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Title/Desc:

COMPATIBILITY GRAB SAMPLING & ANALYSIS PLAN

COMPLETE

ENGINEERING CHANGE NOTICE

Page 1 of 21. ECN **No 623139**Proj.
ECN

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13a. Justification (mark one) Criteria Change ☒ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const ☐ Const. Error/Omission ☐ Design Error/Omission ☐			
13b. Justification Details CRITERIA CHANGES ARE RELECTED IN THE INCORPORATION OF ADDITIONAL TANKS AND ANALYSIS INTO THE GRAB SAMPLING SCHEME FOR THE HANDFORD SITE TANKS IN SUPPORT OF EAST, WEST, AND EVAPORATOR OPERATIONS SUCH AS WASTE TRANSFERS.			
14. Distribution (include name, MSIN, and no. of copies) R. A. Esch, T6-30, 1 ea. J. M. Jones, S5-13, 1 ea. J. G. Kristofzski, T6-06, 1 ea. E. Q. Le, R1-43, 1 ea. G. L. Miller, T6-06, 1 ea. R. D. Schreiber, R2-12, 2 ea.		RELEASE STAMP OFFICIAL RELEASE BY WHC DATE SEP 01 1995 <i>Sta. 4</i>	

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Name: J. M. JONES

Signature

J. M. Jones 08-30-95

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7. Abstract

This document details the plan which serves as the contractual agreement between the Characterization Program, Sampling Operations, and WHC 222-S Laboratory. The scope of this plan is to provide guidance for the sampling and analysis of samples for waste compatibility purposes.

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Compatibility Grab Sampling and Analysis Plan

Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management

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LIST OF ABBREVIATIONS

ACL	Analytical Chemistry Laboratory
DOE	Department of Energy
DQO	Data Quality Objective
DSC	Differential Scanning Calorimetry
DST	Double-Shell Tank
GEA	Gamma Energy Analysis
HPGE/MCA	High Purity Germanium/Multichannel Analysis
IC	Ion Chromatography
ICP	Inductively Coupled Plasma - atomic emission spectroscopy
LIMS	Laboratory Information Management Systems
PNL	Pacific Northwest Laboratory
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
SST	Single-Shell Tank
TCP	Tank Characterization Plan
TGA	Thermogravimetric Analysis
TOC	Total Organic Carbon
TWRS	Tank Waste Remediation System
USQ	Unreviewed Safety Question
WHC	Westinghouse Hanford Company

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1.0 SPECIFIC TANK OBJECTIVES

1.1 RELEVANT SAFETY ISSUES

The Double-Shell Tank (DST) System currently receives waste from the Single-Shell Tank (SST) System in support of SST stabilization efforts or from other on-site facilities which generate or store waste. Waste is also transferred between individual DSTs. The mixing or commingling of potentially incompatible waste types at the Hanford Site must be addressed prior to any waste transfers into the DSTs. The primary goal is to prevent the formation of an unreviewed safety question (USQ) as a result of improper waste management.

The Waste Compatibility Program is concerned with sampling tank waste stored at the Hanford Site on an interim basis until they can be treated, as necessary, for final disposal. The Tank Farm Waste Compatibility Program is implemented to assure continued safe storage and transfer of these wastes. Two issues related to the overall problem of waste compatibility must be evaluated:

- ▶ Assurance of continued operability during waste transfer and waste concentration.
- ▶ Assurance that safety problems shall not be created as a result of commingling wastes under interim storage.

The results of the grab sampling activity prescribed by this Sampling and Analysis Plan shall help determine which DST shall receive waste from tanks without creating safety or operational problems. The potential for four kinds of safety problems shall be addressed: criticality, flammable gas accumulation, energetics, and corrosion and leakage. Operational problems include plugged pipelines and equipment, exceeding the heat load limits of the receiving tank, and transuranic segregation.

1.1.1 Tank Characterization Objectives

The characterization efforts applicable to this Sampling and Analysis Plan are focused on the preparation of future tank stabilization activities, including the resolution of waste compatibility issues of tanks. To identify a potential receiver tank, analyses shall be performed on grab samples obtained from specific tanks (Table 1). These analyses are discussed in Section 4.0. Once the characterization of these tanks has been performed, the waste compatibility assessment shall be conducted. This effort is discussed in *Tank Farm Waste Compatibility Program* (Sutey 1994a).

