November 19, 2010

Mr. Thomas Gutmann, Director
Waste Disposition Programs Division
U.S. Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, SC 29802

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION JULY 28, 2010 ONSITE OBSERVATION REPORT FOR THE SAVANNAH RIVER SITE SALTSTONE FACILITY

Dear Mr. Gutmann:

The enclosed report describes the U.S. Nuclear Regulatory Commission's (NRC's) onsite observation activities on July 28, 2010, at the Savannah River Site (SRS) Saltstone Facility. This onsite observation was conducted in accordance with Section 3116 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (Section 3116), which requires NRC to monitor disposal actions taken by the U.S. Department of Energy (DOE) for the purpose of assessing compliance with the performance objectives set out in 10 CFR Part 61, Subpart C. The activities conducted during the site visit were consistent with those described in the NRC's monitoring plan for salt waste disposal at SRS (dated May 3, 2007) and NRC's staff guidance for activities related to waste determinations (NUREG-1854, dated August 2007).

This onsite observation at SRS was focused on assessing compliance with all four performance objectives: (i) protection of the general population from releases of radioactivity (10 CFR 61.41), (ii) protection of individuals against inadvertent intrusion (10.CFR.61.42), (iii) protection of individuals during operations (10.CFR.61.43), and (iv) stability of the disposal site after closure (10 CFR 61.44). Meeting these four performance objectives depends on the performance of the disposal cells within the period of compliance.

NRC continues to conclude that there is reasonable assurance that the applicable criteria of Section 3116 can be met, if key assumptions made in DOE's waste determination analyses are confirmed to be appropriate. In accordance with the requirements of Section 3116 and consistent with NRC's monitoring plan for the Saltstone Disposal Facility, NRC will continue to monitor DOE's disposal actions at SRS. The monitoring activities are expected to be an iterative process. Presently, three issues previously identified by the staff remain open: (1) the hydraulic and chemical properties of the saltstone grout, (2) the variability of saltstone from batch to batch, and (3) the reduction capability and sorption rate of Technetium-99 onto the saltstone waste form. Further onsite observation visits and technical reviews may be necessary in order to obtain the information needed to close all of the current open issues, as well as other issues that may be opened in the future.

If you have any questions or need additional information regarding this report, please contact Nishka Devaser of my staff at (301) 415-5196.

Sincerely,

/RA/

David L. Skeen, Deputy Director
Environmental Protection
and Performance Assessment Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Enclosure:
NRC Observation Report

cc w /encl:
S. Wilson
Federal Facilities Liaison
Environmental Quality Control Administration
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, SC 29201-1708

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U.S. NUCLEAR REGULATORY COMMISSION JULY 28, 2010 ONSITE OBSERVATION REPORT FOR THE SAVANNAH RIVER SITE SALTSTONE FACILITY

EXECUTIVE SUMMARY:

The U.S. Nuclear Regulatory Commission (NRC) staff conducted its ninth onsite observation visit to the Saltstone Facility at the Savannah River Site (SRS) on July 28, 2010. The purpose of this visit was to focus on compliance with all four performance objectives: (i) protection of the general population from releases of radioactivity (10 CFR 61.41), (ii) protection of individuals against inadvertent intrusion (10.CFR.61.42), (iii) protection of individuals during operations (10 CFR 61.43), and (iv) stability of the disposal site after closure (10 CFR 61.44), by observing Saltstone production operations and activities related to new disposal cell construction. In addition, the staff participated in discussions with DOE representatives related to open issues previously identified as part of NRC's monitoring responsibilities. This report provides a description of NRC onsite observation activities and identifies NRC observations made during the visit. Based on the results of the visit, the NRC continues to have reasonable assurance that the performance objectives of 10 CFR 61 can be met in the areas reviewed, as long as key assumptions made in DOE's waste determination analysis are confirmed to be appropriate.

