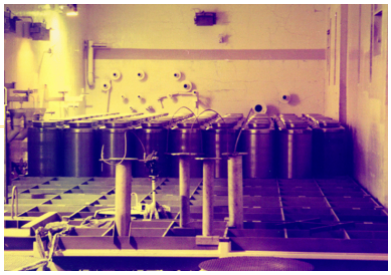
U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

High-Level Waste Canisters Relocation and Storage Project Overview Quarterly Public Meeting



Heatherly Dukes
Manager, High-Level Waste Project
CH2M HILL Babcock & Wilcox West Valley

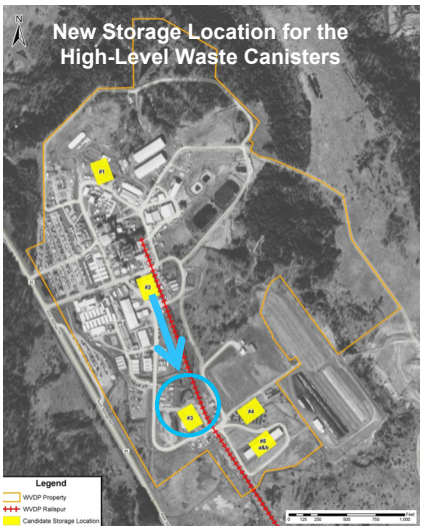
September 25, 2013

OFFICE OF ENVIRONMENTAL MANAGEMENT

HLW Canister Relocation & Storage Project

Objective: Relocating waste from Main Plant's High-Level Waste (HLW) Interim Storage to a stand-alone dry cask storage system:

- 275 HLW canisters
- 2 evacuated canisters
- 1 non-routine HLW canister (WV-413)
- 2 Spent Nuclear Fuel (SNF) debris drums



OFFICE OF ENVIRONMENTAL MANAGEMENT

HLW Canister Relocation & Storage Project

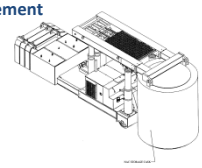
Technical Approach

- Move HLW canisters from Chemical Process Cell racks to decontamination station
- Decontaminate each HLW canister
- Load 5 HLW canisters loaded into multi-purpose canister (MPC) within shielded cask
- Secure and weld the MPC lid remotely
- Transfer the casks to new storage location for eventual shipping

Remote MPC Lid Welding

Simple, Proven Transport to Pad

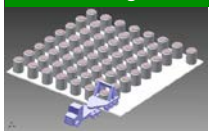
MPC and Vertical Storage Cask
5 Canister Arrangement



TL220 Transporter to Solve In-Facility Challenges

Loaded TL220 Transporter

Cask Storage Pad



OFFICE OF ENVIRONMENTAL MANAGEMENT

HLW Canister Relocation & Storage Project

Use current licensed SNF shipping cask, multi-purpose canister (MPC) overpacks, and current SNF storage cask designs.

5 Canister MPC/Cask

MPC Transfer (Future)

When ready to ship, MPC transferred from Storage Cask to Shipping Cask

MPC/Shipping Cask configuration will be NRC licensed for HLW Certificate of Compliance (CoC)

HLW Destined for Storage Pad

- 278 HLW Canisters
- Canister Features
  - 10' high x 2' diameter
  - 304L stainless steel
  - Filled weight: 5,200 lbs. each

HLW Overpack w/ Internal Basket

- 304L stainless steel with welded 4" thick lid
- Each overpack to hold 5 HLW canisters
- Unloaded weight: 14,500 lbs.

