OVERVIEW OF DEFENSE WASTE PROCESSING FACILITY

to the

NUCLEAR WASTE TECHNICAL REVIEW BOARD

ENGINEERED BARRIER SYSTEMS PANEL

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HIGH-LEVEL LIQUID WASTE MANAGEMENT
SAVANNAH RIVER PLANT

INTERMEDIATE WASTE MANAGEMENT
- FRESH WASTE RECEIPT
- EVAPORATION
- TANK RETIREMENT
- IN-TANK PROCESSING
- SUPERNATE DECONTAMINATION OF SALT SOLUTION

LONG-TERM WASTE MANAGEMENT
- VERIFICATION
- INTERIM CANISTER STORAGE
- SOLIDIFICATION OF SALT SOLUTION

24 ORIGINAL WASTE TANKS
- TYPE I
- TYPE II
- TYPE III

27 NEW HIGH-INTEGRITY TYPE III WASTE TANKS

IN-TANK SLUDGE PROCESSING
- Sludge Washing
- Aluminum Discharging

IN-TANK PRECIPITATION OF REMAINING ACTIVITY
- Ce, Pu, Sr

Cement and Flyash

FEED PREPARATION

IN-TANK STRIPPING

REPOSITORY

WASTE IMMOBILIZATION AREA
SALTSTONE

Blender

Mixer

Transfer Pump

Disposal Forms

Hydrolite
Salt
Cement

Salt Solution
Saltstone Surface Disposal Vault

- Protective Layer (1' Concrete)
- Cap (Waterproofed Concrete)
- Walls (11/2')
- Saltstone
- Foundation (2')
PRECIPITATE HYDROLYSIS

- Formic Acid
- Cu Catalyst
- HAN

- Precipitate Reactor
- Organic Evaporator
- Condenser Decanter

Washed Precip

Wash Water

PHA to Feed Prep

Organic Waste Storage
MELTER FEED PREPARATION

Formic Acid -> SLUDGE RECEIPT & ADJUSTMENT

Sludge -> PHA

MELTER FEED TANK

MERCURY WASH & COLLECTION

SME CONDENSATE

Frit -> SLURRY MIX EVAPORATOR

Melted Liquid Waste Recycle To Tank Farm
MELTING

OFF-GAS TREATMENT

MELTER FEED

GLASS MELTING

CANISTER FILLING

COOLING & LEAK TESTING

INNER CANISTER CLOSURE

CANISTER DECON.
CANISTER WELDING & TESTING

Canister Decon → Smear Test → RCC Press

Visual Inspect Smear Test → Upset Resistance Welding

Waste Storage
DWPF
FILLED CANISTER

Material: 304L SS
Empty Weight: 1,100 lb
Net Weight: 3,700 lb
Weight of Radionuclides: 56 lb
Activity: 176,000 Ci
Decay Heat: 470 W
Dose Rate (At Surface): 5,500 rad/hr
Contamination: < $10^{-4}$ uCi/cm$^2$