1.1.2 Waste Compatibility Program Data Quality Objective

The document, *Data Quality Objectives for the Waste Compatibility Program* (Carothers 1994), describes the process used to develop a data quality objective (DQO) for the waste compatibility issue, as well as the analytical requirements for determining waste compatibility. Since the grab samples shall be taken only for waste compatibility, the waste compatibility program DQO (Carothers 1994) is the only applicable DQO for these sampling events.

2.0 TANK STATUS AND SAMPLING INFORMATION

2.1 SAMPLING INFORMATION

Table 1 identifies tanks scheduled to be grab sampled to prepare for stabilization. the number of samples, the riser to be used for sampling, and the depths at which the samples are to be obtained are identified. For detailed information regarding these tank grab sampling activities, refer to the respective work packages. These work packages contain all the applicable operating procedures and the chain-of-custody records for this sampling event.

With respect to sampling quality control, no field/trip blank shall be taken during these sampling events due to the high concentration levels expected in the analyte results. Cross contamination should not have a significant effect on the analytical results (Sutey 1994b).

Table 1: Tank Grab Sampling Information

Tank	Sample Number	Sample Type	Sample Location	Sample Depth ¹
U-103	103-U-1 103-U-2 103-U-3	Supernate	Riser 2	288" 291" 294"
U-105	105-U-1 105-U-2 105-U-3	Supernate	Riser 7	314" 321" 327"
U-108	108-U-1 108-U-2 108-U-3	Supernate	Riser 7	296" 300" 305"
U-109	109-U-1 109-U-2 109-U-3	Supernate	Riser 7	302" 306" 309"
S-111	111-S-1 111-S-2 111-S-3	Supernate	Riser 5	250" 333" 415"
S-112	112-S-1 112-S-2 112-S-3	Supernate	Riser 5	271" 366" 461"
SX-101	101-SX-1 101-SX-2 101-SX-3	Supernate	Riser 9	519" 594" 669"
SX-102	102-SX-1 102-SX-2 102-SX-3	Supernate	Riser 9	364" 454" 545"
SX-103	103-SX-1 103-SX-2 103-SX-3	Supernate	Riser 9	321" 433" 545"
SX-104	104-SX-1 104-SX-2 104-SX-3	Supernate	Riser 5	462" 495" 528"
SX-105	105-SX-1 105-SX-2 105-SX-3	Supernate	Riser 5	319" 433" 548"

Table 1 (Cont.): Tank Grab Sampling Information

Tank	Sample Number	Sample Type	Sample Location	Sample Depth ¹
SX-106	106-SX-1 106-SX-2 106-SX-3	Supernate	Riser 5	341" 433" 525"
T-110	110-T-1 110-T-2 110-T-3	Supernate	Riser 13	262" 336" 408"
AN-101	1AN-95-1 1AN-95-2 1AN-95-3	Supernate	Riser 16B	327" 502" 662"
AW-102	2AW-95-1 2AW-95-2 2AW-95-3	Supernate Sludge Sludge	Riser 16A	634" 652" 658"
SY-102	2SY-95-1 2SY-95-2 2SY-95-3 2SY-95-4	Supernate	Riser 1A	541" 573" 598" 623"
AY-102	2AY-95-1 2AY-95-2 2AY-95-3 2AY-95-4	Supernate	Riser 15P Riser 15D Riser 15D Riser 15P	343" 514" 671" 671"
AW-105	5AW-95-1 5AW-95-2 5AW-95-3	Supernate Supernate Supernate	Riser 10A Riser 10A Riser 10A	451" 516" 554"
AW-106	6AW-95-1 6AW-95-2 6AW-95-3	Supernate Sludge Sludge	Riser 16B	500" 610" 640"
244-TX	TX-95-1 TX-95-2 TX-95-3	Supernate Supernate Supernate/ Sludge	Riser 8	327" 371" 414"

¹Sample depth is defined as the distance from the top of the riser to the mouth of the sample bottle.

