Defense Waste Processing Facility Recycle Wastewater Environmental Assessment

A Waste Stream Proposed for Evaluation under DOE's High-Level Waste (HLW) Interpretation

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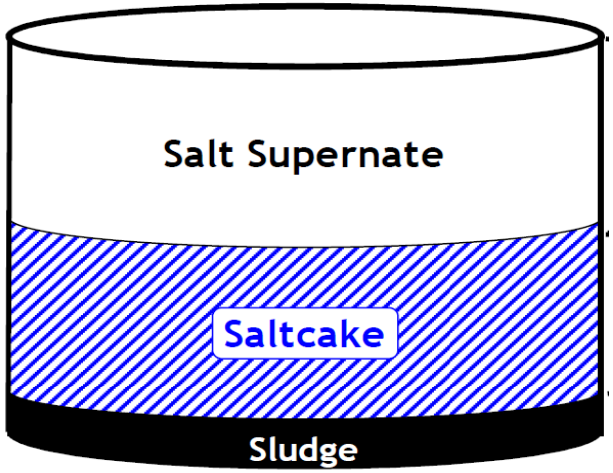
Where Did This Waste Come From?

- Over the years, a primary Savannah River Site (SRS) mission has been the production of special radioactive isotopes to support national defense programs.

- As a result, SRS generated large quantities of liquid radioactive waste.
  - This waste was placed into underground storage tanks
  - Waste is in three physical forms: sludge, salt, and liquid supernatant.

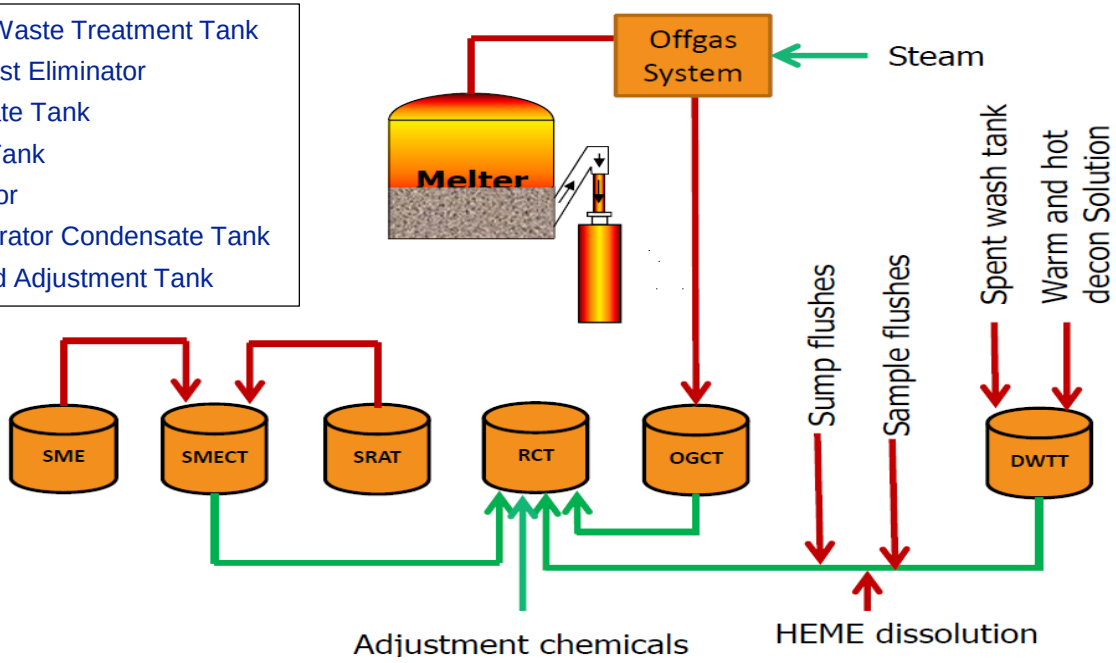
- The sludge portion along with high activity constituents from the salt stream is being transferred to the on-site Defense Waste Processing Facility (DWPF) for vitrification into borosilicate glass to immobilize radioactive constituents.



