



U.S. DEPARTMENT OF
ENERGY

Savannah River Operations Office

SRS Liquid Waste Update

April 13, 2017

South Carolina Nuclear Advisory Council



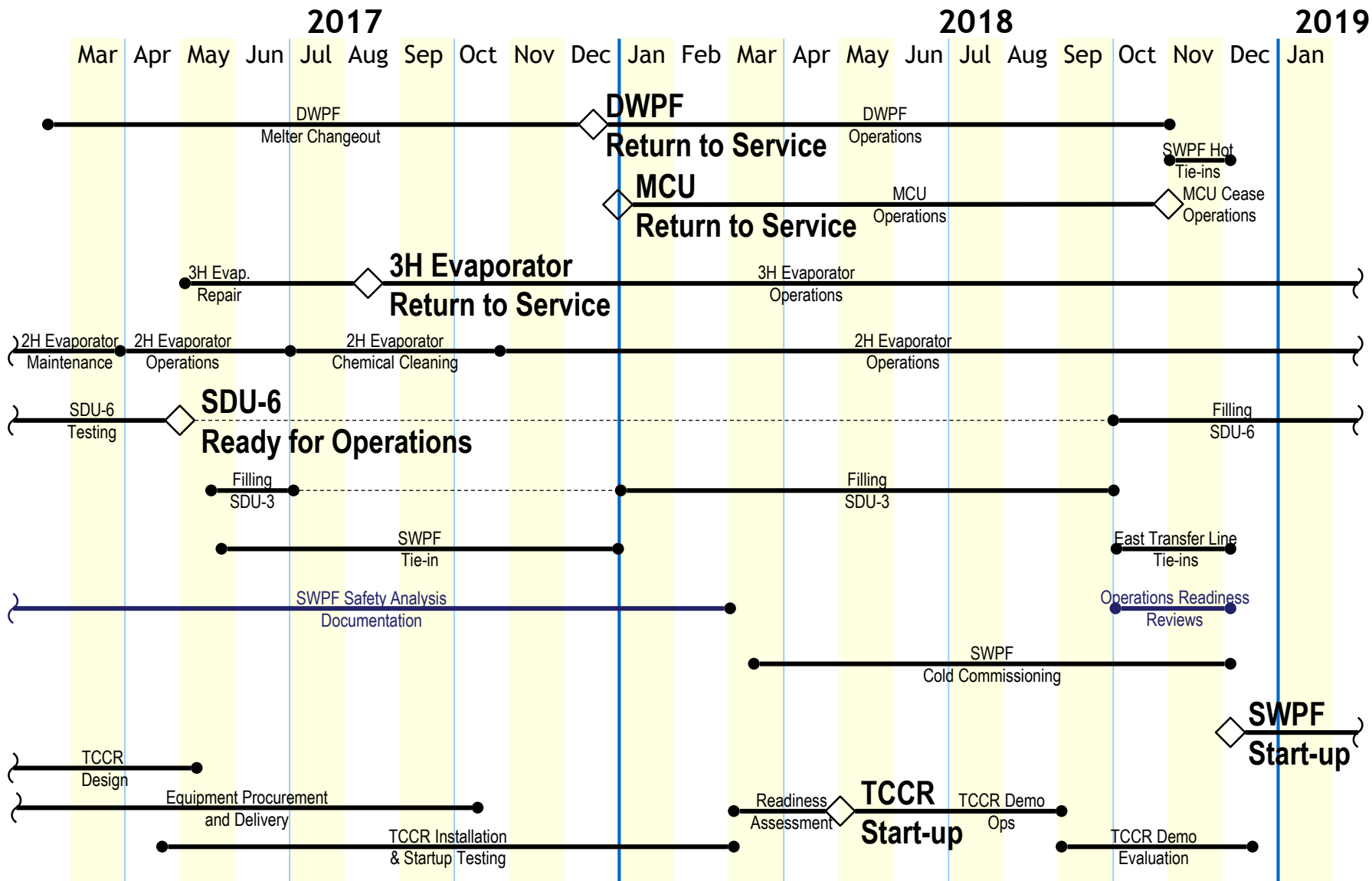
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Department of Energy

Savannah River Operations Office

Overall Schedule for Liquid Waste Facilities



Operational Highlights (as of March 8, 2017)

DWPF

- 52 canisters completed
- 137 canisters double stacked
- DWPF Melter 2 removal activities under way

Saltstone

- Saltstone Disposal Unit (SDU) 6 water-tight start-up testing completed, turnover in progress

