

February 27, 2015

SRR-ESH-2015-00029

Ms. Jolene K. Seitz  
Department of Energy  
Savannah River Site  
Building 704-S – Room 50  
Aiken, South Carolina 29808

**CY2014 Annual Report Status of F/H Area Radioactive Liquid Waste Tanks  
Being Removed from Service (U)**

The Federal Facility Agreement (FFA) for the Savannah River Site (SRS) requires the United States Department of Energy – Savannah River Field Office (DOE-SR) to annually submit a report to the United States Environmental Protection Agency – Region 4 (EPA) and the South Carolina Department of Health and Environmental Control (SCDHEC) on the status of the radioactive liquid waste tanks being removed from service. As requested by DOE-SR, Attachment 1 has been prepared including future tank use activities, and is being submitted to you, for transmittal by DOE-SR to the EPA and SCDHEC to fulfill the FFA requirement described above.

If you have any questions, please contact Keith Liner of my staff at (803) 208-6466.

Sincerely,



Patricia M. Allen, Manager  
Environment, Safety, Health, Quality Assurance and Contractor Assurance  
Savannah River Remediation, LLC

**Attachment 1**

CY2014 Annual Report Status of F/H Area Radioactive Liquid Waste Tanks Being  
Removed from Service

**CY2014 Annual Report**  
**Status of F/H Area Radioactive Liquid Waste Tanks**  
**Being Removed from Service**

**As required by the**  
**Federal Facility Agreement**  
**For the Savannah River Site**  
**(Admin. Docket No.: 89-05-FF, Effective August 16, 1993)**

**March 2015**

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**Table of Contents**

**Acronyms** ..... 4

**I. Introduction** ..... 5

**II. Overview of CY2014 Accomplishments**..... 5

    Status of Bulk Waste Removal Efforts, Operational Closure, and Post Closure Activities for  
    the F- and H-Area Tanks. .... 5

    Status of F- and H-Area Tank Farm Performance Assessments. .... 6

    Status of F- and H-Area Tank Farm Closure Plans. .... 7

    Status of Operational Closure of Groups of Tanks in the F- and H-Areas. .... 7

    Implementation of Section 3116(a) of the Ronald W. Reagan National Defense Authorization  
    Act for FY2005 with respect to the F- and H-Area Tanks. .... 7

**Appendices:**

**A. 2014 Individual Tank Status Report**.....9

**B. Federal Facility Agreement System/Component Assessment Reports**.....20

Acronyms

<u>Acronym:</u>	<u>Description:</u>
BWRE	Bulk Waste Removal Efforts
CY	Calendar Year
DOE-SR	United States Department of Energy – Savannah River Field Office
DWPF	Defense Waste Processing Facility
EOY	End of Year
EPA	United States Environmental Protection Agency Region 4
FFA	Federal Facility Agreement for the Savannah River Site
FTF	F-Area Tank Farm
FTF PA	F-Area Tank Farm Performance Assessment
GCP	Industrial Wastewater General Closure Plan for Waste Tank Systems
HTF	H-Area Tank Farm
HTF PA	H-Area Tank Farm Performance Assessment
NDAA	Ronald W. Reagan National Defense Authorization Act for FY2005 (Pub. L. 108-375)
NRC	Nuclear Regulatory Commission
PA	Performance Assessment
SCDHEC	South Carolina Department of Health and Environmental Control
SRS	Savannah River Site

## **I. Introduction**

The Federal Facility Agreement (FFA) for the Savannah River Site (SRS) requires the United States Department of Energy – Savannah River Field Office (DOE-SR) to annually submit a report to the United States Environmental Protection Agency – Region 4 (EPA) and the South Carolina Department of Health and Environmental Control (SCDHEC) on the status of the radioactive liquid waste tanks being removed from service (FFA IX.E.3). This report includes discussions on the following activities which occurred during CY2014:

- CY2014 accomplishments related to tank farm and waste disposition facilities;
- Bulk Waste Removal Efforts for the F- and H-Area Tanks, F- and H-Area Tank Farm Performance Assessments, and F- and H-Area Tank Farm General Closure Plans;
- Removal from service (operational closure) of groups of tanks in the F- and H-Areas;
- Implementation of Section 3116(a) of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 with respect to the F- and H-Area tanks; and
- Appendix A, which provides the CY2014 status for each of the twenty-four radioactive liquid waste tanks being removed from service.

Also, the FFA Section IX.B.2 requires new or replacement waste tank system component assessments to be submitted annually on or before March 9 of each year, which is attached as Appendix B.

## **II. Overview of CY2014 Accomplishments and Activities**

### **Status of Bulk Waste Removal Efforts, Operational Closure, and Post Closure Activities for the F- and H-Area Tanks**

- Received approval of the *Tanks 5 and 6 Final Configuration Report for F-Tank Farm at the Savannah River Site*.
- Received approval of the *Explanation of Significant Difference (ESD) for Incorporating Tanks 5 and 6 into the Revision 1 Interim Record of Decision Remedial Alternative Selection for the F-Area Tank Farm, Waste Tanks 17 and 20*.

- Developed and received approval on *Request to Remove Tanks 241-905F and 241-906F from Construction Permit No. 17,424-IW: F and H-Area High-Level Radioactive Waste Tank Farms*.
- Developed and received approval on *Request to Remove Tanks 241-918F and 241-919F from Construction Permit No. 17,424-IW: F and H-Area High-Level Radioactive Waste Tank Farms*.
- Developed and approved the *SRR Waste Removal and Operational Closure Strategy*, outlining proposed closure approaches to optimize waste removal on upcoming old-style tanks.
- Completed procurements for and receipt of five Submersible Mixing Pumps and six Commercial Submersible Mixing Pumps to support future waste removal in Tanks 15H and 26F.
- Continued field activities supporting Re-wet and Bulk Waste Removal (BWR) on Tank 15H to include restoration of the Tank 15H heating and ventilation system.
- Submitted an extension request for the Federal Facility Agreement Appendix L, Item 11 commitment for operational closure of four tanks by September 30, 2015. Following SCDHEC/EPA nonconcurrence with the request, the informal dispute process was invoked, and two working meetings were held with stakeholders.