3.0 LABORATORY SAMPLE RECEIPT AND ANALYSIS INSTRUCTIONS

A flowchart showing the general analysis scheme for compatibility samples is presented in Figure 1. The steps are described in detail to provide the laboratory chemist with specific sample analysis guidance, and may be altered by the performing laboratory as necessary. All changes, with justification, must be included in the data report. Grab sample analyses may not need to be performed in the hot cell (based on radioactivity). If the samples must be analyzed in the hot cell, a hot cell blank should be performed; otherwise, no hot cell blank is necessary. The reporting levels for analyses are contained in Table 2 and are detailed in Section 7.0 of this document. Any exceptions regarding receipt and/or analysis of these samples are identified in Section 6.0.

As a precautionary measure, the Safety and Analysis Report Packaging (SARP) has been reviewed for any safety issues involved with transportation of grab samples. For grab samples, the shipping containers must be vented every four days to release retained gas. However, Sampling Operations has a maximum of three days to ship the containers. Since the containers are opened at the time the samples are received at the laboratory, no safety issues should exist for grab samples with respect to transportation.

- Step 1 Receive grab samples. The discussion of sample receipt is presented in Section 4.2.3, "Sample Custody" of this document.
- Step 2 Record visual observations such as color and clarity of the liquid, and the presence of any solid particles in the liquid sample.
- Step 3 Closely inspect liquid samples for the presence and approximate volume of any solids. If no solids exist, proceed to Step 5. However, if solids are detected in the liquid, go to Step 4A.
- Step 4A Remove a portion of the liquid sample and determine the volume percent solids by centrifugation.
- Step 4B Filter the liquid sample. If greater than 1 gram of solid sample is recovered, archive these solids for possible future analyses (Bratzel 1994).
- Step 5 Closely inspect the liquid sample for the presence and approximate volume of any potential organic layers. If potential organic liquid layers exist, proceed to Step 6. If potential organic layers do not exist, go to Step 7.
- Step 6 Any potential organic layer shall be reported immediately by Format I reporting (see Section 7.1). The potential organic layer shall be separated and retained in a jar for possible future analysis.
- Step 7 Remove sufficient aliquots and perform analyses in Table 2.

Step 8 Retain remaining liquid sample as the liquid archive (Bratzel 1994).

3.1 INSUFFICIENT LIQUID GRAB SAMPLE

In the event that the sample volume of any sample is found to be insufficient to perform the requested analyses in Table 2, Characterization Plans and Reports shall be notified (for points of contact, see Section 5.0, Table 3). A prioritization of the analyses required in this Sampling and Analysis Plan is given in Section 3.2. Any analyses prescribed by this document, but not performed, shall be identified in the appropriate data report, with justification for non-performance.

3.2 PRIORITIES FOR COMPATIBILITY ANALYSES

In order to complete the compatibility assessments for these tanks, results from all of the analyses in Table 2 must be received. Therefore, if insufficient sample is retrieved, the tank shall need to be resampled at a later date. However, analyses are still requested on any sample obtained, and should be performed in the following order:

- (1) Corrosion Purposes: OH^- , IC, and pH
- (2) Energetics: DSC/TGA, separable organics
- (3) Flammable Gas Accumulation: Specific Gravity
- (4) Criticality Analyses: Pu-239/240, Am-241, ICP (Fe), and volume percent solids
- (5) TOC
- (6) Heat Generation: Sr-90 and Cs-137
- (7) Other analyses listed in Table 2

Figure 1: Test Plan Flow Chart for Compatibility Analyses

4.0 SPECIFIC ANALYTE, QUALITY ASSURANCE, AND DATA CRITERIA

4.1 SPECIFIC METHODS AND ANALYSES

Table 2 summarizes the analyses to be performed on the compatibility grab samples. The laboratory procedure numbers which shall be used in the analyses are included in the table. These analyses are based on the Waste Compatibility DQO (Carothers 1994).

4.2 QUALITY ASSURANCE

4.2.1 Laboratory Operations

The 222-S Laboratory has a quality assurance program plan (Meznarich 1994) and a quality assurance project plan (Taylor 1993) that shall provide the quality assurance involved in analyzing the tank waste samples. Additionally, the *Hanford Analytical Services Quality Assurance Plan* (DOE 1994), when implemented (August 31, 1995), shall be used as quality assurance requirements.

