



# Integrated Waste Treatment Unit Update

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Citizens Advisory Board

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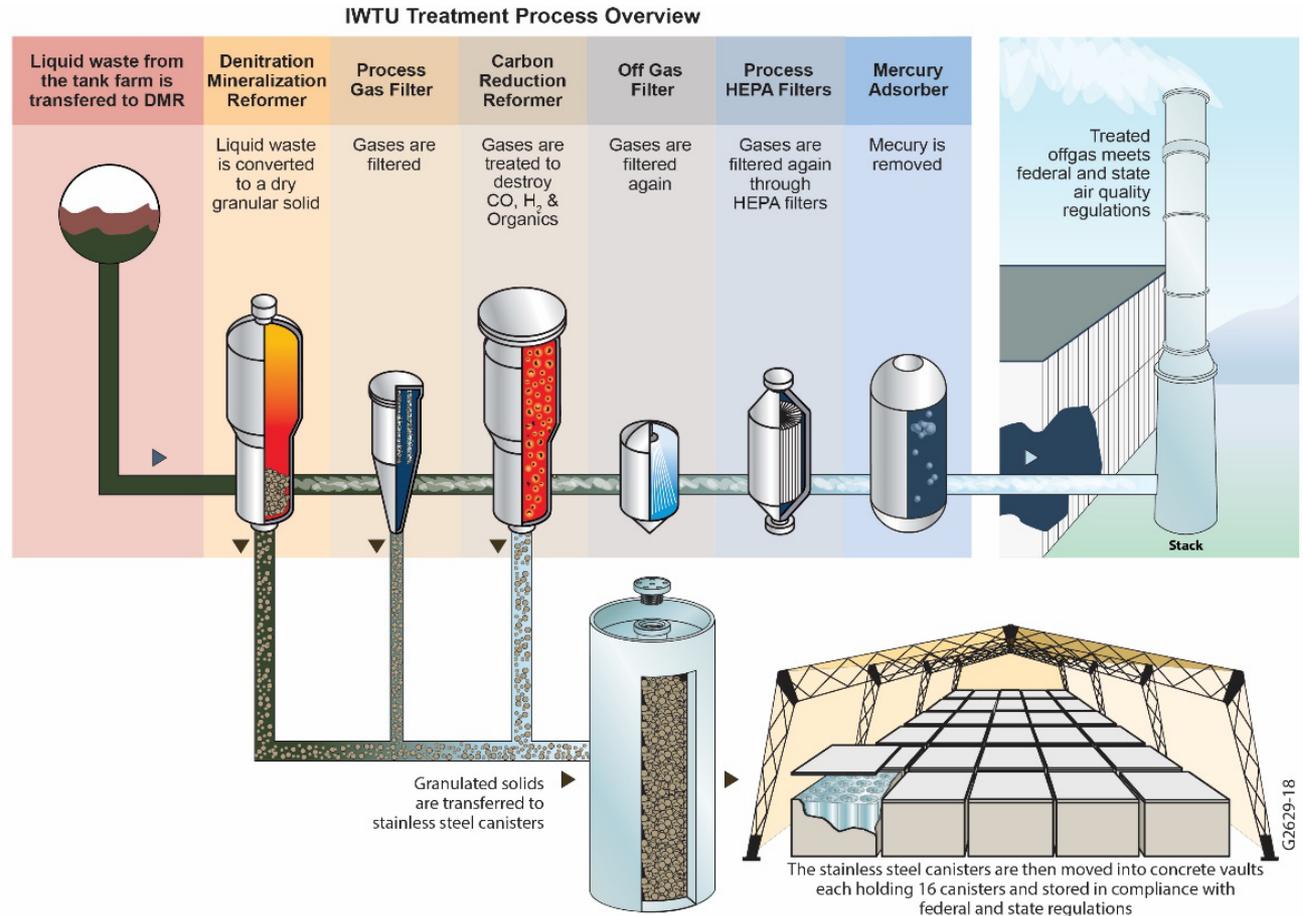
**EM** Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

Idaho Cleanup Project

# IWTU Mission

- There are about 900,000 gallons of liquid radioactive waste stored in three stainless steel underground tanks at the Idaho Nuclear Technology and Engineering Center.
- The Integrated Waste Treatment Unit (IWTU) was constructed to treat, package and store the waste.



