



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Defense Waste Processing Facility Update

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DOE

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September 2016

Purpose

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

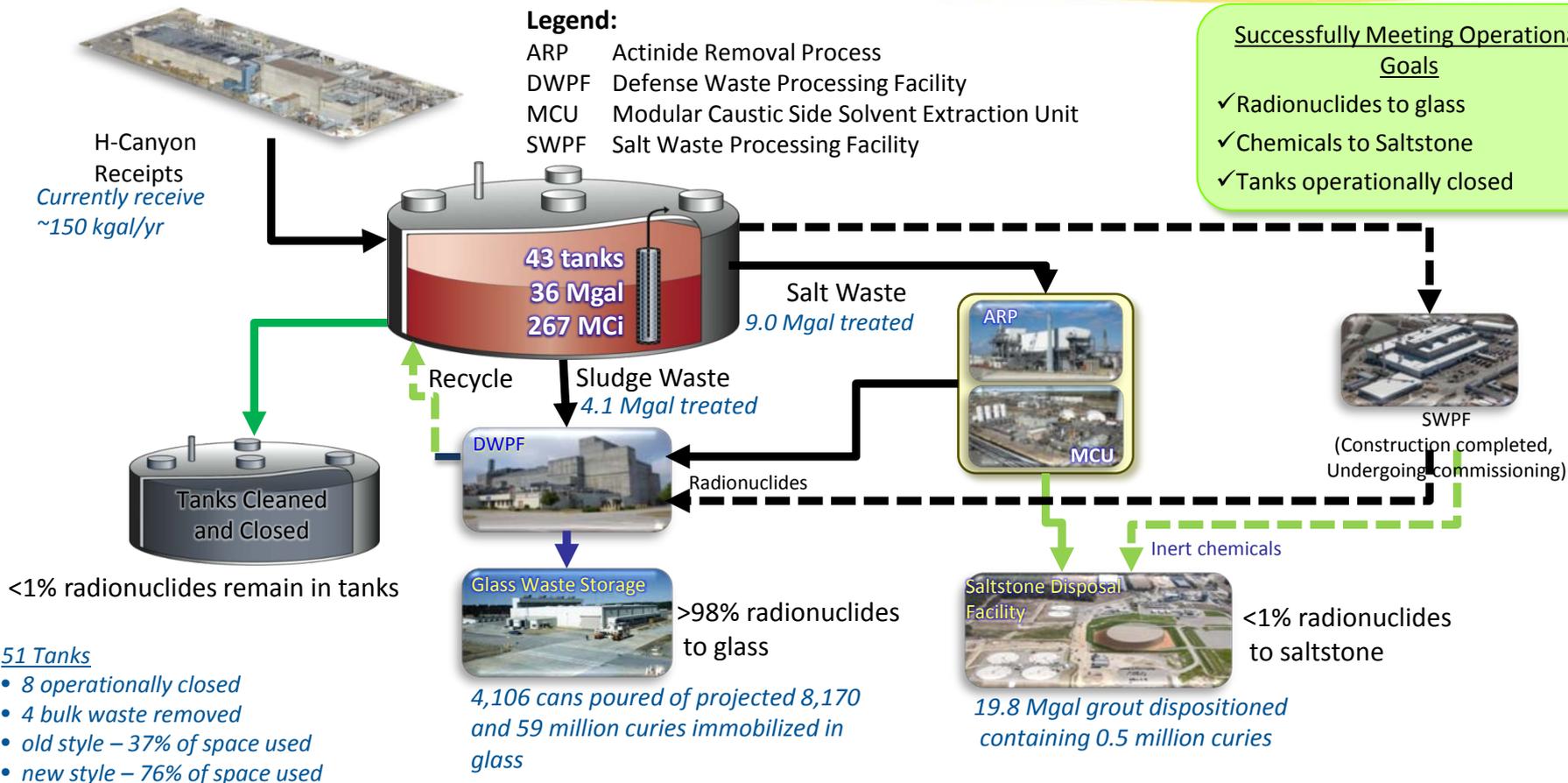
SRS Liquid Waste Program

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



<1% radionuclides remain in tanks

51 Tanks