There are no new open issues resulting from this observation. DOE provided the status of the Open Issues, and described the actions that are being taken to address them. The NRC staff participated in this dialogue, and the presentation provided by DOE (SRR, 2010a) is accessible via NRC's document repository, the Agencywide Documents Access and Management System (ADAMS), at ADAMS accession number ML102180250.

A summary of the staff's observations and conclusions is provided below:

Saltstone Quality Assurance Plan:

- The NRC staff received an update on the saltstone product quality assurance strategy which included discussions about the status of current Open Issues and proposed measures for closure of the Open Issues.

Hydro-test results on Cell 2A and 2B:

- DOE provided a tour of the interior and exterior of Disposal Cell 2 to provide a visual status of corrective actions taken since leaks were found during the hydro-test in April 2010. DOE then gave a presentation on the ongoing repairs and corrective actions for the disposal cells. The staff appreciated the opportunity to observe repairs being made to the inside of the cell and are encouraged by the progress in addressing the leaks observed during the hydrotesting of the new disposal cells. Leaks in the cells during the compliance period could potentially compromise compliance with the performance objectives; the staff maintains an interest in construction of the new disposal cells because inadequate performance resulting from design flaws or problems during construction could compromise compliance with the performance objectives.

- The NRC staff asked about the effect the new cell design corrections might have on assumptions made in the performance assessment (PA) concerning vault performance. The staff encouraged the DOE to consider performance issues observed in the new disposal cells and how the issues may apply to the existing cells (vaults 1 and 4). The staff noted that if leakage occurred around the bolts used to fasten the drainage system to the vault floors in the new vaults, the existing vaults (1 and 4) may also experience similar leakage. NRC staff noted that it would be difficult to observe this type of leakage with the existing monitoring system for Vaults 1 and 4.

Saltstone Core Samples:

- The staff participated in a discussion about test methods and procedures used for the saltstone core samples that were extracted from the wasteform in Vault 4 in September 2008. The core samples will provide direct verification of the quality and properties of the saltstone wasteform. The discussion was useful in providing a status of the preliminary results of the core sampling methods and analysis.

- The NRC staff stated that they maintain an interest in the results of the core sampling in order to gain a better understanding of some of the details of the test procedures and the measured parameters (grout strength, radionuclide concentrations, hydraulic properties, chemical properties, etc.).

- DOE and NRC staff discussed activities to develop alternative recovery methods for core samples. NRC staff expressed concern that it may be difficult to achieve representative boundary conditions (e.g. stress) with the embedded tube-type sampling device being developed by DOE.

Additional Discussion Topics - May 19, 2010 Saltstone Inadvertent Transfer:

- On May 19, 2010, 7,190 liters (1900 gallons) of dilute untreated salt solution was transferred inadvertently into Vault 4, Cell F due to a valve misalignment. DOE stated that no material was released to the environment and approximately 92% of the untreated solution was recovered from Cell F. DOE presented the details of this event, responded to concerns the NRC staff had about the nature of this event, and agreed to provide the documentation concerning the details of this event that the NRC has requested to ensure compliance under monitoring.

- The additional information on the inadvertent transfer provided during the observation was helpful to increasing the staff's understanding of the event. The NRC was notified of the transfer event on May 26, 2010. Though this notification was relatively timely, in the future when an event occurs that could impact compliance with the performance objectives, NRC should be notified as soon as practical so that NRC can fulfill its monitoring responsibilities. Based on our current understanding, the NRC does not believe the event will impact compliance with the 10 CFR Part 61 Subpart C Performance Objectives, but will follow up on this event during future observations.

1.0 BACKGROUND:

Section 3116 of the National Defense Authorization Act for Fiscal Year 2005 (Section 3116) authorizes the Department of Energy (DOE), in consultation with the NRC, to determine that certain radioactive waste related to the reprocessing of spent nuclear fuel is not high-level waste, provided certain criteria are met. Section 3116 also requires NRC to monitor DOE disposal actions to assess compliance with the performance objectives in 10 CFR Part 61, Subpart C.

