HLW Relocation: Integrating New Technology in an Aging Nuclear Facility

Project Overview
The West Valley Demonstration Project near Buffalo, New York initiated construction of a HLW Storage System in 2013. The objective is to provide passive, long-term outdoor interim storage capacity for 278 canisters of vitrified waste that have been stored on-site in the Main Plant Process Building.

The WVDP’s storage system is based on commercial spent fuel dry storage systems. It was designed by NAC International and constructed using specialized vendors and local labor. CH2M HILL Babcock & Wilcox LLC, prime contractor to the U.S. Department of Energy at the site, is managing the project.

Canister relocation is scheduled to begin in 2018 and will take three years to complete. Packaging and relocation of the HLW will enable preparations for demolition of the former nuclear fuel reprocessing plant to proceed.

New Technology

HLW Storage System

Objective: Demolish Main Plant Process Building

Obstacle: Canisters in Storage

Solution: Package in Robust Casks and Relocate

Vitrified HLW at the WVDP
Vitrified waste was produced at the WVDP between 1996-2002
- 278 production canisters
- 10” tall, 2” diameter
- 2,605 liters average
- 1,103 - 3,466 liters range
- 2 evacuated canisters and 1 end-of-process canister

Storage System Benefits
- Adapted from proven technology
- Robust, secure packaging
- Passive, long-term on-site storage
- Overpacked canisters require no shipping modifications
- Minimum 50-year system life expectancy

Future Interim Storage Area

Obstacles* and Improvements**

* Abandoned Oil Lines and Contamination Encountered During Pad Excavation
** Pad Apron Soil Subsidence ** Drainage Added
** Overpack Quality and Fit-up Testing

Loading Preparation and Overpack Welding

Canister Decon
Post-Decon Surveys
Cask/Overpack Assembly
Welding System
Welding
Canister Movements

** Decin System Prototype Testing
** Welder Mockup and Proficiency Training
** Canister Wrap Mockup
** Area Walkdowns
** Cask Prep Platforms

Cask Transport and Haul Path

Vertical Cask Transporter
TL220 Cask Handler
Low-Profile Rail Cart
Air Pallets
Upgrade “5400” of Haul Path
Decontaminate Tunnel
Relocate Utilities
** Pre-Delivery Load Testing
** Full-Scale Operational Testing
** Great Mockups
** Sub-floor Grouting

Planned Work

Construct and Maintain Cask Fabrication and Transfer Pad
Excavate Area and Construct Cask Storage Pad

** Area Walkdowns
** Cask Prep Platforms

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