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Liquid Waste Post-Outage Update

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Liquid Waste (LW) Facilities

H & F Tank Farms



Dates to 1950s

Defense Waste Processing Facility (DWPF)



Dates to 1980s

Salt Waste Processing Facility (SWPF)



Hot Commissioning in 2021

Saltstone Production Facility (SPF)



Dates to 1980s

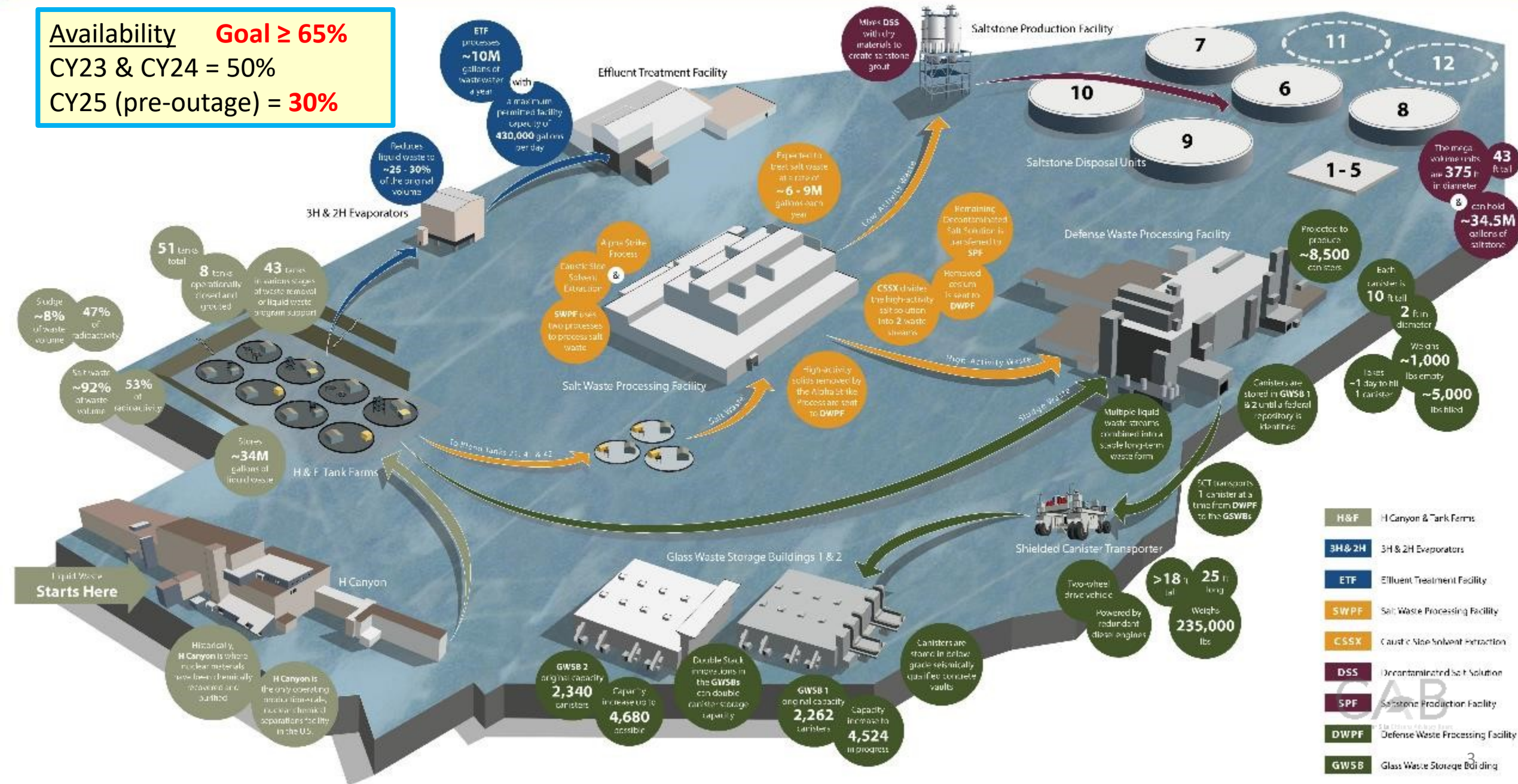
- Integrated network of facilities
- LW System complete with addition of SWPF in 2021
- Most are aged-facilities > 40 years
- Periodic planned outages required
- Integrated System Availability critical to mission execution

