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RCRA CLOSURE PLAN FOR UNDERGROUND STORAGE TANK 105-C (U)

by

Miles, Jr., W. C.

Westinghouse Savannah River Company

Savannah River Site

Aiken, South Carolina 29808

DOE Contract No. DE-AC09-89SR18035

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This Copy of the "RCRA Closure Plan for Underground Storage Tank 105-C" has been amended by insertion to include the following revisions:

<u>Pages Revised</u>	<u>Revision #</u>	<u>Date</u>
11,12,13,14,17	2	6/12/91

RCRA CLOSURE PLAN FOR
UNDERGROUND STORAGE
TANK 105-C (U)

October 1, 1990

Westinghouse Savannah River Company
Savannah River Site
Aiken, SC 29808

PREPARED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT
DE-AC09-88SR18035

WSRC-RP-90-1121
UNCLASSIFIED

10/1/90
3/13

**RCRA CLOSURE PLAN
FOR
UNDERGROUND STORAGE TANK
TANK 105-C**

**SAVANNAH RIVER SITE
AIKEN, SOUTH CAROLINA**

OCTOBER 1, 1990

**PREPARED BY
REACTOR ENVIRONMENTAL ASSESSMENTS DEPARTMENT
BUILDING 703-8C**

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LIST OF ACRONYMS

API	American Petroleum Institute
ALARA	As Low as Reasonably Achievable (i.e. radiation exposure)
CERCLA	Comprehensive Envir. Response, Compensation & Liability Act
CFR	Code of Federal Regulations
CSWE	Central Services Works Engineering
DOE	United States Department of Energy
EPA	United States Environmental Protection Agency
HP	SRS Health Protection/Health Physics
I.D.	Inside Diameter
HX	Heat Exchanger
ND	None Detected
NACE	National Association of Corrosion Engineers
OSHA	Occupational Safety and Health Administration
RCRA	Resource Conservation and Recovery Act
SCDHEC	South Carolina Department of Health & Environmental Control
SRL	Savannah River Laboratory
SRS	Savannah River Site
TCLP	Toxic Characteristic Leaching Procedure
UST	Underground Storage Tank

1.0 INTRODUCTION

The United States Department of Energy (DOE) owns and is responsible for the operation of the Savannah River Site (SRS), a nuclear materials production facility located in Aiken, Allendale, and Barnwell Counties in South Carolina. Operations of the SRS have involved the handling and disposal of various wastes, including chemical, solid, liquid, hazardous, and mixed wastes. A Reactor Department program for repairing heat exchangers created a low level radioactive waste, which was held in underground storage tank (UST) 105-C, hereafter referred to as "the tank". The heat exchanger repair program ended in 1983. The final volume of waste produced from this program was never removed from the tank. According to Procedures used at the facility, the waste's pH was adjusted to the 8.0 - 12.0 range before shipping it to the SRS Waste Management Department. For this reason, area personnel did not anticipate that the waste which is currently contained in the tank would have corrosive hazardous characteristic. However, recent analysis indicates that waste contained in the tank has a pH of greater than 12.5, thereby constituting a hazardous waste. Because the Department of Energy - Savannah River Office (DOE-SR) could not prove that the hazardous waste had been stored in the tank for less than 90 days, the State of South Carolina Department of Health and Environmental Control (SCDHEC) alleged that DOE-SR was in violation of R.61-79.262.34(b), 265, and 270.1 of the 1976 Code of Laws of South Carolina. Settlement Agreement 90-64-SW was prepared to address these allegations.

As agreed in Settlement Agreement 90-64-SW between the DOE and SCDHEC, this is the required closure plan for Tank 105-C. The purpose of this document is to present SCDHEC with an official plan for closing the underground storage tank, according to SCHWMR R.61-79.265 Subparts G and J. Upon approval by SCDHEC, the schedule for closure will be an enforceable portion of this agreement. The Department of Energy would like to officially close the tank and herein requests approval of this closure plan.

2.0 CLOSURE PERFORMANCE STANDARD

(Ref: 265.111) The facility will be closed in a manner that minimizes the need for further maintenance and controls. Since this is to be a clean closure in place, the threat to human health and the environment will be minimized or eliminated. A soils assessment along the tank and associated piping will be conducted to verify this assumption.

Given that:

- 1) there has been no decrease in the tanks liquid level since documented monitoring of the fluid level began in August 1990,
 - 2) knowing that the original tank wall thickness was 1.625 inches,
 - 3) maximum estimated internal corrosion rates are relatively low, and
 - 4) other tanks excavated at SRS have exhibited very little external corrosion,
- we do not believe that there has been a release to the environment.

The intent of this plan is that there will be no post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground or surface waters or to the atmosphere.

(Ref: 265.112) **3.0 BACKGROUND INFORMATION**

3.1 SYSTEM INFORMATION: Tank 105-C was installed in 1961 as part of an off-line heat exchanger repair program, in C-Area at the Savannah River Site (SRS). Figure 1 shows the location of C-Area in relation to several of the other facilities at SRS. The tank is located inside the protected area fence of C-Area, near the stack area of the reactor building. FIGURE 2 shows the location of the tank in relation to the reactor building, SRS coordinates N67520 E46200. Access to the storage tank is through a security gate for the 100-C limited area, which is controlled by security guards. Another fence surrounds the 105-C area, where HP radiation monitors are maintained and operable. Traffic in the area is sparse and controlled by the building custodian.

The storage tank is approximately 40' long, 6' diameter, holds approximately 8400 gallons when full, and has 1.625" thick carbon steel walls. The tank top lies approximately 6' below grade. The tank rests on two concrete saddles that are 2' x 2' x 10', and is sloped such that the east end is 9 inches lower than the west end.

Tank 105-C was used as a temporary holding tank for liquid waste generated by rinsing the heat exchangers with a weak oxalic acid solution. The reacted or spent oxalic acid solution that resulted from the rinsing process was pumped into an above ground neutralization tank in the stack area of the reactor building. Potassium hydroxide (KOH) was then added to raise the solution pH to 8.0 or above. After neutralization, the waste was transferred to the underground storage tank 105-C for temporary storage. It was common for the neutralization process to require additional pH adjustment inside tank 105-C, accomplished by circulating the tank with a pump, and adding more KOH to fine tune the pH. A permanent pump was set up to pump the waste into a waste trailer for transportation to the Separations Department.

(Ref: 265.112)

3.0 BACKGROUND INFORMATION

3.1 SYSTEM INFORMATION: (continued)

The pump and circulation lines have been disassembled since 1983. There are three above ground components of the tank visible; 1) a 2" diameter riser pipe, 2) a 4" diameter riser pipe, 3) and a 2.67" diameter riser, connected to a 20" flange. FIGURE 3 is a diagram showing these features. Standard operating practices and controls were implemented to prevent spills and overflows from the tank during filling and removal operations. The hatch on the manhole prevents rain water from entering the tank. Tank design does not allow internal pressure to build-up in this tank.