### **Status of F- and H-Area Tank Farm Performance Assessments**

The F-Tank Farm Performance Assessment (FTF PA) [SRS-REG-2007-00002, Revision 1] was issued in March 2010 and implemented in 2012.

Revision 1 of the H-Tank Farm Performance Assessment (HTF PA) [SRR-CWDA-2010-00128, Revision 1] was issued in November 2012 and was provided to the NRC in 2013 for consultative review, as part of DOE's H-Tank Farm consultation with NRC under NDAA Section 3116. In June 2014 the NRC issued their *Technical Evaluation Report for H-Area Tank Farm Facility, Savannah River Site, South Carolina*, ML1409A496, which included a review of the HTF PA. Taking into consideration the NRC observations and recommendations, DOE approved the HTF PA in December 2014. Implementation of the HTF PA will occur in 2015.

### **Status of F- and H-Area Tank Farm Closure Plans**

- Developed, submitted, and received approval on the HTF 3116 Basis Document, HTF Performance Assessment, and the *Tier 1 Closure Plan for the H-Area Waste Tank Systems at the Savannah River Site*.
- Initiated Closure Module development for Tanks 12H and 16H, in accordance with challenge schedules developed and agreed upon by DOE/SCDHEC/EPA. Submitted Tank 16H Closure Module Group A, B, and C sections for review by all parties. Submitted Tank 12H Group A and B sections for review.
- Completed analysis of Tank 16H residuals. Developed and issued the *Tank 16H Residual Sample Analysis Report*, and the *Tank 16 Inventory Determination*.
- Developed and presented the *Tank 16 Isolation and Grout Strategy*. Completed electrical and mechanical isolation of all Tank 16H systems in preparation for grouting.
- Entered CLOSURE MODE for Tank 12H to allow the tank to begin drying. Removed all mixing pumps from Tank 12H and relocated pumps to Tank 11H for beneficial reuse.
- Developed and presented the *Tank 12 Isolation and Grout Strategy*. Began tank isolation and grout preparation activities.
- Developed and presented the *Tank 12 Sampling and Analysis Plan* and the *Recommended Radionuclide and Chemical Analyte List for Tank 12* to DOE/SCDHEC/EPA. Performed sampling and compositing of Tank 12H final residuals.

### **Status of Operational Closure of Groups of Tanks in the F- and H-Areas**

Continued progress as highlighted above toward closure of Tanks 16H and 12H, the first two tanks to be closed in the H-Area Tank Farm.

### **Implementation of Section 3116(a) of the Ronald W. Reagan National Defense Authorization Act for FY2005 with respect to the F- and H-Area Tanks**

The Secretary of Energy issued the *Section 3116 Determination for Closure of F-Tank Farm at the Savannah River Site*, DOE-WD-2012-001, on March 27, 2012. In the F-Tank Farm Waste Determination the Secretary of Energy determined that the stabilized residuals, tanks and ancillary structures in the F-Tank Farm at closure are not high-level radioactive waste and may

be disposed of in place at the Savannah River Site. The Secretary of Energy made the F-Tank Farm Waste Determination based on the reasons set forth in the *Basis for Section 3116 Determination for Closure of F-Tank Farm at the Savannah River Site*, DOE/SRS-WD-2012-001, which DOE issued in March 2012. During CY2014, DOE supported the NRC in the NRC's F-Tank Farm monitoring role under Section 3116 of the NDAA through the hosting of an NRC on-site observation visit at the Savannah River Site in March 2014. In addition to the on-site observation visit, DOE participated in one teleconference with the NRC and provided various documents to the NRC as requested.

In February 2013, DOE issued the *Draft Basis for Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site*, DOE/SRS-WD-2013-001 for NRC consultative review, as part of DOE's H-Tank Farm consultation with NRC under NDAA Section 3116. In addition, although not required under NDAA Section 3116, DOE also provided the document for public review and comment. In June 2014 the NRC issued their *Technical Evaluation Report for H-Area Tank Farm Facility, Savannah River Site, South Carolina*, ML1409A496. In December 2014, taking into consideration the NRC observations and recommendations, as well as public comments, the Secretary of Energy issued the *Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site*, DOE-WD-2014-001, on December 19, 2014. In the H-Tank Farm Waste Determination the Secretary of Energy determined that the stabilized residuals, tanks and ancillary structures in the H-Tank Farm at closure are not high-level radioactive waste and may be disposed of in place at the Savannah River Site. The Secretary of Energy made the H-Tank Farm Waste Determination based on the reasons set forth in the *Basis for Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site*, DOE/SRS-WD-2014-001, which DOE issued in December 2014. In 2015, DOE will support the NRC with initiation of the NRC H-Tank Farm monitoring role under Section 3116 of the NDAA.

**APPENDIX A**

**CY2014 Individual Tank Status Report for the  
F and H Area Radioactive Liquid Waste Tank Farms**

## Individual Tank Status Report

### Introduction:

Appendix A provides information on the F-Area and H-Area Tank Farms' Waste Storage Tanks 1 through 24 being removed from service. Information in this appendix, including volumes of material in the tanks, is reported as of the end of CY2014.

Several of the tanks experienced leakage in the past. A dark green background in the tank diagram indicates a tank that has a leakage history; tank storage liquid levels are currently maintained below the lowest known leak site.