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

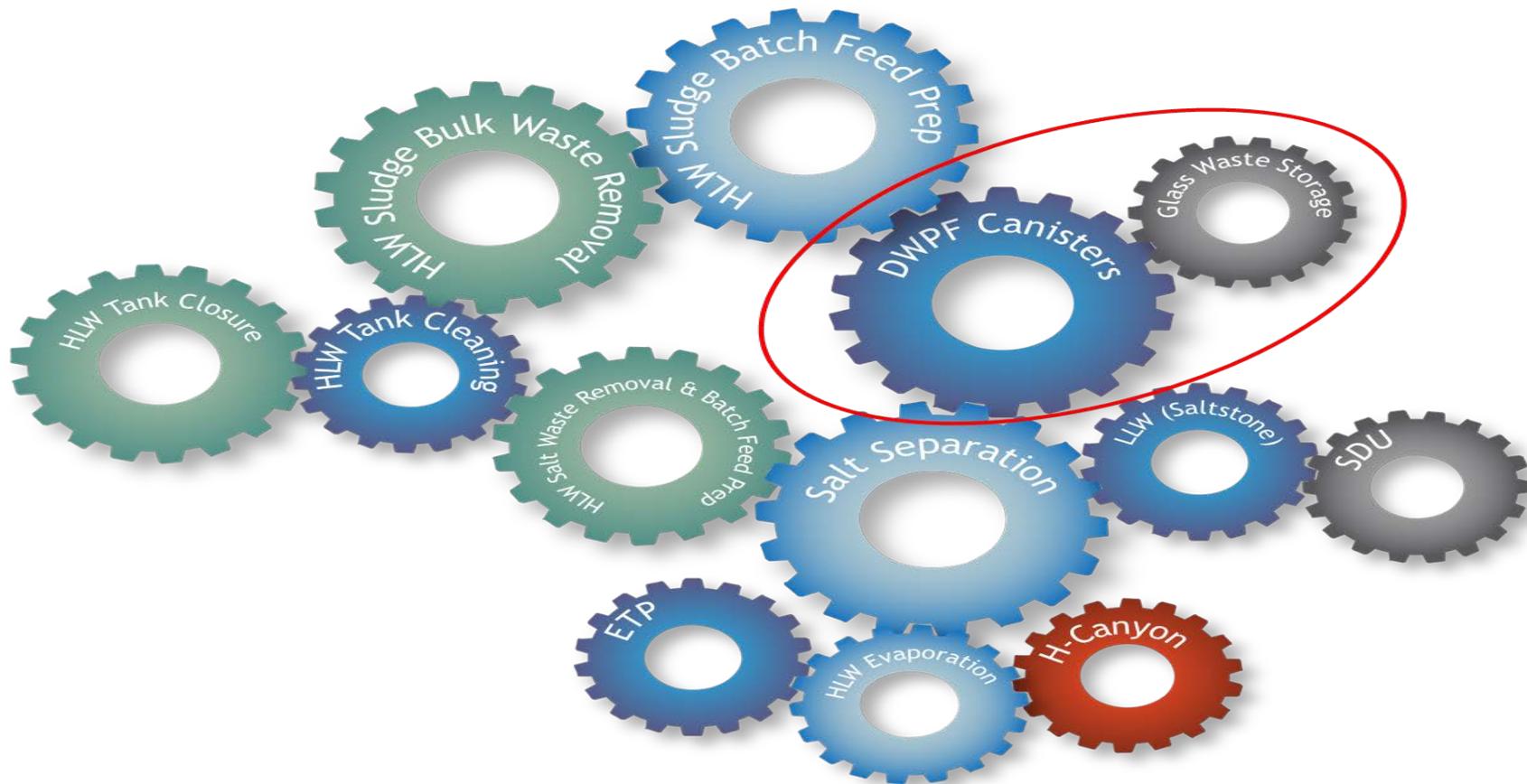
>98% radionuclides to glass

4,106 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

An Integrated System



Vitrification Process

Tank Farm



Glass Waste Storage

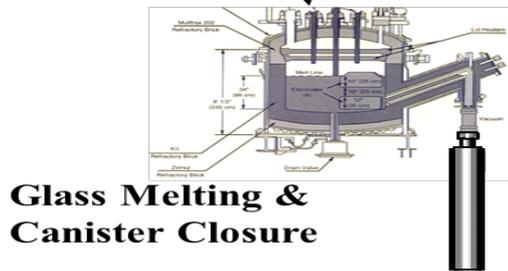
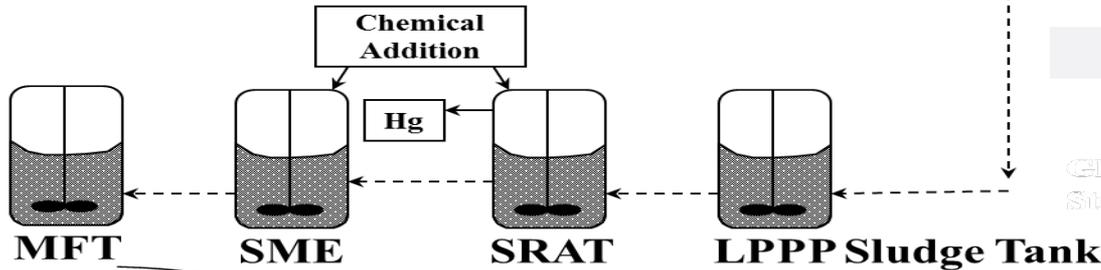


Transporter



Glass Waste Storage Building #2

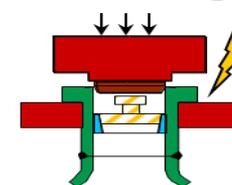
