Hanford Waste Program and D4 Overview

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TRU Program Overview

- ~10,900m$^3$ of CH and RH-TRU/M waste currently in above-ground storage
- ~2,830m$^3$ of CH and RH-TRU/M waste remains to be retrieved from the burial grounds
- ~7,860m$^3$ CH-TRU/M in above-ground storage requires repack prior to shipment to the Waste Isolation Pilot Plant (WIPP); repack severely limited due to funding constraints
- Retrieval of remaining buried waste is not scheduled to resume until after FY 2018
• Shipments of TRU waste to WIPP are unlikely to resume before 2018
• Regulatory Status – Some Tri-Party Agreement (TPA) Milestones will be missed, others are at risk
• Waste containers are aging and degrading
Major TPA Milestones Affecting TRUM Waste

- Applies to waste in above-ground storage as of June 30, 2009, and in retrievable storage (RS) (218-W and 218-E Burial Grounds)
  - M-091-40: Complete the retrieval of contact handled (CH)-RS Waste (RSW) in Burial Grounds by 9/30/2016
  - M-091-46: Complete the certification of small container CH TRU/M waste by 9/30/2017
  - M-091-46H: Complete offsite shipment of all small container CH-TRU/M waste by 9/30/2018
  - M-091-41: Complete retrieval and designation of remote handled (RH)-RSW (regardless of package size, including the 200 Area caissons) by 12/31/2018
  - M-091-44: Complete treatment of large container CH-TRU/M waste and RH-TRU/M waste by 12/31/2030
TPA Milestones – Discussion Points

• Due to funding constraints, many upcoming TPA Milestones will be missed
• Currently retrieval from Burial Grounds is not planned until after 2018
• Repack of Large Boxes will be progressed in preference to retrieval
  – Reduce regulatory and environmental risk/increasing regulatory scrutiny
  – Advanced feed needed for efficient return of the Central Characterization Program (CCP)
  – No costs associated with ramp up of capability
TPA Milestones – Discussion Points

Aging and Degrading Boxes Requiring Repack
• Central Waste Complex (CWC) as of 2/2015:
  – 7,100 Drums and 725 Standard Waste Boxes (SWBs) (3,013m³)
  – 17 Standard Large Boxes (SLB2s) (124m³)
  – 498 other containers including Large Boxes (7,173m³)

• Projected Waste from Generators (Projections in m³ only):
  – Plutonium Finishing Plant (PFP) (2,205m³); Waste expected by 2017
  – Tank Farms (1,200m³); Waste packaging to commence 2020
Large Boxes Stored Outside

Drums Stored in CWC
Hanford Capabilities

• Operational:
  – SuperHENC in Waste Receiving and Processing (WRAP) Facility “Courtyard” (Drums and SWBs)
  – High Energy Real Time Radiography (HERTR) in WRAP “Courtyard” (Drums and SWBs)
  – WRAP TRUPACT II loading facilities (Lay-up status)

• Out of Service at WRAP/T-Plant
  – (2) NDA Isotopic Passive Active Neutron (IPAN) Units (Drums only)
  – (2) NDA Gamma Emissions Assay (GEA) Units (Drums only)
  – (2) RTR Units (Drums only)*
  – WRAP Glove Boxes
  – T-Plant Repack Permacons

*not recoverable
Hanford Waste Plan

• Large Boxes: ~ 7,173 m³ in Above-Ground Storage
  – Perma-Fix Northwest (PFNW): Capable of repacking ~ 5,000 m³
    • 200g Pu gram Limit (exploring license options)
    • Size restrictions for some boxes (size and weight)
    • Transportation issues (most shipments would be gov’t shipping)
    • On average, PFNW can process ~ 500 m³/yr to 940 m³/yr
    • 174 m³ scheduled by FY18 to meet TPA (172 m³ of the 174 m³ scheduled to be repacked by end of FY15)
  – Funding has come from RL-13 efficiencies (21% reductions)
  – Funding is becoming less and less available (other priorities)
• Addressing container degradation on priority basis
Hanford Waste Plan (cont.)

Degrading Containers
TRU Program Issues

- Aging and degrading waste containers
- Protecting commercial viability in future for efficient repack actions
- Constraints on transporting waste to commercial sites for remedial actions
- Additional capability (M-91) will be required to repack drums, SWBs, large boxes and RH-TRU containers that cannot be processed by existing or commercial capabilities
- Adding capability at Hanford for characterization and loading of SLB2s
- CBFO adding capability at Hanford for characterization and loading of RH-TRU waste
TRU Program Issues (cont.)

