



U.S. DEPARTMENT OF
ENERGY

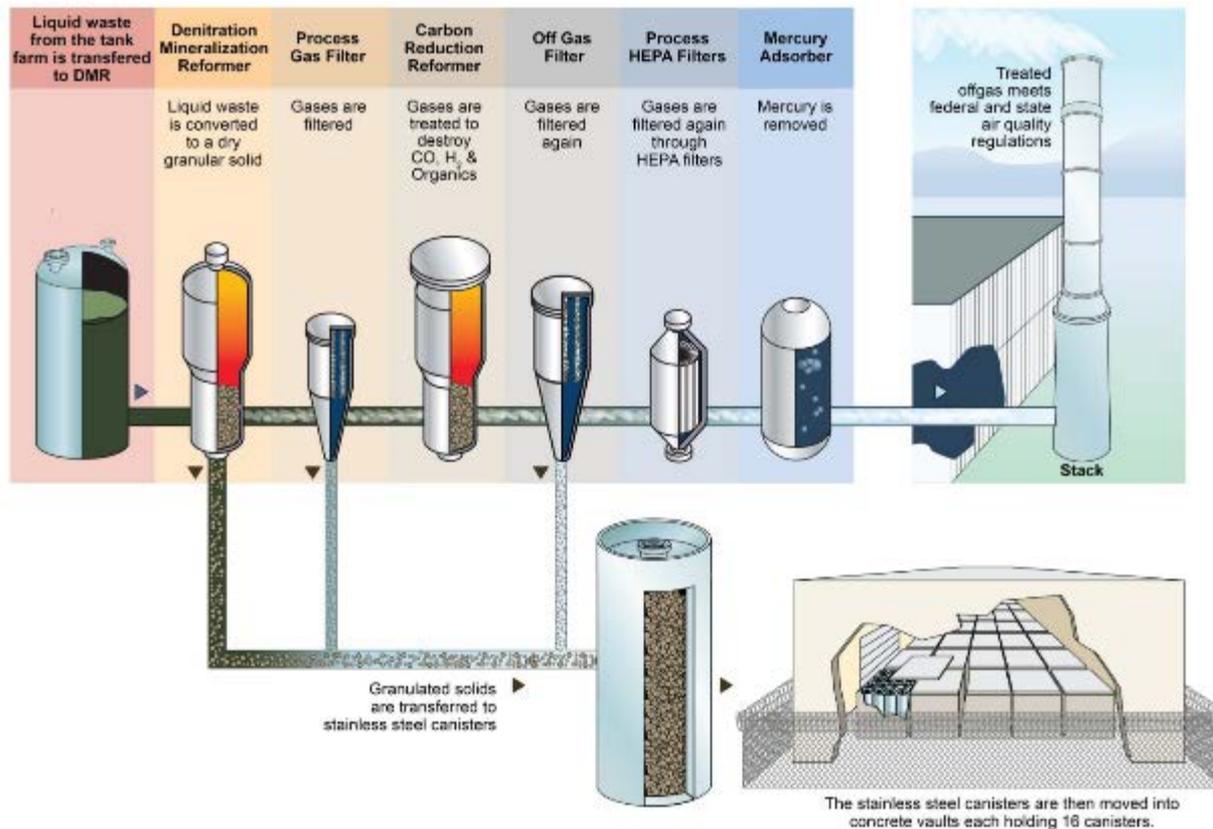
OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Status of Integrated Waste Treatment Unit

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June 21, 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.



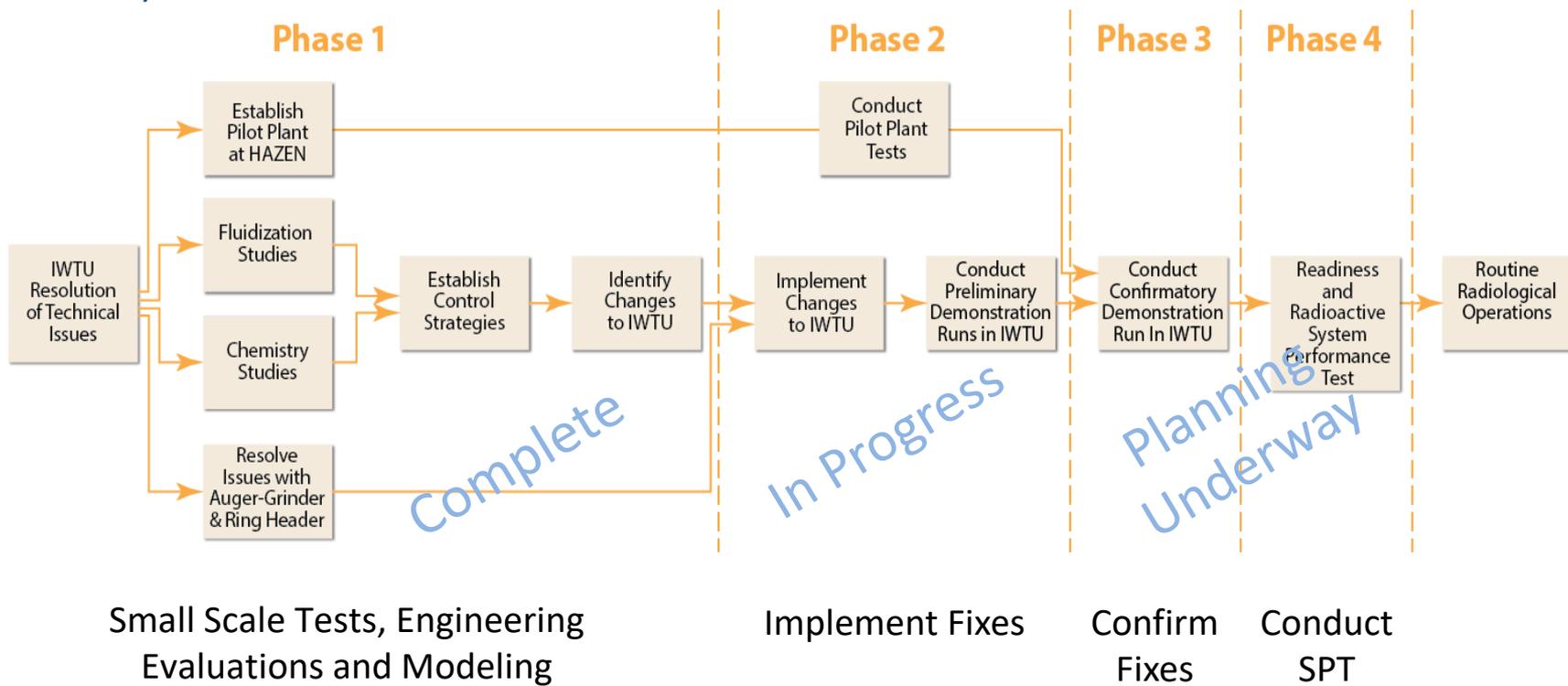
DMR - Double Plenum and Cone



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.



- 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