Six of the tanks are operationally closed:

Tank 5 closed December 19, 2013

Tank 6 closed December 19, 2013

Tank 17 closed December 15, 1997

Tank 18 closed September 5, 2012

Tank 19 closed September 5, 2012

Tank 20 closed July 31, 1997

### Acronyms:

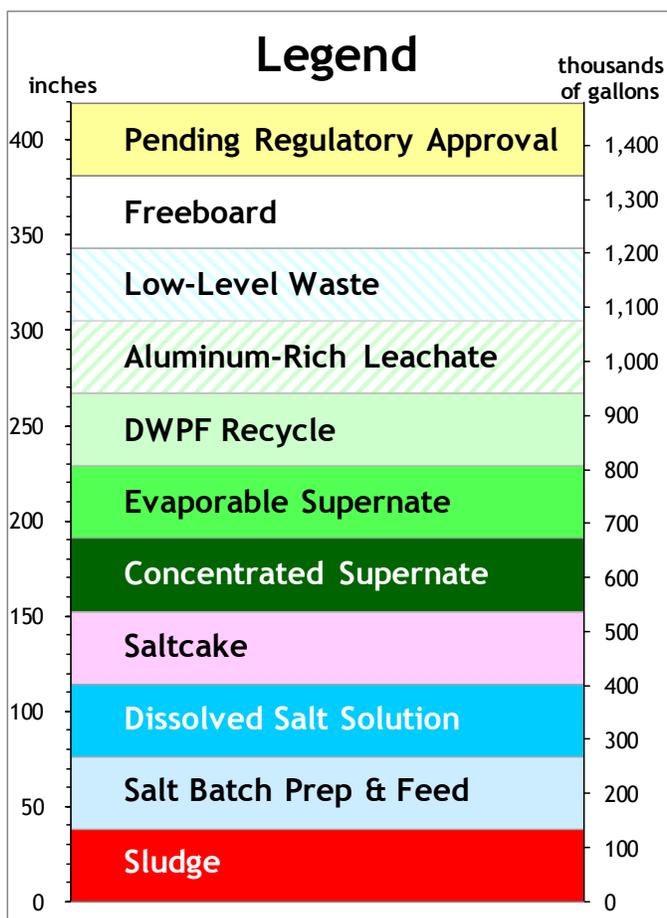
BWRE: Bulk Waste Removal Efforts

DWPF: Defense Waste Processing Facility

EOY: End of Year (December 31, 2014)

EPA: Environmental Protection Agency

SCDHEC: South Carolina Department of Health & Environmental Control

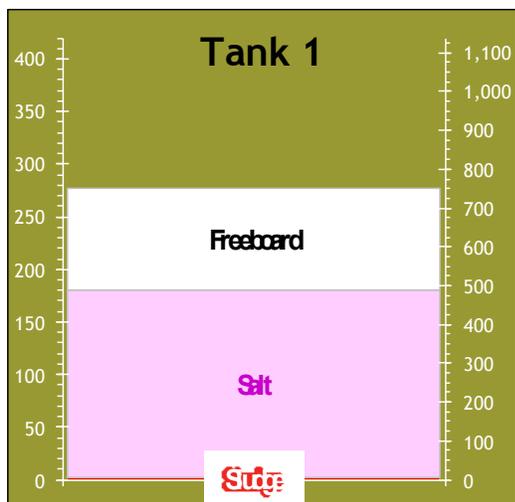


**Tank 1:**

Area: F-Area  
Service: Inactive Waste Storage Tank  
Under Active Surveillance  
Type: I  
EOY Volume: 487,000 gallons

Discussion: There were no transfers in or out during 2014.

Comment: Tank 1 will be a future salt removal tank.

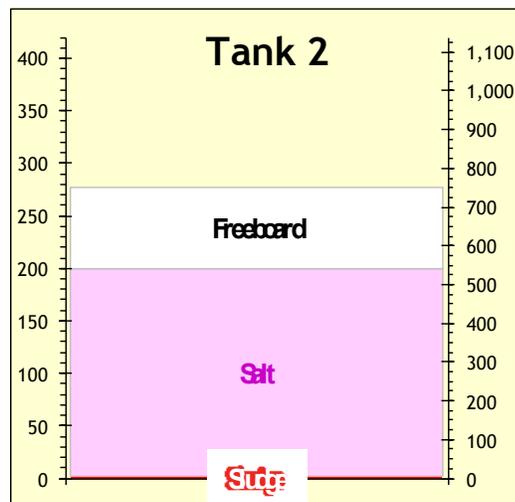


**Tank 2:**

Area: F-Area  
Service: Inactive Waste Storage Tank  
Under Active Surveillance  
Type: I  
EOY Volume: 540,100 gallons

Discussion: There were no transfers in or out during 2014.

Comment: Tank 2 will be a future salt removal tank.

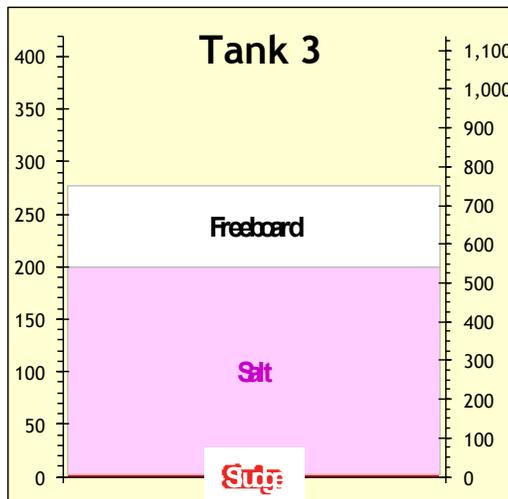


**Tank 3:**

Area: F-Area  
Service: Inactive Waste Storage Tank  
Under Active Surveillance  
Type: I  
EOY Volume: 540,100 gallons

Discussion: There were no transfers in or out during 2014.

Comment: Tank 3 will be a future salt removal tank.