On March 31, 2005, DOE submitted a "Draft Section 3116 Determination Salt Waste Disposal Savannah River Site" to demonstrate compliance with the Section 3116 criteria including demonstration of compliance with the performance objectives in 10 CFR Part 61, Subpart C (DOE, 2005a). In its consultation role, the NRC staff reviewed the draft waste determination and concluded that there was reasonable assurance that the applicable criteria of Section 3116 could be met, provided certain assumptions made in DOE's analyses are verified via monitoring. NRC documented the results of its review in a Technical Evaluation Report issued in December 2005 (NRC, 2005). DOE issued a final waste determination in January 2006 taking into consideration the assumptions, conclusions, and recommendations documented in NRC's Technical Evaluation Report (DOE, 2006).

To carry out its monitoring responsibility under Section 3116, NRC plans to perform three types of activities: (i) technical reviews, (ii) onsite observations, and (iii) data reviews in coordination with the State of South Carolina site regulator, South Carolina Department of Health and Environmental Control (SC DHEC). These activities will focus on key assumptions – called "factors" – identified in the NRC monitoring plan for salt waste disposal at SRS (NRC, 2007). Technical reviews generally will focus on obtaining additional model support for assumptions DOE made in its PA that are considered important to DOE's compliance demonstration. Onsite observations generally will be performed to (i) observe the collection of data (e.g., observation of waste sampling used to generate radionuclide inventory data) and review the data to assess consistency with assumptions made in the waste determination, or (ii) observe key disposal (or closure) activities related to technical review areas (e.g., slag and other material storage, grout formulation and preparation, and grout placements). Data reviews will supplement technical reviews by focusing on monitoring data that may also indicate future system performance or by reviewing records or reports that can be used to directly assess compliance with performance objectives.

2.0 NRC ONSITE OBSERVATION ACTIVITIES:

The observation began with a tour of both the interior and exterior of the Disposal Cell 2 (NRC toured the inside of unit 2A and then walked the circumference of the exterior of unit 2B). After the tour, DOE provided an update on the status of the damp spot activity and internal and external repairs of the disposal cells, which is explained in detail in Section 2.2 of this report. DOE then provided an overview of an inadvertent transfer of 7,190 liters (1900 gallons) of salt solution that took place on May 19, 2010 at the Saltstone Production Facility (SPF). Details of this event were provided in DOE's presentation and are continued in Section 2.4 of this report. Following this discussion, technical discussions took place for the remainder of the observation. Topics for discussion were (1) Open issues status (Section 2.1 Saltstone Quality Assurance

Plan) and (2) Vault 4, Cell E Saltstone core sample status and sampling techniques (Section 2.3 Saltstone Core Samples Analysis).

2.1 SALTSTONE QUALITY ASSURANCE PLAN:

2.1.1 Observation Scope:

The staff's interest in discussing the Saltstone quality assurance plan is to ensure quality of the saltstone product and to make certain that conditions and controls are defined that will ensure future product quality. Verifying the quality of the saltstone wasteform is important to assessing grout formulation and placement which relates directly to ensuring compliance with 10 CFR 61.41, "*protection of the general population from releases of radioactivity*" and 10 CFR 61.42, "*protection of individuals against inadvertent intrusion*".

In March 2008, during an onsite observation at the Saltstone facility, DOE presented a saltstone product quality assurance strategy that would allow them to quantify the impact of factors such as potential bulk component intrabatch variability, flush water additions, and additives on processability of final product properties and on the wasteform properties that are important to performance assessment. NRC had expressed concerns with quantifying the saltstone product quality in a previous onsite observation. DOE has provided periodic updates on the progress of this quality assurance strategy and the NRC staff requested another update as an objective of this observation.