SRS Liquid Waste Facilities

Availability Goal $\geq 65\%$

CY23 & CY24 = 50%

CY25 (pre-outage) = 30%



Outage Objectives

- **Facility Improvements**

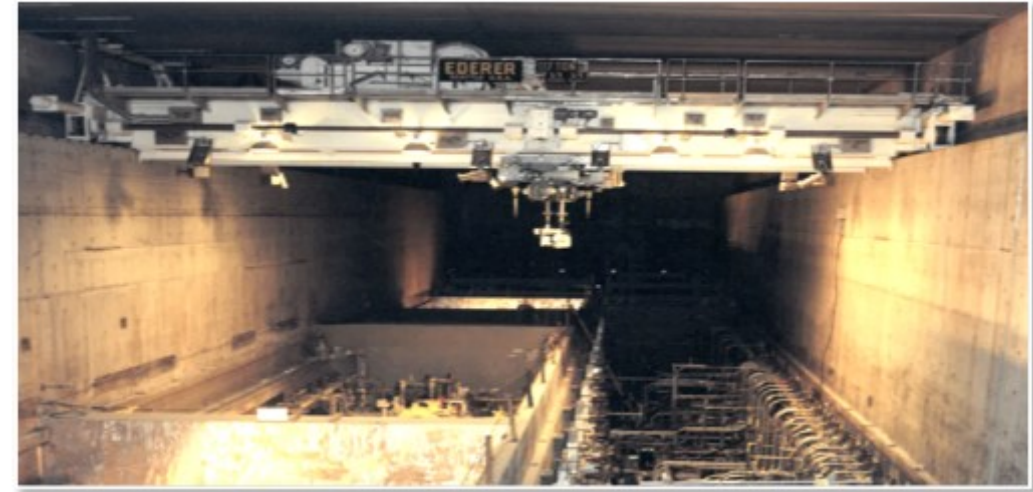
- *Process efficiency gains*
- *Buffers to dampen interface impacts*

- **Equipment Reliability**

- *Robust/reliable equipment to minimize future downtime*

- **Corrective & Preventive Maintenance**

- *Utility systems*
 - Steam, electrical, air, water
- *Process equipment*
 - Pumps, agitators/mixers, piping, valves



2025 Outage - Key Work Scopes

- **Facility Improvements**

- *Extended Cross Flow Filters (CFF)*
- *512-S Lag Storage for SWPF Strip Solution*
- *Strip Effluent (SE) to Slurry Mix Evaporator (SME) modifications in DWPF*

- **Equipment Reliability**

- *DWPF Main Process Crane (MPC) Upgrades*
- *Centrifugal Contactor Replacements*
- *Centrifugal Contactor Vibration Monitoring*



9" Diameter Core Drill for
Vibration Monitoring – 36" deep

Extended Cross Flow Filter (CFF)

- Limiting factor for SWPF production
 - 1st stage of process - filters out actinides
 - <20 gallons per minute total pre-outage
- Replaced all three 10' CFF with 16' CFF
 - Doubled the filter surface area
- Post-outage performance
 - Up to 20 gallons per minute per CFF at minimum pressure

