



Idaho Cleanup Project Integrated Waste Treatment Unit

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EM *Environmental Management*

safety ❖ performance ❖ cleanup ❖ closure

Idaho Cleanup Project

IWTU Mission

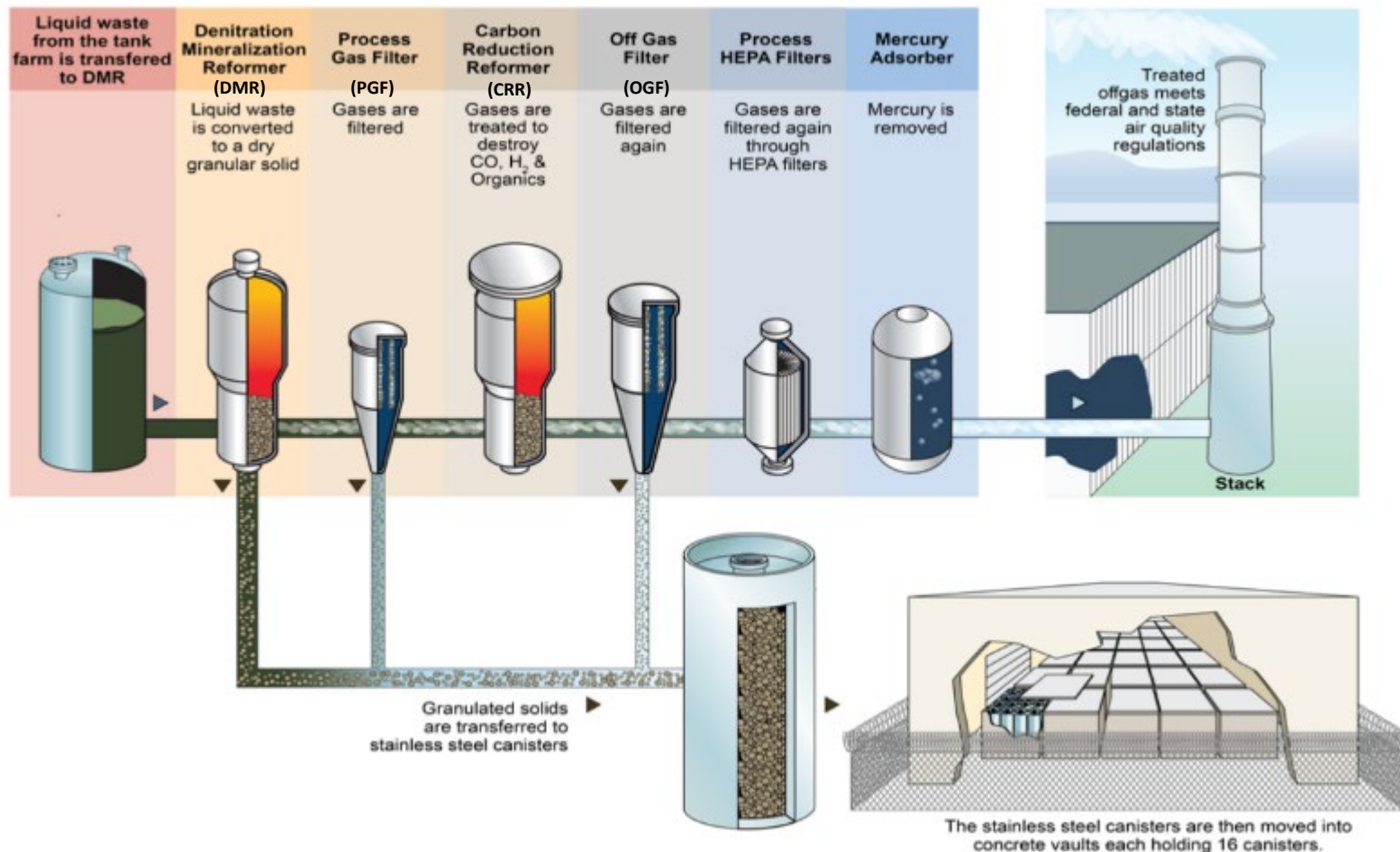
- IWTU is a Hazard Category 2 nuclear facility designed and constructed to treat approximately 850,000 gallons of highly radioactive liquid tank waste (sodium bearing waste – SBW) using the fluidized bed steam reforming process
 - General waste description:
 - Approximately 850,000-900,000 gallons of acidic waste
 - Waste is contained in 3 stainless steel tanks within concrete vaults (WM-187, -188, -189)
 - Tank 187 includes majority of solids (36-in heel)
- The process will convert liquid SBW into a solid, granular, carbonate product for on-site storage pending final disposition