Section 3.2.4, "Grout Formulation and Placement", of the May 2007 monitoring plan (NRC, 2007) provides the basis for the staff's intended review areas.

2.1.2 Observation Results:

DOE provided a presentation that covered each of the three Open Issues. The discussion of each is summarized below and in DOE's presentation (SRR, 2010a).

- **Open Issue 2007-1: Hydraulic and Chemical Properties of Saltstone Grout**

  Open Issue*: At the SRS Saltstone Facility, as a result of variations in the composition of saltstone grout actually produced at the Saltstone Production Facility, DOE should determine the hydraulic and chemical properties of as-emplaced saltstone grout*

DOE provided their proposed strategy for closing this open issue. DOE plans to complete the saltstone core sample analyses and to implement a continuous sampling plan for on-going verification of hydraulic and chemical properties of as-emplaced saltstone. For further detail on the core sample analysis discussion and a description of the importance of the core samples analysis to monitoring, please refer to Section 2.3 of this report.

- **Open Issue 2007-2: Intrabatch Variability of Saltstone Grout**

  Open Issue*: At the SRS Saltstone Facility, DOE should demonstrate that intra-batch variability, flush water additions to freshly poured saltstone grout at the end of each*

production run, and additives used to ensure processability are not adversely affecting the hydraulic and chemical properties of the final saltstone grout. DOE should show that the hydraulic and chemical properties are consistent with the assumptions in the waste determination or show that any deviations are not significant with respect to demonstrating compliance with performance objectives.

DOE stated that they use saltstone simulants to measure properties that can be used to estimate product quality. DOE provided a status of saltstone simulants testing. Simulants testing is needed to identify relationships between grout quality and grout quality parameters such as aluminate concentration, water-to-premix ratio, cure temperature, and dry feeds variability. Some details of this progress can be found on slide 8 of DOE's presentation (SRR, 2010a). DOE stated that the simulants are being developed and cured in batches every two weeks and the samples are allowed to cure for 90 days before being sent out for analysis. The NRC staff considers these parameters and their relationships when calculating potential dose received by the general population (10 CFR 61.41). Verifying these parameters ensures an accurate calculation of potential future dose to members of the public that may consume water from an aquifer local to the Z-Area.

In addition, DOE stated that K_d (distribution coefficient) testing of simulated saltstone is currently underway and is expected to be complete by CY2011.

- **Open Issue 2009-1: Technetium-99 Behavior in Saltstone Grout and Disposal Container**

  ***Open Issue**: At the SRS Saltstone Facility, DOE should demonstrate that (1) technetium-99 in salt waste is converted to its reduced chemical form in saltstone grout during the curing of saltstone grout, and is thereby strongly retained in saltstone grout, and (2) the sorption of dissolved technetium-99 onto saltstone grout and vault concrete is consistent with Kd values for technetium-99 that were assumed in the performance assessment*

DOE provided a summary of the Tc-99 K_d testing underway and stated that a Tc-99-spiked saltstone simulant had been prepared and was sent for analysis. DOE noted that this is a long-term study to assess the K_d and reduction behavior of Tc-99 over time. Reduction of Tc-99 is a key factor in future performance of the saltstone disposal facility. DOE stated that the intention of these experiments is to verify reducing conditions are achieved and to show that Tc-99 remains strongly sorbed to the waste matrix. NRC and DOE discussed the scope of the experiments and DOE's plans to address kinetics and flow conditions, as well as sorption onto vault concrete. Both parties agreed it was important to ensure that flow conditions and the duration of the experiments were appropriately incorporated into the experimental measurements. DOE indicated that laboratory measurement of sorption onto vault concrete had not been performed this year.