Method specific quality control, such as calibrations and blanks, are also found in the analytical procedures. Sample quality control (duplicates, spikes, standards) are identified in Table 2. If no criteria are provided in Table 2, the performing laboratory shall perform to its quality assurance plan(s).

4.2.2 Sample Collection

Grab samples are to be taken and shipped to the performing laboratory by Sampling Operations in accordance with the appropriate work package. Those work packages shall initiate the chain-of-custody for the samples. The following documents will be used as guidance in the handling and shipment of compatibility grab samples:

- TO-100-052, "Segregate, Package, and Inventory Radioactive Waste."
- WHC-CM-2-14, "Responsibilities and Procedures for all Hazardous Material Shipments."
- WHC-SD-TP-SARP-001, "Sample Pig Transport System Safety Analysis Report for Packaging (on-site)."
- WHC-SD-WM-HSP-002, "Tank Farm Health and Safety Plan."

Samples shall be identified by a unique number before being shipped to the laboratory (Table 1). The sampling team is responsible for documenting any problems and procedural changes affecting the validity of the sample in a field notebook. Sampling Operations shall enter this information in the comment section of the chain-of-custody form for addition to the data reports.

Sampling Operations should send the samples to the laboratory within 1 day of removing the samples from each tank, but must transfer the samples within 3 calendar days. Sampling Operations is responsible for verbally notifying the shift manager at the WHC 222-S Laboratory (373-2435) at least 24 hours in advance of an expected shipment.

4.2.3 Sample Custody

The chain-of-custody form is initiated by the sampling team as described in the work packages. Grab samples are shipped in a bottle and sealed with a Waste Tank Sample Seal. All sample shipments are to be labeled with the following information:

WASTE TANK SAMPLE SEAL

Supervisor	Sample No.
Date of Sampling	Time of Sampling
Shipment No.	Serial No.

The sealed and labeled samples are shipped to the laboratory along with the chain-of-custody form. The receipt and control of samples in the Westinghouse Hanford 222-S Laboratory is described in LO-090-101.

WHC-SD-WM-TSAP-037, REV. 1
Table 2: Compatibility Chemical, Radiological, and Physical Analytical Requirements