DWPF Chemical Processing



Canister Cleaning



Welding



DWPF Production

- Canister Production Rate
 - FY16 125 to 150, (135 completed today)
 - FY17 100 with 5 month SWPF tie-in outage
- Canisters Produced To Date (September, 2016) 4,106
- Estimated Total Canister Production 8,170
- Canisters Produced (% of Total) 50%

DWPF 20 Years of Production

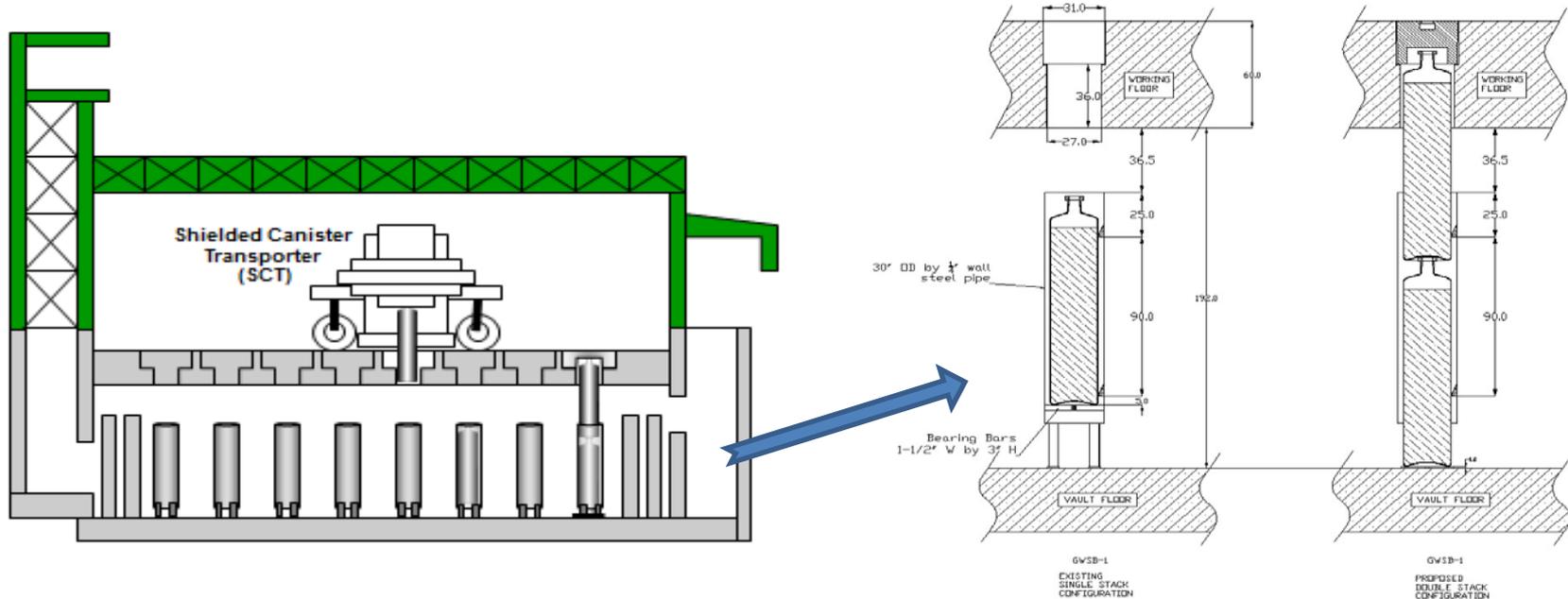
4000th
DWPF Canister
being moved to the
Glass Waste Storage
Building 2