2.1.3 Conclusions and Follow-up Actions:

Based on the discussion that took place during the observation, the NRC continues to have reasonable assurance that the 10 CFR part 61 performance objectives can be met as long as these open issues can be resolved, but will continue to closely monitor information resulting from implementation of the saltstone quality assurance plan. The NRC staff will monitor DOE's actions for each of the Open Issues. The NRC staff appreciates the update and looks forward to seeing results from the saltstone simulant experiments, Tc-99 spiked sample experiments, and the core sample experiments and will be reviewing documentation produced from these experiments as they are provided to NRC.

2.2 SALTSTONE DISPOSAL CELLS HYDRO-TEST:

2.2.1 Observation Scope:

The staff's interest in observing construction relates to ensuring the integrity of the disposal units and identifying the potential mechanisms of contaminant release from the facility. Section 3.1.3, "Hydraulic Isolation of Saltstone", of the May 2007 monitoring plan (NRC, 2007) provides details of the basis for the staff's intended review areas.

2.2.2 Observation Results:

Shortly before DOE began the hydro-test on disposal cell 2B in April 2010, multiple damp spots were evident at the base of the cell. The hydro-test was then suspended until the root cause of the spots was identified. Since April 2010, the hydro-test on cell 2A also required suspension due to leaks identified by the insertion of a dye tracer into the water used during the test. For additional background information on the hydro-test and events that followed suspension of the test, please refer to the April 2010 Onsite Observation Report (NRC, 2010b). At the beginning of the observation, DOE provided a tour of both the interior and exterior of the disposal cells 2A and 2B. NRC staff observed the exterior condition of the cells which included walking the circumference of cell 2B observing repairs to the cell made to the leak points, and then entered cell 2A to observe conditions of the interior of the cell. During the tour, the NRC staff observed some of the interior coating installation, interior cell repairs, and the installation of CIM 1000 coating (©CIM) to the anchor bolts and internal curb. After the tour, DOE provided an update of the status of the damp spot activity and internal and external repairs of the disposal cells. DOE provided a description of their internal process for addressing issues and corrective actions associated with the disposal cells. DOE provided specific details on repair activities such as adding curbing on the exterior of the cell, cutting off the interior anchor bolts on the cell floor, and coating with the CIM 1000 material in a continuous coat up to 5 feet along the cell walls. The image shown on slide 3 of DOE's presentation (ML102180299) provides a useful depiction of corrective actions being considered for the new disposal cells.

NRC Concerns with Proposed Corrective Actions to Disposal Cells 2A and 2B

The NRC expressed concern about the installation of curbing to the exterior of the cell. This installation would cover potentially vulnerable points around the base of the cell making visual inspection impossible. Therefore conclusions about the effectiveness of internal repair activities

of the new disposal cells will be confounded by the presence of the curb on the exterior which may not allow leakage to be seen during the future hydrotest. The staff stated that insufficient confidence in the effectiveness of the repairs will be an additional consideration during review of the PA and in future observations.

Vault 4 Observations

Similar to the curbing proposed for the new disposal cells, the megamix curb installed to protect Vault 4 creates a similar concern to the installation of curbing to cells 2A and 2B, discussed above. During the observation, NRC staff expressed a concern because the megamix curb covers the vault at previously identified vulnerable points around the vault, and, as stated about the new disposal cell exterior curb, this would make visual inspection impossible.

In addition, the leakage observed during cell 2A and 2B hydrotesting was attributed to the bolts in the floors of disposal cells. The NRC staff raised a concern about the integrity of the Vaults 1 and 4 floors because a similar system was used to secure the drain system to the floor of both Vaults 1 and 4. Staff expressed concern that the older disposal vaults may have leakage similar to that observed in the hydrotests of the new cell design, but that DOE is unable to observe leakage underneath the disposal units. NRC staff suggested that direct evidence of leakage (or non-leakage) could be obtained with horizontal soil cores under the existing disposal vaults. NRC staff will evaluate this issue further in future monitoring visits.

