



U.S. DEPARTMENT OF
ENERGY

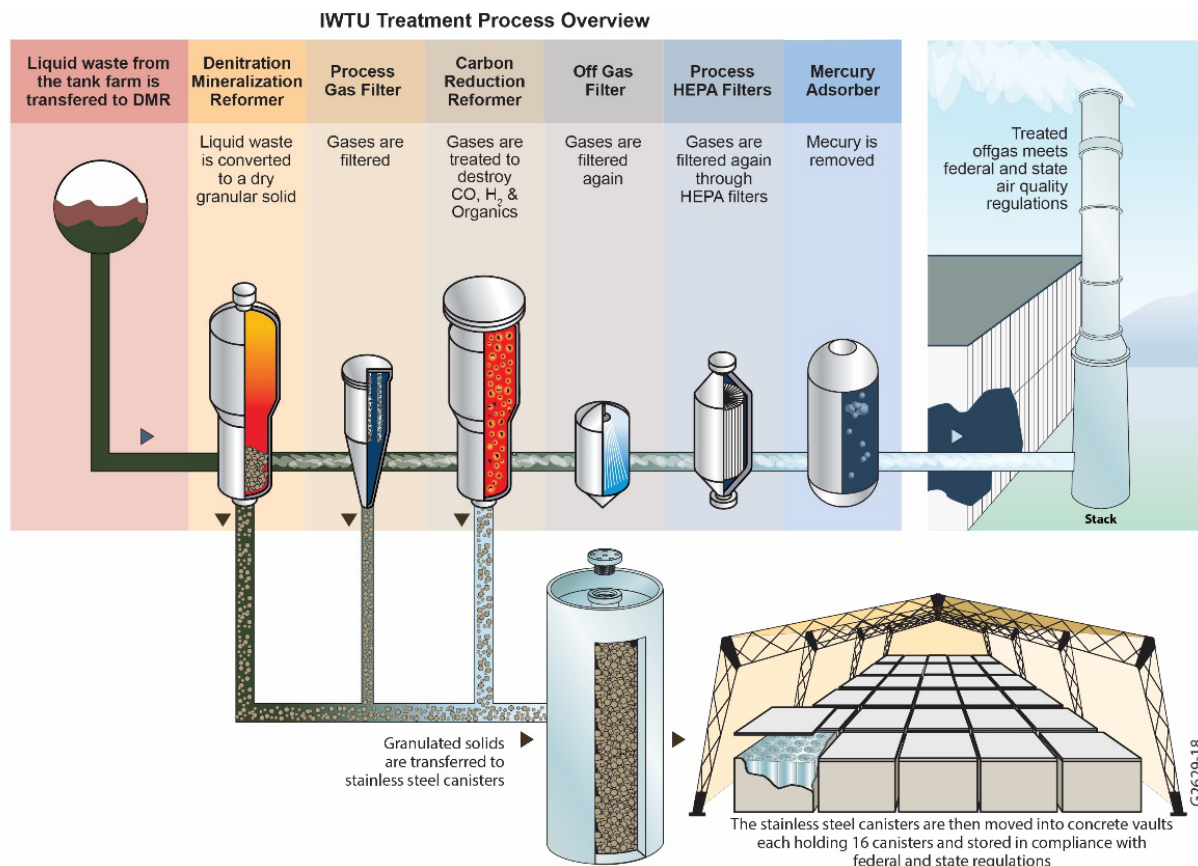
OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Status of Integrated Waste Treatment Unit

