



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

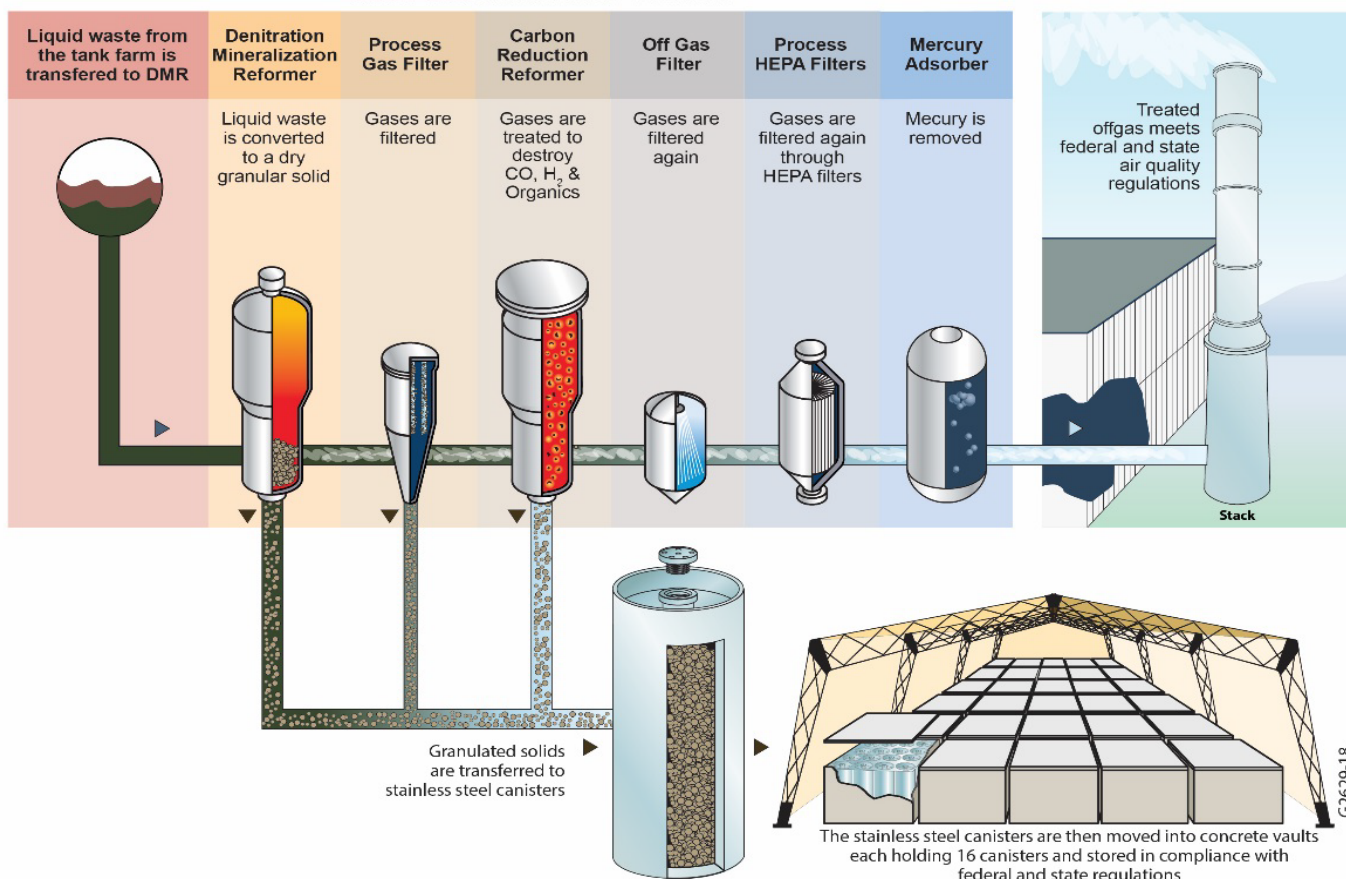
Integrated Waste Treatment Unit

Kevin O'Neill
Idaho Cleanup Project
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IWTU Background

- 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 Treatment Process Overview