It is not believed that wastes stored in this tank would have had significant adverse effects on the tank's structural materials. Tanks that have been excavated from various SRS locations in the past have exhibited external corrosion on the order of at most 1/4". According to a National Association of Corrosion Engineers (NACE) chart of corrosion rates for KOH solutions on mild carbon steel, corrosion amounting to less than 0.02 inches of steel per year would be expected. At this rate, the maximum internal loss of wall thickness over thirty years would be 0.6". Combined with potential external corrosion, at least a 0.75" thick wall should remain.

The tank fluid level was measured in May, 1990, and has been measured once per week since August, 1990. A constant 23.25 inches has been recorded, which equates to approximately 2400 gallons. The only fluid to leave the tank has been the samples that were sent to an off-site, independent lab for analysis. The tank contents are mostly aqueous, with an estimated 300 gallons of sludge accumulated in the tank bottom. A thin oil layer floats on the water surface, and is estimated to be less than 3% of the total volume.

CLOSURE PLAN FOR UNDERGROUND STORAGE TANK 105-C

FIGURE 1: C-AREA AT THE SAVANNAH RIVER SITE

CLOSURE PLAN FOR UNDERGROUND STORAGE TANK 105-C

FIGURE 2: MAP LOCATING 105-C TANK IN C-AREA

FIGURE 3: DIAGRAM OF 105-C TANK

(Ref: 265.112)

3.0 BACKGROUND INFORMATION

3.2 LABORATORY ANALYSIS OF TANK CONTENTS:

A sample from the tank was sent to the Savannah River Laboratory (SRL) for radiological screening, pH analysis and flash point analysis on 3/15/89. A portion of the sample was sent to an independent, South Carolina certified laboratory for EP Toxicity analysis; the date that the independent lab received the sample was 8/24/89. The laboratory report (dated 9/7/89) shows that the metals concentrations in the sample are less than the regulatory thresholds defining a hazardous waste. The EP Toxicity test results are summarized in TABLE 1. SRL test results were printed on 9/15/89, and indicate that the pH of the "mostly aqueous" material from the tank was 13.36. The SRL test results are summarized in TABLE 2.

TABLE 1: Results of EP Toxicity Test on the Aqueous Sample

Arsenic (As)	< 1.00 ppm
Barium (Ba)	< 1.00 ppm
Cadmium (Cd)	< 0.50 ppm
Chromium (Cr)	< 1.00 ppm
Lead (Pb)	< 1.00 ppm
Mercury (Hg)	< 0.20 ppm
Selenium (Se)	< 0.50 ppm
Silver (Ag)	< 1.00 ppm

TABLE 2: Results of SRL Analysis on the Aqueous Sample

pH	13.36
Gross Alpha	7.32E-5 uCi/ml
Tritium	1.59E+1 uCi/ml
Gross Beta/Gamma	3.24E-4 uCi/ml

(Ref: 265.112) 3.0 BACKGROUND INFORMATION

3.2 LABORATORY ANALYSIS OF TANK CONTENTS:

The desire for an independent, off-site lab to perform a complete Hazardous Waste Determination (Ref: 262.11) necessitated obtaining a fresh, representative, sample from the tank. Knowing that tank closure will be implemented in 1991 also made it desirable to obtain additional analysis. (The Toxic Characteristic Leaching Procedure (TCLP) replaced the EP Toxicity test in September 1990). Reactor Operations Department personnel sampled the tank. Samples contained proportionate (representative) amounts of oil, water, and sludge. TABLE 3 below is a summary of the Hazardous Waste Determination performed on the sample, indicating that none of the results except for pH are above or outside of regulatory threshold limits. A copy of the laboratory report can be found in the Appendix, section 10.4.

TABLE 3: Summary of the Hazardous Waste Determination

1. TCLP

Arsenic (As)	3.10	mg/l
Barium (Ba)	1.95	mg/l
Cadmium (Cd)	< 0.015	mg/l
Chromium (Cr)	2.72	mg/l
Lead (Pb)	0.30	mg/l
Mercury (Hg)	< 0.002	mg/l
Selenium (Se)	< 0.15	mg/l
Silver (Ag)	< 0.025	mg/l

Semivolatile Compounds

p-Cresol	0.14 mg/l
others	< detection limit
Volatiles	< detection limit

2. pH	13.2
3. Flashpoint	80 degrees C
4. Reactivity	Not Reactive

(Ref: 265.112) 3.0 BACKGROUND INFORMATION

3.2 LABORATORY ANALYSIS OF TANK CONTENTS: continued

Samples of sludge, water, and oil were taken from the tank on 6/11/90, and were analyzed by SRL to determine which radionuclides were present. The water contained tritium, and only the sludge had significant levels of other radionuclides. Listed below in TABLE 4 is the result of the SRL radiological screening.

TABLE 4: Results of SRL Analysis on the Sludge Sample and Aqueous Sample

Sludge Sample

Co-60	7.13E-3 uCi/ml
Sb-125	3.60E-4 uCi/ml
Cs-137	3.60E-4 uCi/ml
Eu-152	1.71E-4 uCi/ml
Eu-154	3.24E-4 uCi/ml
Eu-155	7.23E-5 uCi/ml
Am-241	2.1E-2 uCi/ml
H-3	4.1E-1 uCi/ml

Aqueous Sample

H-3 (in aqueous sample) 2.23E1 uCi/ml

Note: The sludge contained the majority of the radionuclides that were detected.

(Ref: 265.112) 4.0 DESCRIPTION OF CLOSURE ACTIVITIES

4.1 RADIATION SAFETY: SRS will comply with the requirements of the most current health protection procedures available. The concept of keeping employee exposure to radiation and radioactive releases to the environment As-Low-As-Reasonably-Achievable (ALARA) will be embodied in the work plan. A Radiation Work Permit will be obtained prior to the start of the job each day. Site workers shall have had the necessary OSHA training, and Radiation Worker Training, to qualify them to engage in closure activities.

4.2 PURGE ANCILLARY EQUIPMENT: The piping going from the stack area to tank 105-C, and the piping connecting the truck loading station to tank 105-C will be purged with at least three pipe volumes of fresh water. The water purged through the pipes will empty into tank 105-C and become part of the waste to be neutralized. An estimated 44 gallons of water will be required for this step in the closure. If it is not feasible to purge, then the ancillary piping will be removed or closed in-place as described in section 4.7, by 9/1/91.

4.3 WASTE NEUTRALIZATION: The SRS Waste Management department requires that wastes treated in their evaporator have a pH between 8.0 and 12.0. To avoid adding new chemical species to the waste, oxalic acid will be used for the neutralization procedure. SRL has determined that 10 grams of oxalic acid per 1000 ml of waste is required to bring the pH down to the 10-11 pH range. During the SRL laboratory neutralization test, there was not enough heat generated to cause a temperature increase. The waste will be neutralized by slowly adding oxalic acid to the tank while agitating or circulating the waste to ensure complete mixing. The PE will determine the final pH of the waste with pH paper or other appropriate means.