Project Name	Compatibility Grab Sample	COMMENTS										REPORTING LEVELS			
Plan Number	WHC-SD-WM-TSAP-037	Homogenization Test - Not Required										Early Notify			
		Field Blank - Not Required										Process Control			
C. Waste Compatibility	PROGRAM CONTACTS	Hot Cell Blank - Performed as Necessary										FORMAT III Safety Screen			
												FORMAT IV Waste Management			
	TWRS	R. D. Schreiber										FORMAT V RCRA Compliance			
	222-S Laboratory	M. D. Rollison										FORMAT VI Special			
PRIMARY ANALYSES		SAMPLE		PREP ¹	QUALITY CONTROL ²						CRITERIA		FOR-MAT		
PROGRAM	METHOD	ANAL.	WHC PROCEDURE	LIQUID		DUP	SPK/ MSD	BLK	CALIB STD	PR	AC	UNITS	NOTIFICATION LIMIT ³	EXPECTED RANGE ⁴	
C	DSC	Net Exo. Energy	LA-514-113	X	d	ea smpl	N/A	N/A	ea AB	±20	80-120	J/g	net > 0 ^a or exo > 481	unknown	I, II, IV
C	TGA	Percent Moisture	LA-560-112	X	d	ea smpl	N/A	N/A	ea AB	±20	80-120	wt %	< 17	unknown	I, II, IV
C	Furnace Oxidation	TOC	LA-344-105	X	d ^e	ea smpl	1/mtrx	ea AB	ea AB	±20	80-120	µgC/mL	30,000	unknown	I, II, IV
C	HPGC / MCA	GEA ¹³⁷ Cs	LA-548-121	X	d ^e	ea smpl	N/A	ea AB	ea AB	±20	80-120	µCi/mL	none	unknown	II, IV
C	Sep. & β counting	⁹⁰ Sr	LA-220-101	X	d ^e	ea smpl	1/mtrx ^b	ea AB	ea AB	±20	80-120	µCi/mL	none	unknown	II, IV
C	ICP	Al	LA-505-151	X	d ^e	ea smpl	See ^c	ea AB	ea AB	±20	80-120	µg/mL	none	unknown	II, IV
		Fe											none	unknown	
		Na											none	unknown	
C	Titration ^f	OH	LA-211-102	X	d ^e	ea smpl	N/A	ea AB	ea AB	±20	80-120	µg/mL	none	unknown	I, II, IV
C	IC	Cr	LA-533-105	X	d ^e	ea smpl	1/mtrx	ea AB	ea AB	±20	80-120	µg/mL	none	unknown	II, IV
		F _{PO₄³⁻} , SO ₄ ²⁻											none	unknown	
C	IC	NO ₃ ⁻ , NO ₂ ⁻	LA-533-105	X	d ^e	ea smpl	1/mtrx	ea AB	ea AB	±20	80-120	µg/mL	none	unknown	I, II, IV
C	pH	[H ⁺]	LA-212-102	X	d	ea smpl	N/A	N/A	ea AB	±20	80-120	pH	none	unknown	II, IV
C	Furnace Oxidation	TIC (CO ₂)	LA-344-105	X	d ^e	ea smpl	1/mtrx	ea AB	ea AB	±20	80-120	µgC/mL	none	unknown	II, IV
C	Sep. & α counting	²³⁸ Pu	LA-503-156	X	d ^e	ea smpl	1/mtrx ^b	ea AB	ea AB	±20	80-120	µCi/mL	61.5	unknown	I, II, IV
C	Sep. & α counting	²⁴¹ Am	LA-953-103	X	d ^e	ea smpl	1/mtrx ^b	ea AB	ea AB	±20	80-120	µCi/mL	none	unknown	I, II, IV
C	SpG	Density	LA-510-112	X	d	ea smpl	N/A	N/A	N/A	±20	80-120	g/mL	none	unknown	I, II, IV
C	Centrifugation	% Solids	LA-519-132	X	d	ea smpl	N/A	N/A	N/A	±20	80-120	%	none	unknown	II, IV
C	Visual	Organic Layer	LA-519-151	X	d			N/A	N/A	N/A	N/A	presence	unknown	I, II, IV	

1. Direct, fusion, a-acid, w-water
 2. Precision, AC-accuracy, ea-each, smpl-sample, DUP-duplicate,
 SPK/MSD-spks and matrix spike duplicate, AB-analytical batch, N/A-not applicable, mtrx-matrix
 3. Units for notification limits and expected ranges are those listed in the "units" column.
 4. Either serial dilution matrix spikes will be performed.
 5. Tracer or carrier may be used in place of a spike and results corrected for recovery.
 6. Direct liquid samples may be diluted in acid or water to adjust to proper sample size and/or pH.
 7. Action limit is applicable up to 500 °C. If the energetics action limit is exceeded, laboratory
 personnel and East or West Systems Engineering will decide if adiabatic calorimetry shall be performed.
 8. * will not be run if pH < 12.

5.0 ORGANIZATION

The organization and responsibility of key personnel involved in these tank characterization projects are listed in Table 3.

Table 3: Tank Project Key Personnel List

Individual	Organization	Responsibility
J. G. Kristofzski	TWRS Characterization Plans and Reports	Manager, Characterization Plans and Reports
J. M. Jones	East Systems Engineering	Sampling and Compatibility Cognizant Engineer
M. J. Sutey	West Systems Engineering	Sampling and Compatibility Cognizant Engineer
East Tank Farm Operations Shift Manager	Tank Farm Operations	200 East Tank Farm Point of Contact if Action Limit is Exceeded (373-2689)
West Tank Farm Operations Shift Manager	Tank Farm Operations	200 West Tank Farm Point of Contact if Action Limit is Exceeded (373-3495)

6.0 EXCEPTIONS

In the Waste Compatibility DQO, several necessary specifications concerning sampling and analysis were omitted. These clarifications are addressed in (Sutey 1994b).

