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

Defense Waste Processing Facility Update

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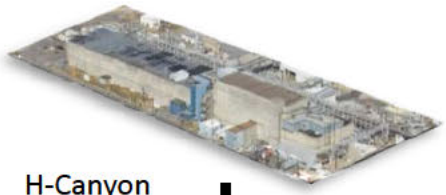
Purpose

- Provide update on the Defense Waste Processing Facility
  - 20 years of Production
  - FY16 Production
- Status on the Interim Canister Storage Double-Stack project.

SRS Liquid Waste Program



H-Canyon Receipts

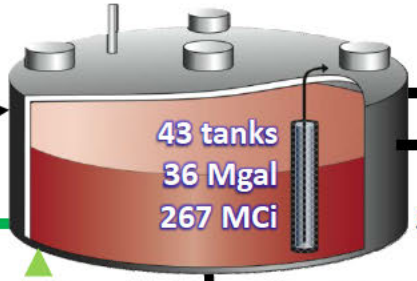
Currently receive ~150 kgal/yr

Legend:

ARP Actinide Removal Process
DWPF Defense Waste Processing Facility
MCU Modular Caustic Side Solvent Extraction Unit
SWPF Salt Waste Processing Facility

Successfully Meeting Operational Goals

- ✓Radionuclides to glass
- ✓Chemicals to Saltstone
- ✓Tanks operationally closed

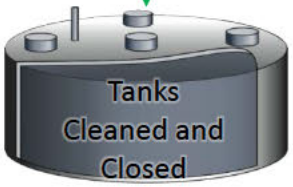


Salt Waste
9.0 Mgal treated

SWPF
(Construction completed, Undergoing commissioning)