(Ref: 265.112) 4.0 DESCRIPTION OF CLOSURE ACTIVITIES

4.4 REMOVAL & DISPOSITION OF WASTE: The oil layer floating on the top of the waste will be skimmed, decanted or otherwise separated from aqueous waste and sludge. Radioactively contaminated waste oil will be sent to an SRS mixed waste storage building, and stored in drums until treatment becomes possible. The remaining neutralized waste (water & sludge) will be pumped into a waste tank trailer and delivered to the SRS Waste Management Operations (WMO). The trailers are designed and constructed to transport wastes containing sludge, and are routinely used for this purpose. WMO will manage the low level radioactive aqueous phase & sludge through their normal procedures, at a permitted facility.

4.5 TANK ASSESSMENT: Per the agreement between DOE and SCDHEC (reference the August 13, 1990 letter from L.R. Bedenbaugh of SCDHEC to Mr. S.R. Wright of DOE-ED), the tank and pipes open to the tank will be assessed against the criteria in R.61-79.265.191 during the closure process. The tank will be tested for tightness per the independent professional engineer's requirements.

4.6 SOILS ASSESSMENT: This assessment will determine if there has been a release from the tank system to the environment. If a release is detected, a restoration effort will ensue. Augering and/or excavating will be used to obtain soil samples for the assessment. Health Protection will monitor the soil as it is excavated for purposes of worker protection. The auger or sampling equipment will be monitored and decontaminated between bore holes or excavations to avoid cross-contamination. Grab soil samples will be taken at the depth of the bottom of the tank or piping, and from any area in an excavation that has been visually stained due to a release.

(Ref: 265.112) 4.0 DESCRIPTION OF CLOSURE ACTIVITIES

4.6 SOILS ASSESSMENT: (continued) Soil samples will be tested for soil pH using the method described in Southern Cooperative Series Bulletin 289 (or similar method), to determine if a release has occurred. At minimum, 12 samples will be taken at specified points along the base of the tank and the buried piping; two remote samples will be taken for background, (see FIGURE 4 on page 15). Sample locations may vary due to underground obstacles identified through the SRS Site Clearance Procedure. Soil found to have an abnormally high pH (12.5 or above) will be removed, if practicable. When all contaminated (pH) soil has been removed the area will be backfilled with clean fill material. Soil removed due to high pH will be neutralized and disposed of in the SRS burial ground. Health Protection will measure the radiation count rate (disintegrations/minute) of the soil to determine the appropriate containerization and transportation requirements. If removed soil is found to have radioactivity levels above background, a report of the removal action will be submitted to the EPA, per CERCLA requirements.

4.7 FILLING & CAPPING EQUIPMENT: This stage of the closure plan will be implemented in accordance with the API Recommended Practice 1604.

Closure of Pipes:

- The tank top and piping will be exposed by excavating.
- The piping associated with the tank will be disconnected, purged and/or removed if necessary.
- The pH of the pipe sections will be checked by the PE. If the pH $\geq$ 12.5, the section will be purged and capped in place or removed and rinsed with three volumes water.
- The purge/rinse water will be monitored for radioactivity, neutralized if pH $\geq$

(Ref: 265.112) 4.0 DESCRIPTION OF CLOSURE ACTIVITIES

4.7 FILLING & CAPPING EQUIPMENT: (continued)

12.5, and disposed of per WSRC Waste Management and Reactors procedures.

-Soil along the piping with $\text{pH} \geq 12.5$ will be removed.

-Plant drawings associated with the piping will be revised to show system changes.

In-Place Closure of Tanks:

-Authorization (Site Clearance) will be obtained for this project.

-Electrical power near the tank will be located and, as required, de-energized.

-The neutralized waste will be removed from the tank. Water sparging and a pump capable of handling sludges, slurries, and solid debris will be used to remove as much of the waste as is reasonably possible. The PE will confirm that the remaining sludge residue has a $\text{pH} < 12.5$, per SCHWMMR R.61-79.265.197.

-An assessment of the tank system integrity will be conducted, per 265.191.

-An independent, professional engineer will review and provide a certified assessment.

-A soils assessment will determine if there has been a release to the environment.

-Soils which have been impacted will be removed and replaced with clean fill.

-The suction, inlet, gauge and vent lines will be disconnected and removed.

-Clean, compacted, fill dirt will be used to back-fill around the tank.

-The tank will be approximately half filled with concrete and allowed to set.

-A concrete mixture that has passed SRL QC/QA requirements will be used.

-A vibrating device will be lowered into the wet concrete to aid in leveling the fill.

-After the heat of hydration has dissipated, the tank will be filled with concrete.

-The risers will be cut and capped at least a foot below grade.

-An asphalt covering will be applied over the tank system area after closure.

-Plant drawings associated with the tank will be revised to show system changes.

CLOSURE PLAN FOR UNDERGROUND STORAGE TANK 105-C

FIGURE 4: SOIL SAMPLING LOCATIONS

(Ref: 265.112) **4.0 DESCRIPTION OF CLOSURE ACTIVITIES**

4.8 SCHEDULE: The closure procedure will be completed within 180 days from the date that SCDHEC approval of this plan is received. DOE will give notice to SCDHEC 45 days prior to starting closure. If additional time is needed to complete this tank closure, a written request will be sent to SCDHEC according to the requirements in the Settlement Agreement 90-64-SW. FIGURE 5 on the following page is a schedule for the closure program.

CLOSURE PLAN FOR UNDERGROUND STORAGE TANK 105-C

Approval of work package:	5/5/91
Neutralize waste:	6/16/91
Remove and dispose of waste:	7/14/91
Tank assessment:	8/4/91
Soil assessment:	8/25/91
Cap, purge or remove ancillary equipment:	9/1/91
Fill tank with inert material:	9/8/91
Surface restoration:	9/13/91
Notify DHEC of completion:	9/13/91

FIGURE 5: SCHEDULE FOR THE TANK CLOSURE PROCESS

(Ref: 265.114) 5.0 EQUIPMENT DECONTAMINATION

The equipment used to implement this tank closure will be inspected by the Health Protection Department (HP) for the presence of radioactive contamination. These items may include pumps, transfer hoses, backhoe buckets, augers, etc. An appropriate detergent will be used to clean all equipment identified by HP as requiring such action. The cleaning solution will be collected and analyzed for radioactive contamination, flashpoint and pH; it will be managed as a hazardous waste, radioactive waste, or mixed waste, as appropriate. If cleaning a piece of equipment is not possible or practicable, it will be handled as a hazardous waste, radioactive waste, or mixed waste, as appropriate.

(Ref: 265.112 a) 6.0 MAINTENANCE OF CLOSURE PLAN

A copy of the approved closure plan will be kept at Building 105-C in the building custodians office until closure is completed and certified.

(Ref 265.115) 7.0 CERTIFICATION

An independent, qualified, professional engineer will review all phases of the closure plan, including the assessment of the tank system integrity. After site soils assessment, tank integrity assessment, tank closure, and equipment decontamination procedures are completed, the professional engineer will certify that tank 105-C has been closed in accordance with the approved closure plan.