NAC-STC Shipping Cask

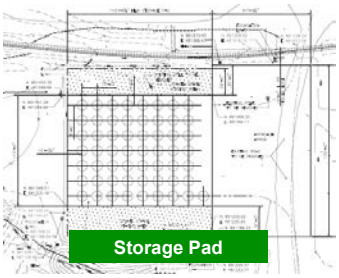
OFFICE OF ENVIRONMENTAL MANAGEMENT

Major Subcontracts

NAC International
- HLW Storage System

Butler Construction Co.
- Construction of Storage Pad

5 Canister MPC/Cask



Storage Pad

OFFICE OF ENVIRONMENTAL MANAGEMENT

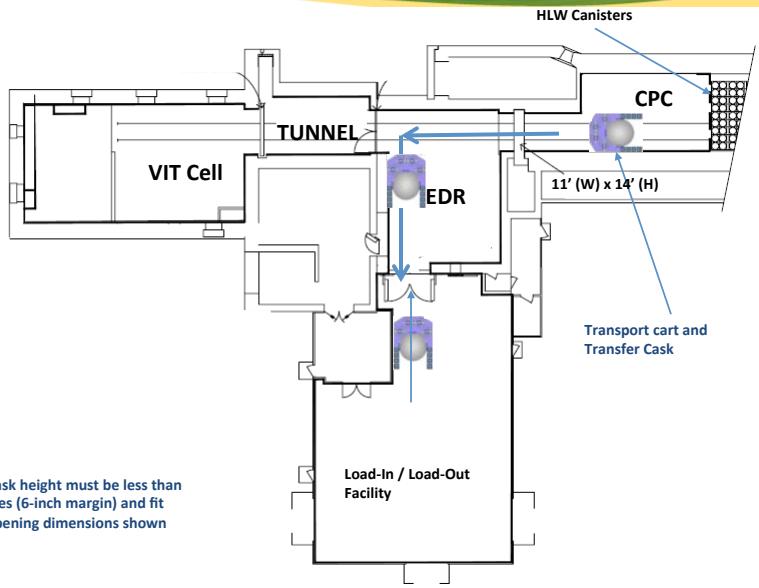
NAC Scope

- The design, fabrication, and delivery of a HLW Storage System
  - 56 overpacks and storage casks
  - Storage Pad (design only)
- In-facility transport equipment
- MPC lid welding equipment
- Ancillary equipment (e.g., lifting fixtures)
- Equipment and transportation of loaded storage casks from the Main Plant to the storage pad
- Design and specifications of storage pad
- Data and analysis to support the design and safety analysis (DOE 10 CFR 830)
- NRC Coc for HLW shipping using an approved shipping cask (NAC-STC)
- Training and mockup support

NAC Project Using Vertical Storage

OFFICE OF ENVIRONMENTAL MANAGEMENT

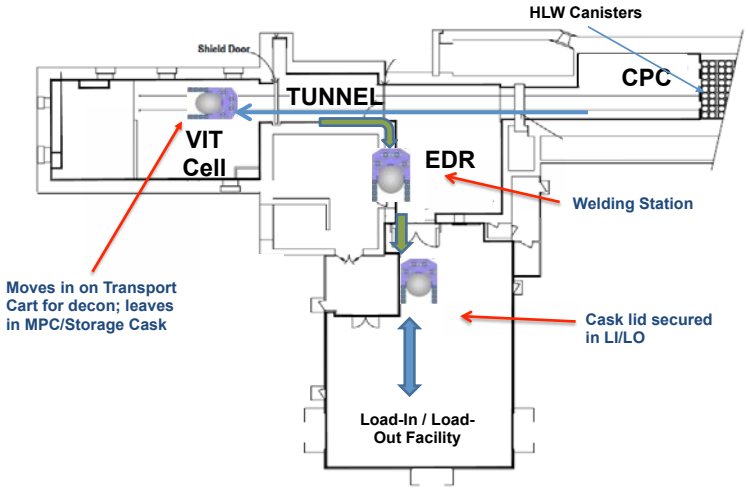
HLW Canisters Relocation – Pathway 1



Notes:
Transfer cask height must be less than 137.5-inches (6-inch margin) and fit through opening dimensions shown

OFFICE OF ENVIRONMENTAL MANAGEMENT

HLW Canisters Relocation – Pathway 2



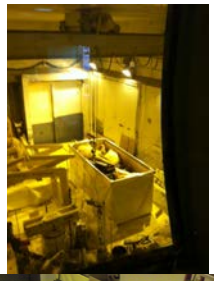
OFFICE OF ENVIRONMENTAL MANAGEMENT

Recent/Current Activities

Chemical Process Cell (CPC) and Equipment Decontamination Room (EDR) Cleanup/ Preparations