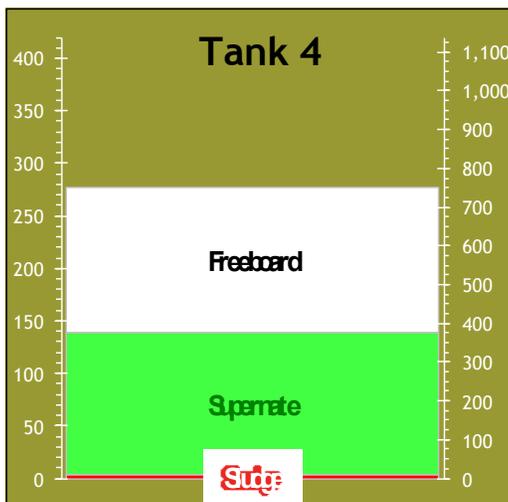


**Tank 4:**

Area: F-Area  
Service: Tank Closure  
Type: I  
EOY Volume: 375,300 gallons

Discussion: There were no transfers in or out during 2014.

Comment: SCDHEC and EPA concurred that BWRE were complete and that additional supernate may be added to keep the sludge material hydrated.

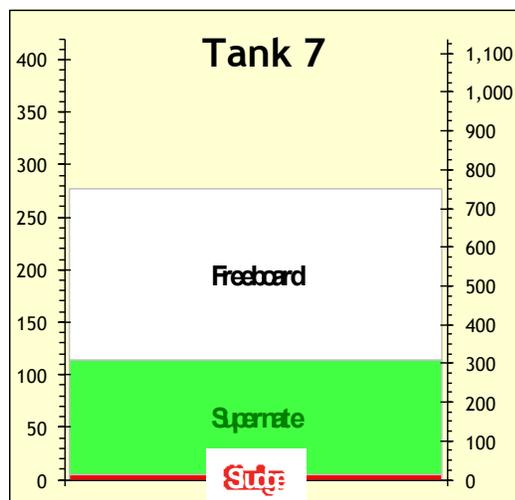


**Tank 7:**

Area: F-Area  
Service: Waste storage tank  
Tank Type: I  
EOY Volume: 309,500 gallons

Discussion: There were no transfers in or out during 2014.

Comments: SCDHEC and EPA concurred that BWRE were complete and that additional supernate may be added to keep the sludge material hydrated.

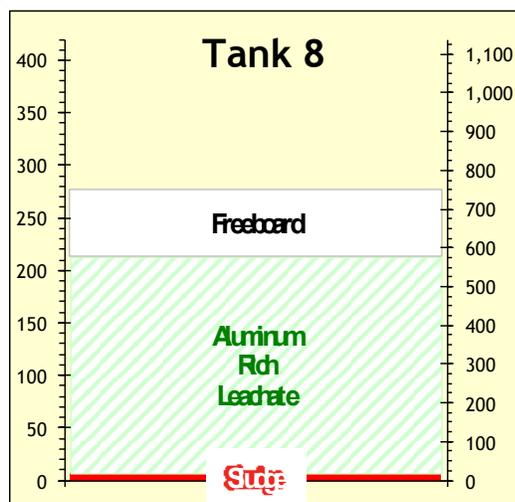


**Tank 8:**

Area: F-Area  
Service: Aluminum rich leachate storage tank  
Type: I  
EOY Volume: 578,000 gallons

Discussion: There were no transfers in or out during 2014.

Comment: SCDHEC and EPA concurred that BWRE were complete and that Tank 8 could continue to store aluminum rich leachate.

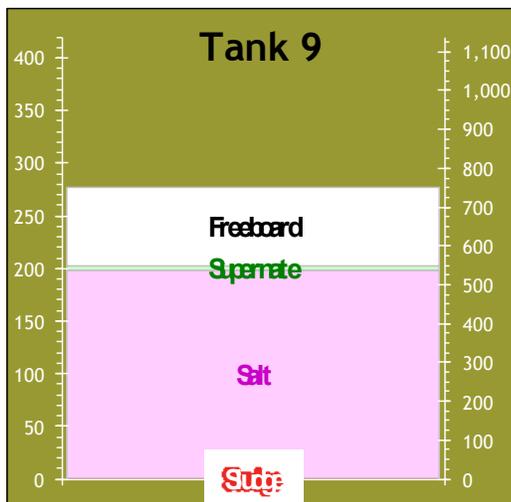


**Tank 9:**

Area: H-Area  
 Service: Inactive Waste Storage Tank  
 Under Active Surveillance  
 Type: I  
 EOY Volume: 550,100 gallons

Discussion: There were no transfers in or out during 2014.

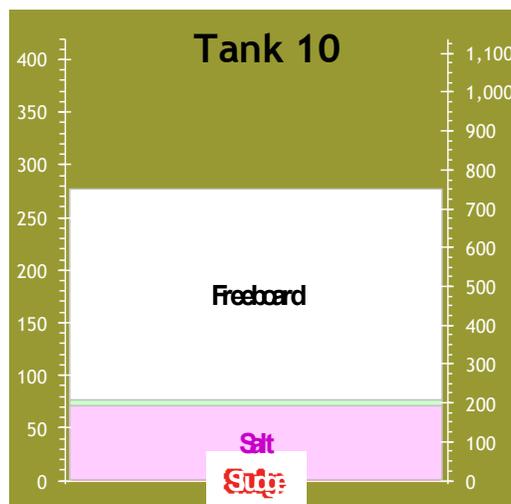
Comment: Tank 9 will be a future salt removal tank.



**Tank 10:**

Area: H-Area  
 Service: Inactive Waste Storage Tank  
 Under Active Surveillance  
 Type: I  
 EOY Volume: 207,300 gallons

Discussion: There were no transfers in or out during 2014.

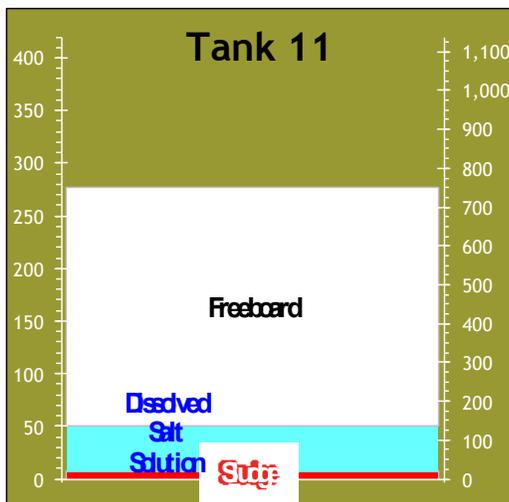


**Tank 11:**

Area: H-Area  
Service: Salt solution hold tank  
Type: I  
EOY Volume: 135,200 gallons

Discussion: There were no transfers in or out during 2014.

