CHBWV Project Update  
(Including Vitrification Demolition Plan)

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Citizen Task Force Meeting  
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Safety Performance

As of March 9, 2017, CHBWV and subcontractors worked approximately 2,485,066 work hours (1,585 days) without a lost-time work accident or illness.

High-Level Waste Crew
FY 2017 Goals

- Perform all work safely and compliantly
- Complete relocation of legacy waste from Main Plant Process Building (Head-End Cell drums)
- Begin demolition of Vitrification Facility (Contingent on funding)
- Ship demolition debris from Vitrification Facility (Contingent on funding)
- Continue deactivation of Main Plant Process Building
- Continue reconfiguration of water, natural gas, electric, communications infrastructure (Contingent on funding)

Facility Deactivation Status

- Vitrification Facility Deactivation – 100% Complete
- Main Plant Process Building Deactivation – 62% Complete
Vitrification Facility Location

Agenda

- Vitrification Facility Background
- Review of Regulatory Requirements
- Demolition Preparations
- Demolition Approach
- Waste Management and Disposal
- Status and Schedule
Vitrification Facility Background

- Single-purpose facility constructed to vitrify the WVDP’s liquid high-level waste (HLW)

Vitrification Facility Background (continued)
### Review of Regulatory Requirements

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<tr>
<th>Regulatory Authority</th>
<th>Citation</th>
<th>Relevancy</th>
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| **U.S. Department of Energy (DOE)** | 10 CFR 835 – Occupational Radiation Protection | Establishes annual occupational exposure limits for CHBWV employees:  
• 5 rem/year (5,000 mrem/year) for radiological workers*  
• 100 mrem/year for non-radiological workers |
| | DOE Order 435.1 | Establishes requirements for management of radioactive waste |
| | DOE Order 458.1 | Establishes annual exposure limits for members of the public:  
• 100 mrem/year |
| **U.S. Environmental Protection Agency (EPA)** | 40 CFR 61 (NESHAPS) | Establishes emission standards for radionuclides in air (commonly referred to as Radionuclide National Emission Standards for Hazardous Air Pollutants)  
• 10 mrem/year (sitewide) with EPA approval  
• 0.1 mrem/year without specific EPA approval  
• Also sets standards for buildings that contain asbestos |
| **U.S. Nuclear Regulatory Commission (NRC)** | West Valley Demonstration Project Act | Establish decommissioning standards for WVDP (complete) and provides for review and consultation regarding WVDP activities |

* CHBWV has established an Administrative Control Level of 500 mrem/year for the general workforce and up to 1,000 mrem/year for a portion of the workforce

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### Review of Regulatory Requirements, cont.

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<tbody>
<tr>
<td><strong>New York State Department of Environmental Conservation (NYDEC)</strong></td>
<td>6 NYCRR Part 373-3</td>
<td>Establishes standards for interim status operation and closure of hazardous waste management units</td>
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<tr>
<td></td>
<td>6 NYCRR Part 750-2</td>
<td>Establishes standards for discharge of waste water</td>
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<tr>
<td><strong>U.S. Department of Transportation (USDOT)</strong></td>
<td>49 CFR – Hazardous Materials Regulations</td>
<td>Establishes packaging, labeling, and transportation of hazardous material, including radioactive waste</td>
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<tr>
<td><strong>New York State Department of Labor (NYDOL)</strong></td>
<td>12 NYCRR Part 56</td>
<td>Establishes standards for removal of asbestos</td>
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Demolition Preparation

- **Objective**
  - To ensure safe and environmentally protective facility demolition in compliance with worker and environmental protection limits, and in keeping with As Low As Reasonably Achievable (ALARA) principles

- **Meeting the Objective**
  - **Characterization**
    - Radiological sampling
    - Contamination surveys

Demolition Preparation (continued)