Since historical information exists to adequately address the potential for line plugging and precipitation of solids during the transfer of waste, no viscosity or cooling curve analysis shall be required during this analysis activity.

Any exceptions identified for the tanks to be compatibility grab sampled (from Table 1) are identified below in Table 4.

Table 4: Tank-Specific Analytical Exceptions

TANK	EXCEPTIONS
U-103	Analyze sample 103-U-1, and archive samples 103-U-2 and 103-U-3 until dispositioned by West Systems Engineering.
U-105	Analyze sample 105-U-1, and archive samples 105-U-2 and 105-U-3 until dispositioned by West Systems Engineering.
U-108	Analyze sample 108-U-1, and archive samples 108-U-2 and 108-U-3 until dispositioned by West Systems Engineering.
U-109	Analyze sample 109-U-1, and archive samples 109-U-2 and 109-U-3 until dispositioned by West Systems Engineering.

Table 4 (Cont.): Tank-Specific Analytical Exceptions

TANK	EXCEPTIONS
AW-102	<p>ANALYZE SUPERNATE SAMPLE 2AW-95-1 PER THE COMPATIBILITY DQO WITH FOLLOWING ADDITIONAL ANALYSIS OBTAINED FROM SAMPLE SCHEDULE DOCUMENT NUMBER FSS-630-00001, REV B-6, SAMPLE POINT SLY-A, ROUTINE SET #2:</p> <p>APPR/OTR, U_{gross}, TC, AT, TB, H3, C14, Co60, Se79, Nb94, Tc99, Ru106, I129, Cs134, Ce144, Eu154, Eu155, Ra226, Np237, Pu238, and Cm244</p> <p>Note that duplicate analysis or spikes are not required for supernate sample 2AW-95-1.</p> <p>ANALYZE SEPARATED PHASES (DECANTED SUPERNATE AND CENTRIFUGED SLUDGE) FROM SAMPLES 2AW-95-2 AND 2AW-95-3 FOR THE FOLLOWING PARAMETERS:</p> <p>APPR/OTR, SpG, Pu239/240, Am241, Sr90, Cs137, AT, TB, U_{gross}, TC, TIC, %Solids (visual and centrifugation), and Si</p> <p>Note that duplicate analysis will be required for sludge samples 2AW-95-2 and 2AW-95-3.</p> <p>Format II and Format IV reporting required for all sample analysis.</p> <p>Archive samples until dispositioned by East Engineering or Evaporator Engineering.</p>

Table 4 (Cont.): Tank-Specific Analytical Exceptions

TANK	EXCEPTIONS
AW-106	<p>ANALYZE SUPERNATE SAMPLE 6AW-95-1 PER THE COMPATIBILITY DQO WITH FOLLOWING ADDITIONAL ANALYSIS OBTAINED FROM SAMPLE SCHEDULE DOCUMENT NUMBER FSS-630-00001, REV B-6, SAMPLE POINT SLY-A, ROUTINE SET #2:</p> <p>APPR/OTR, U_{gross}, TC, AT, TB, H3, C14, Co60, Se79, Nb94, Tc99, Ru106, I129, Cs134, Ce144, Eu154, Eu155, Ra226, Np237, Pu238, and Cm244</p> <p>Note that duplicate analysis or spikes are not required for supernate sample 6AW-95-1.</p> <p>ANALYZE SEPARATED PHASES (DECANTED SUPERNATE AND CENTRIFUGED SLUDGE) FROM SAMPLES 6AW-95-2 AND 6AW-95-3 FOR THE FOLLOWING PARAMETERS:</p> <p>APPR/OTR, SpG, Pu239/240, Am241, Sr90, Cs137, AT, TB, U_{gross}, TC, TIC, and %Solids (visual and centrifugation)</p> <p>Note that duplicate analysis will be required for sludge samples 6AW-95-2 and 6AW-95-3.</p> <p>Format II and Format IV reporting required for all sample analysis.</p> <p>Archive samples until dispositioned by East Engineering or Evaporator Engineering.</p>

