

# *Citizens Advisory Board Presentation*

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## *Integrated Waste Treatment Unit*

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**EM** *Environmental Management*

# Facility Description

- **New Hazard Category 2 Nuclear Facility:**
  - 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
- **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.
- **Over Pressurization Event:**
  - After the event of June 16<sup>th</sup> 2012, facility modifications have been completed along with additional recovery actions.



# Facility Recovery

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## Recovery Actions Include:

- ✓ Off Gas Blower Seal Upgrades completed and installed
- ✓ Check valve inspections
- ✓ Flushing of sensing/instrument lines
- ✓ Evaluate plugging of fluidizing rails and ring header using a four phase testing plan with testing vessels.
- ✓ Completed design changes to rails and installed in vessels.



✓ = Completed Activity

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# Facility Recovery - DMR

- Four testing phases:
  - ✓ 1) Proof of concept
  - ✓ 2) Test in ASME vessel
  - ✓ 3) Final design w/instrumentation
  - 4) Full scale test in DMR (TI-102)



✓ = Completed Activity

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# Fluidizing Bed Action- DMR



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# Phase 3 Testing Summary

- Existing ring header will function as designed with new operating parameters
- Determined minimum purge flows, flowrates, pressure drop, and flow distribution to keep rings and rails clear of solids
- Determined appropriate startup and shutdown flow sequences to prevent solids buildup
- Modified Product Receiver Cooler (PRC) flow distribution rails



# Test Instruction - 102 Verification (Phase 4 Testing)

- This final phase of testing will be performed during the implementation of TI-102.
- Calibrate instrumentation and demonstrate solids management capability using Canister Filling stations.
- An inspection of the ring header and fluidizing rails will be performed during a confirmatory outage after successfully completing plant heat-up to full operating temperatures with TI-102.
- Perform full scale operations using simulant materials of similar chemistry to sodium bearing waste prior to introducing radioactive waste feed.



# Current Status

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- ✓ Phase 3 testing has been completed and final report issued
  - ✓ Completed Reassembly of DMR and PRC based on ring and rail tests
  - ✓ Initiated Contractor Management Self Assessment
  - ✓ Completed Revisions to the Safety Basis Documents
  - ✓ Completed system leak test, 12 leaks found, repairs underway
- To Be Done:
    - Revise Operating Procedures based on approved safety basis
    - Perform Rapid Shutdown System testing using revised parameters
    - Retrain Operations Personnel to revised procedures
    - Initiate Contractor and DOE Readiness Reviews for full operation