CPC Waste Disposition

Size Reduction



Waste Packaging Activities

OFFICE OF ENVIRONMENTAL MANAGEMENT

Recent/Current Activities

Planning Canister Decontamination

Canister Decontamination

- Performed testing
- Received/evaluated proposals for system

Vertical Decontamination Testing

Remote Vacuuming of a Canister Top

Remote Wiping of a Canister Top

OFFICE OF ENVIRONMENTAL MANAGEMENT

Recent/Current Activities

Completed Storage System Design
- Multi-purpose Canister Overpack
- Vertical Storage Casks
- Transport system

Performed Hazard Analysis
- < Hazard Category 3

Certificate of Compliance
- Drafted/reviewed NAC shipping cask Safety Analysis Report amendment

Preparing for Vertical Storage Cask fabrication
- Liners being fabricated
- Planning on-site rebar/concrete forming for casks

Quality Control/Vendor Visits for Procurements

Vertical Storage Cask Being Fabricated

Vertical Storage Cask (VSC)

- 161" tall with lifting lugs
- 120" diameter, 20" concrete with 4" thick steel liner
- 14" thick bolted lid comprised of 4" steel and 10" concrete
- Unloaded weight: 133,500 pounds

OFFICE OF ENVIRONMENTAL MANAGEMENT

Recent/Current Activities

Video Inspection of Pit

EDR Design and Modifications
- Soaking Pit inspected/sampled
- Design 90% complete/includes floor loading upgrades

Equipment Procurement Awards for
- 8 VSC liners
- Materials for 8 MPCs
- TL220 transporter
- Transport A Frame and Tugger
- Quality Control/Vendor list completed for Vertical Storage Cask liner

OFFICE OF ENVIRONMENTAL MANAGEMENT

Recent/Current Activities

Storage Pad Design/Construction

- Subsurface soil characterization, hydrologic and hydraulic testing completed for pad site
- Surface soils and structural conditions testing/analysis completed for haul road
- Final design completed
- Developed Stormwater Pollution Prevention Plan for construction
- Awarded construction contract to Butler

Geotechnical Sampling

Future Pad Location

OFFICE OF ENVIRONMENTAL MANAGEMENT

Recent/Current Activities

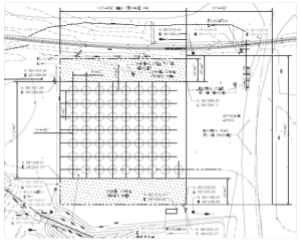
Storage Pad Features

- Excavation up to 12 feet
- Placement of approximately 2,800 cubic yards of locally-produced concrete.
- Three-foot-thick structurally engineered reinforced concrete
- Pad dimensions: 144' X 110'
- Engineered crane and approach pads
  - Concrete approach: 98' X 170'
  - 2-Crane pads: 26' X 144' each
- Construction to complete in November

Storage System Features

- Minimum design life of 50 years (casks and pad)
- Loaded individual storage cask weight is ~175,000 pounds (87.5 tons)

Typical Storage Pad



Pad Dimension 144 x 110

OFFICE OF ENVIRONMENTAL MANAGEMENT

Project Look Ahead

- Evaluate and award procurement for
  - Design and fabrication of decontamination system
  - Automatic Welding System for MPCs
  - Engineering and construction for structural floor modifications
- Vertical Storage Cask fabrication startup
- Characterize/Grout Soaking Pit
- Waste Compliance Plan submittal
- EDR floor core borings
- Haul road upgrades
- Deliveries
  - 8 Vertical Storage Cask liners - Oct
  - Materials for 8 MPCs - Dec
  - TL220 transporter - April
  - Transport A Frame and Tugger - April

Vertical Storage Cask Liner

GT-50 Tugger and A-Frame

OFFICE OF ENVIRONMENTAL MANAGEMENT

Current HLW Project Schedule

Major Tasks	Projected Date
Construct Storage Pad	November 2013
Obtain DSA Approval (DOE Safety Evaluation Report)	December 2013
Obtain NRC Certificate of Compliance (CoC) for Shipping HLW	November 2014
Approved Start of Transfers (Operations)	September 2016
Complete Relocation of Canisters/SNF debris/etc.	June 2018

Questions?