Comments: SCDHEC and EPA concurred that BWRE were complete. Tank 11 will be used for future receipt of dissolved salt and cleaning materials from Tank 10.

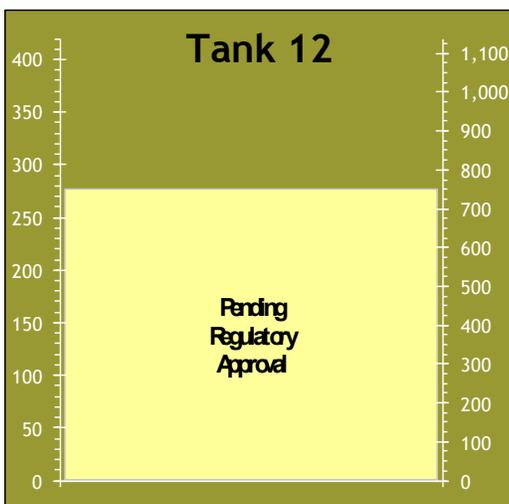


**Tank 12:**

Area: H-Area  
Service: Tank Closure  
Type: I  
EOY Volume: 1,900 gallons

Discussion: There were no transfers in or out during 2014.

Comment: SRR received SCDHEC, EPA, and DOE concurrence to enter the sampling and analysis phase for Tank 12. Waste characterization sampling is complete and sampling analysis was initiated. Closure Module development began.

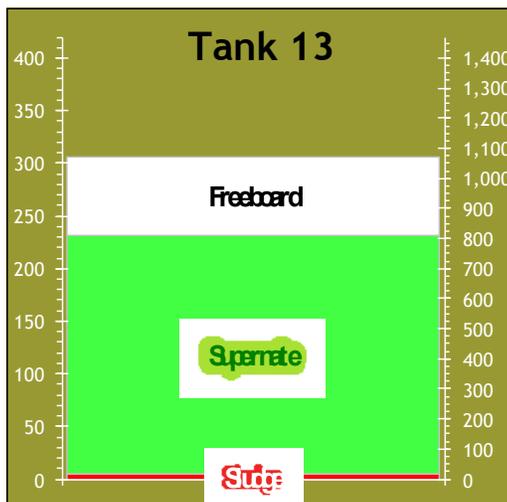


**Tank 13:**

Area: H-Area  
Service: Active Waste Tank  
Type: II  
EOY Volume: 811,000 gallons

Discussion: Tank 13 supported Tank 22 solids removal in 2014. Tank 22 DWPF Recycle was stored in Tank 13 temporarily and Recycle was received directly from DWPF. The DWPF Recycle was returned to Tank 22 when solids removal was complete. Tank 13 supported de-liquoring of the 3H Evaporator by receiving Sludge Batch decant stored in Tank 42. Additionally, Tank 37 received decant from Tank 13 to support salt dissolution in Tank 37, a 3H Evaporator receipt tank.

Comment: Tank 13 is a sludge removal and sludge staging tank for future sludge batches.

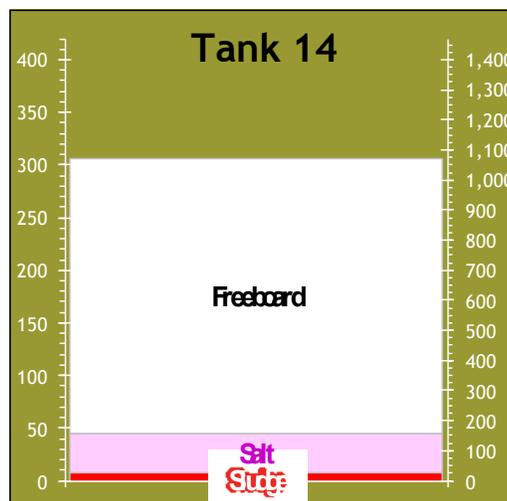


**Tank 14:**

Area: H-Area  
Service: Inactive Waste Storage Tank  
Under Active Surveillance  
Type: II  
EOY Volume: 157,500 gallons

Discussion: There were no transfers in or out during 2014.

Comment: Tank 14 will be a sludge removal tank for future sludge batches.

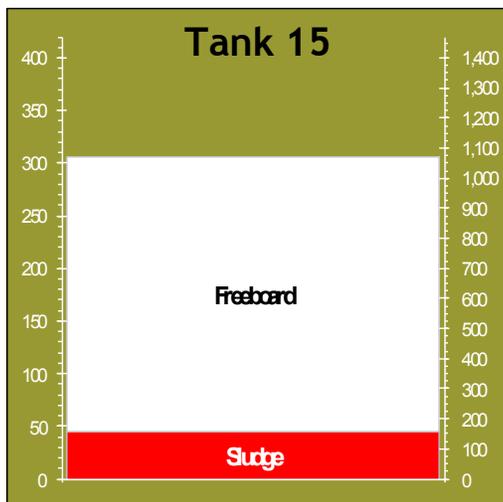


**Tank 15:**

Area: H-Area  
Service: Inactive Waste Storage Tank  
Under Active Surveillance  
Type: II  
EOY Volume: 158,800 gallons

Discussion: There were no transfers in or out during 2014. Field activities continued to prepare Tank 15 for re-wet and BWRE activities.