2.2.3 Conclusions and Follow-up Actions:

Based on the results of the visit and the preliminary results provided by DOE (ML101660516), the NRC continues to have reasonable assurance that the 10 CFR part 61 performance objectives can be met if the proposed corrective actions for the disposal cells prove effective, but will continue to closely monitor both the performance of Vault 4 and the continued construction and testing of the new disposal cells. The NRC staff will monitor the path forward and corrective actions implemented by DOE regarding the short-term performance problems associated with the new disposal cells and will continue to monitor the situation. The staff looks forward to hearing the final corrective actions approved by DOE, as the final plans will influence the Technical Evaluation Report being prepared by the NRC staff during its review of the updated PA.

2.3 SALTSTONE CORE SAMPLES ANALYSIS:

2.3.1 Observation Scope:

The staff's interest in discussing core sample analysis and sampling procedures relates to ensuring the integrity of the wasteform and verifying that the actual saltstone wasteform has properties that are consistent with the simulated saltstone samples.

Saltstone core samples were removed from Vault 4, Cell E, in September 2008. The samples were discussed briefly in an onsite observation conducted in March 2009, which led to staff requesting additional information about the results of physical or chemical tests being performed

on core samples (NRC, 2009). NRC staff had requested this discussion as a follow-up to the request made during this observation.

Section 3.2.4, "Grout Formulation and Placement", of the May 2007 monitoring plan (NRC, 2007) provide details of the basis for the staff's intended review areas.

2.3.2 Observation Results:

Nine core samples were taken from three locations along the western wall of Cell E of Vault 4 in September 2008 from salt waste deposited in December 2007. Each core was approximately 9 cm (3.5 in.) in diameter and 15 cm (6 in.) deep. In March 2009, DOE explained its plans to test parameters such as porosity, saturated hydraulic conductivity, and distribution coefficients for radionuclides. In the discussion at the current observation visit, DOE provided a status of the progress made in testing these parameters. As can be seen in slide 5 of the presentation (SRR, 2010a), the samples analysis is currently still in progress, however, discussions were centered on techniques used for evaluating current samples, preliminary results of current samples, and the evaluation of sampling techniques proposed for use in the future.

Techniques Used for Current Samples

DOE noted that obtaining results from current samples has posed some difficulty because of the invasive sampling method. DOE provided documentation about the core samples (SRNL, 2009) which provides some description of the sampling method. NRC staff stated that it was important to verify the quality of the saltstone product, and core samples were one of the most direct ways to obtain the information. NRC understood the concern expressed by DOE that the core sampling technique may have affected the integrity of the samples. As seen in the aforementioned DOE core sample document, some of the samples were highly fractured, and the integrity of the samples appears to be low. NRC staff informed DOE that a contractor to the NRC had little difficulty obtaining core samples from large grout sample experiments when the grout had moderate or better strength (Walter, 2010). Although some of the grout parameters presented differences in the strength (between SRS saltstone and the NRC contractor simulant), the NRC contractors' grout was designed to simulate the wasteform as assumed in the Saltstone PA. Since the sampling technique used by NRC contractor was not as detrimental to the saltstone, NRC questions whether fracturing observed by DOE may be a function of product quality and not sampling technique. DOE and NRC agree to follow-up on core sampling techniques as more information is developed.

Preliminary Results of Current Samples

The DOE briefly provided some of the preliminary results from analyses of the current samples. DOE, SC DHEC, and NRC spoke at length about the sample results. NRC reiterated that the core sampling was a very important activity and DOE should continue to make progress in obtaining representative samples. Some samples or sections of core samples experienced significant fracturing and had poor integrity. DOE believed sample quality was caused by the coring process and sample recovery, and had devoted resources to different sample recovery methods. In-situ sample recovery methods are being investigated. NRC reiterated a previous suggestion by DHEC staff, that the core samples from saltstone could be leach tested to verify and provide model support for estimated radionuclide release rates in the current and future

performance assessments. NRC and DHEC stated that more samples should be taken and that it would be very beneficial to the PA review process and under monitoring of the saltstone process to provide the full results of the analyses to the NRC.