- **Time:**
  - TPA conflicts for Hanford
  - RH Wastes highly challenging, driving large numbers of shipments
  - WIPP operational timelines conflict with ability to process and ship

- **Funds:** Priority is medium, funds to RL are potentially declining
  - Re-constitution of retrieval and certification programs costly
  - Efficiencies only go so far
• Consent Agreement and Final Order (CAFO) adding further distraction and diversion of funding
  – Re-labeling waste containers
  – Developing closure documentation

• Inconsistent funding affects waste processing facilities
  – Site facilities (e.g., WRAP) at risk of closure due to process delays
  – Commercial capabilities significantly reduced because consistent waste flow is not available to keep the doors open

• Relationship with regulators will continue to decline until we move the waste
Additional drum shipments to DOE-Idaho:

- Advanced Mixed Waste Treatment Project (AMWTP) could process all of the CH and RH
- However, current TRUPACT II Authorized Methods for Payload Control (TRAMPAC) restrictions will not allow the transportation of drums with prohibited items; Hanford has minimal number of drums that have no prohibited items
- Western Governors Association
Hanford D4 Activities

• Plutonium Finishing Plant Complex (PFP) demolition planned completion in September 2016. Estimated waste volumes:
  – ~24,000 m$^3$ of LLW/MLLW between January 2015 through December 2017 (~21,000 m$^3$ from LLW rubble)
  – ~2200 m$^3$ of TRU/TRUM between January 2015 through December 2017

• Central Plateau D4 – Miscellaneous building removal. Estimated waste volumes:
  – ~4200 m$^3$ of LLW/MLLW (including waste sites) between January 2015 through September 2018

• 100 K – Miscellaneous building removal. Estimated waste volumes:
  – ~58,000 m$^3$ of LLW/MLLW (including waste sites) between January 2015 through September 2018
PFP Complex D4 Activities

- PFP Complex – Deactivation and eventual demolition of major process buildings is the most significant D4 activity on the site.
  - 234-5Z – Main building (Dash 5)
  - 236-Z – Plutonium Reclamation Facility (PRF)
  - 242-Z – Waste Treatment andAmericium Facility; includes McCluskey Room
  - 291-Z – Ventilation building and stack
PFP Complex D4 Activities

• PFP slated to be slab-on-grade in 2016. Remaining work includes:
  – Size-reduction of gloveboxes and demo-prep for gloveboxes to be picked during demo
  – 236-Z: Removal of last remaining pencil tanks
  – 234-5Z: Removal of E4 ventilation and filter boxes
PFP D4 Timeline

• January 2015: Demo prep begins
  – In-Situ size-reduction of select gloveboxes, grouting, drain line removal, asbestos abatement

• Spring 2016: Demolition begins
  – March: 236-Z begins
  – May: 234-5Z begins
  – June: 242-Z begins
  – July: 291-Z begins
Major TPA Milestones Related to PFP D4

- Applies to PFP above-grade structures

- **M-083-00A**: Complete PFP Facility Transition & Selected Disposition Activities. Completion Of This Major Milestone Includes The Following Key Elements: 1) Completion Of All Activities Necessary To Achieve End Point Criteria Established Through Milestone M-83-20 For Placing The PFP Facility In A Safe And Stable S&M Mode, 2) Completion Of All Activities Described In The Approved M-83 Series Interim Milestones And Target Date; And 3) Completion Of The Balance Of PFP Selected Disposition Activities Pursuant To The Final Action Memoranda And Work Plans. Note: Also See "Description/ Justification" Contained In Change Form M-83-01-03. Due by 9/30/2016
PFP D4 Issues/Challenges

- D4 at PFP is our focus and DOE-RL #1 priority; to achieve slab-on-grade we have to overcome issues and potential risks:
  - Maintain commercial capabilities to process waste (e.g., gloveboxes, PRF Canyon strongbacks, etc.)
  - Managing through heightened regulatory compliance environment
PFP D4 Issues/Challenges (cont.)

- Transitioning to Documented Safety Analysis (DSA) revision to facilitate D&D work
  - Requires removal of material-at-risk to implement
  - Result will be reduction of Technical Safety Requirements control for HVAC, fire, and criticality systems

- End Point Criteria
  - Reconciling pre-CERCLA primary regulatory criteria with current CERCLA authorization
  - Aligning end point expectations

Criticality System Horn – As TSR controls are reduced, maintenance of these systems will be reduced and eventually discontinued
• PRF canyon crane operations - crane has had a history of failure
• Open air demolition approval – current air model contains very conservative assumptions; model to be re-run using actual conditions