Treated SBW simulant product



IWTU Process Flow



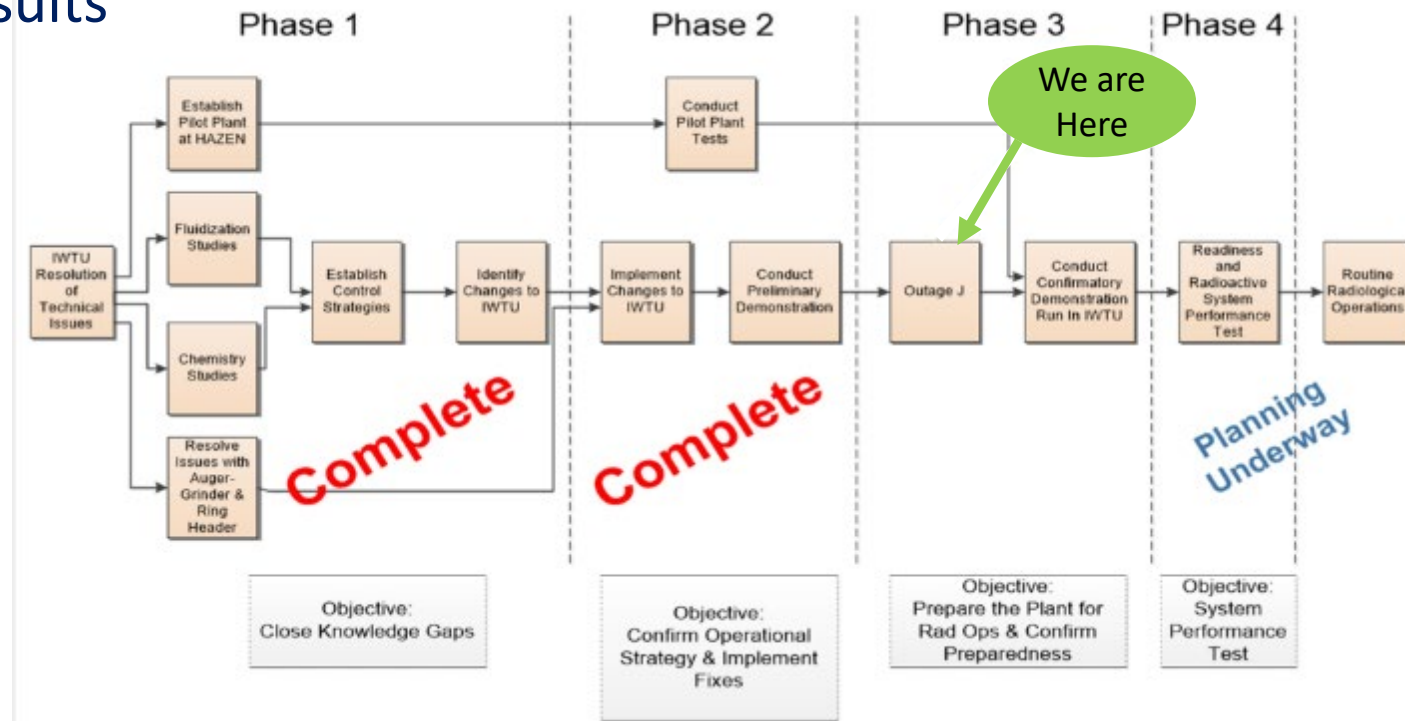
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IWTU Phased Approach