Proposed Future Sampling Techniques

Alternate methods were discussed and each had its strengths and weaknesses. DOE presented information on an in-situ sampling technique essentially using embedded pipes, for which they tested the force required to remove the sampling device. NRC expressed concern that the sampling device may allow less disruption of the sample, however the sampling device may change the in-situ conditions of the wasteform such that the sample is not representative. The NRC stated that when its contractor conducted experiments to test the properties of large-scale samples, scale effects were evident in the results. This highlights the importance of measuring properties of representative samples at appropriate scale.

2.3.3 Conclusions and Follow-up Actions:

The staff found the discussion about test methods and procedures of saltstone core samples beneficial. The staff maintains an interest in the sample analysis methods and results, and would like to continue the discussion when more results are available. The NRC staff would like more timely receipt of the core sample test results. Continued discussion about the sampling methods and processes will be conducted in future monitoring activities.

2.4 ADDITIONAL DISCUSSION TOPICS - SALTSTONE INADVERTENT TRANSFER:

2.4.1 Observation Scope:

This observation activity was not explicitly stated in the scope of the observation guidance; however, the inadvertent transfer occurred in the months preceding the observation and could relate to demonstrating compliance with the performance objectives (e.g. unanticipated inventory from transfer, changes to stability of wasteform in cell, inadequate retrieval of untreated salt waste, etc.).

2.4.2 Observation Results:

DOE provided an overview of the inadvertent transfer event that occurred on May 19, 2010 at the Saltstone Production Facility (SPF). DOE made progress on understanding the cause of the event and developing corrective action. At the time of the monitoring visit, DOE was still in the process of completing analysis on the radiological make-up of the transfer. The NRC staff previously requested this information and the staff reiterated this request during the observation. This event involved a transfer of approximately 7,190 liters (1900 gallons) of diluted salt solution from the SPF to Vault 4, Cell F while SPF was in a special test mode. This event was attributed to operator error resulting in a valve misalignment. The facility obtained a sample of the transferred liquid and an analysis of the chemical constituents was used to estimate that the liquid was dilute (~10%) salt solution. Additional details about the inadvertent transfer can be found in the presentation provided to the NRC by DOE (SRR, 2010c). The bullets below provide a summary of the document:

Inadvertent Transfer of Salt Waste Chain of Events

- On May 19, 2010, during performance of a Special Procedure to test Salt Feed Tank (SFT) pump and agitator, about 7,190 liters (1900 gallons) of liquid was inadvertently transferred from the SFT to Vault 4 Cell F.
- The Bleed Water level increased in Vault 4 Cell F due to the material. The Drainwater Return System was utilized to return the liquid to the SFT.
- Event was the result of the operator's failure to position a valve per the procedure coupled with a single point failure situation.
- Samples pulled (from hopper) and analyzed for pH, chromium, and mercury levels. Concentrations consistent with past samples (RCRA non-hazardous and LDR compliant)
- SC DHEC notified of the event, path forward and sample results.
- A Fact Finding has been conducted with Corrective Actions developed to prevent recurrence.

2.4.3 Conclusions and Follow-up Actions:

Based on the information provided to the staff prior to and during the observation, the NRC staff concludes that the SPF staff responded appropriately to this event. Due to the corrective actions that resulted from the inadvertent transfer, the NRC staff does not believe the event will impact compliance with the 10 CFR part 61 performance objectives. Prior to and during the observation, the NRC staff requested additional information on the radiological inventory of the transfer; this request will be tracked as *Follow-Up Action 2010-03-01*.

3.0 PARTICIPANTS:

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David Esh	Keith Liner	David Hoel
Karen Pinkston	David Little	Carl Lanigan
Gregory Suber	Coleman Miles	Chun Pang
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SC DHEC	Mark Schmitz	
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