✓ **Complete**

Mock-Up Photos



Existing 10' Filter



Sleeved Filter Upon Removal

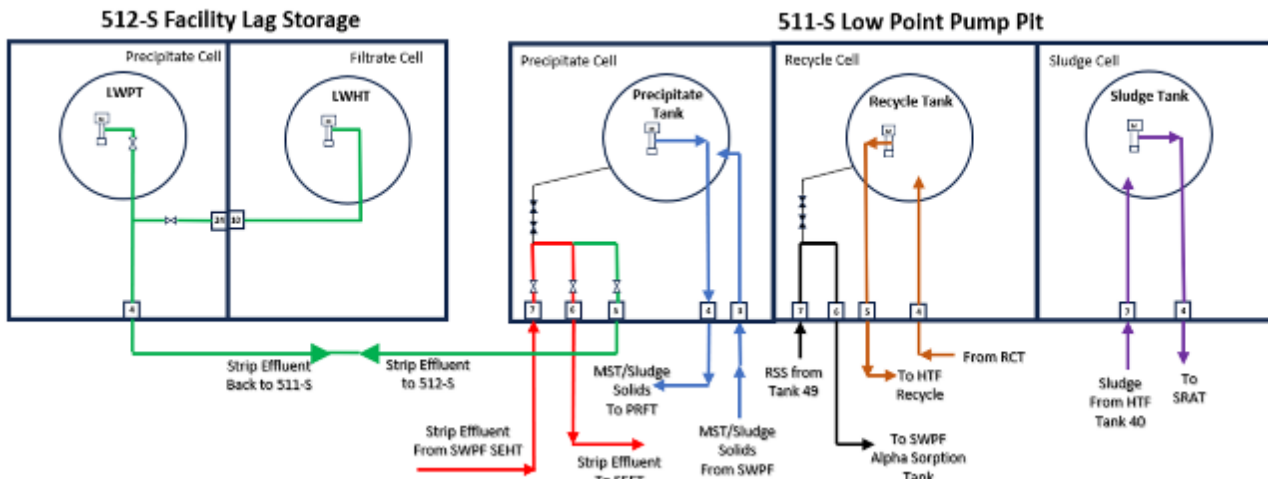


New 16' Filter

512-S Lag Storage for SWPF Strip Effluent

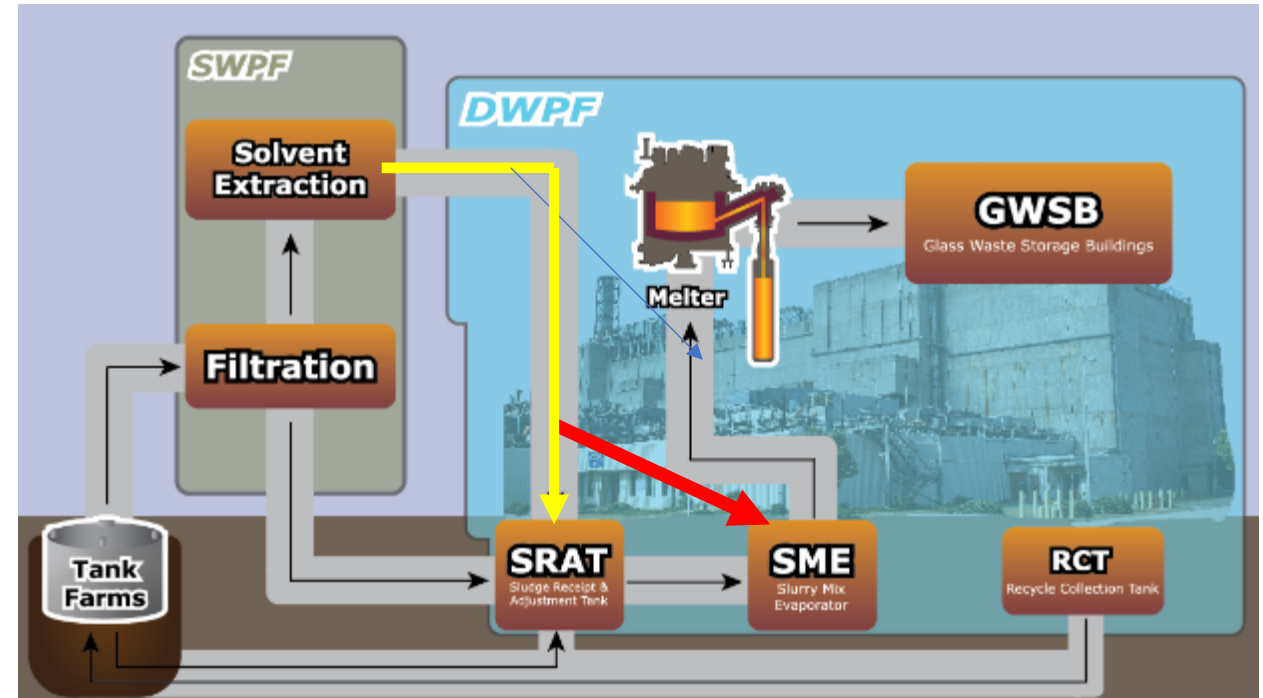
- Placed two idle tanks at Building 512-S into service as interim storage for SWPF strip effluent (SE) being transferred to DWPF
- Provides ~10 days of buffer to accommodate short-term outages at DWPF without pausing SWPF operations