- A four phased approach to achieve radiological operations
- Each phase scope of work negotiated separately due to the discrete nature of the work and builds upon previous phase results



IWTU COVID Impact Summary

- DOE issued partial stop work on March 25th 2020; allowed Essential Mission Critical Operations only
 - Transitioned to Phase 1 in May 2020
 - Transitioned to Phase 2 in July 2020
- Case rate surges last fall and again in March 2021
 - Positive results of asymptomatic individuals & quarantine impacts
 - Returned to Stage 0 on March 18th
 - Moved to Stage 1 on March 29th
 - Initiated Stage 2 on April 12th
- Outage J completion has slipped over 10 months due to COVID impacts which will delay the start of radiological operations



Major Outage J Objectives

- Finalize Process Gas Filter (PGF) design
- Optimization for sustained radiological operations
 - Wet/dry decontamination system modifications
 - Canister decontamination system modifications
 - Contamination control facility modifications
- Other operability improvements



Wet decon system skid installation (Pre-COVID)

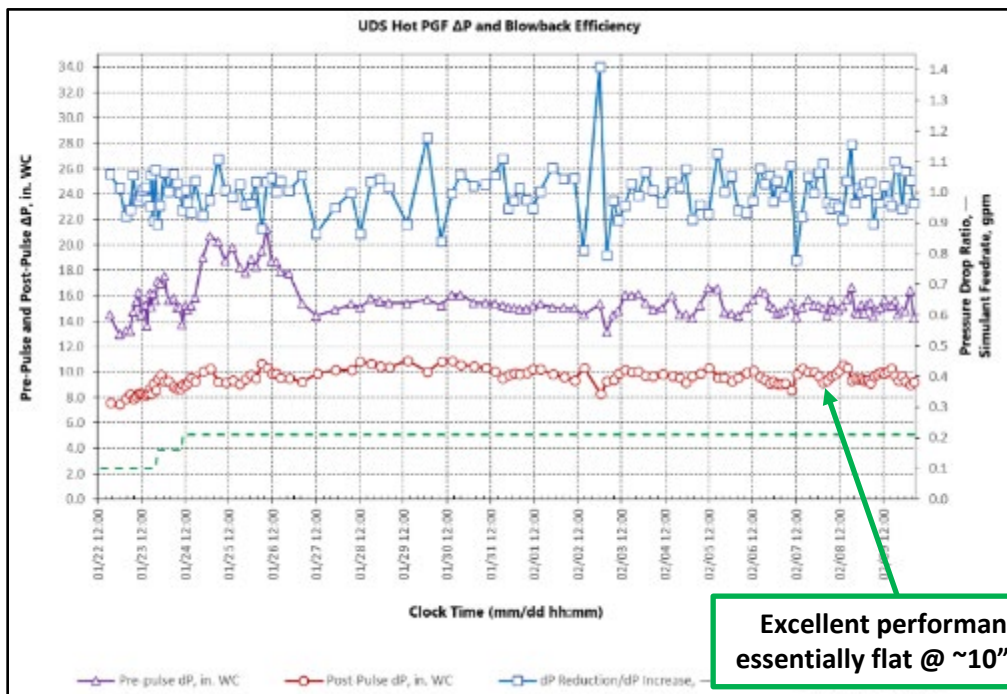


Wet decon control tubing installation inside pipe chase (Pre-COVID)



Process Gas Filter (PGF) Status

- New bundles fabricated & installed
- Vessel re-assembled & inspected
- Stable PGF dP observed during latest Hazen tests



