



U.S. DEPARTMENT OF  
**ENERGY**

OFFICE OF  
**ENVIRONMENTAL  
MANAGEMENT**

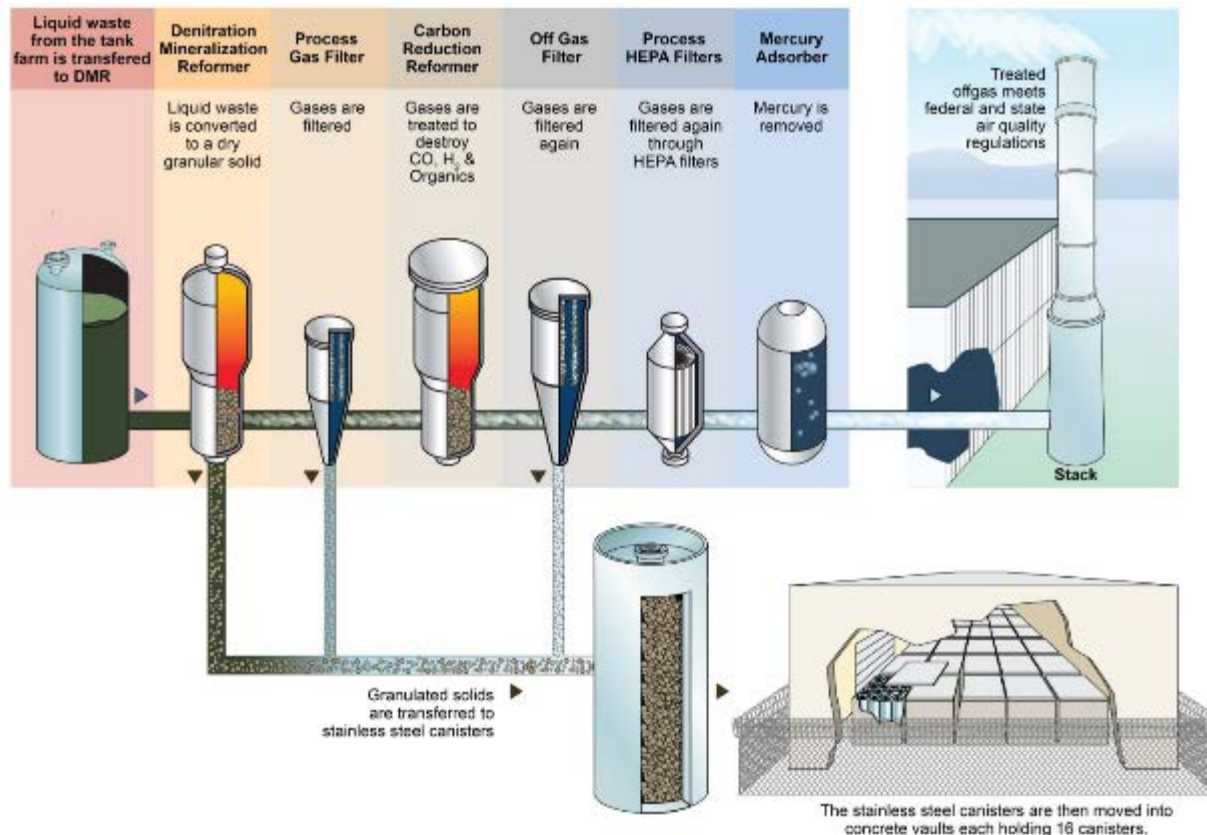
# Status of Integrated Waste Treatment Unit

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**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 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.