Table 4 (Cont.): Tank-Specific Analytical Exceptions

TANK	EXCEPTIONS
AW-105	<p>ANALYZE SUPERNATE SAMPLES 5AW-95-1, 5AW-95-2, AND 5AW-95-3 PER THE COMPATIBILITY DQO WITH THE FOLLOWING ADDITIONAL ANALYSIS FROM THE EVAPORATOR WHC-SD-WM-DQO-014, REV 1 DOCUMENT:</p> <p>APPR/OTR, Acetone, and NH₃</p> <p>Note that duplicate analysis will be required for supernate samples 5AW-95-1, 5AW-95-2, and 5AW-95-3.</p> <p>Format II and Format IV reporting required for all sample analysis.</p> <p>Archive samples until dispositioned by East Engineering or Evaporator Engineering.</p>
AY-102	<p>ANALYZE SUPERNATE SAMPLES 2AY-95-1, 2AY-95-2, 2AY-95-3, AND 2AY-95-4 PER THE COMPATIBILITY DQO WITH THE FOLLOWING ADDITIONAL ANALYSIS FROM THE EVAPORATOR WHC-SD-WM-DQO-014, REV 1 DOCUMENT:</p> <p>APPR/OTR, Acetone, and NH₃</p> <p>Note that duplicate analysis will be required for supernate samples 2AY-95-1, 2AY-95-2, 2AY-95-3, and 2AY-95-4.</p> <p>Format II and Format IV reporting required for all sample analysis.</p> <p>Archive samples until dispositioned by East Engineering or Evaporator Engineering.</p>

6.1 LABORATORY SAMPLE RECEIPT AND ANALYSIS INSTRUCTIONS FOR EXCEPTIONS

A flowchart showing the general analysis scheme for exceptional compatibility samples is presented in Figure 2 with detailed steps below.

- Step 1 Receive grab samples. The discussion of sample receipt is presented in Section 4.2.3, "Sample Custody" of this document.
- Step 2 Record visual observations such as color and clarity of the sludge or liquid, and the presence of any solid particles in the sludge sample.
- Step 3 Closely inspect the sludge samples for the presence and approximate volume of any solids. If no solids exist, proceed to Step 5. However, if solids are detected in the sample, go to Step 4A.
- Step 4A Determine the volume percent solids of the sample by centrifugation and decant supernate for further analysis.
- Step 4B Remove adequate amount of solids and perform analyses in Table 4.
- Step 4C Archive remaining solids for possible future analyses (Bratzel 1994).
- Step 5 Closely inspect the liquid sample for the presence and approximate volume of any potential organic layers. If potential organic liquid layers exist, proceed to Step 6. If potential organic layers do not exist, go to Step 7.
- Step 6 Any potential organic layer shall be reported immediately by Format I reporting (see Section 7.1). The potential organic layer shall be separated and retained in a jar for possible future analysis.
- Step 7 Remove aliquots from decanted portion of sludge sample and perform analyses in Table 4.
- Step 8 Retain remaining liquid sample as the liquid archive (Bratzel 1994).

Figure 2: Test Plan Flow Chart for Exceptions to Compatibility Analyses

7.0 DELIVERABLES

All analyses of compatibility samples will be reported as Formats I and II as shown in Table 2. The Waste Compatibility Program may have requested progress reports from the laboratory regarding the analyses. However, due to the rapid turn around time required for these analyses (see Section 7.2), no special progress reports for this tank characterization project shall be required from the laboratory. All reports generated as part of normal operations (e.g., monthly reports) shall still be done. The data shall be reported in the units given by Table 2, and all procedure and revision numbers used in the analyses shall be included in the report. Additional information regarding reporting formats is given in Schreiber (1994a).

7.1 FORMAT I REPORTING

Table 2 contains the notification limits for each analyte. Any results that exceed the notification limits defined in the DQO processes, shall be reported immediately by calling the appropriate Tank Farm Operations Shift Manager (see Table 3) and the Characterization Program Office (Schreiber 1994b). This verbal communication must be followed within 24 hours by written notification to East Systems Engineering or West Systems Engineering (depending on whether the tank is in East or West area), the Characterization Program Office, Process Control, and Characterization Plans and Reports documenting the observations. Points of contact within each program/project are defined by Schreiber (1995). Additional analyses for verification purposes may be contracted between the performing laboratory and the above contacts either by a revision to this document or by letter of instruction.