Hazen PGF differential pressure during UDS run



Installing modified PGF bundles



Installing PGF vessel head



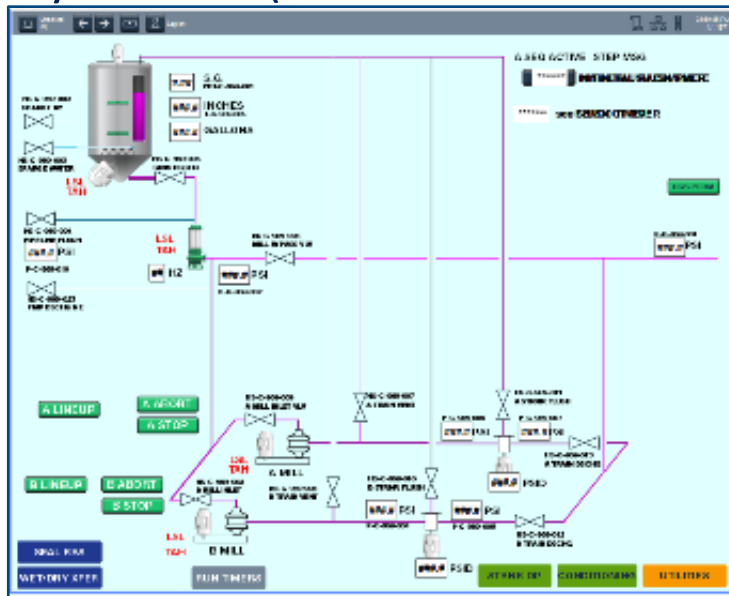
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Wet and Dry Decontamination System Status

- Field construction complete
- Loop checks complete
- Integrated system testing
 - Wet decon (water only)
 - Dry decon (gas only); full test following confirmatory run (residual bed material)
 - Dry vacuum (alumina & bauxite solids)



Wet decon conditioning system human-machine interface screen



Auxiliary blower

Canister Decontamination System Status

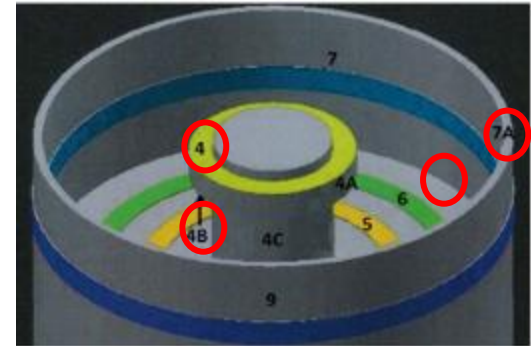
- Field construction, loop checks, mastering & shakedown complete
- Integrated testing ~90% complete
- Implementing excess canister movement resolution



Programming robot points



Canister decon robot performing automated decon cycle



Canister pintle region



Canister decon human-machine interface



Contamination Control Modifications Status

- Completed vault cell access door, vault plenum HVAC tie-in & canister fill cell 0 HVAC modification
- Remaining field activity
 - Canister fill cell 1 HVAC
 - Vault loading tarping system
 - Personnel decon station
 - Herculite liner under transfer bell crane path
 - Floor prep/painting



Vault loading cell access door



Vault loading cell plenum & tarping system



Transfer bell crane
Herculite liner



Other Outage J Accomplishments

- Replaced depleted mercury adsorber beds
- Installed phosphoric addition system
- Installation of upgraded NO_x system
- Installation of 5-plex personnel trailer
- Installation & testing of control system upgrade



Granular Activated Carbon (GAC) bed vessels



Phosphoric acid addition system



Project Path Forward Summary

- Complete Outage J construction & testing activities – completion delayed due to COVID
- Perform readiness verification activities – likely delayed to follow-on ICP core contract
- Conduct Confirmatory Run
 - Verify Outage J modifications and preparedness for radioactive waste operations under simulated radiological conditions
- Conduct final plant outage
 - Conduct integrated test of dry decon system
 - Perform required PGF filter & other system inspections
- Conduct System Performance Test
 - Simulant start up, bed turnover & off-gas collection dry-run
 - Initiate test with blended (simulant & SBW) feed to verify rad conditions
 - Establish final permit conditions using 100% SBW tank waste
 - Conduct steady-state SBW treatment operations

