



October 25, 2007

SRS-REG-2007-00030

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**Saltstone Status Report - Third Quarter 2007 (U)**

References:

1. Modified Permit for the Savannah River Site (SRS) Z-Area Saltstone Disposal Facility, Facility ID No. 025500-1603, Aiken County, 1/23/07
2. Notification and Response to Vault 4 Wet Spots, ESH-WPG-2007-00031, August 27, 2007

The *Saltstone Status Report - Third Quarter 2007* is the first report submitted on behalf of the Department of Energy (DOE), Permittee, to the South Carolina Department of Health and Environmental Control (herein referred to as the Department) to satisfy, in part, the reporting requirements of the *Modified Permit for the Savannah River Site (SRS) Z-Area Saltstone Disposal Facility, Facility ID No. 025500-1603, Aiken County, 1/23/07* (Reference 1). This is the first required report since the stay on Reference 1 was lifted on August 7, 2007. The Report is organized into Attachments which satisfy the Special Conditions found in Reference 1 in accordance with the table below and the requirements of Reference 2.

Condition, Reference 1	Attachment
General Condition B.5 and Special Condition A.3.d	Attachments 1 and 2
Special Condition A.3.a	Attachment 3

The information contained in Attachment 1 provides a status of the Saltstone Production and Disposal Facility (SPF/SDF) operations during the first through third quarters of 2007, beginning with the start of the treatment and disposal of the Deliquification, Dissolution, and Adjustment (DDA) waste stream at the SPF, which commenced on March 5, 2007. The third quarter 2007 report is considered the baseline for reporting purposes, and as such data from previous SPF operations is not included, with the exception of that explained in Attachment 2. Also included in Attachment 1 is an update on the vault exterior condition which is required per Reference 2.

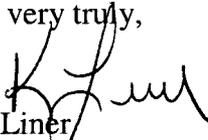
Attachment 2 is being provided with the baseline report, third quarter 2007, to record the assumptions that have been made to develop the baseline and those that will be used for future reports. At this time, it is not the intent that Attachment 2 will be included in future reports.

Mr. John M. McCain, Jr.  
SRS-REG-2007-00030  
Page 2 of 9  
October 25, 2007

The information contained in Attachment 3 of this letter is being submitted to the Department in order to provide a status of the SRS Liquid Waste Disposition Processing Strategy activities during the first through third quarters of 2007, except for activities associated with Permit Special Condition A.1.d. (Reference 1), which will be covered in a separate report provided by DOE. Moreover, the report required by Permit Special Condition A.3.b., will be provided separately by DOE.

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

Yours very truly,



Keith Liner  
Site Regulatory Integration and Planning  
Washington Savannah River Company, LLC

### Attachment 1

## Saltstone Production and Disposal Facility Status Third Quarter 2007

**Note: Third Quarter 2007 period extends from July 1, 2007 through September 30, 2007, however, reporting starts with treatment and disposal of the DDA waste stream which commenced on March 5, 2007.**

Permit Condition	Requirement	Value	Comments
<b>B.5 a)</b>	Cumulative process volume of salt waste disposed to date	100 kilogallons (kgals)	For period 3/5/07 - 9/30/07
<b>b)</b>	Process volume of saltstone grout disposed and vault location (cell identity) for the reporting period	226 kgals, Vault 4, Cell E Vault 4, Cell L	For period 3/5/07 - 9/30/07
<b>c)</b>	Cumulative process volume of saltstone grout disposed to date	226 kgals	For period 3/5/07 - 9/30/07 See Attachment 2 Basis
<b>d)</b>	Remaining vault volume;	$1.25 \times 10^4$ kgals	As of 9/30/07 See Attachment 2 Basis
<b>e)</b>	Curies disposed and vault location for the reporting period	0.7 kilocuries (kCi), Vault 4, Cell E Vault 4, Cell L	For period 3/5/07 - 9/30/07
<b>f)</b>	Cumulative inventory of curies disposed to date	0.7 kCi, Vault 4, Cell E Vault 4, Cell L	For period 3/5/07 - 9/30/07 See Attachment 2 Basis
<b>g)</b>	Curies of highly radioactive radionuclides disposed and vault location for the reporting period	0.3 kCi, Vault 4, Cell E Vault 4, Cell L	For period 3/5/07 - 9/30/07
<b>h)</b>	Cumulative inventory of highly radioactive radionuclides disposed to date	0.3 kCi, Vault 4, Cell E Vault 4, Cell L	For period 3/5/07 - 9/30/07 See Attachment 2 Basis

**Vault 4 Exterior Update (Cells B, D, J, K, L only)**

A number of wet spots were observed on the exterior wall of Vault 4, Cells E, J, and L during the reporting period. The Xypex coating is working as designed as drying of the wet spots has been observed. Xypex concentrate is being reapplied, in accordance with engineering evaluations, to a number of the wet spots to provide additional coating and crystalline growth. Changes in appearance of the wet spots, observed during routine inspections, are noted in Saltstone Disposal Facility operating procedures.

