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Page 1 of 1

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7. Abstract

This document is a plan which serves as the contractual agreement between the Characterization Program, Sampling Operations, WHC 222-S Laboratory, and PNL 325 Analytical Chemistry Laboratory. The scope of this plan is to provide guidance for the sampling and analysis of samples from tank 241-AP-107.

8. RELEASE STAMP

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WHC-SD-WM-TP-286
Revision 0

Tank 241-AP-107
Tank Characterization Plan

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

by

Los Alamos Technical Associates
8633 Gage Boulevard
Kennewick, Washington 99336

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF ABBREVIATIONS

ACL	Analytical Chemistry Laboratory
AP-107	Tank 241-AP-107
DOE	Department of Energy
DQO	data quality objective
DST	double-shell tank
NCPLX	non-complexed waste
PNL	Battelle Pacific Northwest Laboratory
RCRA	*Resource Conservation and Recovery Act of 1976*
SST	single-shell tank
TC	total carbon
TCP	Tank Characterization Plan
TIC	total inorganic carbon
TOC	total organic carbon
TWRS	Tank Waste Remediation System
USQ	unreviewed safety question
WHC	Westinghouse Hanford Company

1.0 DATA QUALITY OBJECTIVE

The Defense Nuclear Facilities Safety Board has advised the DOE to concentrate the near-term sampling and analysis activities on identification and resolution of safety issues (Conway 1993). The Data Quality Objective (DQO) process was chosen as a tool to be used in the resolution of safety issues. As a result, a revision in the Federal Facilities Agreement and Consent Order (Tri-Party Agreement) milestone M-44-00 has been made, which states that "A Tank Characterization Plan (TCP) will be developed for each double-shell tank (DST) and single-shell tank (SST) using the DQO process ... Development of TCPs by the DQO process is intended to allow users (e.g., Hanford Facility user groups, regulators) to ensure their needs will be met and that resources are devoted to gaining only necessary information." This document satisfies that requirement for tank 241-AP-107 (AP-107).

2.0 HISTORICAL TANK INFORMATION

This section summarizes some of the available information for tank AP-107. Discussions of the process history, recent sampling events for the tank, and general information about the tank are included. The fill history information is available in *Waste Volume Projections: Thermocouple and Surface Level Readings* (Koreski 1994).

2.1 CONFIGURATION OF TANK AP-107

Double-shell tank AP-107 was constructed and went into service in 1986 as a Dilute Receiver Tank. Tank AP-107 is one of eight tanks that comprise the AP-Tank Farm, which embodied the seventh generation tank design with a 75-ft diameter and an operating depth of 35.2-ft (Anderson 1990). The tank has a design capacity of 4,390,000 Liters (1,160 kgal); however, safety considerations require a maximum operating capacity of 4,320,000 Liters (1,140 kgal). Tank AP-107 is a tank-in-tank design consisting of a heat-treated, stress-relieved primary liner with a nonstress-relieved outer steel liner, both inside a reinforced concrete shell.

2.2 AGE AND PROCESS HISTORY OF TANK AP-107

Tank AP-107 entered service with a transfer of 71,900 Liters (19 kgal) of flush water in August 1986. It continued to receive small additions of flush water until the first quarter of 1990, when it received three transfers of dilute non-complexed waste from the PUREX Ammonia Scrubber. The three transfers totaled 4,220,000 Liters (1,115 kgal), from individual transfers of 1,150,000 Liters (305 kgal), 2,860,000 Liters (755 kgal), and 208,000 Liters (55 kgal). This PUREX Ammonia Scrubber waste constituted approximately 98% of tank AP-107's total volume of 4,310,000 Liters (1,139 kgal) at the end of the first quarter of 1990 (Amato 1994).

With this transfer, tank AP-107 reached its peak waste volume of 4,310,000 Liters (1,139 kgal). Small unknown losses since then have lowered the waste volume to 4,190,000 Liters (1,108 kgal). Unknown losses are most likely caused by evaporation. Losses or gains due to instrumentation also account for changes in tank volume. A switch from one measurement device to another would be recorded as a gain or loss in depth since the methods do not have the same reference zero. The volume for the tank according to Koreski, as of December 24, 1993, was reported at

4,190,000 Liters (1,108 kgal) following a loss of 117,000 Liters (31 kgal) over nearly four years. This gradual and constant decline in waste level, representing a loss of approximately 79.5 Liters (21 gal) per day, can be attributed to evaporation from the waste's surface (Amato 1994).