Tank Farms

- 3H Evaporator leak sites identified at the bottom section of the cone

Actinide Removal Process/

Modular Caustic Side Solvent Extraction Unit (ARP/MCU)

- MCU operations suspended due to Melter 2 end-of-life

FY17 Production Status

52 Complete for FY17
of 100 Canisters
DWPF

152K of 900K gallons
Saltstone

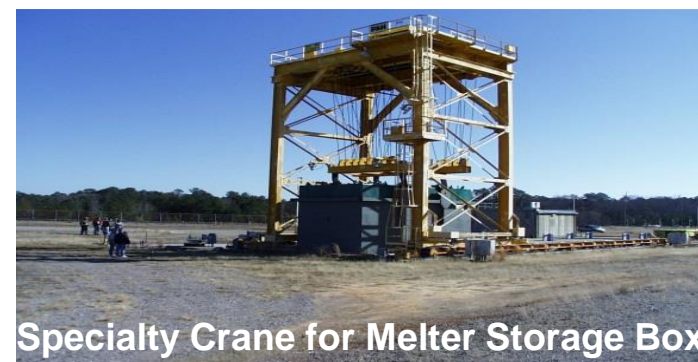
476K of 1,000K gallons
Space Gain
Evaporators

397K Complete for FY17
of 1,300K gallons
ARP/MCU

Melter 2 Replacement

- **The replacement effort includes the following scope:**
 - Melter 2 Removal
 - Melter 3
 - Placement of melter into the mock-up cell
 - Installation and checkout of components
 - Transport to Defense Waste Processing Facility (DWPF)*
 - Inspection and checkout of components at DWPF*
 - Startup and testing of Melter 3*
 - Cranes and Rails
 - Inspection and maintenance of multiple cranes, including specialty cranes used only for Melter movements.
 - Inspection and maintenance of rail systems and railcars
- **The Melter Replacement scope is being integrated with the DWPF Outage scope, which includes maintenance on numerous systems that can only occur during a Melter Outage**
- **The baseline schedule is being finalized and will include an independent review by personnel involved in Melter 1 replacement**

* Item not in-progress due to completion of predecessor activities



SWPF Scope Update

SWPF Support

- Liquidus model report is on track to complete May 2017
- NGS Conceptual Design is on track
 - 30% internal design review under way

DWPF Modifications

- DSA to support Flush Plan is on track for delivery to DOE-SR in early March
- DSA work continues with the MCU DSA change showing transmittal to DOE in mid-March

West Transfer Lines

- Vendor mobilization in progress
 - Sheet piling installation planned 3/6-3/23
 - Pilot holes to support sheet piling are complete
- Work packages to install transfer line mods in progress
- Coordinate outages/flushing activities with Melter 2 replacement

Tank 49 Feed Modifications

- Phase III Transfer Line
 - Core and jacket pipe installation are complete
 - Backfill under way
- Jumper fabrication for connecting B3 pump and T49 valve box is installed
 - Valve box cover modifications are under way
- B3 pump modifications are complete
 - Testing scheduled for mid-March