Where Did This Waste Come From?

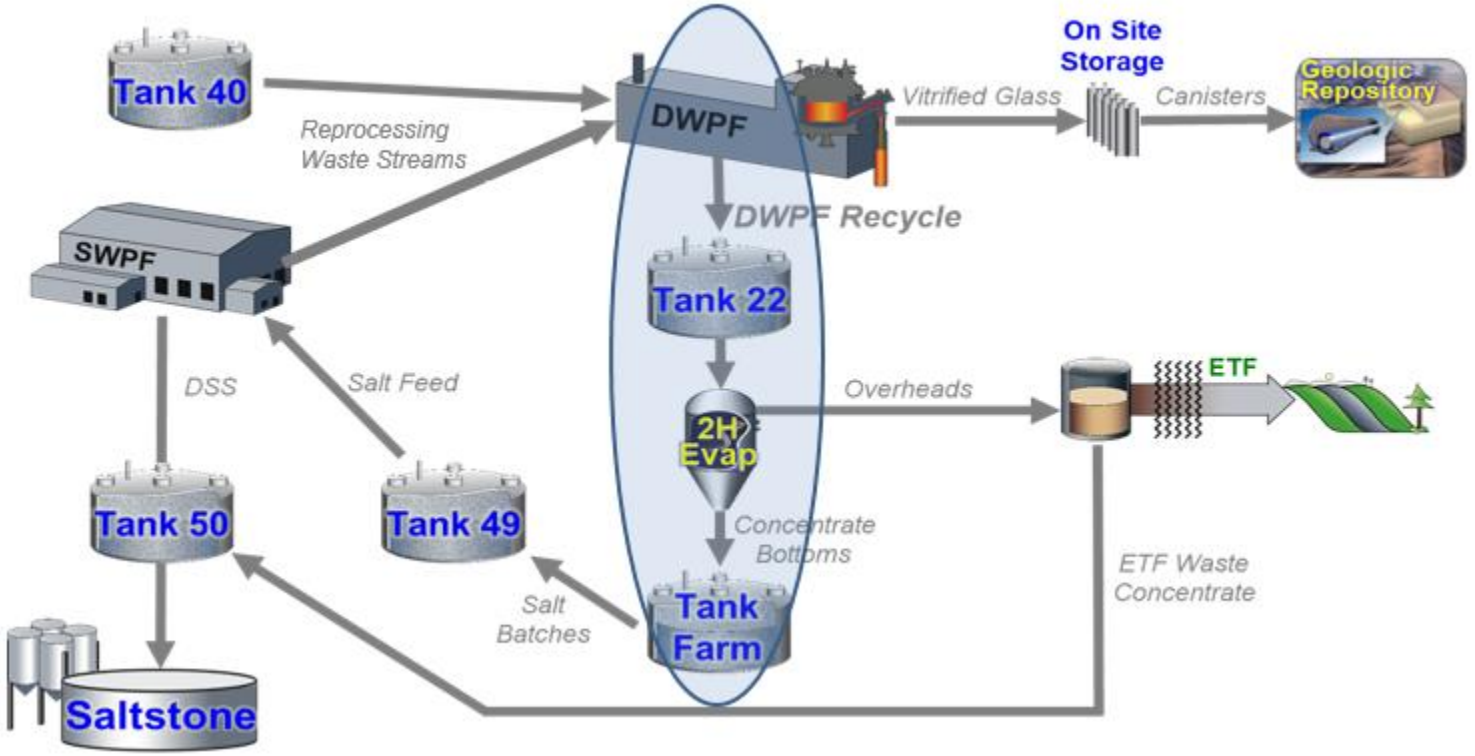
- DWPF recycle wastewater is generated during vitrification of tank sludge.
  - It is a combination of several dilute waste streams consisting primarily of condensates from high-temperature sludge pretreatment and vitrification processes.
  - Other components include process samples, sample line flushes, sump flushes, and cleaning solutions.