Recycle

Sludge Waste
4.1 Mgal treated



Radionuclides

Inert chemicals

<1% radionuclides remain in tanks

>98% radionuclides to glass

4,081 cans poured of projected 8,170 and 59 million curies immobilized in glass

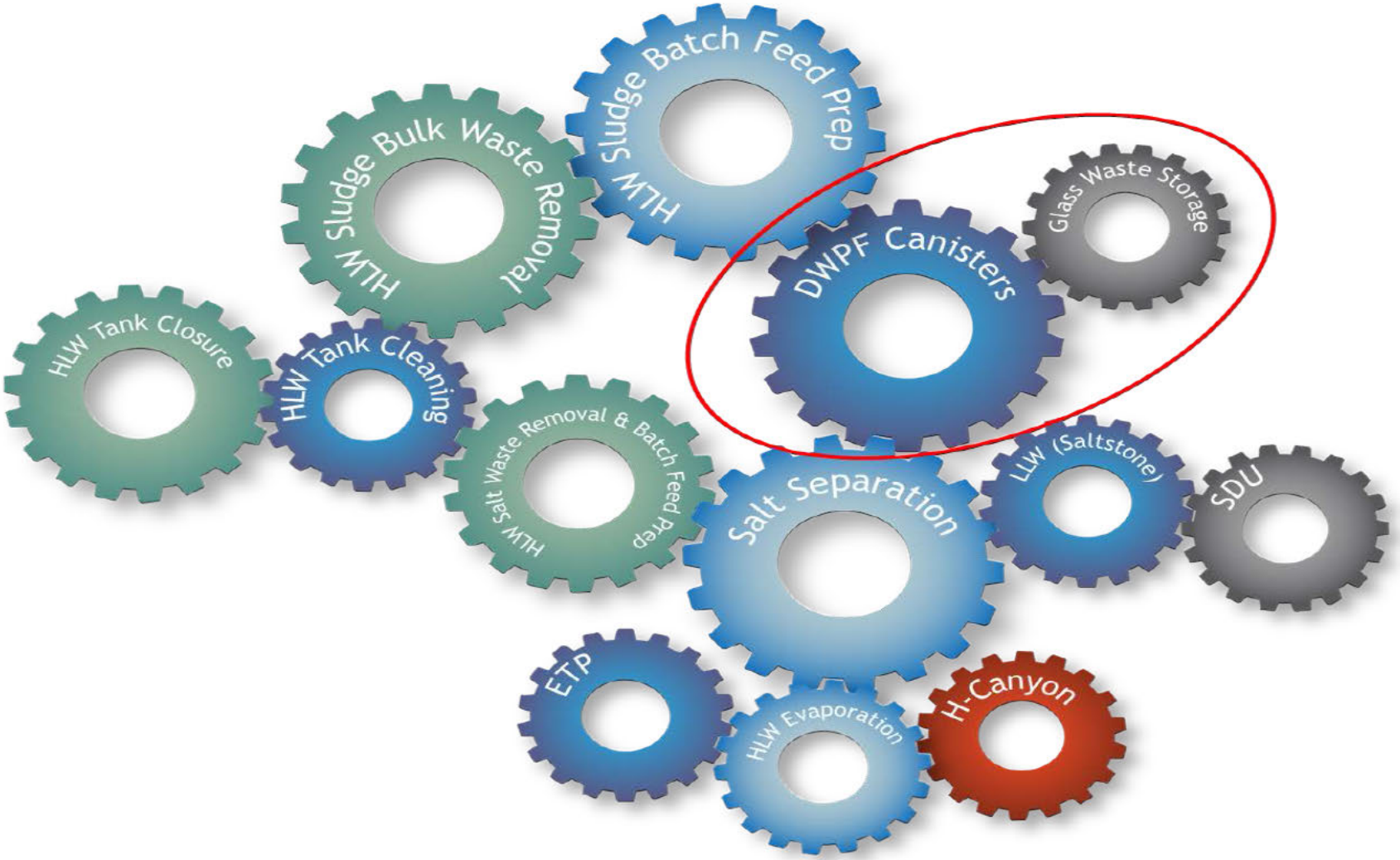
<1% radionuclides to saltstone

19.8 Mgal grout dispositioned containing 0.5 million curies

51 Tanks

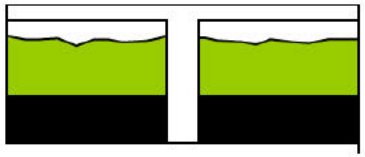
- *8 operationally closed*
- *4 bulk waste removed*
- *old style – 37% of space used*
- *new style – 76% of space used*

An Integrated System



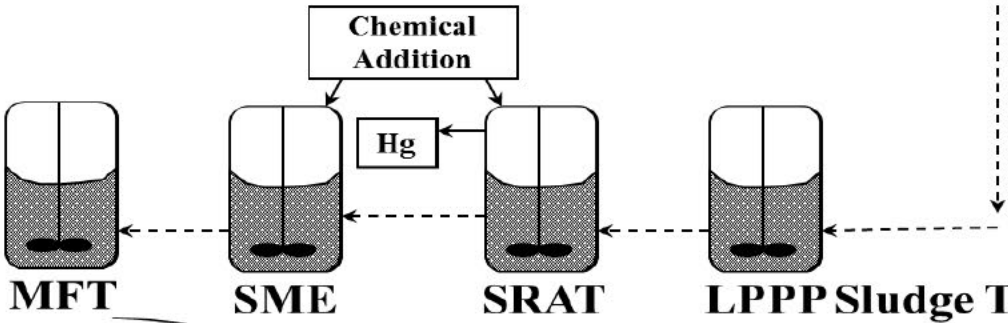
Vitrification Process

Tank Farm

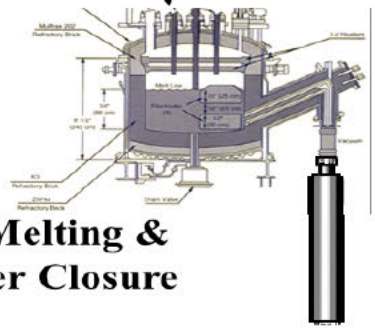


Glass Waste Storage

DWPF Chemical Processing

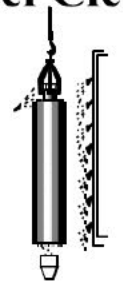


Transporter

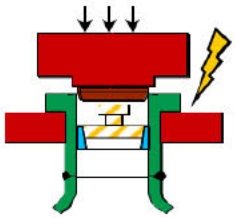


Glass Melting &
Canister Closure

Canister Cleaning



Welding



DWPF Production

- On schedule to produce desired number of canisters this year
- Canister Production Rate
  - FY16 125 to 150
  - FY17 100 with 5 month SWPF tie-in outage
- Canisters Produced To Date (July 25, 2016) 4,081
- Estimated Total Canister Production 8,170
- Canisters Produced (% of Total) 50%