Between September 24, 1994 and October 2, 1994, the waste in tank AP-107 was transferred to tank 241-AW-102 for Evaporator Campaign 94-2 processing. The liquid level after these transfers was 25.9 cm (10.2 in). From October 20, 1994 to October 21, 1994, approximately 509,000 Liters (134 kgal) of PUREX neutralized cladding removal waste was received from tank 241-AW-103. The liquid level after this transfer was 150 cm (59.1 in). Prior to sampling, approximately 3,104,000 Liters (820 kgal) of PUREX miscellaneous waste will be transferred into AP-107 from tank 241-AW-104.

2.3 EXPECTED TANK CONTENTS

The waste currently in tank AP-107 is categorized as dilute complexed liquid waste, as is the waste in tank 241-AW-104 to be transferred into tank AP-107. The expected waste constituents for tank AP-107 after the transfer of waste from tank 241-AW-104 are provided in Table 2-1.

Table 2-1: Historical Waste Constituents for Tank AP-107

Analyte	Result (μg/mL)	Analyte	Result (μg/mL)
Aluminum (Al)	88.5	Total Inorganic Carbon (TIC)	482
Chlorine (Cl^-)	68	Total Organic Carbon (TOC)	513
Flouride (F^-)	2,310	Isotope	Result (μCi/mL)
Hydroxide (OH^-)	1,820		
Iron (Fe)	1.16	Americium (^{241}Am)	4.19E-04
Nitrate (NO_3^-)	9,510	Cesium (^{134}Cs)	1.42E-00
Nitrite (NO_2^-)	2,620	Cesium (^{137}Cs)	5.21E-00
Phosphate (PO_4^{3-})	187	Plutonium ($^{239/240}Pu$)	2.85E-05
Sodium (Na)	9,640	Strontium (^{90}Sr)	6.54E-03
Specific Gravity 0.989		pH 12.4	

3.0 REFERENCES

Amato, L. C., D. S. De Lorenzo, A. T. DiCenso, J. H. Rutherford, and R. H. Stephens, 1994, *Tank Characterization Report for Double Shell Tank 241-AP-107*, WHC-SD-WM-ER-362, Rev. 0, Los Alamos Technical Associates, Kennewick, Washington.

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Conway, J. T., Letter to H. R. O'Leary, DOE, "*DNFSB Recommendation 93-5 to the Secretary of Energy*," 9400070, dated July 19, 1993.

Koreski, G. M., 1994, *Waste Volume Projections: Thermocouple and Surface Level Readings*, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A

SAMPLING AND ANALYSIS PLAN FOR GRAB SAMPLING IN FISCAL YEAR 1995 (242-A EVAPORATOR CAMPAIGN 95-1)

TABLE OF CONTENTS FOR APPENDIX A

LIST OF TABLES FOR APPENDIX A

LIST OF FIGURES FOR APPENDIX A

LIST OF ABBREVIATIONS FOR APPENDIX A

ACL	Analytical Chemistry Laboratory
AP-107	Tank 241-AP-107
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 - Multi Channel Analysis
IC	ion chromatography
ICP	inductively coupled plasma - atomic emission spectroscopy
NCPLX	non-complexed waste
PNL	Battelle Pacific Northwest Laboratory
RCRA	*Resource Conservation and Recovery Act of 1976*
SST	single-shell tank
TC	total carbon
TCP	Tank Characterization Plan
TGA	thermogravimetric analysis
TIC	total inorganic carbon
TOC	total organic carbon
TWRS	Tank Waste Remediation System
USQ	unreviewed safety question
WHC	Westinghouse Hanford Company

A1.0 SPECIFIC TANK CHARACTERIZATION OBJECTIVES

A1.1 RELEVANT SAFETY ISSUES

The 242-A Evaporator will process waste from double-shell tanks (DSTs) in order to concentrate the mixed waste solutions. The feed stream for the evaporator is comprised of waste transferred into the feed tank, tank 241-AW-102, from other tanks selected to be processed, known as candidate feed tanks. The primary evaluation to assess the processibility of waste going to the evaporator is performed on each of the candidate feed tanks. The issue of processibility is to verify the candidate feed tank waste will not react adversely during Evaporator operations. An unexpected chemical reaction occurring within the waste may impact the processing operations. Therefore, prior to transfer to the evaporator, each candidate feed tank must be evaluated from four perspectives: process control, safety, compliance, and compatibility.

Tank 241-AP-107 (AP-107) is a candidate feed tank which is expected to be processed in the 242-A Evaporator Campaign 95-1. Three issues related to the overall concern of the evaporator must be evaluated:

- Compatibility of the candidate waste with respect to feed tank, slurry tank and evaporator requirements.
- Safety parameters of the candidate waste tank to avoid a facility condition which is outside the safety boundaries.
- Compliance of the waste as dictated by regulations from various government, and environmental agencies.