(Ref: 265.197 (a))

8.0 POST CLOSURE

When the closure plan is carried out, all of the wastes will have been removed from Tank 105-C and no contaminated soil will be left in the area, therefore post closure monitoring of the facility will be unnecessary, unless soil contamination can not be removed. If not all of the pH contaminated soils can be practicably removed, a study will be initiated to determine the best method to comply with 265.310, Post Closure Care. The actual post closure care will depend on the results of the study. Note: This closure plan already calls for covering the area with an asphalt, which will minimize the percolation of water through soil column.

9.0 FINANCIAL

In accordance with SCDHEC and Federal Regulations, federal facilities are exempt from the requirement for preparing, keeping, or presenting the following:

1. A closure cost estimate. (Ref: 265.142)
2. A financial assurance mechanism for closure. (Ref: 265.143)
3. A post-closure cost estimate. (Ref: 265.144)
4. A financial assurance mechanism for post closure. (Ref: 265.145)
5. Liability coverage for waste site closures. (Ref: 265.147)

10.0 APPENDIX

10.1 Settlement Agreement for SRS RCRA 90 Day Violations .	A
10.2 Letter from Bedenbaugh SCDHEC to Wright DOE, 8/13/90	B
10.3 Waste Analysis Plan	C
10.4 Laboratory Report	D
10.5 Reference	E

10.1
SETTLEMENT AGREEMENT

A

SEP 10 1990

September 6, 1990

CERTIFIED MAIL

Mr. S. R. Wright, Director
Department of Energy
Savannah River Operations Office
P. O. Box A
Aiken, S.C. 29802

File Reference: Savannah River Site
SCI 890 008 989

Dear Mr. Wright:

Enclosed is a fully executed copy of Settlement Agreement 90-64-SW between the South Carolina Department of Health and Environmental Control (DHEC) and the United States Department of Energy (DOE) signed and effective on September 5, 1990. This Agreement addresses greater than ninety (90) day storage violations at the Savannah River Site. Please make note of all compliance deadlines.

If I may be of further assistance, please telephone me at 734-4658.

Very truly yours,

Gail Rawls Jeter
Gail Rawls Jeter
Enforcement Section
Bureau of Solid and Hazardous
Waste Management

GRJ:hpg

cc: Lewis R. Badenbaugh, Director, Compliance Monitoring and Enforcement
Samuel L. Finklea, III, Legal Office
Alan Coffey, Hazardous Waste Permitting
Danny McGlohorn, Compliance Monitoring
Kim Cauthen, Lower Savannah EQC
Jeff Pallas, EPA Region IV

N. Grant

THE STATE OF SOUTH CAROLINA
BEFORE THE DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

IN RE: UNITED STATES DEPARTMENT OF ENERGY
SAVANNAH RIVER SITE
AIKEN, ALLENDALE, AND BARNWELL COUNTIES

SETTLEMENT AGREEMENT
90-64-SW

The United States Department of Energy (DOE) owns and is responsible for the operation of the Savannah River Site ("SRS"), (SC1890008989), a nuclear materials production facility located in Aiken, Allendale, and Barnwell Counties in South Carolina.

Operations of the SRS have involved the handling and disposal of various forms of wastes, including chemical, solid, liquid, hazardous, and mixed wastes.

Under Section 6001 of the Resource Conservation and Recovery Act ("RCRA"), federal facilities "...shall be subject to, and must comply with, all Federal, State, interstate and local requirements, both substantive and procedural (including any requirement for permits or reporting or any provisions for injunctive relief and such sanctions as may be imposed by a Court to enforce such relief), respecting control and abatement of solid waste or hazardous waste disposal in the same manner, and to the same extent, as any person is subject to such requirements, including the payment of reasonable service charges."

FINDINGS OF FACT

1) DOE owns and is responsible for the operation of the SRS, a national defense nuclear materials production facility located in Aiken, Allendale, and Barnwell Counties in South Carolina.

2) On September 21, 1979, the South Carolina Department of Health and Environmental Control (DHEC) instituted emergency hazardous waste management regulations. On March 31, 1980, DHEC promulgated the South Carolina Hazardous Waste Management Regulations (SCHWMR). These regulations were amended on

January 29, 1984; on January 24, 1986; on March 19, 1987; on November 27, 1987; on October 28, 1988; and on June 23, 1989.

3) Pursuant to the emergency regulations, on December 19, 1979, DOE submitted to DHEC a notification of its hazardous waste activities. On September 29, 1980, DOE submitted to DHEC an application for a hazardous waste facility permit (Part A) for storage and for disposal in seepage basins. At that time, DOE and the U.S. Department of Justice questioned the extent of RCRA and State jurisdiction over DOE hazardous waste activities. The September 29, 1980, submission modified the December 15, 1979, notification by excluding certain waste management units which DOE had determined were not covered by the Federal program.

4) On April 2, 1981, the U.S. Environmental Protection Agency (EPA) granted DHEC interim authorization to conduct Phase I of the Federal hazardous waste program. Phase II, Components A and B were granted November 18, 1982. Phase II, Component C was granted December 22, 1983. DHEC's Final Authorization application was approved by EPA on November 8, 1985.

5) DOE and DHEC entered into a Memorandum of Agreement (MOA) on April 8, 1985, which was amended on April 6, 1988.

6) On July 3, 1986, EPA published a Federal Register Notice (51 FR 24504) which provided guidance on obtaining authorization from EPA to regulate radioactive mixed waste.

7) After submitting an appropriate application, DHEC received authorization from EPA to regulate radioactive mixed waste on September 13, 1987.

8) On September 8, 1989, DOE verbally notified DHEC that two (2) containers of hazardous waste had exceeded the ninety (90) day storage limitation at two (2) different Separations hazardous/mixed waste 90-day accumulation areas. On October 16, 1989, DHEC received written confirmation of this deficiency. The wastes were identified as one fifty-five gallon drum of waste xylene with an accumulation start date of June 9, 1989, and one B-6 container of contaminated lead with an accumulation start date of May 30, 1989.

This letter also notified DHEC that one drum of used oil had been stored in one of the 90-day accumulation area locations within the Separations area since June 9, 1989, awaiting characterization as specification or off-specification oil. Further, this letter notified DHEC that all three (3) containers were transported to an onsite permitted storage facility on September 8, 1989, that a program to prevent the recurrence of this violation at the Separations area is being implemented, and that a program is being initiated to require all used oil streams to be characterized as specification or off-specification.

9) On October 11, 1989, DOE verbally notified DHEC that two (2) containers of hazardous waste at a temporary F-Area Separations Works Engineering 90-day accumulation area had exceeded ninety (90) days in storage. This verbal notification was followed by a letter of October 24, 1989, which stated that the containers were fifty-five gallon drums containing waste paint with accumulation start dates of June 10, 1989. This letter notified DHEC that this generation of hazardous waste was a one-time occurrence, and through a miscommunication the drums were not transported to a permitted storage area in a timely manner. Further, DOE reported in this letter that both drums were transported to a permitted storage area on October 10, 1989, and that a program to prevent the recurrence of this violation is being implemented.

