Integrated Waste Treatment Unit (IWTU) Commissioning

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Panel on Challenges in HLW Tank Management: Startup and Commissioning

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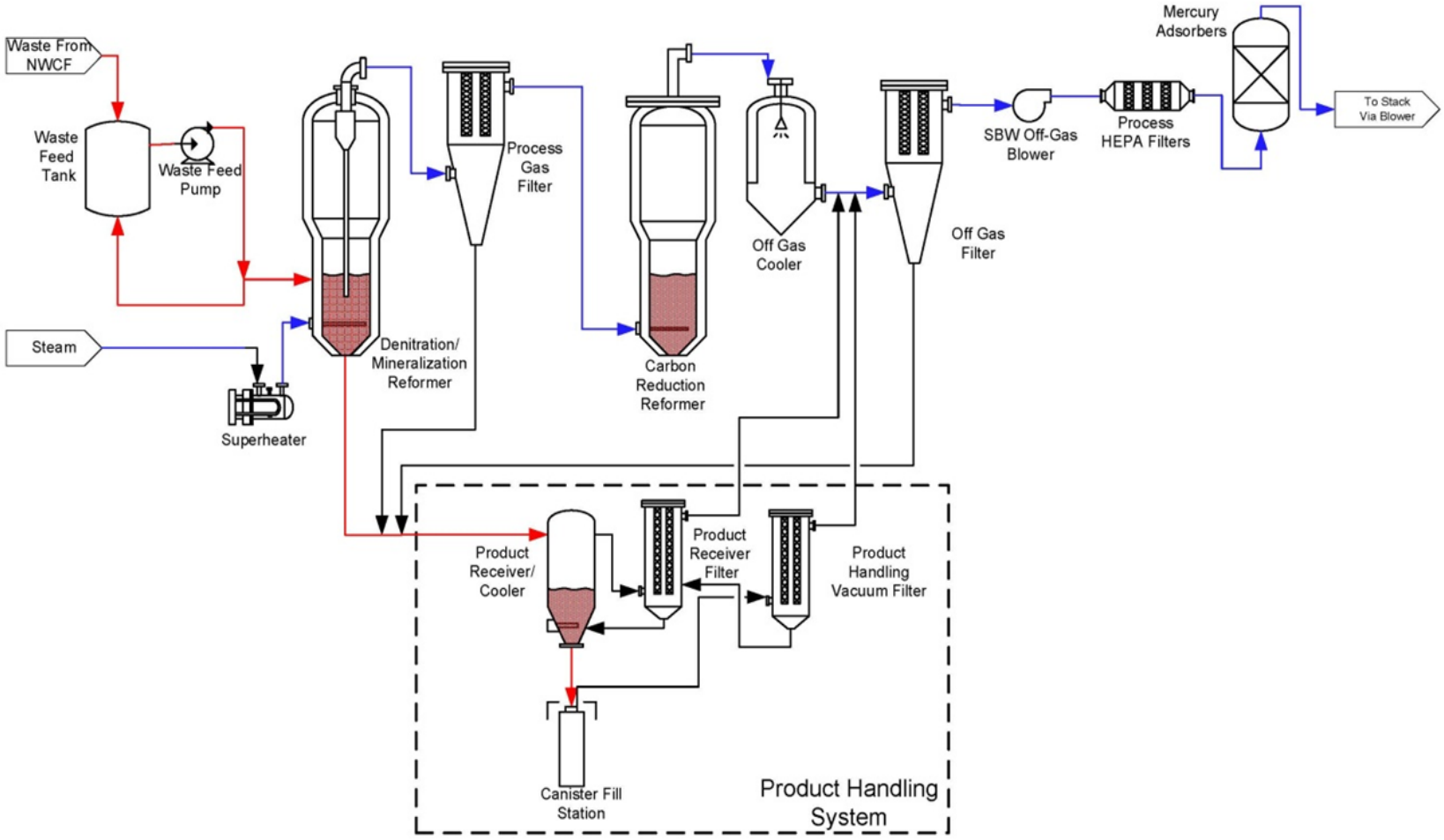
Facility Description

- **New Hazard Category 2 Nuclear Facility:**
  - Process Building with reinforced concrete process cells inside a structural steel building, along with a Product Storage Building
- **Steam Reforming Process:**
  - First of its kind, full scale steam reforming process; reformer vessels use superheated steam and nitrogen gas, along with coal and coke, to convert acidic radioactive liquid waste to solid carbonate particles – packaged in stainless steel canisters and stored in concrete vaults
- **Mission:**
  - To treat ~900,000 gallons of radioactive liquid waste stored in the Idaho Tank Farm Facility into a stable form suitable for disposal outside of Idaho.

Integrated Waste Treatment Unit Process



IWTU Commissioning Timeline

- CD-4, April 2012
- Initial startup, June 2, 2012
- Over pressurization/system shutdown, June 16, 2012
- Evaluation/Recovery activities, June 2012 through December 2013
- Test Instruction (TI) -102, December 2013 through January 2015
- Test data evaluation/procedure updates/system improvements currently underway

TI-102 IWTU Integrated System Test: Hot Startup

Objective Operate IWTU Process w/ Steam fluidization flow and Waste Simulant to validate operating Procedures and ensure facility operability prior to radioactive waste

- Test conducted December 30, 2013 through January 10, 2015
- Processed a total of ~62,000 gallons SBW Simulant
- Test has resulted in number of operational improvements for system heat-up and processing
- Currently in outage to complete maintenance and modifications
- Preparing for second simulant performance run

Commissioning Experience

- Expectations
- Scale up (1/10 scale direct to full scale)
- Vendor Qualifications
- Experience Base (availability and depth)
- DSA implementation
- Utilization of Outside resources (National Labs/Industry)
- Peer/Independent Reviews