DWPF 20 Years of Production

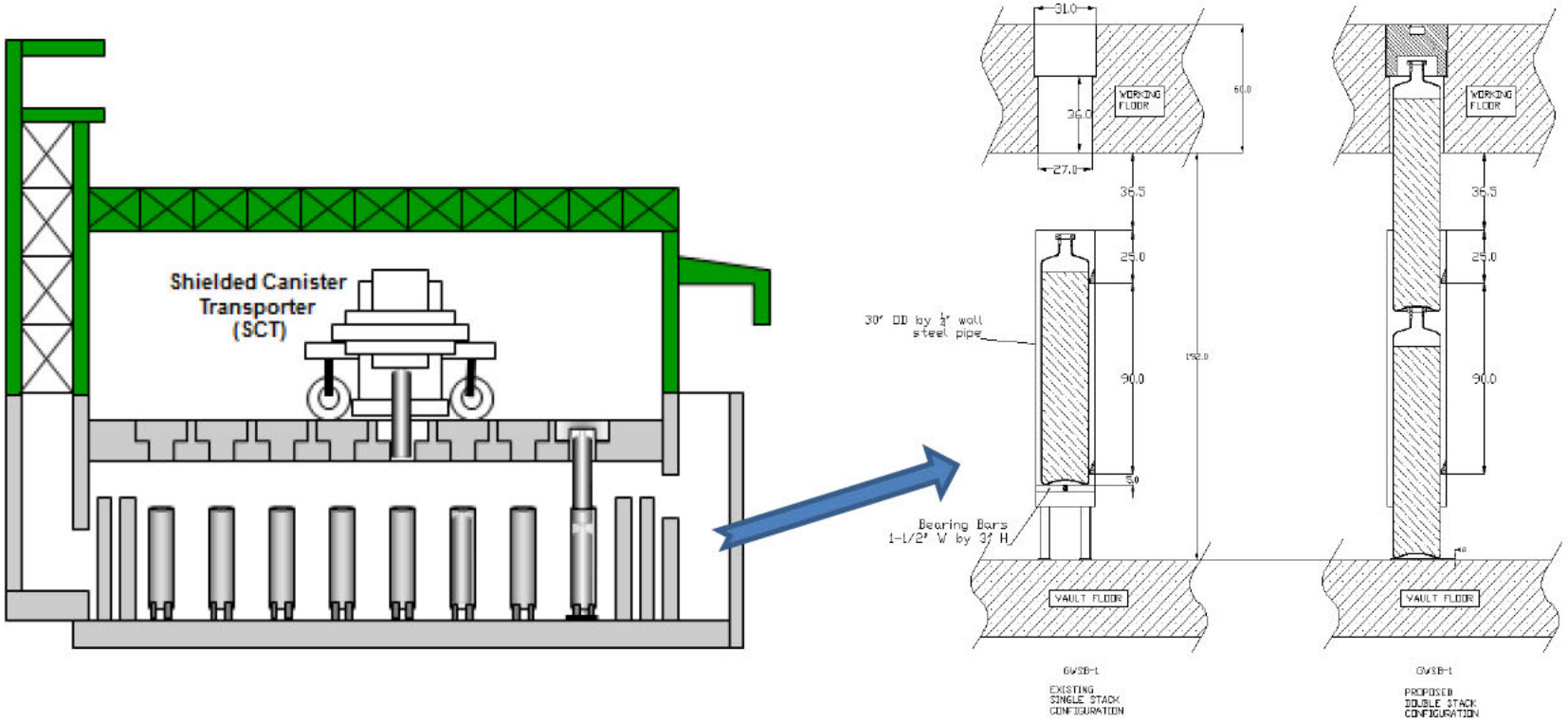
4000th

DWPF Canister being moved to the Glass Waste Storage Building 2

GWSB #1 Interim Canister Storage – Double Stack

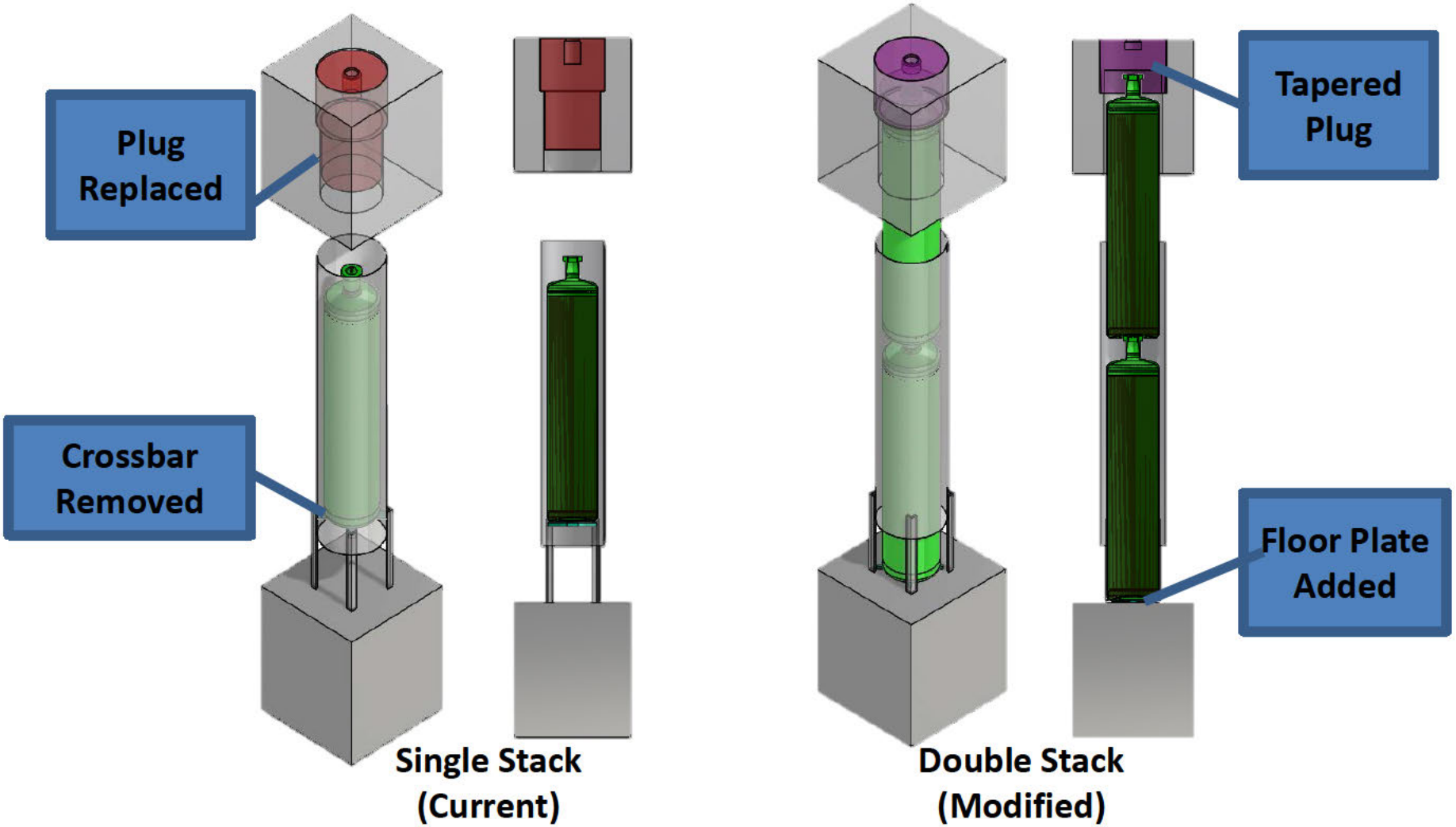
- **No 3rd Glass Waste Storage Building (GWSB)**
  - Large upfront cost & future D&D cost
  - Line Item 12-D-403 (~ $130 million) has been cancelled
  - SRS Liquid Waste System Plan, revision 20, approved on March 21, 2016, determined that additional storage of space of vitrified canisters is not needed until 2029 due to GWSB #1 double stacking initiative.
- **Interim Canister Storage – Double Stack**
  - GWSB#1 Capacity Increased from 2,262 to 4,524
  - GWSBs Capacity Increased to 6,864 providing space through FY 29
  - Still need space for approximately 1,306 more canisters