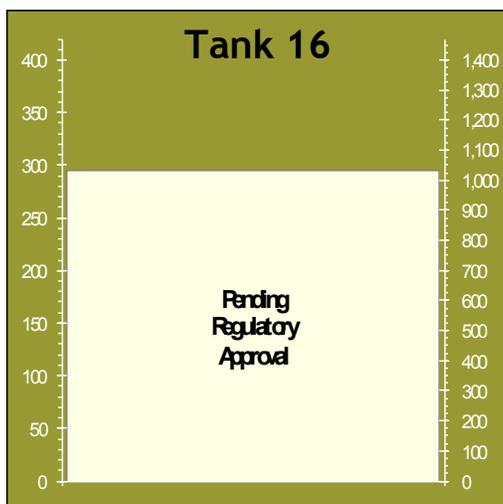
Comment: Tank 15 will be a sludge removal tank for future sludge batches.



**Tank 16:**

Area: H-Area  
Service: Removed From Service  
Type: II  
EOY Volume: 330 gallons

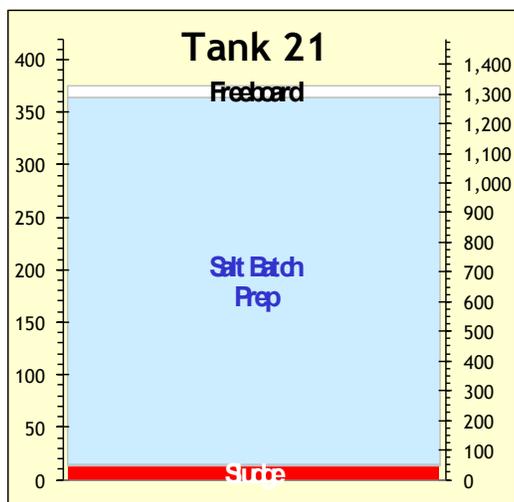
Discussion: Tank 16 sample analysis laboratory report is now issued. The Tank 16 Closure Module development continues. Tank grout preparations continue with all cooling coil modifications complete. Riser and equipment grout modifications are in progress. Bulk fill grout procurement is developed and out for vendor bids.



**Tank 21:**

Area: H-Area  
Service: Salt Batch Blend Tank  
Type: IV  
EOY Volume: 1,287,500 gallons

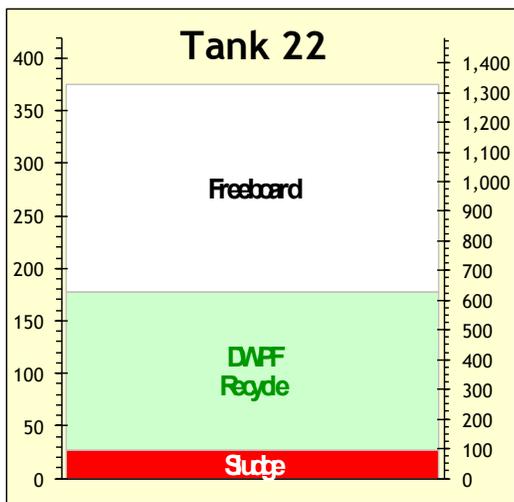
Discussion: Salt Batch 7 material was transferred to Tank 49 for processing in 2014. Tank 21 received material from Tanks 23, 35, and 38 to prepare Salt Batch 8.



**Tank 22:**

Area: H-Area  
Service: Storage Tank for DWPF  
Recycle  
Type: IV  
EOY Volume: 627,600 gallons

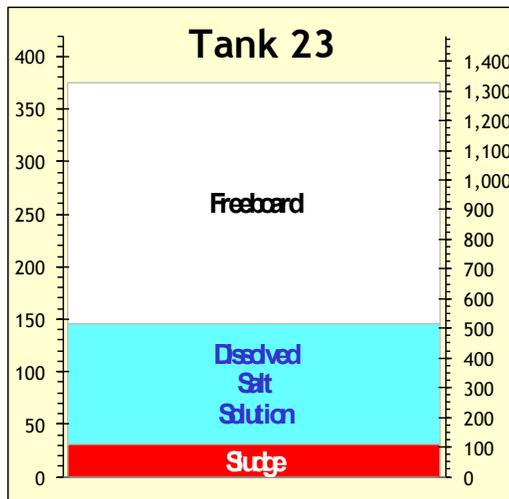
Discussion: In 2014, Tank 22 continued receiving and storing DWPF recycle and supplying feed for the 2H Evaporator. A solids removal campaign was performed supporting Sludge Batch 9.



**Tank 23:**

Area: H-Area  
Service: Salt Solution Hold Tank  
Type: IV  
EOY Volume: 518,300 gallons

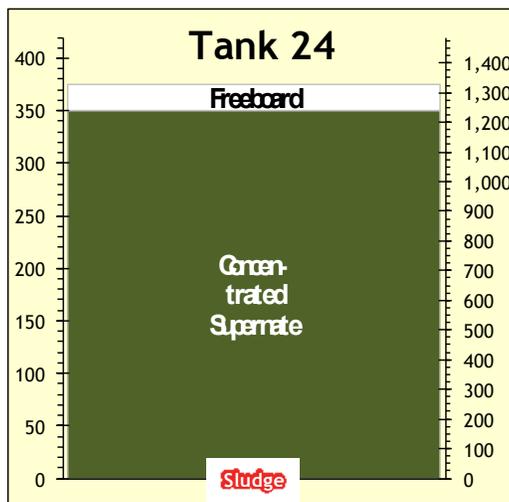
Discussion: Tank 23 received dissolved salt from Tank 41 and Tank 35, which was transferred to Tank 21 for Salt Batch 8 preparation.



**Tank 24:**

Area: H-Area  
Service: Storage Tank  
Type: IV  
EOY Volume: 1,237,900 gallons

Discussion: There were no transfers in or out during 2014.