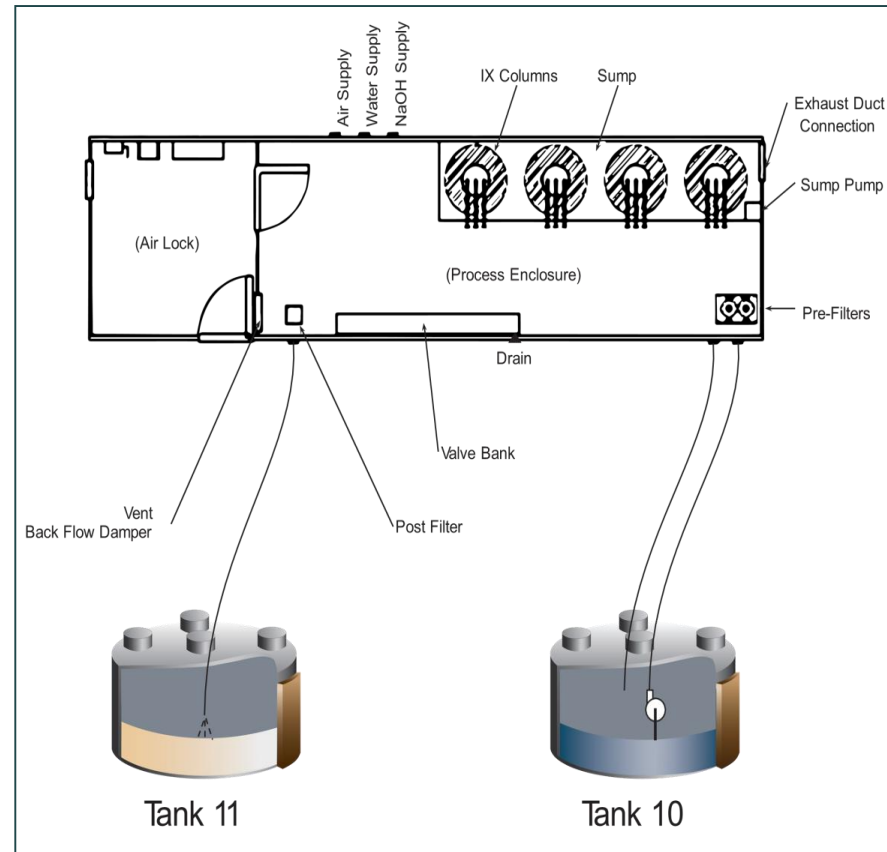
Tank Closure Cesium Removal

Objective

- Modular, at-tank, ion exchange technology demonstration designed to remove Cesium and enhance bulk waste removal efforts
- Leverage commercial supplier expertise and contemporary Fukushima experience
- Improve flexibility by exploring alternatives for off-site disposition of used resin
- Simple design, reliable, cost-effective

Status

- Contract awarded to Westinghouse Electric Company in July 2016
- Detailed design is nearly complete
- Procurements and fabrication under way
- Equipment delivered in October 2017
- Siting, utility, and transfer line design work by SRR is under way
- Will be operated by site staff when complete



**TCCR Module
Diagram**

3H Evaporator Recovery

Leak site identification

- Insulation removal from the cone of the evaporator complete
- Used robot to flush exterior of pot cone
- Dye added to pot and pot heated
- Three leak sites identified in bottom cone

Path forward/repair

- Repair options are being developed as part of contract for repair
- Characterization of cone using ultrasound, external dye, and laser mapping

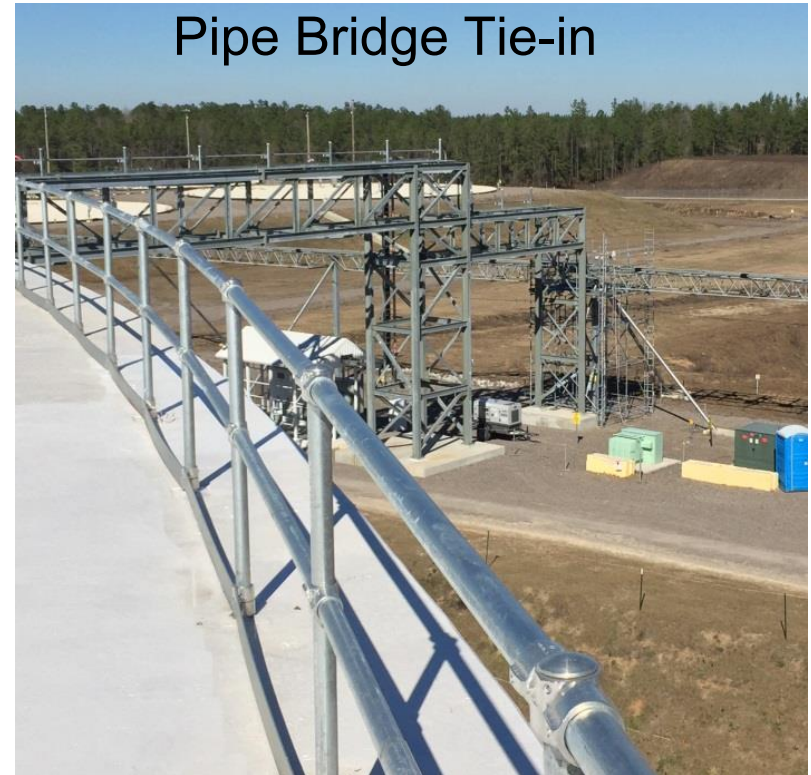
New vessel

- Proposals were received for fabrication of new evaporator vessel
- Evaluation of proposals complete
- Decision to procure new vessel is dependent on repair success and funding



Saltstone Update

- **Completed an independent verification of the 2016 safety basis annual update**
- **Initiated a Facility Self Assessment for Saltstone Disposal Facility 6 (SDU 6) readiness**
 - The assessment is expected to continue for 2 weeks
 - Project remains on schedule
- **Saltstone expected to be processing decontaminated salt solution by mid-May**



