U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

CHBWV High-Level Waste Storage and Relocation Project Update

John Rendall
Regulatory Strategy and Engineering

Quarterly Public Meeting
November 18, 2015

High-Level Waste Storage and Relocation Project

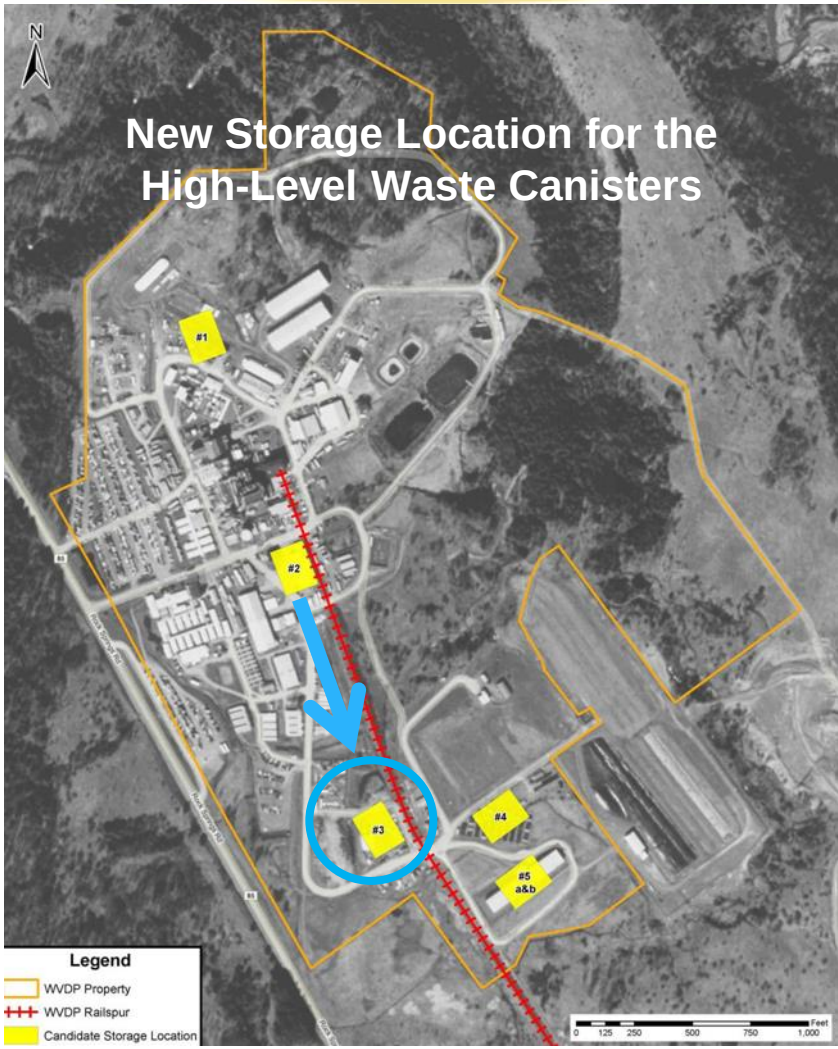
This project marks the first time in U.S. history that vitrified high-level waste has been placed into long-term outdoor passive storage.

Objective

Relocate HLW canisters from Main Plant Process Building (MPPB) to a new on-site Storage Pad

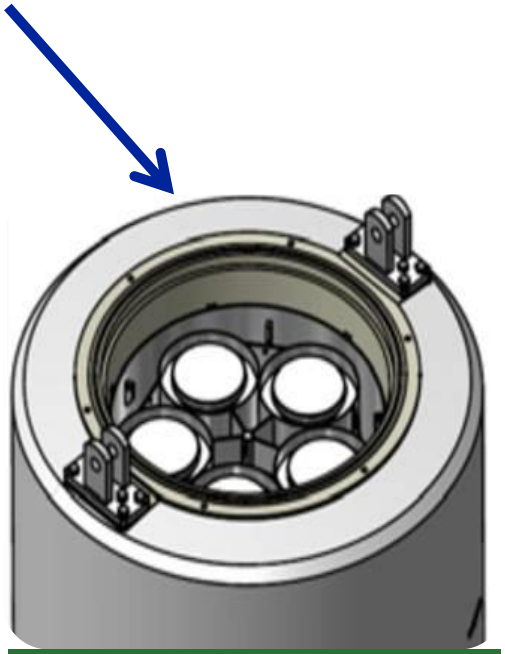
- 278 HLW canisters
- Loaded into 56 Casks