10) On October 17, 1989, DHEC personnel performed an inspection of the two (2) Separation hazardous/mixed waste 90-day accumulation areas and the temporary F-Area Separation Work Engineering 90-day accumulation area where hazardous waste had been stored for greater than ninety (90) days. The inspection revealed that no hazardous wastes exceeding the ninety (90) day storage limit were present in these areas at that time.

11) Later on October 17, 1989, DOE verbally notified DHEC that eleven (11) containers of hazardous waste had exceeded the ninety (90) day storage limit at Buildings 717-A and 710-G. The verbal notification was followed by a letter of October 31, 1989. These wastes were identified as one container of machine coolant containing lead with an accumulation start date of July 11, 1989, from Building 717-A and ten (10) containers of waste paint and solvent from Building 710-G, two (2) of which had accumulation start dates of June 1, 1989, and eight (8) of which had accumulation start dates of July 5, 1989. According to this letter the container of machine coolant was moved to a permitted storage area on

October 19, 1989, and the other ten (10) containers were moved to a permitted storage area on October 18, 1989.

12) On November 17, 1989, DHEC personnel performed an inspection of Buildings 710-G and 717-A and found no wastes stored for greater than ninety (90) days.

13) On December 21, 1989, DHEC notified DOE of the violations determined by review of the October 16, October 24, and October 31, 1989, letters. The December 21, 1989, Notice of Violation scheduled a conference for January 9, 1990. During this conference DOE and DHEC personnel discussed the violations and proposed solutions.

14) In a December 20, 1989, meeting DOE reported to EPA-Region IV staff a finding regarding the unpermitted storage of containers of mixed wastes, i.e., lead counter weights and silver saddles, located in the F- and H-Area Canyon Buildings. Both of these mixed wastes streams are considered hazardous waste by process knowledge in accordance with the SCHWMR R.61-79.262.11(c)(2). DHEC personnel were involved in this meeting via a telephone conference call.

15) On January 25, 1990, EPA-Region IV and DHEC personnel visited the H-Area Canyon Buildings and viewed by remote camera some containerized storage of the lead counter weights as specified in item fourteen (14) above.

16) In order to comply with the SCHWMR, DOE determined to moved the containers of waste lead counter weights and silver saddles out of the F- and H-Area Canyon Buildings. All the above identified containers of waste lead in F- & H-Area Canyon Buildings were removed to onsite interim status or permitted storage by May 2, 1990. The above identified silver saddles from F-Area Canyon were removed to onsite interim status storage by May 3, 1990.

17) On May 8, 1990, DHEC issued a Notice of Violation to DOE regarding the storage of the lead counter weights and silver saddles, as specified in items fourteen (14) and fifteen (15) above. This May 8, 1990, Notice of Violation scheduled a conference for May 16, 1990, to discuss the violations.

18) During the May 16, 1990, conference, DOE presented to DHEC a letter which provided written confirmation of a May 11, 1990, verbal notification that Tank 105-C contained mixed waste. According to this letter, Tank 105-C contained waste of pH greater than 12.5, thereby constituting hazardous waste (R.61-79.261.22). Further, DOE could not provide documentation that the hazardous waste had been stored in Tank 105-C for less than ninety (90) days. DOE has ceased using Tank 105-C for the storage of additional hazardous waste.

19) DOE does not have interim status or a permit for the storage of hazardous waste in Tank 105-C.

20) On June 13, 1990, DHEC personnel confirmed the presence of containers of lead counter weights and silver saddles in storage at the RCRA interim status Mixed Waste Management Facility, Building Number 643-29G.

21) In July 1990, DOE requested a variance to certain portions of R.61-79.262 for less than ninety (90) day accumulation of mixed waste in the F- and H-Area Canyon Buildings.

CONCLUSIONS OF LAW

DHEC has determined that DOE has violated the SCHWMR promulgated pursuant to Section 44-56-10 et seq., of the 1976 South Carolina Code of Laws, as amended, as follows:

1) R.61-79.262.34(a), for failure to comply with regulations regarding the accumulation of mixed wastes in containers and hazardous waste in a tank for less than ninety (90) days; and

2) R.61-79.262.34(b), R.61-79.265, R.61-79.270.1, and Section 44-56-60(A) of the 1976 Code, as amended, for storage of hazardous waste for greater than ninety (90) days in areas as specified above without complying with interim status standards and without having applied for or received a permit for storage.

AGREEMENT

WHEREAS, without trial or adjudication of any issue of fact or law, the parties have agreed to the following settlement agreement, thereby resolving disputes set forth as described above, without this Settlement Agreement constituting an admission by DOE in respect to any such issue(s) of fact or law alleged herein or through their attorneys and authorized officials;

IN THAT the question of DHEC's authority to assess civil penalties for violations of the South Carolina Hazardous Waste Management Regulations at the SRS is in litigation (Natural Resources Defense Council, Inc., Energy Research Foundation, South Carolina League of Women Voters, and the Georgia Conservancy; Plaintiffs: DHEC, Intervenor - Plaintiffs; V. DOE, Secretary John S. Herrington and Acting Secretary William E. Vaughn; Civil Action No. 1:85-2583-6), DHEC agrees to delay assessment and/or negotiation of a monetary payment or penalty until a decision is rendered in the aforementioned suit. Furthermore, DHEC and DOE agree to stay negotiation of a payment and/or penalty pending the outcome of this suit;

By entering into this Agreement, DHEC does not waive any right or authority it may have under South Carolina law. DOE reserves any rights and jurisdiction conferred on it by Section 1006 of RCRA, 42 USC Section 6905, and under the Atomic Energy Act of 1954, 42 USC Section 2011, *et seq.*

NOW, THEREFORE, in the spirit of mutual cooperation between DHEC and DOE and in settlement of existing disputes stated herein, and consistent with the Memorandum of Agreement (MOA) between DOE and DHEC, dated April 8, 1985, as amended April 6, 1988, DOE shall perform the following:

1) On or before December 21, 1990, submit to DHEC a closure plan for the mixed waste storage activities at the F- and H-Area Canyon Buildings in accordance with R.61-79.265 Subpart G. DHEC recognizes that the F- and H-Area Canyon Buildings contain highly radioactive materials and wastes. DHEC agrees to review the closure plan for F- and H-Area Canyon Buildings with consideration being given to the highly radioactive nature of the wastes involved and its affect on the requirements of R.61-79.265

Subpart G. Upon approval by DHEC, the schedule for closure will be an enforceable portion of this Agreement;

2) On or before June 30, 1991, transfer all the above identified containers of silver saddles in H-Area Canyon Building to an area which has interim status or is permitted for the storage of this waste stream;

3) On or before November 30, 1990, complete a survey of the entire SRS site to determine any locations where hazardous wastes are stored for more than ninety (90) days in an area that does not have interim status for storage of hazardous waste for greater than ninety (90) days or in any area that is not included in the hazardous waste permit for storage;

4) On or before March 1, 1991, correct any deficiencies found during the survey performed pursuant to item three (3) above;

5) DHEC agrees that DOE's compliance with paragraphs three (3) and four (4) of this Section will stand in lieu of any enforcement against deficiencies identified during the referenced survey.