FY16 Liquid Waste Plan

| Scope of Work | | FY16 Planned Accomplishments |
|--------------------------------------|----------------|--|
| Tank Farm Operations | 180,264 | Process 1.126 Mgal of salt solution through MCU. Complete Sludge Batch 9 prep. Complete processing of Salt batch 8, initiate processing of Salt Batch 9. |
| DWPF/SS Operations | 134,493 | Produce 133 Canisters of Vitrified HLW. Process 1.5 Mgal of DSS into grout. |
| SWPF Support Projects | 15,924 | Continue DWPF Mods, Blend & Feed tanks (Tank 49 transfer line work), East-West transfer line tie-in. Continue DWPF alternate reductant implementation. |
| Tank Closures | 4,402 | Completed grouting of Tank 12 April 2016. |
| Bulk Waste Removal | 21,093 | Complete preparation of Tank 15 and Tank 26. Tanks 15 and 26 needed for sludge batch 10. Continue preparation of Tank 35 for BWR needed for Sludge batch 11. |
| Saltstone Disposal Units | 24,381 | Continue construction of SDU 6. Initiate SDU 7 planning activities. |
| Supplemental Salt Initiatives | 2,351 | Initiate procurement of Tank Closure Cesium Removal (TCCR) to meet Tank 10 BWRE commitment. |
| Glass Waste Storage | 2,157 | Continue limited canister double stack implementation. |
| Business Services | 37,709 | Program Support and Business Services |
| Pension, Legacy, and Fee | 27,712 | Legacy Medical cost and Fee |
| | 450,486 | |

FY17 Liquid Waste Plan

| Scope of Work | | FY17 Planned Accomplishments |
|--------------------------------------|----------------|---|
| Tank Farm Operations | 194,500 | Target 1.3 Mgal of salt solution through MCU. Process Sludge Batch 9. Complete processing of Salt batch 9. Initiate processing of Salt Batch 10 and compile Salt Batch 11. Perform Tank 41 Salt Dissolution campaign. Continue procurement of 3H evaporator pot . |
| DWPF/SS Operations | 147,045 | Target 100 Canisters of Vitrified HLW. Target 0.9 Mgal of DSS into grout. |
| SWPF Support Projects | 21,375 | Continue DWPF Mods, Blend & Feed tanks (Tank 49 transfer-line work), East-West transfer line tie-in. Initiate SWPF tie-in outage. Work on dry feeds for Saltstone Facility. |
| Tank Closures | 1,000 | Initiate Heel Removal activities on Tank 15 |
| Bulk Waste Removal | 11,170 | Complete Tank 15 BWRE and initiate waste removal preparation activities on Tank 3 and Tank 9. |
| Saltstone Disposal Units | 21,608 | Complete construction of SDU 6 and initiate construction of SDU7 (LI Authorization Required) |
| Supplemental Salt Initiatives | 15,000 | Continue Tank Closure Cesium Removal (TCCR) procurement |
| Glass Waste Storage | 4,725 | Continue canister double stack implementation |
| Business Services | 49,500 | Program Support and Business Services and contract transition |
| Pension, Legacy, and Fee | 21,700 | Pension, Legacy Medical and Fee |
| | 487,623 | |

FY18 Liquid Waste Plan

| Scope of Work | FY18 Planned Accomplishments |
|--------------------------------------|---|
| Tank Farm Operations | Target 1.7 Mgal of salt solution through MCU. Process Sludge Batch 9B. Complete processing of Salt batch 11. Initiate processing of Salt Batch 12. Complete Tank 41 Salt Dissolution campaign. Delivery of the 3H Evaporator Pot. |
| DWPF/SS Operations | Target 100 Canisters of Vitrified HLW. Target 2.7 Mgal of DSS into grout. |
| SWPF Support Projects | Complete SWPF Tie-in outage. Continue work on dry feeds for Saltstone Facility. |
| Tank Closures | |
| Bulk Waste Removal | Continue Tank 3 bulk waste removal. Initiate waste removal preparation activities on Tank 27, Tank 44 and continue on Tank 9. |
| Saltstone Disposal Units | Continue construction of SDU 7 |
| Supplemental Salt Initiatives | Complete Tank Closure Cesium Removal (TCCR) demonstration for cesium removal and complete Tank 10 BWRE. |
| Glass Waste Storage | Continue canister double stack implementation |
| Business Services | Program Support and Business Services |
| Pension, Legacy, and Fee | |
| | |