Relocation of the HLW canisters will allow the eventual demolition of the MPPB



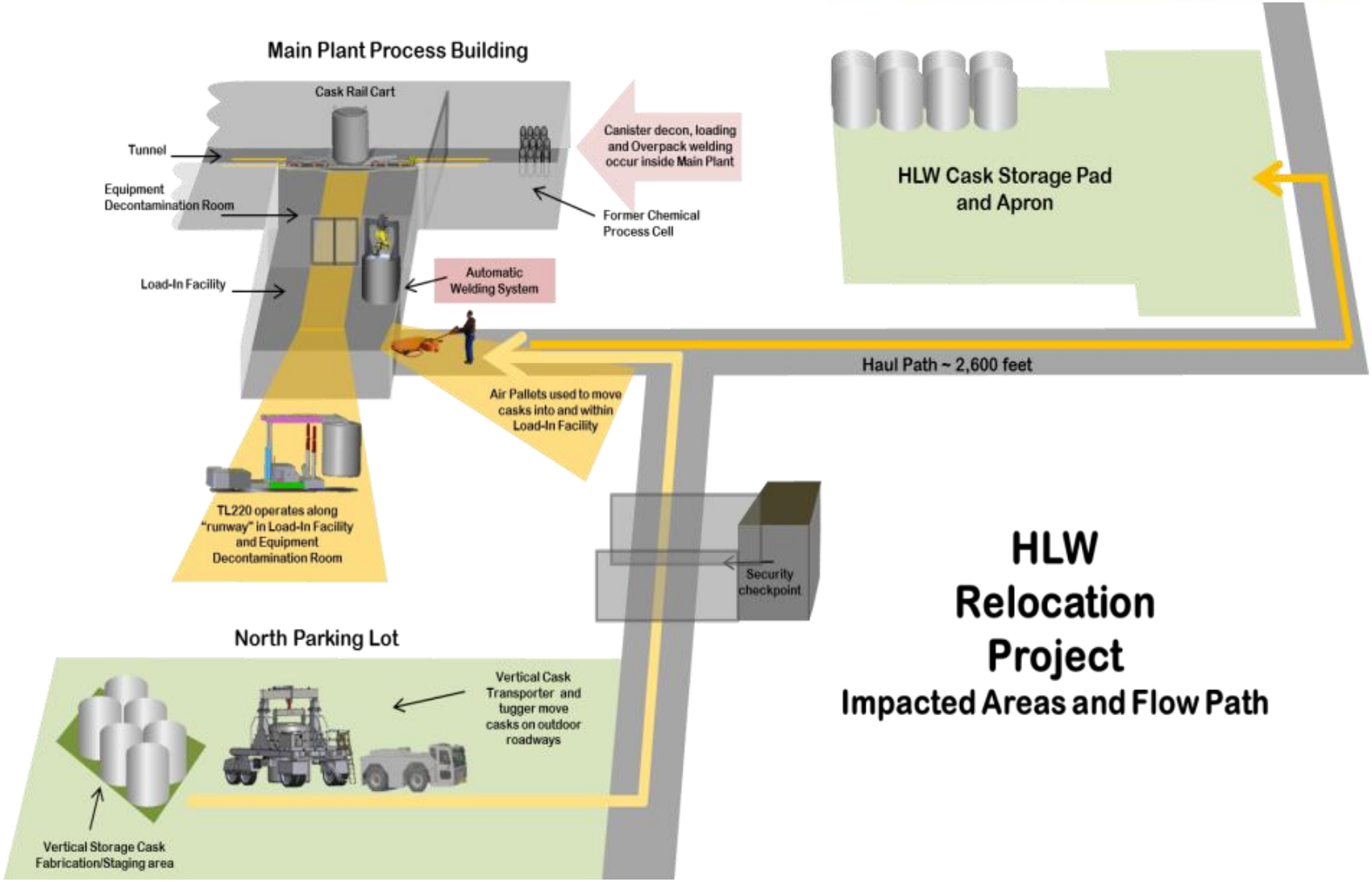
Technical Approach

- During on-site assembly, an overpack is placed into each cask
- Canisters are remotely decontaminated
- 5 canisters are remotely loaded into an overpack
- Overpack lid is remotely welded
- Cask lid is bolted on
- Cask is transfer to storage pad



Loaded Canisters

Relocation Route



High-Level Waste Storage Pad Construction

133 Tons of Rebar Placed

Fabrication of Casks and Overpacks

Vertical Storage Cask Reinforced with Rebar

Vertical Storage Casks Fabricated on Site

Major Equipment Procurements

GT-50 Tugger

Vertical Cask Transporter (VCT)

TL220

Major Equipment Procurements, cont.