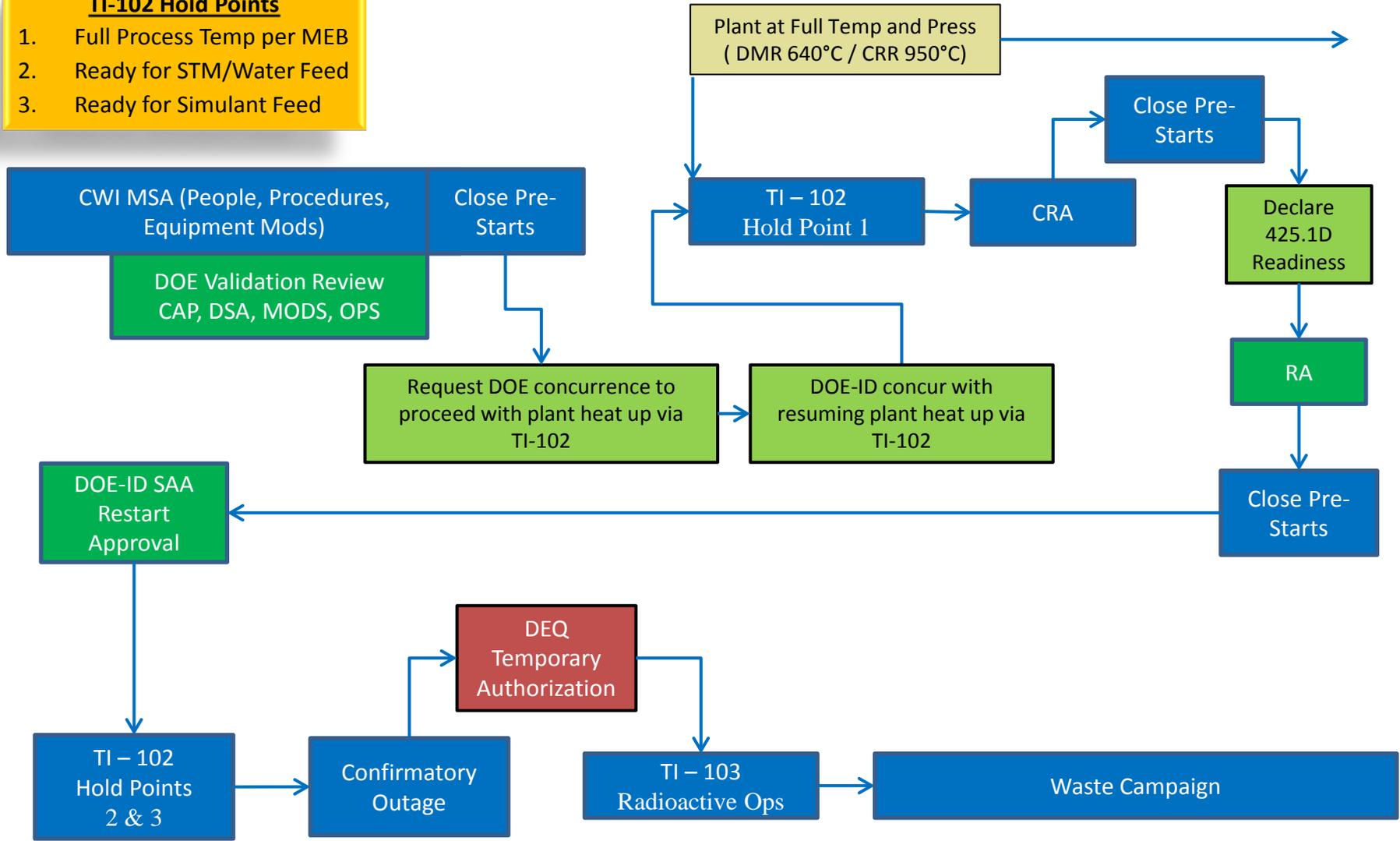
✓ = Completed Activity

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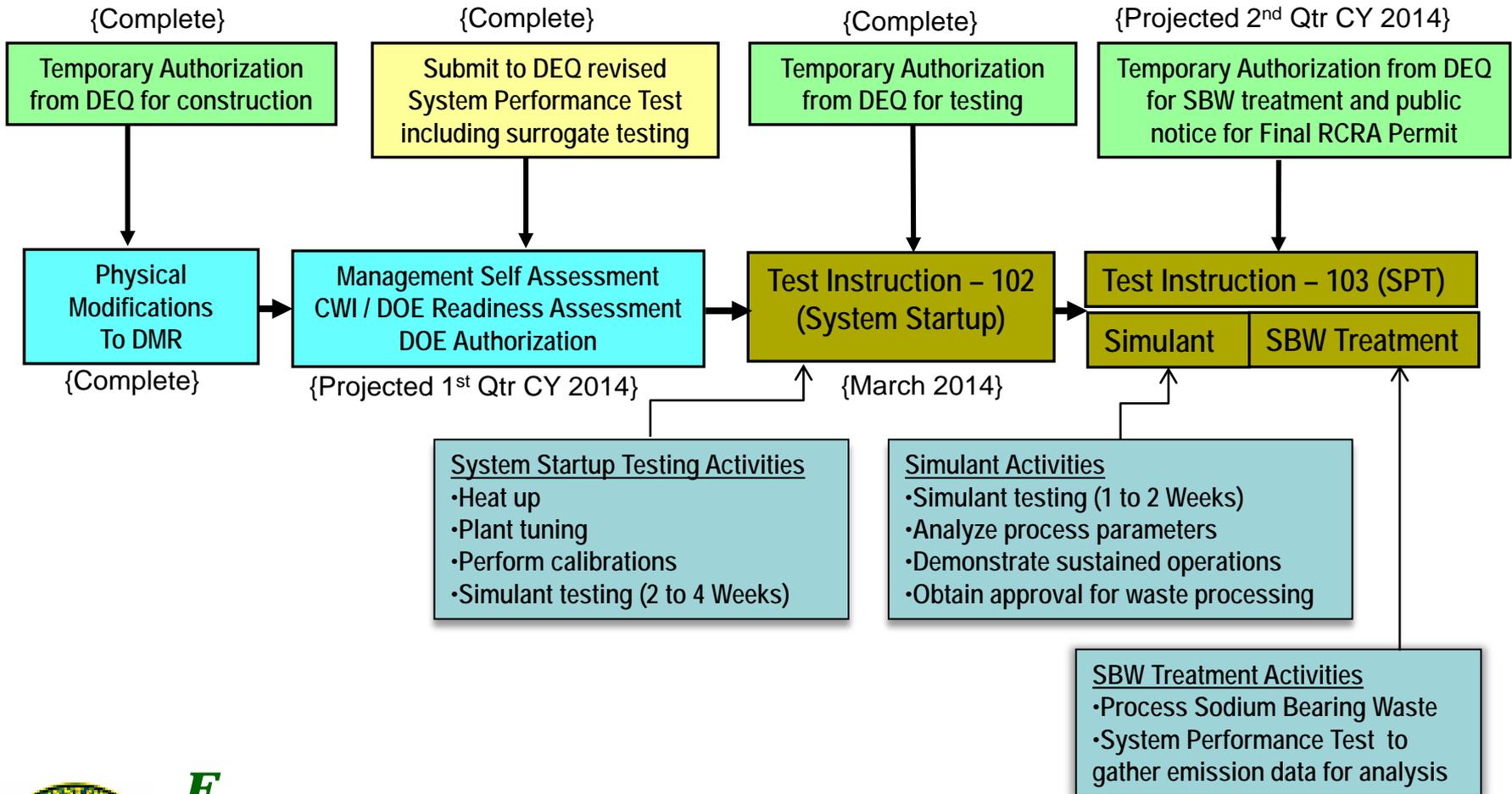


# IWTU Restart Logic and Process

- TI-102 Hold Points**
1. Full Process Temp per MEB
  2. Ready for STM/Water Feed
  3. Ready for Simulant Feed



# Permitting and Startup Strategy



# Dashboard Summary for IWTU Project

Key Questions	Dashboard Indicator	Comments
Impact on budget for activity or cleanup		Project costs have increased because of delays in startup and testing.
Impact on employment or economic development		Project has no negative affect in this area.
Affect on agreements		Settlement Agreement milestone missed. Consent Order revised to 31 Dec 2014.
Impact on safety and environment		This project will process radioactive liquid waste into a solid waste for disposal.
Impact on cleanup DOE-wide		The process used is one-of-a-kind and could have further application DOE wide when successfully proven.



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# Questions?



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# Integrated Waste Treatment Unit Process

