waste storage facilities at ORNL to allow for continued waste processing at TWPC
  – Delay processing of high dose RH waste casks (due to limited RH storage capacity)
  – May require establishing additional RH waste storage capacity
Key Near Term Mission Priorities – CH/RH Debris

• Complete CCP certification approval process
• Continue to prioritize and stage TRU waste drums for CCP certification activities
• Begin CH waste inventory relocation to allow continued processing operations during WIPP shipment suspension
• Complete CH and RH TRU debris processing
Future Work
RH Sludge Buildouts and Processing

• RH Sludge (and associated supernate) inventory \(~2,000\ m^3\)
  – Currently stored primarily in the Melton Valley Storage Tanks (MVSTs) at ORNL
    ➢ 8 robust 50,000 gallon storage tanks inside an underground concrete vault
  – Remains to be processed and is a high regulatory priority for TDEC

• The TWPC needs to be modified to enable processing of the sludge and remaining supernate

• Sludge Facility Buildouts are currently in the Conceptual Design stage
  – Procurement process for Design Contractor currently underway
Summary

• The TRU Program has made good progress in processing and dispositioning the Oak Ridge TRU waste inventory

• Approval of the DOE Central Characterization Program to allow resumption of certification activities is expected in the near term

• Waste shipments to WIPP have been suspended as a result of recent operational events

• The duration of the shipment suspension has not been determined

• EM Oak Ridge plans to continue processing of TRU waste to enable progress under the Site Treatment Plan by leveraging existing resources and TRU storage capacity at ORNL

• RH-TRU storage capability may need to be established depending on the duration of the WIPP suspension