✓ *Complete*



SE to SME Project Modification

- Strip effluent (SE), the cesium stream from SWPF, is processed in the Sludge Receipt and Adjustment Tank (SRAT)
- SE to SME improves operational flexibility in DWPF by providing a redundant disposition path for SE
- Allows for “Sprint Capability” to catch up when DWPF downtimes/outage creates a backlog of SE from SWPF



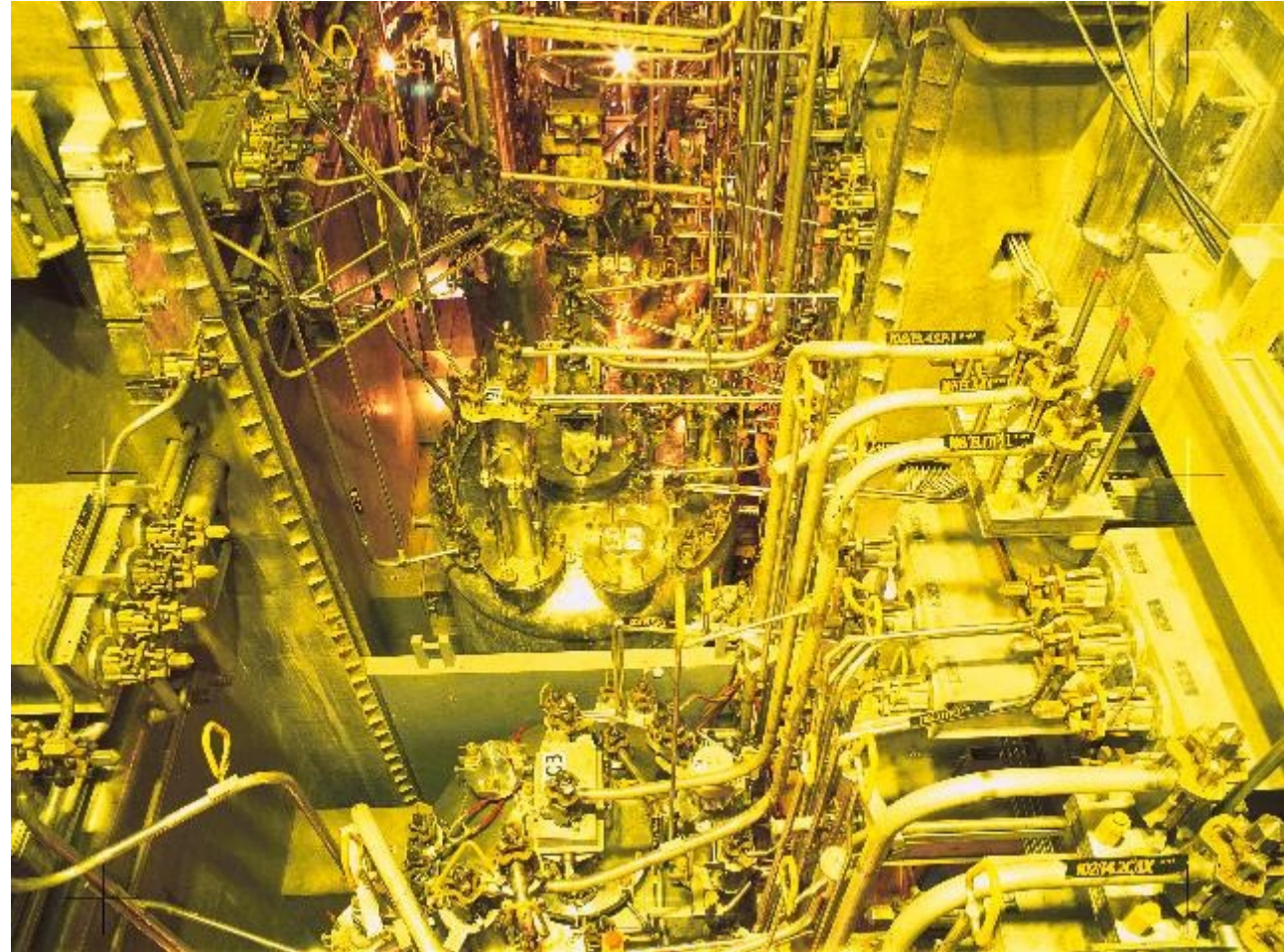
✓ *Complete*

DWPF Main Process Crane (MPC) Upgrade

- MPC required to observe & service remote process cells
 - *High radiation/temperature & acidic environment*
- “Heart of DWPF” – remote wireless operation



DWPF Main Process Crane (MPC)



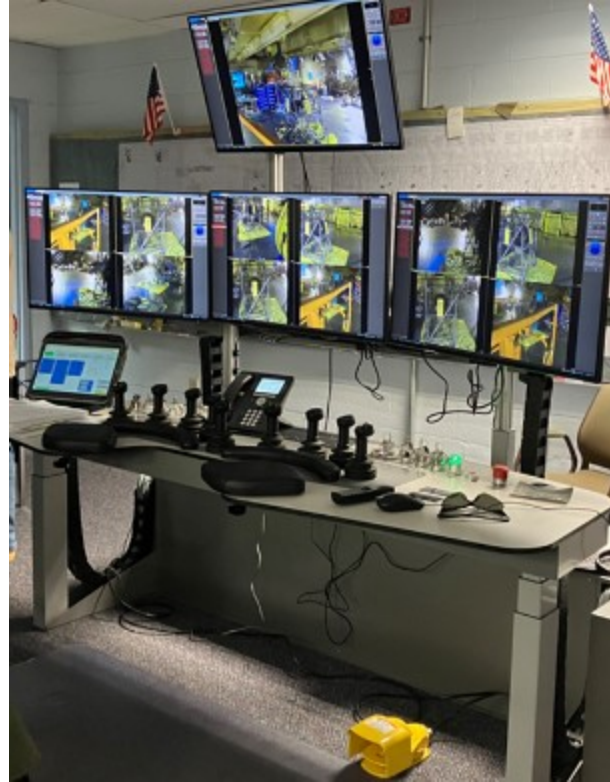
DWPF Remote Processing Cells



DWPF Main Process Crane (MPC) Upgrade



Old Crane Operating Console



New Crane Operating Console

- Replaced existing ten analog cameras with digital
 - *Added two new cameras*
- New antennas and wireless communication system
- New crane operating & maintenance consoles
- New crane simulator for training

✓ **Complete**

DWPF Main Process Crane (MPC) Simulator



- Accurate depiction of DWPF canyon including cell covers, vessels, jumpers
- Impact wrench and connector operation
- Equipment installation and removal
- Significant improvement in Crane Operator knowledge and proficiency

Centrifugal Contactor Replacements

- **Challenges**

- *Periodic mechanical failures*
- *Fouling of flow weirs with solids degrades process performance*