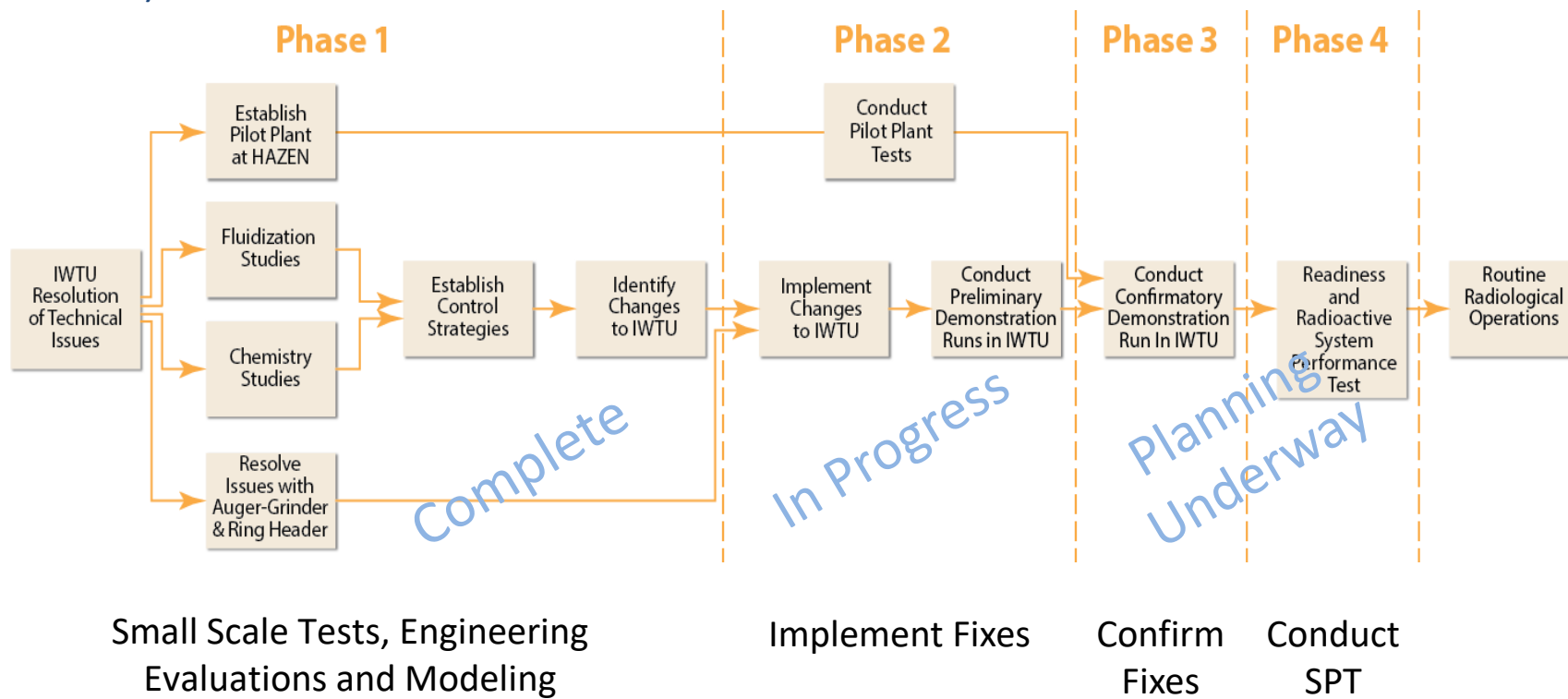
DMR - Double Plenum and Cone



Nitrojet Technology

# 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)





# Simulant Run 2

- Integrated System Test - Part 4, Demonstration Run 2
  - Verify satisfactory DMR fluidization during simulant operations – primary objective.
  - Demonstrate that the DMR average bed particle size can be controlled with periodic seed particle addition.
    - Target range of mean particle size is 200-400 micron.
  - Verify that the modified sample system operates satisfactorily.
  - Determine the effect of the new DMR throat purges on downstream CO concentrations during transfers.



# Upcoming Activities

- Complete Simulant Run 2
  - Verify satisfactory DMR fluidization
  - Anticipate 30 days of simulated feed
- 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
    - Replace PGF Filters, Install Canister De-con System, Improve Cell and Vessel De-con Systems
  - Confirmatory Run
  - System Performance Test