**WEST VALLEY DEMONSTRATION PROJECT**

**Project Overview**

Construction of a high-level waste interim storage system was initiated at the West Valley Demonstration Project near Buhl, Idaho, in 2015. This system will provide interim storage capacity for 270 containers of vitrified waste that has been stored within the facility for more than 2 decades. Since permanent storage of the containers in the Main Plant Process Building no longer practical, this project is being undertaken to allow the waste to be moved to a more secure on-site repository. The new storage system was designed by NAC International and constructed using specialized vendors and local labor. Canister relocation is scheduled to begin in 2021.

**Strategy**

- Use "off-the-shelf" commercial dry fuel storage system design, modified for HLW storage
- Robust reinforced concrete storage casks for secure permanent storage
- HLW canisters will be packaged and prepared for off-site shipment

**Challenges**

- Existing configuration requires modifications to prepare and receive canisters
- Surplus container volume on canisters
- Infrastructure upgrades required to support relocation
- Multi-year project due to funding limitations

**Benefits**

- Cost-effective use of off-the-shelf technology
- Multi-compartment configuration reduces future handling and shipping costs
- Closed storage system design eliminates potential for dose rate "hot spots"
- Low-dose storage (10 minutes at 1 meter)
- Piping storage design is virtually maintenance-free
- Design, fabrication, and rigorous activities meet high nuclear quality assurance standards
- System interfaces with NRC Type-B licensed shipping casks

**Vitriﬁed HLW Canisters**

- Vitrified waste was produced at the VV-100 between 1994 - 2002
- 270 production canisters
- Full HLW, 3-liter containers
- 2,045 cfs storage range
- 1,199,746 cfs for range
- 550 canisters and 1 out-of-process canister
- 1 container with non-riskable debris

**Vertical Storage Casks (VSCs)**

- Final canister相关内容 has been redacted for confidentiality.

**Canister Decontamination**

- Decontamination methods are being tested on the stored canisters to evaluate their efficacy for removing radionuclide particulates on the tops of the stored canisters. The outcome of the testing will be used in determining a path forward for canister decontamination.

**Cask Movement Planning**

- Building and infrastructure configurations, container control, and storage cask weight are major considerations in planning for storage cask movements. All equipment and pathways between the current storage location and the HLW Storage Pad are under evaluation.

**Infrastructure: Cranes, Cameras and Tooling**

- The HLW Relocation Project will involve prolonged use of the lifting equipment in the current storage area. Evaluations are underway to determine if lifting equipment, rigging, and upgrades to support cranes removal and overloading are necessary.

**Floor Loading Evaluations**

- The remediation capacity store floors involved with loaded cask transport is under evaluation. A visual inspection and scan surveys are part of the investigation that will identify required modifications.

**Haul Path**

- The loaded storage casks will travel 1.5 miles from the current storage location to the HLW Storage Pad. The traveled pathway is found to be suitable for transport by use of the existing roadway.

**HLW Storage Pad Construction**

- Pad engineered for storage and future removal of loaded storage casks. Area expanded to native soils, backfilled and compacted.
- Reinforced concrete pad and approach alignment, alignment and pavement.
- Protection of perimeter and security features.

**Cask Loading and Handling**

- The canisters will be loaded into HLW Overpacks that are then loaded into VSCs. Loaded VSCs will then be transported along a 0.2-mile on-site roadway to the HLW Storage Pad. Specialized cask handling equipment will be used inside the current storage facility and outside.

**Transport and Cask Placement**

- A low loader and 5-frame crane will be used to transport the loaded casks from the current storage location to the HLW Pad. An approach apron facilitates ease of loading operations. The pad is equipped with adjoining crane pads to facilitate crane removal for future off-site shipment.

**HLW Interim Storage**

- The packaged canisters will remain in passive storage on the secure pad until a federal HLW repository is available.

**HLW Overpack**

- The HLW overpack is designed to accommodate the container capacity of the canisters.
- The multi-compartment interior compartment holds the canister and facilitates direct loading of the package in a shipping cask.
- Example:
  - 2-compartment inner barrel
  - 304SS stainless steel construction
  - 16-inch wide, 3-inch thick plate, 4-inch thick lid
  - 7.25 tons unladen weight
  - Designed for direct loading into MAC-SIT shipping cask

**Canisters Stored Inside Main Plant**

- Canisters stored inside the Main Plant

**Overpack Welding**

- The loaded stainless steel overpack will be remotely welded and weld integrity verified.