**APPENDIX B**

**Federal Facility Agreement System/Component Assessment Reports**

<b>Report Number</b>	<b>Title</b>
M-ESR-H-00410 / Rev. 2	Isolation of Instrument Air From the Tank 16 Bubbler Level Indication

# **Savannah River Site**

## **FEDERAL FACILITY AGREEMENT ASSESSMENT REPORT**

**FOR**

### **ISOLATION OF INSTRUMENT AIR FROM THE TANK 16 BUBBLER LEVEL INDICATION SYSTEM**

**M-ESR-H-00457**

**REVISION 0**

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## DISCLAIMER

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**APPROVAL SIGNATURES / SUMMARY OF CHANGES**

**APPROVALS**

PREPARER  David Massey, Design Services Mechanical Engineer Project Management, Design and Construction Services	DATE  10.14.14
REVIEWER  Frank Galium, Design Services Mechanical Engineer Project Management, Design and Construction Services	10/14/14
APPROVAL  Gregory C. Arthur, Waste Removal and Tank Closure	10/15/14
APPROVAL  Ed Howard, Design Services Project Engineer, Project Management, Design and Construction Services	10/15/14

**SUMMARY OF CHANGES**

Rev. No	Reason for Change	Pages Affected	Issue Date
0	Initial Issue	All	10/15/14

## TABLE OF CONTENTS

1.0	EXECUTIVE SUMMARY .....	5
2.0	DESIGN INFORMATION.....	5
3.0	WASTE COMPATIBILITY .....	6
4.0	FOUNDATION SUPPORT .....	6
5.0	LEAK DETECTION AND PAST LEAKS .....	6
6.0	INSPECTIONS .....	6
7.0	DETERMINATION OF SECONDARY CONTAINMENT .....	6
8.0	PROFESSIONAL ENGINEER CERTIFICATIONS (DESIGN AND CONSTRUCTION).....	7
9.0	ATTACHMENT .....	8

## 1.0 Executive Summary

This Assessment Report is being submitted to satisfy requirements of Section IX and Appendix B of the Savannah River Site (SRS) Federal Facility Agreement (FFA, Ref. 2.5.1). Waste Tank 16H is a Type II, (Ref. 2.5.2) old style waste tank and has a planned operational closure date in accordance with the SRR Schedule. The mechanical isolation of Tank 16 includes the isolation of the Instrument Air (IA) supply to the bubbler transmitters located at Inspection Port (IP) no. 41. The bubblers had provided waste tank level indication but are no longer required as Bulk Waste Removal Efforts (BWRE) have previously been completed and the Waste Tank 16H transfer system is inactive as described in Section 5.0. The isolation of the bubblers from IP-41 is in preparation for tank closure. The IA was isolated from Waste Tank 16H under P-DCP-H-12004 (Ref. 2.5.4).

## 2.0 Design Information

2.1 This modification includes the following activities:

2.1.1 Capping of the Instrument Air (IA) supply to the Waste Tank 16H bubblers.

2.2 Applicable SRS Engineering Standards and Engineering Guides:

2.2.1 SRS Engineering Standards Manual, WSRC-TM-95-1:

2.2.1.1 15060, Rev. 18, ASME B31.3 Additional Requirements for SRS Piping Systems

2.2.1.2 05057, Rev. 4, Control of Welding

2.2.1.3 15065, Rev. 2, Requirements for SRS Pipe Cleaning

2.2.2 SRS Engineering Practices Manual, WSRC-IM-95-58:

2.2.2.1 15060-G, Rev. 7, Application of ASME B31.3

2.3 SRS Supporting Calculations:

2.3.1 There is no design calculation required for this modification.

2.4 Applicable National Codes & Standards:

ASME B31.3-2010

2.5 Reference Documents

2.5.1 WSRC-OS-94-42 – ADN 89-05-FF, Federal Facility Agreement for the Savannah River Site

2.5.2 Assessment Report, Phase II for the F and H Area High Level Radioactive Waste Tank Farms, Rev. 0, 1991

2.5.3 WSRC-SA-2002-00007, Rev. 15, Concentration, Storage, and Transfer Facilities

Documented Safety Analysis, Section 3.4.1.5.2, Facility Configuration and Design Inputs

2.5.4 P-DCP-H-12004, Rev. 1, Tank 16 Preparation for Annulus Cleaning

### **3.0 Waste Compatibility**

This modification does not impact waste compatibility.

### **4.0 Foundation Support**

This modification does not impact any foundation supports.

### **5.0 Leak Detection and Past Leaks**

Waste Tank 16H is deactivated and the primary tank contains negligible quantities of waste (Ref. 2.5.3). Waste transfers into Tank 16H are prohibited under the Documented Safety Analysis (Ref. 2.5.3). Leak detection is no longer required.

### **6.0 Inspections**

Piping material, fabrication, assembly, erection, inspection, examination, and testing shall be in accordance with:

- ASME Code B31.3 -2010
- WSRC-TM-95-1, SRS Engineering Standards 15060 and 05057
- WSRC-IM-95-58, SRS Engineering Guide 15060-G

### **7.0 Determination of Secondary Containment**

No assessment of the primary and secondary containment is required for this modification.

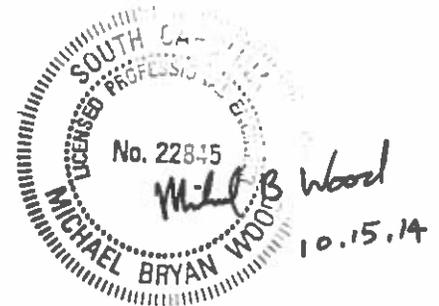
### 8.0 Professional Engineer Certifications (Design and Construction)

#### Design

This assessment report was prepared under my supervision and direction. I certify that the design for the modifications detailed in P-DCP-H-12004 for the isolation of the Instrument Air (IA) supply to the Waste Tank 16H bubblers at IP-41 complies with applicable engineering standards and the requirements of Appendix B of the Federal Facility Agreement. These standards have been generally accepted as adequate in demonstrating leak tightness.