- **Meeting the Objective (continued)**
  - **Airborne Dispersion Modeling**
    - Used to identify quantity, type and/or location of contamination that can remain in a structure during open-air demolition that results in defined exposure restrictions at surrounding control boundaries for worker and public protection
    - Key variables that effect model results are contamination levels (i.e., source term), contaminant emission rate, and meteorological conditions
      - Contamination levels are controlled through how much pre-demolition decontamination is performed
      - Contaminant emission rate is controlled by the rate at which demolition is performed and the demolition method used
      - Meteorological conditions are based on five years of actual WVDP data
    - Two models utilized
      - AERMOD used to estimate worker dose
      - CAP-88 used to estimate public dose
Demolition Preparation (continued)

• Meeting the Objective (continued)
  • Demolition Methods and Controls
    • Dismantlement approach (e.g., hammer, saw)
    • Fugitive dust control
      • Application of fixatives during deactivation, prior to demolition and on the waste pile prior to shipment
    • Fogging/misting during demolition
    • Storm and surface water management
    • Weather limitations defined by existing site procedures
    • Air monitoring action levels established through work control documents (e.g., Radiological Work Permit, Work Instruction Package)

Demolition Preparation (continued)

• Meeting the Objective (continued)
  • Deactivation and Decontamination
    • Residual accessible equipment and hazardous materials removed
    • Decontamination performed on cell walls and floor
    • Environmental release points isolated
      • Penetrations/embedded piping sealed
        • Floor grouted
        • Facility de-energized and isolated
        • Remaining residual contamination “fixed” in place
CH2M HILL and BWXT have decades of radioactive facility demolition experience and will apply lessons learned during successful demolition of 01-14 Building in 2012-2013

- Demolition performed by trained and qualified heavy equipment operators using long reach shears and processors

Demolition Approach (continued)

- Sequenced Demolition Plan beginning at building exterior
  - Working from least contaminated areas inward toward the most contaminated areas
- Demolition Plan
  - Summarizes the approach for deactivation, decommissioning and demolishing the facility
  - DOE review/approval
  - NRC review/comment
Detailed Demolition Safety Planning

- Detailed Demolition Safety Planning and Execution
  - Worker protection:
    - Radiological protection – Personal Protective Equipment (PPE), dosimetry, air monitoring
    - Industrial Protection – Plan of the Day, Computer model for Pre-job briefings
    - Area access restricted to necessary personnel
    - Work Instruction Packages define demolition sequences and “Hold Points”

- Public and Environmental Protection:
  - Restricted site access
  - Air monitoring / Air dispersion modeling program approved by U.S. Environmental Protection Agency (EPA)
    - Real-time monitoring in demolition area
    - Demolition boundary monitoring
    - Off-site perimeter monitoring
  - Storm water management / Dust suppression
  - Daily fixative / cover of waste pile
  - Limiting size of debris pile / Frequent waste packaging and disposal
  - Fixative application during deactivation (prior to demolition)
  - Detailed final surveys
Demolition Boundaries and Features

30-meter Area Boundary Includes Facility and Waste Storage/Loading Areas

Waste Management and Disposal

- Vitrification Facility Specific Waste Disposition Plan Developed
- Vitrification Facility demolition will generate ~6,700 tons of debris
  - Debris piles kept small and packaged or covered daily
  - Debris loading into 25-cubic yard Intermodals
  - All projected to be NRC Class A low level radioactive waste
- Shipment and disposal plans in place
  - Truck or truck-to-rail shipment for disposal at Nevada National Security Site (NNSS), EnergySolutions and Waste Control Specialists (WCS) licensed facilities in Nevada, Utah and Texas, respectively
  - Estimate 15 Intermodals per week (450 total shipments)
- Deactivation and decontamination are 100% complete
- Vitrification Facility is demolition ready
  - Start date contingent upon available funding
  - Approximately 8-month overall schedule to demolish building and ship waste
- Fixative Application in Vitrification Cell Ceiling
- Utilities Isolated and Air-Gapped
- Utility Lines Sealed Shut

Demolition Complete