# IWTU Overview

- The process will convert liquid Sodium Bearing Waste (SBW) into a solid, granular, carbonate product for on-site storage pending final disposition.
- Construction was completed in late 2011, initial heat-up occurred in June 2012.
- Process instabilities and equipment issues identified during non-radiological testing have delayed the transition to radiological operations.
- Currently in a planned outage (Outage J). Major outage activities address preparation for radiological operations.
- Pilot Plant testing of alternative Process Gas Filter (PGF) filter elements conducted at Hazen Research, Inc. resulted in selection of replacement filter media.



# Process Gas Filter Testing

## Completed Hazen Research Filter Media Tests on Replacement Filter Media Research - Full Bundle Tests

- Test results indicate uncoated ceramic media meet performance requirements (Refractron monolithic SiC)



Refractron monolithic SiC



IWTU PGF filters – Sim Run 2





# Process Gas Filter Path Forward

## ➤ Hazen Long Term Filter Run

- Fifty (50) Refractron SF15 elements on order with delivery date of October 10
- Fuses in final stage of specification for procurement
- Pilot plant mods on track for completion for startup late October
- Scope of PGF long-term testing (expected duration 60-70 days)
  - Test mating between ceramic filters and metallic fuses (spring packs and seals)
  - Test efficacy of modified IWTU blowback system
  - Test Refractron SF15 filter elements at various feed rates
- Design Efforts
  - Filter and PGF modification design changes currently underway
  - Blowback system design and analysis are in progress



# Radiological Control Modifications

- Original design assumed 10 months operation and minimal Rad Controls
- Enhancing in-cell canister DECON capabilities
  - Canister surveying and cleaning will utilize robot suction and wiping
  - Plan to install and test DECON system during outage
- Designing wet and dry DECON systems
  - Reduces source term prior to maintenance of process vessels and piping
  - Wet decontamination system collects nitric “wash” from process vessels
    - To be returned to waste feed tank or NWCF
- Dry decontamination system removes product material from DMR dual plenum
  - To be returned to solids handling system



Product canister  
in fill cell



Can fill decon system testing



# Canister Decontamination System

## ◆ Status

- Completed Factory Acceptance Test
- Completed System Integration Test
- Facility installation initiated in September



FAT (factory acceptance test) at Oakland Automation



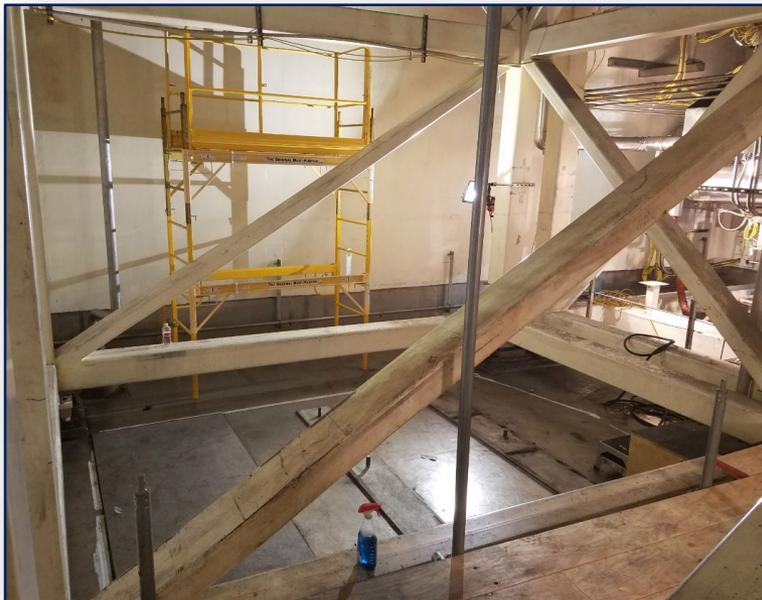
System Shakedown Test at Columbia Energy



# Wet and Dry Decontamination System

## ◆ Status

- Installation of the wet & dry decon systems has started
- Dry decon system will provide secondary transport of process vessel solids to the canister filling system.



Area in 4-pack is ready for decon conditioning system installation



The old decon tank has been removed

- Process optimization continues at the mockup



# Upcoming Activities

- Continue with Outage J activities
  - Outage J – Additional plant modifications and equipment maintenance
    - Upgrade cell, vessel, and canister de-con capability
    - Resolve Process Gas Filter performance issues
      - Modify system as needed to accommodate new filters
- Conduct Confirmatory Run
  - Verify Outage J modifications and conduct a contractor readiness assessment in preparation for radioactive waste operations
- Conduct System Performance Test
  - DEQ oversight – establish final permit conditions using tank waste