The results of this grab sampling activity prescribed by this Sampling and Analysis Plan shall help determine whether tank AP-107 may be used as a candidate feed tank for the Evaporator operations without creating safety, compliance, or operational problems.

A1.1.1 Tank AP-107 Characterization Objectives

The characterization efforts of this Sampling and Analysis Plan are focused on the resolution of the issues above. To evaluate the potential for waste incompatibility with the feed tank, slurry tank, and evaporator, as well as relevant safety issues, analyses will be performed on the grab samples obtained from tank AP-107. These analyses are discussed in Section A4.0. Only decisions based on sampling and analysis of liquid waste from tank AP-107 will be addressed within this document; operational issues such as plugged pipelines and equipment problems are not within the scope of this Sampling and Analysis Plan. Once the characterization of tank AP-107 has been performed, the waste compatibility and safety assessment shall be conducted. This effort is discussed in the *242-A Evaporator/Liquid Effluent Retention Facility Data Quality Objectives* (Von Bargen 1994a).

A1.1.2 242-A Evaporator and Safety Screening Data Quality Objectives

The sampling and analytical needs associated with candidate feed tanks, and the safety screening of the tanks have been identified through the Data Quality

Objective (DQO) process. Additional data needs associated with tank AP-107 may be identified in subsequent DQO efforts, which may then be incorporated into future revisions of this Tank Characterization Plan.

The document, *242-A Evaporator/Liquid Effluent Retention Facility Data Quality Objectives* (Von Bargen 1994a) describes the requirements and data needs necessary to address issues such as process control, safety, compliance, and compatibility for the 242-A Evaporator. The purpose of the 242-A Evaporator DQO is to determine the most effective method of gathering essential data necessary to make decisions to support successful operation of the facility.

The *Tank Safety Screening Data Quality Objective* (Babad and Redus 1994) describes the sampling and analytical requirements that are used to screen waste tanks for unidentified safety issues. The criteria that determine when a tank is placed on a particular Watch List are specified in that document.

A1.1.3 Data Quality Objectives Integration

Both the 242-A Evaporator and the Safety Screening DQOs require that samples be taken from a minimum of two risers separated radially to a maximum extent possible by the existing installed risers. The 242-A Evaporator DQO requires samples be taken at different depths to get an estimate of the tank spatial variability. Riser selection will be made by numbering the available risers which are at least 15 feet from each other and using a random number generator to select which riser will be used.

The Safety Screening DQO requires each of the 177 underground storage tanks to be safety screened. However, the DQO is not specific as to the number of grab samples necessary for an adequate representation of the waste. Therefore, the number of samples to be taken from AP-107 will reflect those needed by the Evaporator DQO. Many of the analyses required by the Safety Screening DQO are similar to the Evaporator DQO; therefore, no analytical or preparative conflicts are anticipated, with the exception of the 45 day report preparation.

A2.0 TANK STATUS AND SAMPLING INFORMATION

A2.1 TANK STATUS

Tank AP-107 currently contains 615,000 Liters (162 kgal) of dilute complexed waste. This volume of waste corresponds to approximately 150 cm (59.1 in) of waste. The tank is scheduled to receive approximately 3,104,000 Liters (820 kgal) of dilute complexed waste from AW-104, which will bring the total volume to 3,720,000 Liters (982 kgal) of waste. The tank is still in service, as are all eight tanks in the AP-Tank Farm. The "in service" designation allows these tanks to continue receiving waste in conjunction with production and/or waste processing operations. The tank integrity is classified as sound and it is currently not on any Watch List. There are no unreviewed safety questions (USQs) associated with Tank AP-107 at this time.