- **Procured 16 new units**

- *Now have 20 total spares for more proactive system optimization*

- **Installed spare contactors during outage**

- *Included all high-risk mechanical failures & units with solids fouling*

✓ **Complete**



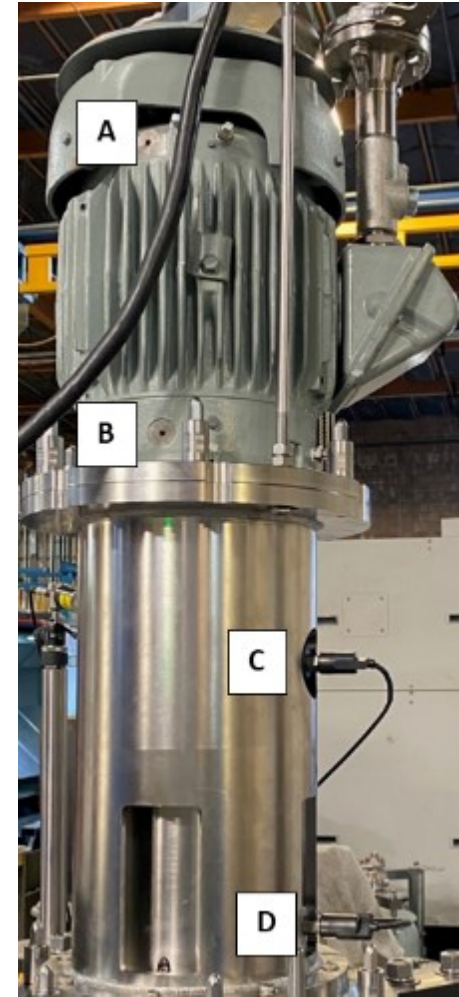
SWPF Centrifugal Contactor



Centrifugal Contactor Vibration Monitoring

- Upgraded remote monitoring capability for SWPF centrifugal contactors
- Increased from one to four temperature/vibration sensors per unit
 - 9" diameter core drill through 36" shield wall
 - Modifications on each contactor to mount new sensors
 - > 900 cable terminations
- Improve reliability and reduce down time
 - Improve predictability of failure and decision making
 - Capitalize on planned & unplanned outages

✓ **Complete**



Centrifugal Contactor Monitor Locations

Corrective & Preventative Maintenance Examples

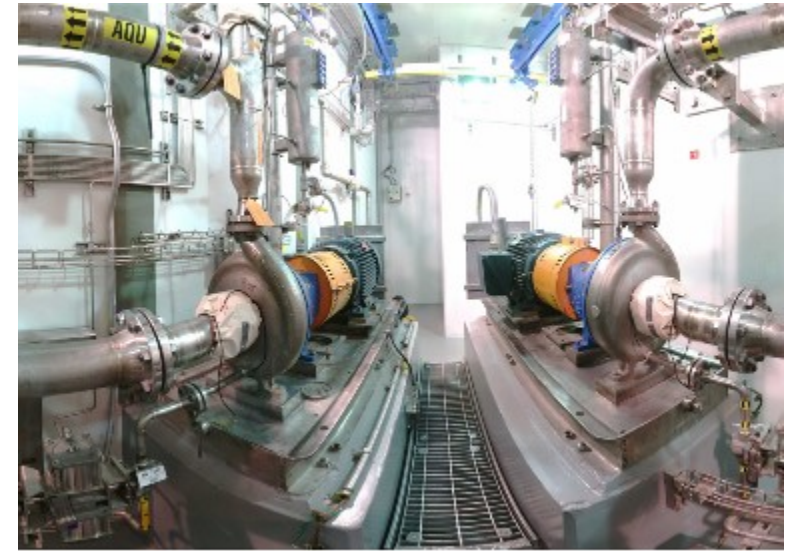
- Distributed Control System (DCS) upgrade
- Preventative Maintenance of Electrical Load Centers
- Shielded Canister Transporter (SCT) Tire Change
- Steam and Condensate Repairs

✓ *Complete*



SWPF Room 136B Pump Repairs

- **Emergent Corrective Maintenance Task**
 - *Aligned with planned outage to minimize down time*
- **Room 136B houses strip effluent (SE) transfer pumps**
 - *Drain valve and seal leakage detected*
 - *High radiation, cesium laden product stream*
 - *Dose rates of ~640R/hour (Federal Limit = 5R/year)*
- **Repairs have been successfully completed**
 - *Extensive use of robotics, extended tools and innovative shielding techniques*



✓ **Complete**

Current Status

- Outage work complete as planned
- SWPF Room 136B emergent repairs completed in early August
- All facilities have resumed process operations
- Early indications of outage impact are positive
 - *CFF capability vastly improved, etc.*
- LW system capacity now capable of satisfying the mission need
 - *Primary focus on increasing system availability (Goal of $\geq 65\%$)*