Kevin O'Neill
Idaho Cleanup Project
April 19, 2018

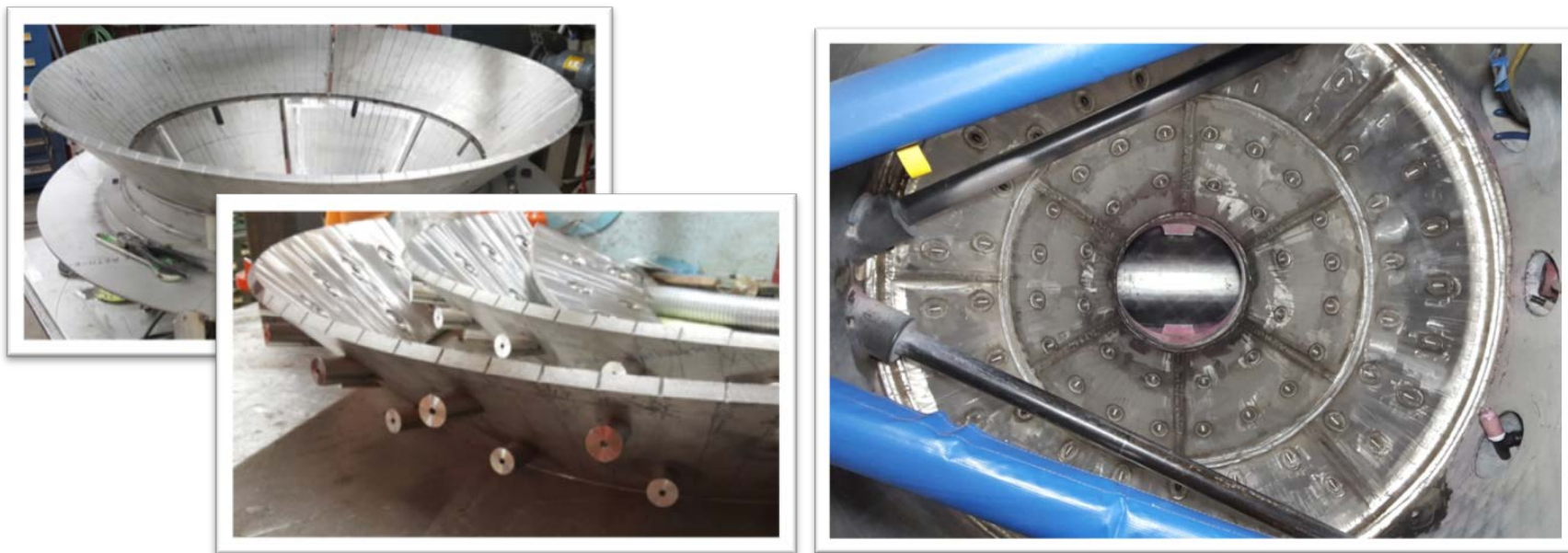
IWTU Background

- 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 the waste, but design and mechanical problems have prevented the beginning of waste treatment.



IWTU Overview / Objectives

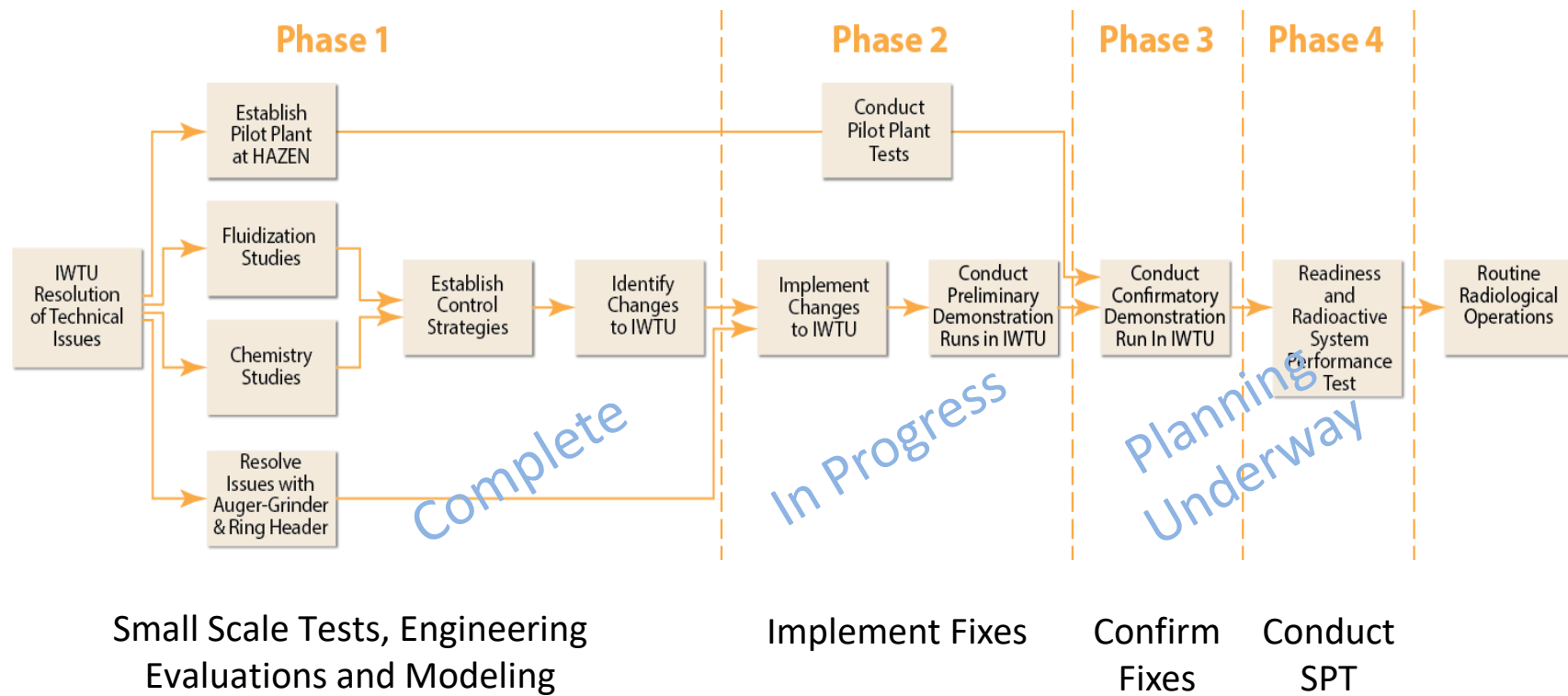
- The process will convert Sodium Bearing Waste into a solid, granular, carbonate product for on-site storage pending final disposition.
- Process instabilities and equipment problems identified during non-radiological testing have delayed the transition to radiological operations.
- Instabilities are associated with the primary reaction vessel, the Denitration Mineralization Reformer (DMR), and include particle size control, difficulties maintaining fluidizing conditions and scale formation within the DMR.