Interim Canister Storage – Double Stack Concept for GWSB1



- Two canisters per location (vs. one can per location)
- Lower canister on support on vault floor (vs. cross bar support 3’ off floor)
- Upper canister placed directly on top of lower canister
- Upper canister extends into operating deck floor, but remains below grade
- Shield plug redesigned for equivalent radiological protection

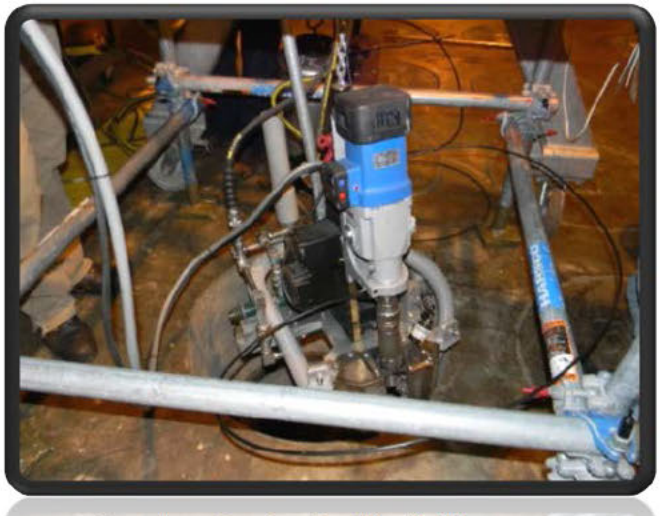
Proposed Modifications



Glass Waste Storage Building 1 Vault

- **Inside vault looking across rows of canister supports**
- **Inside canister storage location**
  - Minimum Opening in floor is 27 inch ID
  - Cross Bar Assembly is 1 ½ inch x 3 inch galvanized carbon steel bars
  - Cross Bar Assembly~ 18 ft down with 30 inch OD
  - 2 sets of guides (3 tabs each) to guide canisters
  - Bottom guides sit 5 inches above cross bar assembly

SRR Developed Remote Cutting Tool



Crossbar Cutting Tool In Field

Completed Crossbar Cut

1. *Tool capable of removing 1 ½ inch x 3 inch galvanized steel*
2. *Control amount of water and carbon steel particles*
3. *Minimum efficiency of 2 storage locations per shift*

First Canister Support Crossbar Removed

Shield Plug Replacement

Double Stack Progress

- Progress in FY 16
  - 234 crossbars have been removed (July 26, 2016)
  - 150 of 150 positions planned have new plates and new plugs installed (July 26, 2016)
- Shielded Canister Transporter software and hardware modifications complete to support double stacking in August
- Other progress:
  - Heat Model supports canisters produced to date and future sludge batch forecast
  - Seismic/Structural calculations support adequate margin for static and seismic performance category and canister integrity
  - Radiological calculations and field surveys confirm dose rates during modification w/o completely emptying vault
  - Canister Double Stack activities will not alter the Hazard Category
  - DSA change to update configuration change is complete

Questions And Comments?

Acronym List

DWPF: Defense Waste Processing Facility

SWPF: Salt Waste Processing Facility

ARP: Actinide Removal Process

MCU: Modular Caustic Side Solvent Extraction Unit

BWRE: Bulk Waste Removal Efforts

GWSB: Glass Waste Storage Building

LPPP: Low Point Pump Pit

SRAT: Sludge Receipt and Adjustment Tank

MCi: Million Curies

SME: Slurry Mix Evaporator

MFT: Melter Feed Tank

SCT: Shielded Canister Transporter

GWSP: Glass Waste Storage Project

FY: Fiscal Year

HLW: High Level Wastes