Rail Cart

Air Pallet

Automated Welding System (AWS)

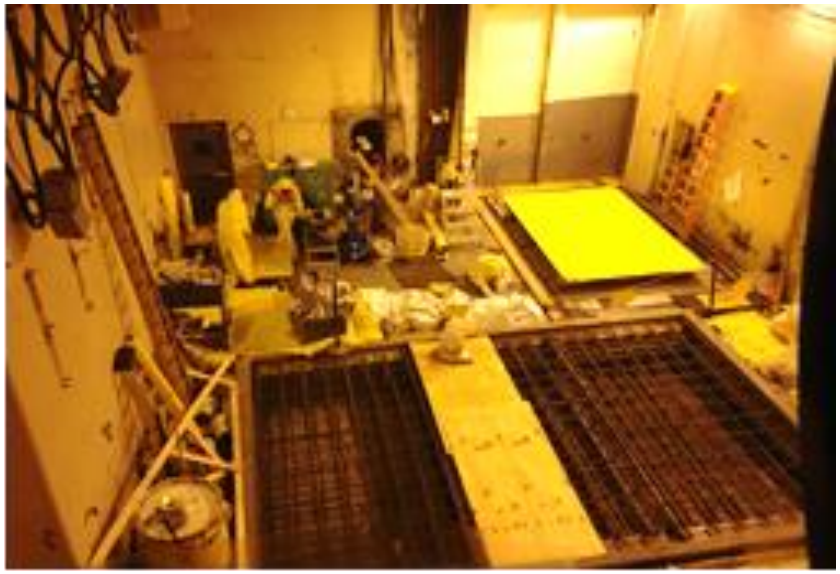
Waste Disposition from Transport Areas

Equipment Decontamination Room (EDR) Waste Removal for Shield Door Repair

Tunnel Decontaminated

Waste removal activities for EDR and Vitrification Cell

Extensive Facility Modifications



Filled EDR Soaking Pit

Core Boring in the Equipment Decontamination Room (EDR) – Added Floor Structural Enhancement

Facility Modifications, cont.

Load-In Facility (LIF) Modifications

Erected Cask Preparations Platform

Installed Equipment
Decontamination Room Camera

Installed LIF Floor Plating

Countdown to 1st HLW Cask Relocation

Step 1. Thursday, November 5, 2015

Step 2. Friday, November 6, 2015

Step 3. Saturday, November 7, 2015

Step 4. Monday, November 9, 2015

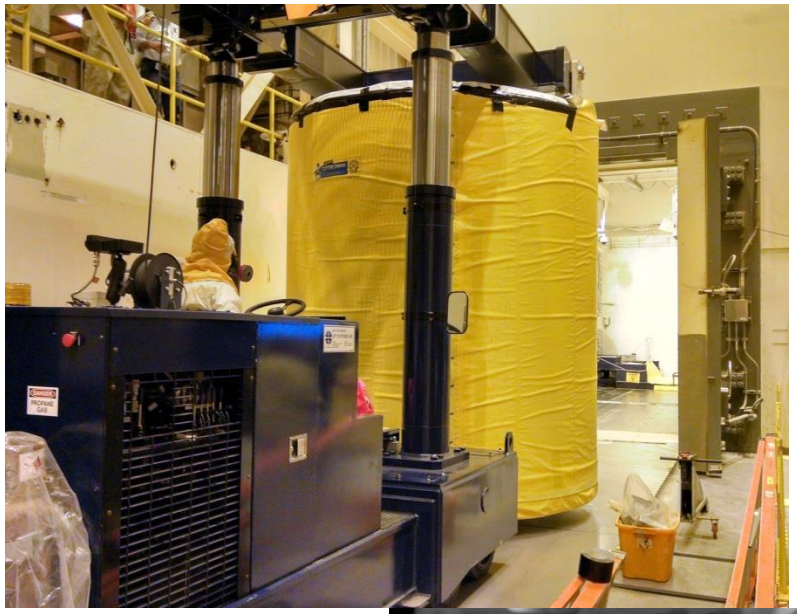
Step 5. Tuesday, November 10, 2015

5-Step Evolution to Relocation – Step 1

The Vertical Storage Cask (VSC) was prepared and then lifted using the TL-220 and moved into the EDR and placed on the Low Profile Rail Cart.