A2.2 SAMPLING INFORMATION

Tank AP-107 is a non-Watch List DST scheduled to be grab sampled in order to prepare for transfer to the 242-A Evaporator. One surface grab sample will be taken from AP-107, consisting of one 100 mL bottle. Grab samples from five subsurface locations will be taken as well. At three of these subsurface sampling location, four 100 mL bottles will be drawn: one for boildown and mixing study analyses, two for organic analyses (one for sVOA and one for VOA), and one for inorganic and radionuclide analyses. At the two additional subsurface sampling locations, two 100 mL bottles will be drawn: one for organic analyses (acetone only), and one for inorganic analyses (ammonia, hydroxide, and nitrite only). After completion of the acetone analyses, the remaining liquid from the organic samples will be used for Mixing/Boildown studies. Therefore, seventeen total surface and subsurface 100 mL grab samples will be taken from tank AP-107; four samples will be taken from each of two separate depths from riser 1 located east of AP-107 central pump pit (90 degrees from North direction), four samples and two samples will be taken from each of two separate depths respectively from riser 1 located southwest of AP-107 central pump pit (210 degrees from North direction), two samples will be taken from riser 1 located northwest of AP-107 central pump pit (330 degrees from North direction), and the tank waste surface sample will be taken from riser 1 (330 degrees from North direction). The sample bottles for organic (sVOA), inorganic/radiochemical analyses, and the mixing/boildown studies must be 100 mL, precleaned, amber colored bottles with a certification of EPA level 1 procedure A, sealed with a Teflon[1] cap. Sample bottles used for organic (VOA) and surface (TOC) analyses must be 100 mL, precleaned, amber colored bottles with a certification of EPA level 1 procedure B, sealed with a septum cap and lined septum (Von Bargen 1994b). For detailed information regarding the tank AP-107 grab sampling activities refer to work package ES-94-1235. This work package contains all the applicable operating procedures and the chain of custody records for this sampling event.

With respect to sampling quality control, one field blank consisting of three 100 mL bottles shall be taken during the sampling event: one 100 mL bottle for semi-volatile organics, one 100 mL bottle for volatile organics, and one 100 mL bottles for inorganic/radiochemical analyses. Two trip blanks (100 mL each) shall be collected during the sampling event (one for semi-volatile organics, one for volatile organics) and shall only be analyzed for those constituents that are detected in the field blank. Field and trip blank bottles used for organic analyses must be 100 mL, precleaned, amber colored bottles with a certification of EPA level 1 procedure B, sealed with a septum cap and lined septum. The field bottle used for inorganic/radiochemical analyses must be a 100 mL, precleaned, amber colored bottle with a certification of EPA level 1 procedure A, sealed with a Teflon[1] cap (Von Bargen 1994b). After completion of organic analyses, the remaining liquid in the field blank samples can be used for inorganic/radiochemical analyses. In order to ensure that the same working and environmental conditions were applicable during the removal of each sample and blank from the tank, all samples and blanks must be obtained within 4 calendar days (Tucker 1994).

Table A-1 summarizes the sample number for each bottle, analysis to be performed on the waste, bottle type, sample location and depths for sampling operations.

[1] Teflon is a registered trademark of E. I. duPont de Nemours

Table A-1: Tank AP-107 Grab Sampling Depths

SAMPLE NUMBER	ANALYSIS TO BE PERFORMED ON WASTE	BOTTLE TYPE[1]	SAMPLE LOCATION[2]	SAMPLE DEPTH[3]
107-AP-1A	Organic/VOA	S	Riser 1 (90°)	1316 cm (518 in)
107-AP-1B	Organic/sVOA	T	Riser 1 (90°)	1316 cm (518 in)
107-AP-1C	Inorg/Rad	T	Riser 1 (90°)	1316 cm (518 in)
107-AP-1D	Mixing/Boildown	T	Riser 1 (90°)	1316 cm (518 in)
107-AP-2A	Organic/VOA	S	Riser 1 (90°)	1072 cm (422 in)
107-AP-2B	Organic/sVOA	T	Riser 1 (90°)	1072 cm (422 in)
107-AP-2C	Inorg/Rad	T	Riser 1 (90°)	1072 cm (422 in)
107-AP-2D	Mixing/Boildown	T	Riser 1 (90°)	1072 cm (422 in)
107-AP-3A	Organic/VOA	S	Riser 1 (210°)	1255 cm (494 in)
107-AP-3B	Organic/sVOA	T	Riser 1 (210°)	1255 cm (494 in)
107-AP-3C	Inorg/Rad	T	Riser 1 (210°)	1255 cm (494 in)
107-AP-3D	Mixing/Boildown	T	Riser 1 (210°)	1255 cm (494 in)
107-AP-4A	Organic[4]	S	Riser 1 (210°)	828 cm (326 in)
107-AP-4B	Inorganic[5]	T	Riser 1 (210°)	828 cm (326 in)
107-AP-5A	Organic[4]	S	Riser 1 (330°)	1346 cm (530 in)
107-AP-5B	Inorganic[5]	T	Riser 1 (330°)	1346 cm (530 in)
107-AP-6 (surface)	TOC	S	Riser 1 (330°)	732 cm (288 in)
107-AP-IB	Inorg/Rad	T	Field Blank	--
107-AP-OB1	Organic/VOA	S	Field Blank	--
107-AP-OB2	Organic/sVOA	T	Field Blank	--
107-AP-TB1	Organic/VOA	S	Trip Blank	--
107-AP-TB2	Organic/sVOA	T	Trip Blank	--

[1] Bottle type: T = Teflon Cap, S = Septum Cap (with lined septum)

[2] Riser 1 is located east of AP-107 central pump pit (90 degrees from North direction). Riser 1 is located southwest of AP-107 central pump pit (210 degrees from North direction). Riser 1 is located northwest of AP-107 central pump pit (330 degrees from North direction).