DWTT: Decontamination Waste Treatment Tank
HEME: High Efficiency Mist Eliminator
OGCT: Off Gas Condensate Tank
RCT: Recycle Collection Tank
SME: Slurry Mix Evaporator
SMECT: Slurry Mix Evaporator Condensate Tank
SRAT: Sludge Receipt and Adjustment Tank



Current Practice

Currently, recycle wastewater is returned to the tank farm (Tank 22) for volume reduction by evaporation (evaporator 2H), or is beneficially reused in salt dissolution and pretreatment or sludge washing.



NEPA Analysis - Environmental Assessment

- **Proposed Action:**
  - Dispose of up to 10,000 gallons of stabilized (grouted) DWPF recycle wastewater from SRS at a commercial LLW disposal facility located outside of South Carolina, licensed by either the NRC or an Agreement state under 10 CFR Part 61.
- **Purpose and Need:**
  - Demonstrate capability to stabilize (grout) and dispose of this waste stream at licensed LLW commercial facilities.
  - Demonstration would inform DOE's planning efforts for later stages of tank closure (2031-2034) when facilities and systems currently used for reuse and management of DWPF recycle wastewater may no longer be operational to address residual volumes.
  - DOE would conduct additional National Environmental Policy Act (NEPA) analysis if more than 10,000 gallons of DWPF recycle wastewater is proposed for disposal at an off-site commercial LLW disposal facility.

NEPA Analysis - Environmental Assessment

- DOE has developed three alternatives for accomplishing this Proposed Action:
  - ***Alternative 1*** would deploy a treatment capability at SRS to stabilize (grout) up to 10,000 gallons of DWPF recycle wastewater and then transport the grouted waste form to a licensed commercial disposal facility.
  - ***Alternative 2*** would transport up to 10,000 gallons of DWPF recycle wastewater to a licensed commercial disposal facility with the capability to stabilize (grout) and dispose of the final waste form.
  - ***Alternative 3*** would transport up to 10,000 gallons of DWPF recycle wastewater to a licensed commercial treatment facility with the capability to stabilize the liquid into a grouted waste form, and then transport the final waste form to a licensed commercial disposal facility.
  - As required by 10 CFR 1021.321(c), a No-Action Alternative is also being evaluated.

Proposed Evaluation under DOE's HLW Interpretation

- DWPF recycle wastewater is currently managed as HLW because it has radionuclides from reprocessing waste as a result of DWPF operations or storage in tanks that contain residual quantities of reprocessing waste.
- Under DOE's Proposed Action, DOE will evaluate whether the stabilized wastewater could be disposed of at a commercial LLW facility as non-HLW under DOE's HLW interpretation.
- DWPF recycle wastewater is the first NEPA evaluation using DOE's HLW interpretation.
- The HLW interpretation, as published in its Supplemental Notice on June 10, 2019 (84 FR 26835), intends to facilitate the safe disposal of defense reprocessing waste if the waste meets either of the following two criteria:
  - Does not exceed concentration limits for Class C LLW as set out in 10 CFR 61.55 and meets the performance objectives of a disposal facility, **or**
  - Does not require disposal in a deep geologic repository and meets the performance objectives of a disposal facility as demonstrated through a performance assessment conducted in accordance with applicable requirements.

Next Steps

- Issue Draft EA for public comment – anticipated Calendar Year (CY) 2019.
- Issue Final EA in consideration of public comments and issue either a Finding of No Significant Impact or a determination to prepare an Environmental Impact Statement.
- As stated in its Supplemental Notice, DOE will continue its current practice of managing reprocessing wastes as HLW unless and until specific wastes are determined to be non-HLW based on evaluations of waste characteristics and potential disposal options.

Questions?