6) After correcting the deficiencies pursuant to items three (3) and four (4) above, storage of hazardous waste for greater than ninety (90) days in any location at the SRS shall constitute a violation of this Settlement Agreement and action may be initiated as specified below unless the storage location: has interim status for the storage of hazardous waste for greater than ninety (90) days; is included in the permit for the storage of hazardous waste for greater than ninety (90) days; has been granted an extension pursuant to R.61-79.262.34(b); or has been granted any other DHEC approved extension for the storage of hazardous waste for greater than ninety (90) days;

7) On or before October 1, 1990, submit to DHEC a closure plan for Tank 105-C in accordance with R.61-79.265 Subpart G. Upon approval by DHEC, the schedule for closure will be an enforceable portion of this Agreement; ✓

8) On or before August 1, 1990, comply with all applicable portions of R.61-79.265 for Tank 105-C until such time as Tank 105-C is properly closed and certification of closure is accepted by DHEC;

9) On or before August 1, 1990, and until closure is properly completed and certification of closure is accepted by DHEC, comply with appropriate provisions of R.61-79.265 for the storage of silver saddles in the H-Area Canyon Building giving consideration to the variance request specified in Findings of Fact number twenty-one (21) above and to Section 1006(a) of the Resource Conservation and Recovery Act, 42 USC Section 6905(a).

IT IS FURTHER AGREED THAT, consistent with the MOA:

(a) DOE shall be permitted to exceed the time schedule set forth in this Agreement only to the extent that the delay is respective of personnel protection concerns or caused by reasons entirely beyond the control of DOE or the control of any entity controlled by or under common control of DOE. In any event, the burden of establishing a basis for an extension shall be exclusively on DOE.

(b) If DOE determines it may fail to achieve any deadline set forth in this Agreement, DOE shall submit a written report by messenger or certified mail to DHEC. Such report shall be submitted at least five (5) working days prior to the deadline anticipated to be missed and shall include the following:

- (1) An explanation for the anticipated failure to meet the deadline;
- (2) The measures taken and to be taken by DOE to minimize the delay;
- (3) The timetable by which those measures will be implemented which will not be beyond the period of time reasonably necessary for completion of those activities on an expedited schedule calculated to minimize the delay.
- (4) Any documentation relevant to (a) and (b).

(c) DHEC will respond in writing within five (5) working days to any report by DOE pursuant to Paragraphs (a) and (b) of this Section by indication whether DHEC approved DOE's proposed date or time period for completion of the delayed activities. DHEC's written approval will be incorporated into the Settlement Agreement. If DHEC does not so approve, DHEC will so state in writing, and also state the date by which, or the time period within which, DOE shall achieve the tasks as to which the deadline applied, which written response shall be deemed to be incorporated into this Settlement Agreement.

(d) In regard to Section 1006 of RCRA and to the unique nature of mixed waste, DHEC will consider an amendment to this Agreement to address compliance with the appropriate provisions of the storage regulations for the silver saddles which are generated in the F- and H-Area Canyon Buildings between the effective date of this Agreement and April 2, 1991, only if the generation is the result of an unanticipated and unavoidable upset(s) of any process of F- and H-Area Canyon Buildings.

IT IS FURTHER AGREED that failure to meet the requirements of this Settlement Agreement shall be deemed a violation of the Hazardous Waste Management Act, shall be deemed unlawful, and may subject the owner/operator to appropriate administrative or judicial sanctions. Upon ascertaining any such violation, DHEC shall promptly initiate appropriate action(s) to obtain compliance with both this Settlement Agreement and the aforesaid Act. Such action shall be consistent with the MOA between DOE and DHEC dated April 8, 1985, as amended April 6, 1988.

THE SOUTH CAROLINA DEPARTMENT
OF HEALTH AND ENVIRONMENT CONTROL

DATE: September 5, 1990 BY: Michael D. Jarrett
Michael D. Jarrett, Commissioner

WE CONSENT:

United States Department of Energy

C. C. Nelson DATE: 5-1-91

DATE: _____

THE SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Hartsill W. Truesdale

DATE: 8/27/90

Hartsill W. Truesdale, P.E., Chief
Bureau of Solid and Hazardous
Waste Management

Sam H. [Signature]

DATE: 8/28/90

Approved by: Legal Office

10.2

**8/13/90 LETTER FROM L.R. BEDENBAUGH OF SCDHEC,
TO S.R. WRIGHT DOE**

B

8/13/90
1220 PM
AC50286

August 13, 1990

CERTIFIED MAIL

Mr. S. R. Wright, Director
Environmental Division
Savannah River Operation Office
U.S. Department of Energy
P. O. Box A
Aiken, S. C. 29801

Dear Mr. Wright:

Personnel of the South Carolina Department of Health and Environmental Control (DHEC) have reviewed the United States Department of Energy's (DOE) letter of July 13, 1990, concerning compliance with interim status for the storage of silver saddles in the H-Area Canyon and mixed waste in Tank 105-C. As stated in the proposed settlement agreement for greater than ninety (90) day storage violations, DHEC recognizes the highly radioactive nature of the silver saddles wastes stored in the H Area Canyon Building and agrees with DOE's July 13, letter for the provision of R.61-79.265 which are not applicable to the storage of silver saddles in H-Area Canyon only until closure is accomplished.

Regarding the applicable provisions of R.61-79.265 for Tank 105-C, DHEC again recognizes that Tank 105-C contains radioactive mixed waste and agrees with DOE's Compliance Clarification for R.61-79.265, Tank 105-C with the exception of R.61-79.265.191. As discussed and agreed in a conference call with Phillip Prater and other members of DOE and Westinghouse Savannah River Company staff on August 13, 1990, DOE will perform an assessment of Tank 105-C which meets the requirements of R.61-79.265.191, but the assessment will be performed during the closure process rather than prior to closure. This timing of the assessment will allow for the removal of the radioactive mixed wastes prior to performing the assessment.

If there are any further questions, please telephone Gail Jeter at 734-4568.

Very truly yours,

Lewis R. Bedenbaugh, Director
Division of Compliance Monitoring and
Enforcement

LRB:hpg

cc: Alan Coffey, Hazardous Waste Permitting
Gail Jeter, Enforcement
Kim Cauthen, Lower Savannah River EQC
Harry Mathis, Hydrogeology

Commissioner: Michael D. Jarrett Board: Henry S. Jordan MD, Chairman John B. Pate, MD, Vice Chairman William E. Applegate, III, Secretary
Toney Graham, Jr., MD John H. Burries Richard E. Jabbour, DOS Currie B. Spravey, Jr.

2800 Bull Street Columbia, South Carolina 29201

10.3
WASTE ANALYSIS PLAN

C

WASTE ANALYSIS PLAN

The 105-C tank contents consist of oil, water, and sludge containing radionuclides with a pH of 13.2. The tank is inspected daily and the level is monitored using the rodding method on a regular schedule. Listed below are results of TCLP analyses performed on the tank contents, from a report dated 8/31/90. Since the tank is out of service and scheduled for closure, no need for further analysis is anticipated. If any unforeseen changes in the tank contents do occur, the analyses can be repeated.