IWTU Overview

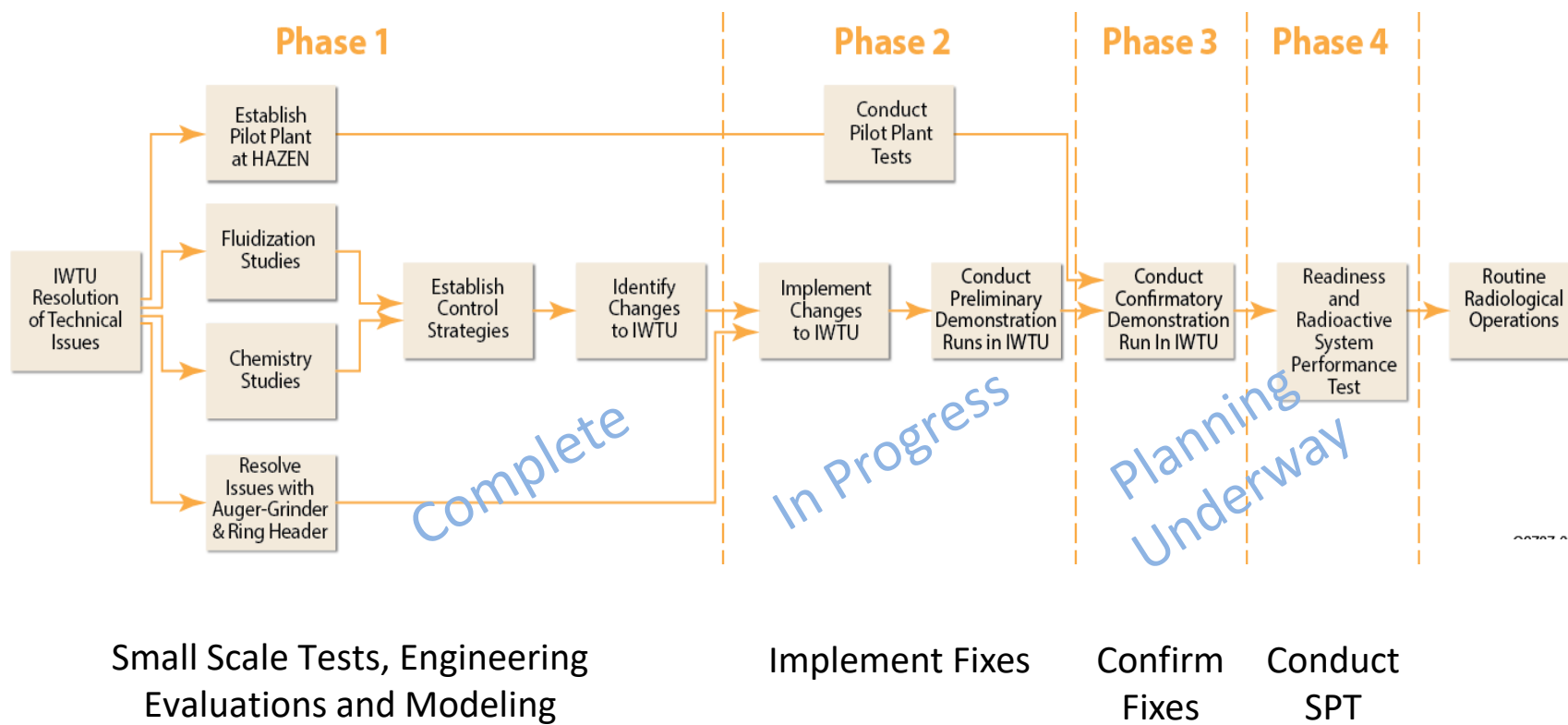
- The process will convert Sodium Bearing Waste (SBW) into a solid, granular, carbonate product for on-site storage pending final disposition.
- Construction was completed in late 2011, initial heat-up occurred in June 2012



- Process instabilities and equipment problems identified during non-radiological testing have delayed the transition to radiological operations.
- Modified Denitration Mineralization Reformer (DMR) performed well during a recent 30 day demonstration run using simulated waste.
- Currently in a maintenance outage to address the buildup of material on the Process Gas Filter (PGF) elements.

Approach to Address Remaining Issues

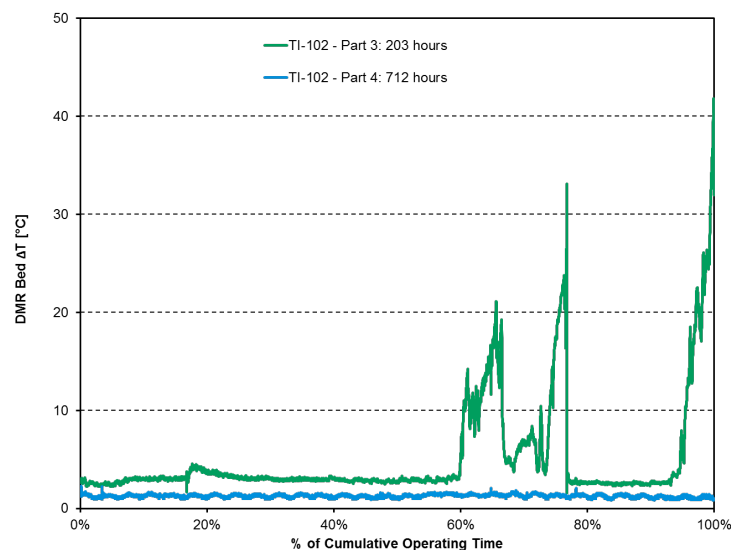
- Fluor Idaho has established a systematic, mechanistic based approach involving 4 phases to address issues with the IWTU
- Phase 2 Demonstration Run - Simulant Run 2 - completed, preparing for Simulant Run 3