Stamp

Name: MICHAEL B. WOOD  
License Number: 22845

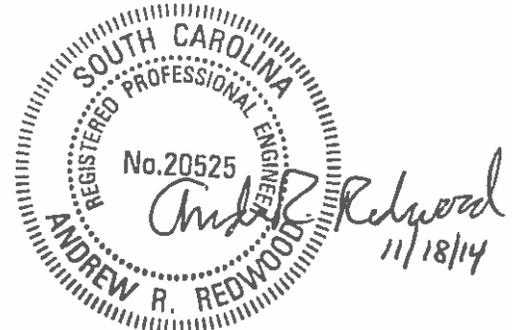


#### Construction and Installation

I have conducted an inspection, to the extent possible, of the completion of the modified system. Based upon the inspection, I certify that, to the best of my knowledge, information, and belief, the isolation of the IA supply to the Waste Tank 16H bubblers at IP-41 was constructed in accordance with the approved design detailed in P-DCP-H-12004. I further certify that the modification was tested in accordance with the requirements summarized in Section 6.0 of this Report and detailed in P-DCP-H-12004. The tests conducted to demonstrate leak tightness were found acceptable.

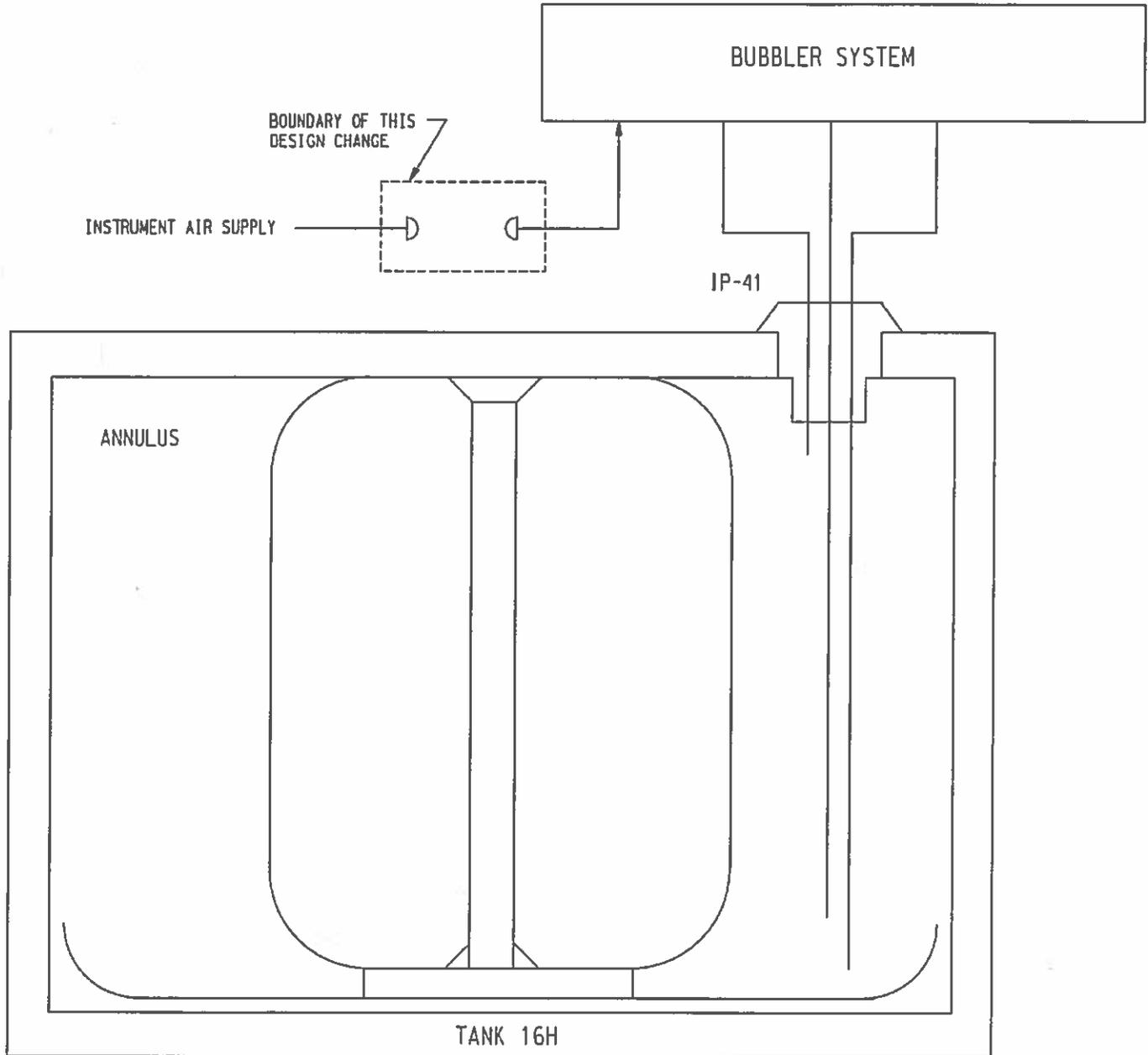
Stamp

Name: Andrew R. Redwood  
License Number: 20525



9.0 ATTACHMENT

Waste Tank 16H IP-41 Bubbler Transmitters



Electronic copy cc:

J.L. Folk Jr., DOE, 704-S  
P. Giles Jr., DOE, 704-S  
J.M. Ridley, DOE, 704-S  
P.C. Suggs, DOE, 704-S  
J.L. Bentley, DOE, 704-S  
D.J. Ferguson, DOE, 704-S  
A.I. Watson, DOE, 730-B

S.A. Macvean, SRR, 766-H  
M.A. Schmitz, SRR, 766-H  
G.G. Campbell, SRR, 766-H  
J.K. Fortenberry, SRR, 766-H  
R.E. Edwards Jr., SRR, 766-H  
M.N. Borders, SRR, 704-56H  
S.K. Smith, SRR, 766-H  
O.D. Stevens, SRR, 766-H  
D.P. Skiff, SRR, 766-H  
V.A. Franklin, SRR, 705-1C  
T.F. England, SRR, 705-1C  
S.A. Thomas, SRR, 705-1C  
J.R. Cantrell, SRR, 705-1C

C.L. Bergren, SRNS, 730-4B  
V.E. Millings III, SRNS, 730-4B

File Info:

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