TCLP

Arsenic	(As)	3.10	mg/l
Barium	(Ba)	1.95	mg/l
Cadmium	(Cd)	< 0.015	mg/l
Chromium	(Cr)	2.72	mg/l
Lead	(Pb)	0.30	mg/l
Mercury	(Hg)	< 0.002	mg/l
Selenium	(Se)	< 0.15	mg/l
Silver	(Ag)	< 0.025	mg/l

Semivolatile Compounds

p-Cresol	0.14	mg/l
others	< detection limit	

Volatiles	< detection limit
-----------	-------------------

pH 13.2

Flashpoint 80 degrees C

Reactivity Not Reactive

10.4

HAZARDOUS WASTE DETERMINATION LABORATORY REPORT

D

PAGE 1

Westinghouse / Savannah River
Savannah River Site
Aiken, South Carolina 29808

PROJECT NUMBER: 121-36

CATEGORY: TCLP

MATRIX : SOLID

CLIENT ID : 105C NXYK COMPOSITE 1-5

metaTrace ID: 779-001

REPORT DATE: 08/31/90

SAMPLE DATE: 08/15/90

DATE REC'D : 08/21/90

CONSTITUENT METALS-200 SERIES

PARAMETER	TCLP EXTRACT DATE	DATE ANALYZED	DETECTION LIMIT mg/L	CONC mg/L	REGULATORY LEVEL mg/L
Arsenic	08/23/90	08/28/90	0.200	3.10	5.0
Barium	08/23/90	08/28/90	0.010	1.95	100.0
Cadmium	08/23/90	08/28/90	0.015	ND	1.0
Chromium	08/23/90	08/28/90	0.025	2.72	5.0
Lead	08/23/90	08/28/90	0.100	0.30	5.0
Mercury	08/23/90	08/28/90	0.002	ND	0.2
Selenium	08/23/90	08/28/90	0.150	ND	1.0
Silver	08/23/90	08/28/90	0.025	ND	5.0

SEMIVOLATILE COMPOUNDS-EPA 8270

PARAMETER	TCLP EXTRACT DATE	EXTRACT DATE	DATE ANALYZED	DETECTION LIMIT mg/L	CONC mg/L	REGULATORY LEVEL mg/L
o-Cresol	08/23/90	08/26/90	08/31/90	.010	ND	200.00
m-Cresol	08/23/90	08/26/90	08/31/90	.010	ND	200.00
p-Cresol	08/23/90	08/26/90	08/31/90	.010	0.140	200.00
Cresol	08/23/90	08/26/90	08/31/90	.010	ND	200.00
1,4-Dichlorobenzene	08/23/90	08/26/90	08/31/90	.010	ND	7.50
2,4-Dinitrotoluene	08/23/90	08/26/90	08/31/90	.010	ND	0.13
Hexachlorobenzene	08/23/90	08/26/90	08/31/90	.010	ND	0.13
Hexachloro-1,3-butadiene	08/23/90	08/26/90	08/31/90	.010	ND	0.50
Hexachloroethane	08/23/90	08/26/90	08/31/90	.010	ND	3.00
Nitrobenzene	08/23/90	08/26/90	08/31/90	.010	ND	2.00
Pentachlorophenol	08/23/90	08/26/90	08/31/90	.050	ND	100.00
Pyridine	08/23/90	08/26/90	08/31/90	.010	ND	5.00
2,4,5-Trichlorophenol	08/23/90	08/26/90	08/31/90	.010	ND	400.00
2,4,6-Trichlorophenol	08/23/90	08/26/90	08/31/90	.010	ND	2.00

SURROGATES	% RECOVERIES				
Nitrobenzene-d5	08/23/90	08/26/90	08/31/90	NA	84 %
2-Fluorobiphenyl	08/23/90	08/26/90	08/31/90	NA	89 %
p-Terphenyl-d14	08/23/90	08/26/90	08/31/90	NA	94 %
Phenol-d5	08/23/90	08/26/90	08/31/90	NA	99 %
2-Fluorophenol	08/23/90	08/26/90	08/31/90	NA	96 %
2,4,6-Tribromophenol	08/23/90	08/26/90	08/31/90	NA	116 %

NA= NOT APPLICABLE; ND= NOT DETECTED

PAGE 2

Westinghouse / Savannah River
Savannah River Site
Aiken, South Carolina 29808

PROJECT NUMBER: 121-36

CATEGORY: TCLP
MATRIX : SOLID

CLIENT ID : 105C NXYK COMPOSITE 1-5
MetaTrace ID: 779-001

REPORT DATE: 08/31/90
SAMPLE DATE: 08/15/90
DATE REC'D : 08/21/90

VOLATILE COMPOUNDS-EPA 8240

PARAMETER	TCLP EXTRACT DATE	DATE ANALYZED	DETECTION LIMIT mg/L	CONC mg/L	REGULATORY LEVEL mg/L
Benzene	* NA	08/23/90	.050	ND	0.50
Carbon tetrachloride	* NA	08/23/90	.050	ND	0.50
Chlorobenzene	* NA	08/23/90	.050	ND	100.00
Chloroform	* NA	08/23/90	.050	ND	6.00
1,2-dichloroethane	* NA	08/23/90	.050	ND	0.50
1,1-dichloroethylene	* NA	08/23/90	.050	ND	0.70
2-Butanone (MEK)	* NA	08/23/90	1.00	ND	200.00
Tetrachloroethylene	* NA	08/23/90	.050	ND	0.70
Trichloroethylene	* NA	08/23/90	.050	ND	0.50
Vinyl chloride	* NA	08/23/90	.100	ND	0.20

SURROGATES				PERCENT RECOVERY
Toluene-d8	NA	08/23/90	NA	108 %
Bromofluorobenzene	NA	08/23/90	NA	103 %
1,2-Dichloroethane-d4	NA	08/23/90	NA	110 %

* Sample was < 5%, therefore, no ZHE extraction was required.