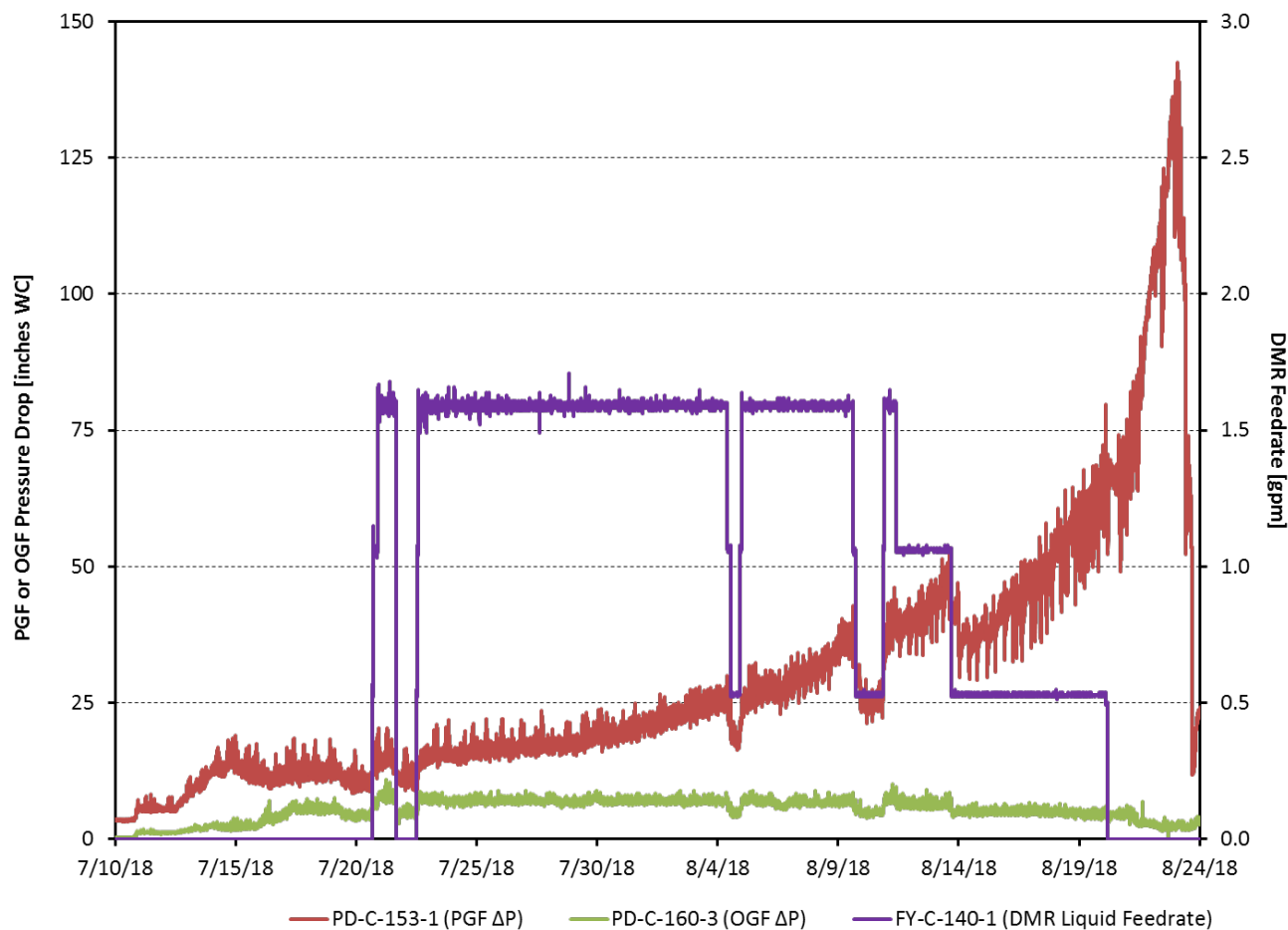
Simulant Run 2 Results

Primary and secondary test objectives met

- ✓ Demonstrated reliable DMR fluidization – unmitigated success
DMR bed differential temperatures ranged from 1 – 1.6 C°
- ✓ Processed over 53,000 gallons of simulant over 30 days
Feed on-line efficiency >95%
- ✓ Excellent control of DMR bed particle size – ranging 190 – 250 μ
- ✓ Sample system modifications were successful
- ✓ Auger-Grinder continued to function well
Product transfer rates improved



Process Gas Filter Performance



Process Gas Filter Performance cont'd



PGF Bundle being removed from housing



PGF Bundle after initial cleaning

- Resolve Process Gas Filter performance
 - Complete onsite and offsite analysis and testing
 - Clean and replace filters
 - Implement operational changes as needed
- Conduct Simulant Run 3
 - Verify satisfactory plant operations during long term operations at baseline conditions, and at or near boundary conditions
 - Anticipate 50 day period of simulated waste feed on
- Finalize Plan for Phases 3 and 4
 - Outage J – Additional plant modifications and equipment maintenance
 - Confirmatory Run – “Shakedown” of Outage J Mods and establish carbonate bed using Simulant
 - System Performance Test – EPA/DEQ oversight, establish Permit conditions using Tank Waste