

# Hanford Waste Program and D4 Overview



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# TRU Program Overview



- ~10,900m<sup>3</sup> of CH and RH-TRU/M waste currently in above-ground storage
- ~2,830m<sup>3</sup> of CH and RH-TRU/M waste remains to be retrieved from the burial grounds
- ~7,860m<sup>3</sup> 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

# TRU Program Overview (cont.)



- 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



# CH-TRU Waste Volumes (Excluding Buried Waste)



- Central Waste Complex (CWC) as of 2/2015:
  - 7,100 Drums and 725 Standard Waste Boxes (SWBs) (3,013m<sup>3</sup>)
  - 17 Standard Large Boxes(SLB2s) (124m<sup>3</sup>)
  - 498 other containers including Large Boxes (7,173m<sup>3</sup>)
- Projected Waste from Generators (Projections in m<sup>3</sup> only):
  - Plutonium Finishing Plant (PFP) (2,205m<sup>3</sup>); Waste expected by 2017
  - Tank Farms (1,200m<sup>3</sup>); Waste packaging to commence 2020



## Large Boxes Stored Outside



## Drums Stored in CWC







- 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



- Large Boxes: ~ 7,173 m<sup>3</sup> in Above-Ground Storage
  - Perma-Fix Northwest (PFNW): Capable of repacking ~ 5,000m<sup>3</sup>
    - 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, PFWN can process ~ 500m<sup>3</sup>/yr to 940m<sup>3</sup>/yr
    - 174m<sup>3</sup> scheduled by FY18 to meet TPA (172m<sup>3</sup> of the 174m<sup>3</sup> 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



## 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



- 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



- Plutonium Finishing Plant Complex (PFP) demolition planned completion in September 2016. Estimated waste volumes:
  - ~24,000 m<sup>3</sup> of LLW/MLLW between January 2015 through December 2017 (~21,000 m<sup>3</sup> from LLW rubble)
  - ~2200 m<sup>3</sup> of TRU/TRUM between January 2015 through December 2017
- Central Plateau D4 – Miscellaneous building removal. Estimated waste volumes:
  - ~4200 m<sup>3</sup> of LLW/MLLW (including waste sites) between January 2015 through September 2018
- 100 K – Miscellaneous building removal. Estimated waste volumes:
  - ~58,000 m<sup>3</sup> 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 and Americium Facility; includes McCluskey Room
  - 291-Z – Ventilation building and stack





- 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



*Employee size reducing WT-3 glove box in 242-Z*

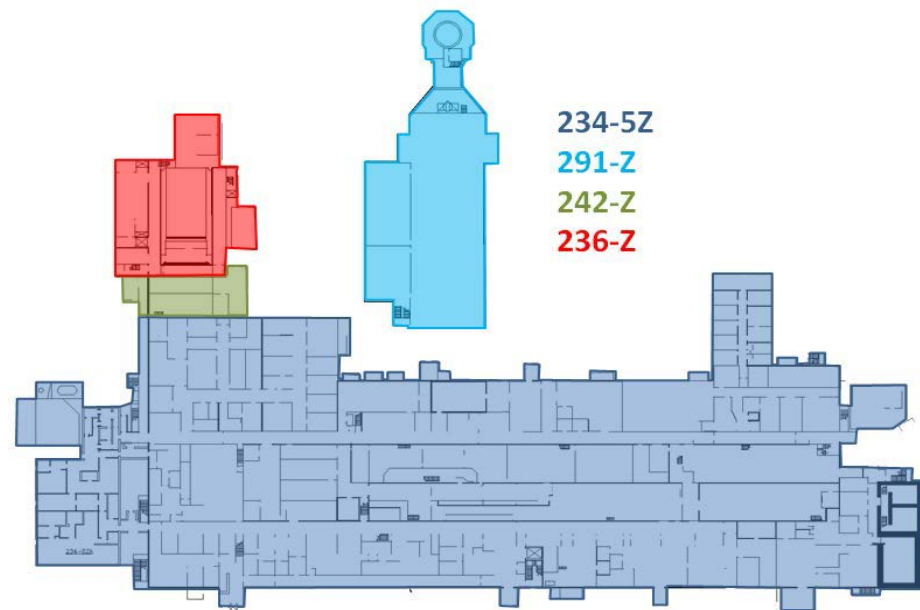


*Employees in the duct level separate, bag and remove sections of E4 ventilation duct.*





- 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-083-44:** Complete Transition Of The 234-5Z (Plutonium Conversion Facility) & ZA (Plutonium Conversion Support Facility), 243-Z Low Level Waste Treatment Facility, 291-Z Exhaust Building, And 291-Z-1 Exhaust Stack To Support PFP Decommissioning Deactivate And Prepare For Dismantlement The Above Grade Portions Of The 234-5Z & ZA, 243-Z, And 291-Z And 291-Z-1 Stack Buildings. Due by 9/30/2015
  - **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



- 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



*Pencil tanks in PRF canyon*



*Preparing glovebox for shipment to Perma-Fix Northwest*

# 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*

# PFP D4 Issues/Challenges (cont.)



- 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



*Employees repairing the crane in the PRF canyon*



*Crane operator moving pencil tanks for size reduction*