NA= NOT APPLICABLE; ND= NOT DETECTED

PAGE 3

Westinghouse / Savannah River
Savannah River Site
Aiken, South Carolina 29808

PROJECT NUMBER: 121-36

CATEGORY: TCLP

MATRIX : SOLID

CLIENT ID : NA
metaTrace ID: QC BLANKS

REPORT DATE: 08/31/90

SAMPLE DATE: 08/15/90

DATE REC'D : 08/21/90

CONSTITUENT METALS-200 SERIES

PARAMETER	TCLP EXTRACT DATE	DATE ANALYZED	DETECTION LIMIT mg/L	CONC mg/L	REGULATORY LEVEL mg/L
Arsenic	NA	08/28/90	0.200	ND	5.0
Barium	NA	08/28/90	0.010	ND	100.0
Cadmium	NA	08/28/90	0.015	ND	1.0
Chromium	NA	08/28/90	0.025	ND	5.0
Lead	NA	08/28/90	0.100	ND	5.0
Mercury	NA	08/28/90	0.002	ND	0.2
Selenium	NA	08/28/90	0.150	ND	1.0
Silver	NA	08/28/90	0.025	ND	5.0

SEMIVOLATILE COMPOUNDS-EPA 8270

PARAMETER	TCLP EXTRACT DATE	EXTRACT DATE	DATE ANALYZED	DETECTION LIMIT mg/L	CONC mg/L	REGULATORY LEVEL mg/L
o-Cresol	NA	NA	08/31/90	.010	ND	200.00
m-Cresol	NA	NA	08/31/90	.010	ND	200.00
p-Cresol	NA	NA	08/31/90	.010	ND	200.00
Cresol	NA	NA	08/31/90	.010	ND	200.00
1,4-Dichlorobenzene	NA	NA	08/31/90	.010	ND	7.50
2,4-Dinitrotoluene	NA	NA	08/31/90	.010	ND	0.13
Hexachlorobenzene	NA	NA	08/31/90	.010	ND	0.13
Hexachloro-1,3-butadiene	NA	NA	08/31/90	.010	ND	0.50
Hexachloroethane	NA	NA	08/31/90	.010	ND	3.00
Nitrobenzene	NA	NA	08/31/90	.010	ND	2.00
Pentachlorophenol	NA	NA	08/31/90	.050	ND	100.00
Pyridine	NA	NA	08/31/90	.010	ND	5.00
2,4,5-Trichlorophenol	NA	NA	08/31/90	.010	ND	400.00
2,4,6-Trichlorophenol	NA	NA	08/31/90	.010	ND	2.00

SURROGATES

					% RECOVERIES
Nitrobenzene-d5	NA	NA	08/31/90	NA	77 %
2-Fluorobiphenyl	NA	NA	08/31/90	NA	81 %
p-Terphenyl-d14	NA	NA	08/31/90	NA	58 %
Phenol-d5	NA	NA	08/31/90	NA	37 %
2-Fluorophenol	NA	NA	08/31/90	NA	57 %
2,4,6-Tribromophenol	NA	NA	08/31/90	NA	93 %

NA= NOT APPLICABLE; ND= NOT DETECTED

PAGE 4

Westinghouse / Savannah River
Savannah River Site
Aiken, South Carolina 29808

PROJECT NUMBER: 121-36

CATEGORY: TCLP
MATRIX : SOLID

CLIENT ID : NA
metaTrace ID: GC BLANKS

REPORT DATE: 08/31/90
SAMPLE DATE: 08/15/90
DATE REC'D : 08/21/90

VOLATILE COMPOUNDS-EPA 8240

PARAMETER	TCLP EXTRACT DATE	DATE ANALYZED	DETECTION LIMIT mg/L	CONC mg/L	REGULATORY LEVEL mg/L
Benzene	NA	08/23/90	.005	ND	0.50
Carbon tetrachloride	NA	08/23/90	.005	ND	0.50
Chlorobenzene	NA	08/23/90	.005	ND	100.00
Chloroform	NA	08/23/90	.005	ND	6.00
1,2-dichloroethane	NA	08/23/90	.005	ND	0.50
1,1-dichloroethylene	NA	08/23/90	.005	ND	0.70
2-Butanone (MEK)	NA	08/23/90	.100	ND	200.00
Tetrachloroethylene	NA	08/23/90	.005	ND	0.70
Trichloroethylene	NA	08/23/90	.005	ND	0.50
Vinyl chloride	NA	08/23/90	.010	ND	0.20

SURROGATES				% RECOVERY
Toluene-d8	NA	08/23/90	NA	106 %
Bromofluorobenzene	NA	08/23/90	NA	108 %
1,2-Dichloroethane-d4	NA	08/23/90	NA	103 %

NA= NOT APPLICABLE; ND= NOT DETECTED

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Westinghouse / Savannah River
Savannah River Site
Aiken, South Carolina 29808

PROJECT NUMBER: 121-36

CATEGORY: TCLP
MATRIX : SOLID

CLIENT ID : NA
metaTrace ID: OC LCS

REPORT DATE: 08/31/90
SAMPLE DATE: 08/15/90
DATE REC'D : 08/21/90

CONSTITUENT METALS-200 SERIES

PARAMETER -----	TCLP EXTRACT DATE -----	DATE ANALYZED -----	DETECTION LIMIT mg/L -----	% RECOVERY -----
Arsenic	NA	08/28/90	0.051	102 %
Barium	NA	08/28/90	0.001	98 %
Cadmium	NA	08/28/90	0.004	105 %
Chromium	NA	08/28/90	0.005	104 %
Lead	NA	08/28/90	0.035	100 %
Mercury	NA	08/28/90	.0002	99 %
Selenium	NA	08/28/90	0.059	95 %
Silver	NA	08/28/90	0.003	111 %

NA= NOT APPLICABLE; ND= NOT DETECTED

Westinghouse / Savannah River
Savannah River Site
Aiken, South Carolina 29808

PROJECT NUMBER: 121-36

PARAMETER: REACTIVITY
METHOD: EPA 335.2
MATRIX: SOLID

REPORT DATE : 08/31/90
DATE REC'D : 08/21/90

CLIENT ID	metaTRACE ID	DATE SAMPLED	DATE ANALYZED	REACTIVITY
105C HXTK COMPOSITE 1-5	779-001	08/15/90	08/30/90	NR
BLANK	NA	NA	08/30/90	NR

* NOTES: NA=NOT APPLICABLE, NR=NOT REACTIVE

Westinghouse / Savannah River
Savannah River Site
Aiken, South Carolina 29808

PROJECT NUMBER: 121-36

PARAMETER: PH
METHOD: EPA 1310
MATRIX: SOLID

REPORT DATE: 08/31/90
DATE REC'D : 08/21/90

CLIENT ID	metaTRACE ID	DATE SAMPLED	DATE ANALYZED	pH CONC
105C HXTK COMPOSITE 1-5	779-001	08/15/90	08/30/90	13.2

Westinghouse / Savannah River
Savannah River Site
Aiken, South Carolina 29808

PROJECT NUMBER: 121-36

PARAMETER: FLASHPOINT
METHOD: EPA 1010
MATRIX: SOLID

REPORT DATE: 08/31/90
SAMPLE DATE: 08/15/90
DATE REC'D : 08/21/90

CLIENT ID -----	metaTRACE ID -----	DATE ANALYZED -----	DEGREES C -----
105C HXTK COMPOSITE 1-5	779-001	08/30/90	80
LCS pXylene	NA	08/30/90	26

* NOTE: The sample had no flashpoint up to 80 degree C.

NA=NOT APPLICABLE, ND=NOT DETECTED

10.5 REFERENCES

1. Corrosion Data Survey. Metals Section, 6th Edition, published by the National Association of Corrosion Engineers, in 1985. Library of Congress Number, ISBN 0-915567-07-5.
2. Reference Soil Test Methods for the Southern Region of the United States, Southern Cooperative Series Bulletin 289, published by The University of Georgia College of Agriculture Experiment Stations, September 1983.

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7/25/94

END