**EM-1 Monica Regalbuto's Ride on the SGT
May 12, 2016**

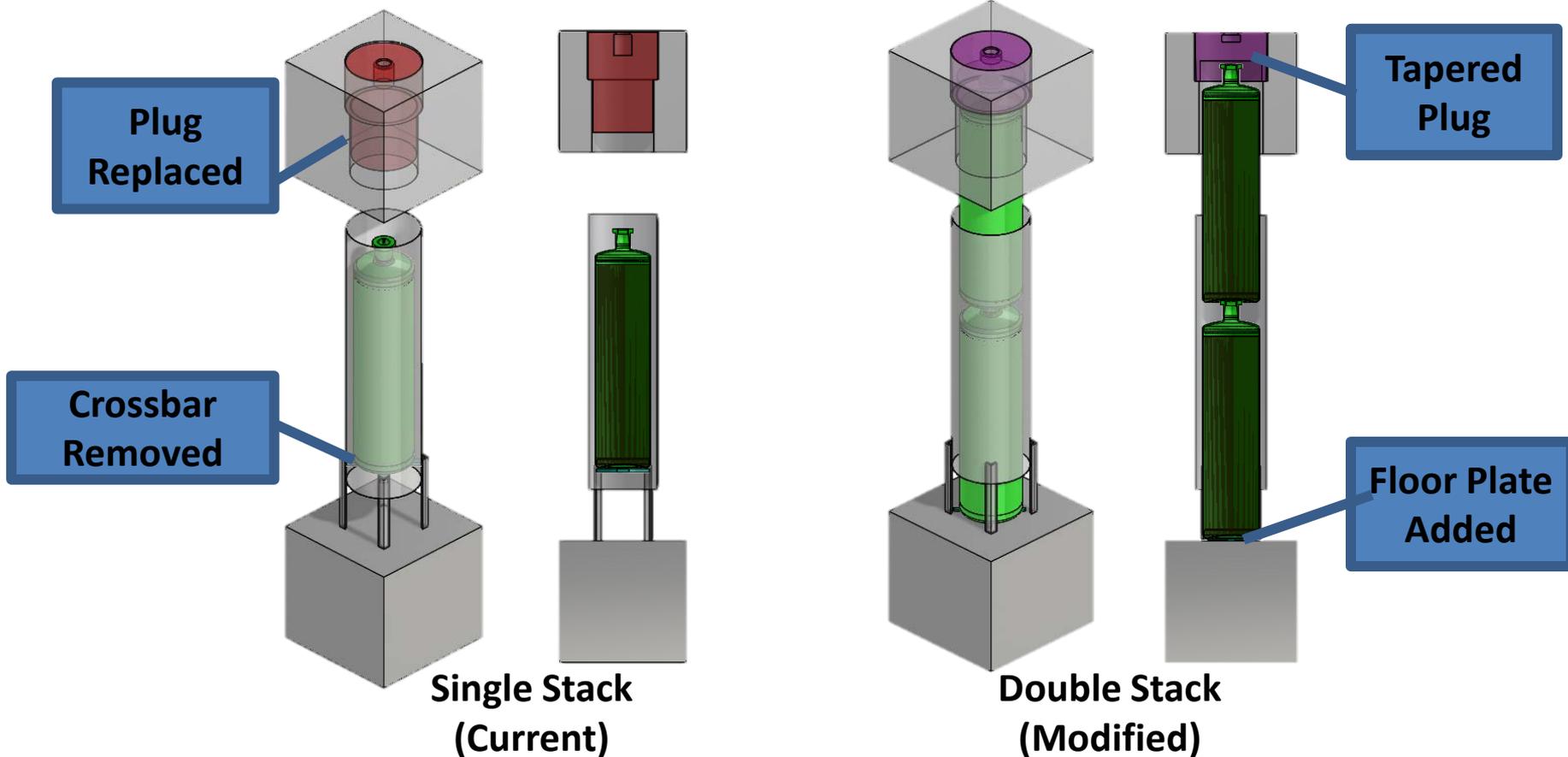


- **No 3rd Glass Waste Storage Building (GWSB)**
 - Large upfront cost & future D&D cost
 - Line Item 12-D-403 (~ \$130 million) has been cancelled
 - SRS Liquid Waste System Plan, revision 20, approved on March 21, 2016, determined that additional storage of space of vitrified canisters is not needed 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



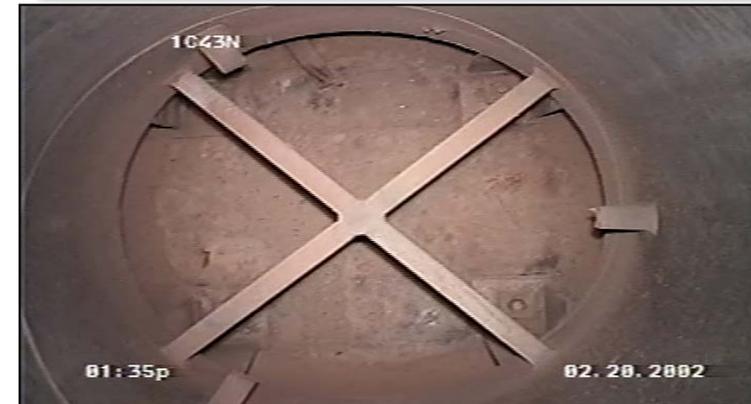
- Two canisters per location (vs. one can per location)
- Lower canister on support on vault floor (vs. cross bar support 3' off floor)
- Upper canister placed directly on top of lower canister
- Upper canister extends into operating deck floor, but remains below grade
- Shield plug redesigned for equivalent 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 Inside Diameter
 - Cross Bar Assembly is 1 ½ inch x 3 inch galvanized carbon steel bars
 - Cross Bar Assembly~ 18 ft down with 30 inch Outside Diameter
 - 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
 - 262 crossbars have been removed (September, 2016)
 - 150 of 150 positions planned have new plates and new plugs installed
 - Shielded Canister Transporter software and hardware modifications were completed
- First two canisters were double stacked 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
 - Canister Double Stack activities will not alter the Hazard Category
 - Documented Safety Analysis (DSA) change to update configuration change was completed and implemented



**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

DSA: Documented Safety Analysis

OD: Outside Diameter

ID: Inside Diameter