The VSC was then prepared for entry into the Chemical Process Cell (CPC).

Operations in the EDR included removing the overpack lid and lid shield, removing the VSC lifting lugs, and installing the Foreign Material Exclusion (FME) cover on the VSC.



5-Step Evolution to Relocation – Step 2

The Low Profile Rail Cart (LPRC) was moved into the CPC in the morning and five HLW canisters were loaded into the overpack inside the cask.

The LPRC was then moved back to the EDR and the overpack lid, lid shield and lifting bale were positioned onto the overpack inside the cask.

The cask was then surveyed so we understood the radiological conditions, and then the lifting devices were installed into the top of the cask.

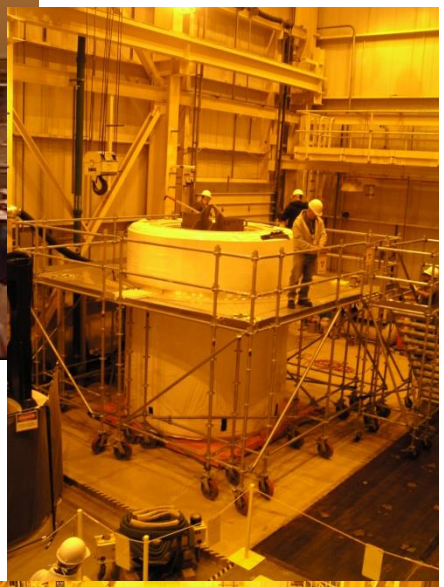
5-Step Evolution to Relocation – Step 3

The loaded cask was moved from the EDR into the Load In Facility (LIF) after the cask inner layer of contamination protection was removed.

The cask was then placed on an air pallet and positioned into the welding station.

After cask positioning, scaffolding was locked into position, and welding shield lifting bail was unbolted and removed.

Following surveys and a cleanliness inspection by the welders, the automated welding system frame was bolted to the cask and the welding shroud was placed into position.

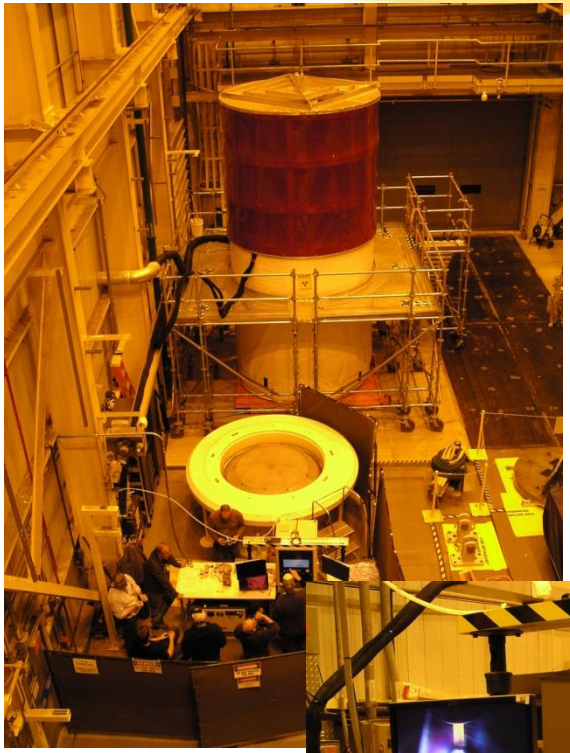


5-Step Evolution to Relocation – Step 4

The overpack lid -was successfully welded using an automated welding system.

Following the root pass and inspection, three additional weld passes were completed.

The weld was then visually inspected by Quality Assurance (from a monitor)



5-Step Evolution to Relocation – Day 5

The day started with the removal of the annulus FME, placement of the lid o-ring and gasket, and then removal of the welding shield.

Following the required radiological surveys, the cask lid was placed and bolted down.

The final step was using the air pallet to move the VSC to the south door of the LIF, placing the cask in the Vertical Cask Transporter and moving the VSC to the on-site storage pad.

Only 55 More to Go…….

1st Cask Loaded onto Vertical Cask Transporter

1st Cask Placed on the Interim Storage Pad