## Attachment 2

### Saltstone Production and Disposal Facility Status Basis

Permit Condition	Requirement	Basis
<b>B.5 a)</b>	Cumulative process volume of salt waste disposed to date	The cumulative process volume of salt waste value begins with the treatment and disposal of the DDA waste stream which commenced on March 5, 2007. The process volume of salt waste is the quantity of salt solution transferred from Tank 50 to the Saltstone Production Facility.
<b>b)</b>	Process volume of saltstone grout disposed and vault location (cell identity) for the reporting period	The process volume of saltstone grout value begins with the treatment and disposal of the DDA waste stream which commenced on March 5, 2007. The process volume of saltstone grout also includes the grout produced from processing of the bleed and process water that is returned to the SPF via the drain water collection system and any clean grout poured for a vault cell cold cap. For this reason the quantity of grout disposed of is slightly different from that which could be calculated using the process volume of salt waste from item (a). The process volume of saltstone grout reported is the total volume of saltstone grout disposed of during the reporting period. The vault location (cell identity) identifies the cells that were used to dispose of the reported total process volume of saltstone grout during the reporting period.
<b>c)</b>	Cumulative process volume of saltstone grout disposed to date	The cumulative process volume of saltstone grout value begins with the treatment and disposal of the DDA waste stream which commenced on March 5, 2007. Note: The cumulative process volume of saltstone grout disposed of to date (item (c)) and process volume of saltstone disposed of for the reporting period (item (b)) is the same for the first reporting period, the third quarter of 2007.
<b>d)</b>	Remaining vault volume	The vault cell volume is based on visual observation of the amount of grout in each cell. The remaining vault volume is based on use of the 8 cells in Vault 4 (B,D,E,F,H,J,K,L) which are equipped with the drain water return system and the exterior sealant minus the current cell inventory. Note: Exterior coating has not yet been applied to Cells B and H. Portions of the 8 cells were used for testing and previous SPF operations, so not all the vault volume used to date is due to DDA waste. The 8 cell vault volume remaining on March 5, 2007 (total volume minus previous use) was used as the baseline to determine remaining vault volume.

**Attachment 2 (continued)**

Permit Condition	Requirement	Basis
<p><b>d)</b> <b>(cont'd)</b></p>	<p>Remaining vault volume</p>	<p>Total vault volume of 8 cells = <math>1.34 \times 10^4</math> kgals            Total previous use vault volume of 8 cells = <math>6.41 \times 10^2</math> kgals</p> <p>Baseline vault volume (prior to DDA) =  <math>1.34 \times 10^4</math> kgals – <math>6.41 \times 10^2</math> kgals = <math>1.27 \times 10^4</math> kgals</p> <p>Remaining vault volume =            Baseline- Reporting Period Use from B.5(b)</p> <p>Remaining vault volume =  <math>1.27 \times 10^4</math> kgals – 226 kgals = <math>1.25 \times 10^4</math> kgals</p>
<p><b>e)</b></p>	<p>Curies disposed and vault location for the reporting period</p>	<p>The curies disposed value is calculated using the salt waste process volume transferred from Tank 50 (item (a) above) and the most current Tank 50 salt waste material balance radionuclide concentrations beginning on March 5, 2007. The curies disposed are a sum total of those radionuclides listed in Attachment III of Reference 1. The Tank 50 material balance salt waste concentrations are based on conservative concentrations so the curies disposed value may be overestimated during reporting periods. See item (f) below.</p>
<p><b>f)</b></p>	<p>Cumulative inventory of curies disposed to date</p>	<p>Actual radionuclide analysis of Tank 50 salt waste is required on a semi-annual basis. The Tank 50 material balance is updated using the actual salt waste sample results twice per year. In the balance of the year conservative estimates are used for radionuclide concentrations. For this reason the curies disposed during the reporting period may be overestimated. In order to account for the conservatism, the cumulative inventory of curies disposed will be updated on an annual basis to account for actual salt waste radionuclide concentrations. The cumulative inventory update will be completed upon receipt of the second set of radionuclide sample results for the calendar year. The cumulative inventory of curies disposed begins with the treatment and disposal of the DDA waste stream which commenced on March 5, 2007. See item (e) above for calculation method. Note: The cumulative inventory of curies disposed to date (item (f)) and the curies disposed for the reporting period (item (e)) is the same for the first reporting period, the third quarter of 2007.</p>