Cone and Double Plenum installed in the DMR

Approach to Address Remaining Issues

- Fluor Idaho has established a systematic, mechanistic based approach involving 4 phases to address issues with the IWTU.
- Facility is currently preparing to start the second Phase 2 Demonstration Run (Simulant Run 2).



Outage I Progress

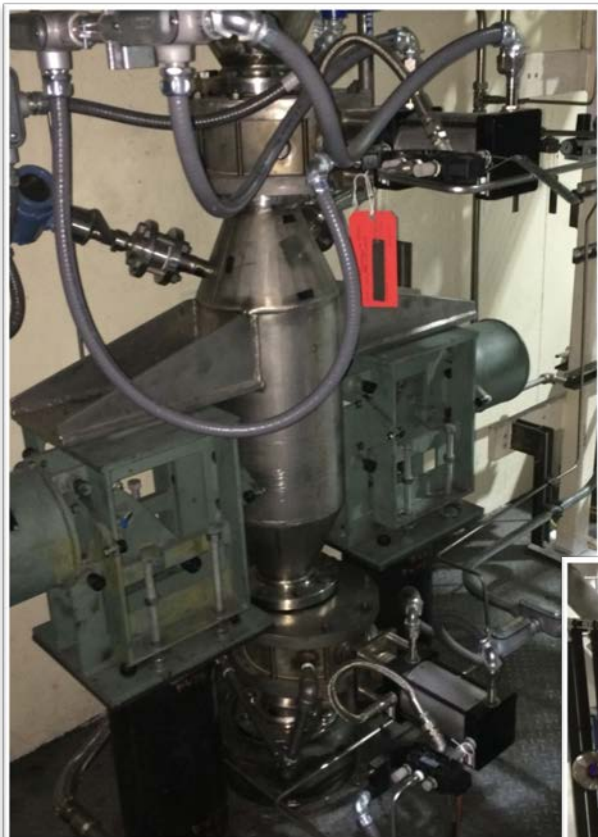


Denitration Mineralization Reformer (DMR)



Carbon Reduction Reformer (CRR)

Outage I Progress



Additive Airlock

Oxygen (O_2)
Monitor



Carbon Monoxide (CO) Monitor

- Complete Readiness Review activities
- Conduct Simulant Run 2
 - Verify satisfactory DMR fluidization
 - Anticipate 30 days of simulated feed on
- 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 feed on
- Finalize Plan for Phases 3 and 4
 - Outage J
 - Demonstration Run
 - System Performance Test