7.2 FORMAT II REPORTING

The data found from these analyses shall determine whether or not waste from these tanks are compatible with the waste in the DSTs. Due to the immediate necessity of the data, the WHC 222-S Laboratory has agreed to have each tank's analyses completed and results reported within 60 days of receipt of the sample at the laboratory loading dock. The results shall be reported electronically, or by using a Laboratory Information Management Systems (LIMS) report to either East Systems Engineering or West Systems Engineering, as appropriate. Although no data validation, supporting raw data, or quality control results are to be included, the results still require review and approval by the cognizant scientist or manager of the laboratory operation. In addition to the LIMS/electronic report, a letter report shall be sent to Characterization Plans and Reports, Characterization Program Office, Los Alamos Technical Associates (LATA), East or West Systems Engineering, Tank Characterization Database, and Tank Characterization Resource Center representatives summarizing the results. Any observations taken during the receipt and analyses of the grab samples should be included in this letter report.

7.3 FORMAT IV REPORTING

This report shall include the results of the analyses required by the historical DQO (see Table 1 for delineation of program requests). The data package shall be provided to Analytical Services, the Characterization Program, the Historical DQO point of contact, the Tank Characterization Resource Center, and Tank Characterization Database representatives within 216 days of the sampling event. Detailed information regarding the contents of this reporting format are given in Schreiber (1994a).

8.0 CHANGE CONTROL

Under certain circumstances, it may become necessary for the performing laboratory to make decisions concerning a sample without review of the data by the customer or the Characterization Program. These changes shall be documented through the use of internal characterization change notices or analytical deviation reports for minor low-impact changes and documented in applicable laboratory reports. All significant changes (such as changes in scope) shall be documented by Characterization Support via an Engineering Change Notice to this plan. All changes shall also be clearly documented in the final data report.

Additional analyses of grab sample material from this characterization project at the request of the Characterization Program shall be performed according to a revision of this plan.

9.0 REFERENCES

- Bratzel, D. R., Letter to S. M. Joyce, "Archiving Requirements", 7E720-94-125, dated June 23, 1994.
- Carothers, K. G., 1994, *Data Quality Objectives for the Waste Compatibility Program*, WHC-SD-WM-DQO-001, Westinghouse Hanford Company, Richland, Washington.
- DOE, 1994, *Hanford Analytical Services Quality Assurance Plan*, DOE/RL-94-55, Rev. 0, U.S. Department of Energy, Richland Field Office, Richland, Washington.
- Haller, C. S., 1994, *Fiscal Year 1995 Tank Waste Remediation System Tank Waste Analysis Plan*, WHC-SD-WM-PLN-091, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- Meznarich, H. K., 1994, *Quality Assurance Program Plan for Laboratory Analysis and Process Testing*, WHC-SD-CP-QAPP-003, Rev. 1, Westinghouse Hanford Company, Richland, Washington.
- Schreiber, R. D., 1994a, Letter to C. S. Haller, "Revised Interim Tank Characterization Plan Guidance", 7E720-94-121, dated May 13, 1994.
- Schreiber, R. D., 1994b, Letter to J. G. Kristofzski, "Format I Reporting Requirement," 7E720-94-128, dated August 15, 1994.
- Schreiber, R. D., 1995, Letter to J. G. Kristofzski, "REVISION: Point of Contact/Distribution List", 71520-95-108 REISSUE, dated March 23, 1995.
- Sutey, M. J., 1994a, *Tank Farm Waste Compatibility Program*, WHC-SD-WM-OCD-015 Rev. 0A, Westinghouse Hanford Company, Richland, Washington.
- Sutey, M. J., 1994b, Letter to C. DeFigh-Price, "Precision and Accuracy Requirements for the Waste Compatibility Data Quality Objectives (DQO), WHC-SD-WM-DQO-001", 7CF30-94-023, dated June 3, 1994.
- Taylor, L. H., 1993, *Quality Assurance Project Plan for Chemical Analysis of Highly Radioactive Mixed Waste Samples in Support of Environmental Activities on the Hanford Site*, WHC-SD-CP-QAPP-002 Rev. 0A, Westinghouse Hanford Company, Richland, Washington.
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