**Attachment 2 (continued)**

Permit Condition	Requirement	Basis
<b>g)</b>	Curies of highly radioactive radionuclides disposed and vault location for the reporting period	See item (e) above for calculation method. The individual highly radioactive radionuclide concentrations (as defined in Section 3116 Determination for Salt Waste Disposal) will be reported starting with the treatment and disposal of the DDA waste stream on March 5, 2007.
<b>h)</b>	Cumulative inventory of highly radioactive radionuclides disposed to date	See item (f) above for calculation method. The individual highly radioactive radionuclide concentrations (as defined in Section 3116 Determination for Salt Waste Disposal) will be reported starting with the treatment and disposal of the DDA waste stream on March 5, 2007. Note: The cumulative inventory of highly radioactive radionuclides disposed to date (item (h)) and the curies of highly radioactive radionuclides disposed for the reporting period (item (g)) is the same for the first reporting period, the third quarter of 2007.

### **Attachment 3**

#### **SRS Liquid Waste Disposition Processing Strategy Update**

Activities continue at the Savannah River Site consistent with the Department of Energy's (DOE) performance objectives and the Common Goals and Values (jointly developed by the DOE, the South Carolina Department of Health and Environmental Control (SCDHEC), and the South Carolina Governor's Nuclear Advisory Council (GNAC) as described in the SRS Liquid Waste Disposition Processing Strategy. The following updates are being provided for the key elements which support the Liquid Waste Disposition Processing Strategy.

Treatment and disposal of the Deliquification, Dissolution, and Adjustment (DDA) waste stream at the Saltstone Production and Disposal Facility (SPF/SDF) commenced on March 5, 2007. SPF operations with the DDA waste stream continued until such time that the SDF Industrial Solid Waste Landfill Permit (ISWLF) was stayed on March 19, 2007 (Reference 1). The SDF ISWLF Permit stay was lifted on August 7, 2007. DDA operations recommenced at the SPF on October 23, 2007.

Integrated testing of the Actinide Removal Process (ARP) and Modular Caustic Side Solvent Extraction Unit (MCU) facilities continued during the reporting period. Radiological operations (integrated runs) commenced at the ARP/MCU facilities on September 6, 2007, well ahead of the September 30, 2007 date required by Reference 1. Readiness assessments and operational readiness reviews of the ARP/MCU facilities are on schedule to be completed in the first quarter of 2008. The ARP/MCU facilities plan to introduce liquid waste early in the second quarter of 2008. Therefore, operations at the ARP/MCU facilities continue to support integrated runs and the other elements of Reference 1, Permit Condition A.1.

The following activities are also notable during the reporting period:

- Efforts continued to identify a viable treatment technology for Tank 48.
- A subcontract was let for mechanical cleaning of Tanks 18 and 19.
- Waste removal activities continued in Tanks 5 and 6.
- DWPF operations continued.

DOE has developed and is preparing to issue Revision 14 of the Life-Cycle Liquid Waste Disposition System Plan. This plan reflects the delays in interim salt processing associated with the regulatory documentation and permitting process and the delay in the projected startup of the Salt Waste Processing Facility. DOE will be providing SCDHEC a briefing on this Plan and, in consultation with SCDHEC, will determine if a revision to the Liquid Waste Disposition Processing Strategy is appropriate. The Life-Cycle Liquid Waste Disposition System Plan identified several risks at this time. These risks include:

- The ability to complete all waste removal from the Type III tanks by 2028.
- The ability to complete final closure of old-style tanks per the Federal Facility Agreement (FFA) schedule during the period between FY13 and FY15.

DOE will continue to seek opportunities to mitigate these risks.

Mr. John M. McCain, Jr.  
SRS-REG-2007-00030  
Page 8 of 9  
October 25, 2007

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File Info:

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10666, DOE/ADM  
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