[3] Sample depth is defined as the distance from the top of the riser flange to the mouth of the sample bottle.

[4] This sample will be analyzed for acetone only. After completion of the acetone analysis, the remaining liquid in this sample will be used for Mixing/Boildown Study.

[5] This sample will be analyzed for ammonia, hydroxide, and nitrite only.

A3.0 LABORATORY SAMPLE RECEIPT AND ANALYSIS INSTRUCTIONS

A3.1 LIQUID GRAB SAMPLE ANALYSIS

A flowchart showing the general analysis scheme for tank AP-107 is presented in Figure A-1. Each step in the flowchart should be performed on all grab samples with the exception of the surface sample and the sample obtained for the mixing and boildown study. The steps are described in detail to provide the laboratory chemist with sample analysis guidance, and may be altered by the performing laboratory as necessary so long as the intent is not changed. 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 shall be performed; otherwise, no hot cell blank is necessary. The reporting levels for analyses are contained in Table A-2 and are detailed in Section A7.0 of this document.

As a precautionary measure, the Safety and Analysis Report for Packaging (SARP) has been reviewed for any safety issues involved with transportation of grab samples. For grab samples, the shipping container must be vented every four days to release retained gas. Sampling Operations has a maximum of eight days to ship the containers. If the containers are not shipped to the performing laboratory within three days, Sampling Operations shall vent the containers in the field and note the time of this activity on the chain of custody form which accompanies the samples.

From each of the three locations where four samples will be collected, the laboratory will receive four 100 mL bottles: one for boildown and mixing study analyses, two bottles for organic analyses (one for VOA, one for sVOA), and one for inorganic/radionuclide analyses. The sample remaining in the bottles for organic analyses may be used for inorganic and radionuclide analyses after the organic analyses are completed. From the two additional locations where two samples will be collected, the laboratory will receive two 100 mL bottles: one for organic analyses (acetone only) and one for inorganic analyses (ammonia, hydroxide, and nitrite only). The sample remaining in the bottles for organic analyses (acetone only) will be used for mixing/boildown study after the completion of acetone analysis. The laboratory will also receive one tank waste surface sample to determine whether a floating organic layer is present. The following steps shall be taken by the performing laboratory for the receipt and analysis of the AP-107 grab samples:

Step 1 Receive liquid grab samples at the laboratory in accordance with approved procedures.

Step 2 Is the sample a tank waste surface sample?

Yes: Go to Step 3
No: Go to Step 6

Step 3 Closely inspect the surface sample for the presence and approximate volume of any potential organic layers. Does the sample contain any immiscible (potentially organic) layers?

Yes: Go to Step 4
No: Go to Step 5

Step 4 Report any visually observed immiscible (potentially organic) layer immediately by Format I reporting. Also report findings by Format IV reporting.

Step 5 Remove sufficient aliquots from the tank waste surface sample and perform total organic carbon analysis.

Note: Steps 6-13 shall be performed on the subsurface liquid sample.

Step 6 Is the sample going to be used for the boildown and mixing studies?

Yes: Go to Step 7
No: Go to Step 8

Step 7 The laboratory shall archive the 100 mL bottle and wait for further instruction pending a letter of instruction (LOI) from the Evaporator program (See Section A6.1).

Step 8 Record visual observations such as color and clarity of the liquid, and the presence of any solid particles in the subsurface sample.

Step 9 Closely inspect the liquid sample for the presence and approximate volume of any solids. If solids are detected in the liquid, proceed to Step 10A. If no solids exist, go to Step 11.

Step 10A Remove a portion of the liquid sample and determine the volume percent solids by centrifugation.

Step 10B If greater than 1 gram of solid sample is recovered, archive these solids for possible future analyses (Bratzel 1994).

Step 11 Closely inspect the liquid sample for the presence and approximate volume of any immiscible (potentially organic) layers. Does the sample contain any immiscible (potentially organic) layers?

Yes: Go to Step 12
No: Go to Step 13

Step 12 Report any visually observed immiscible (potentially organic) layer immediately by Format I reporting. The potentially organic layer shall be separated and retained in a jar.

Step 13 Remove sufficient aliquots from the liquid sample and perform the appropriate analyses listed in Table A-2.

Step 14 Retain 40 mL of any remaining liquid sample from each bottle as the liquid archive (Bratzel 1994).

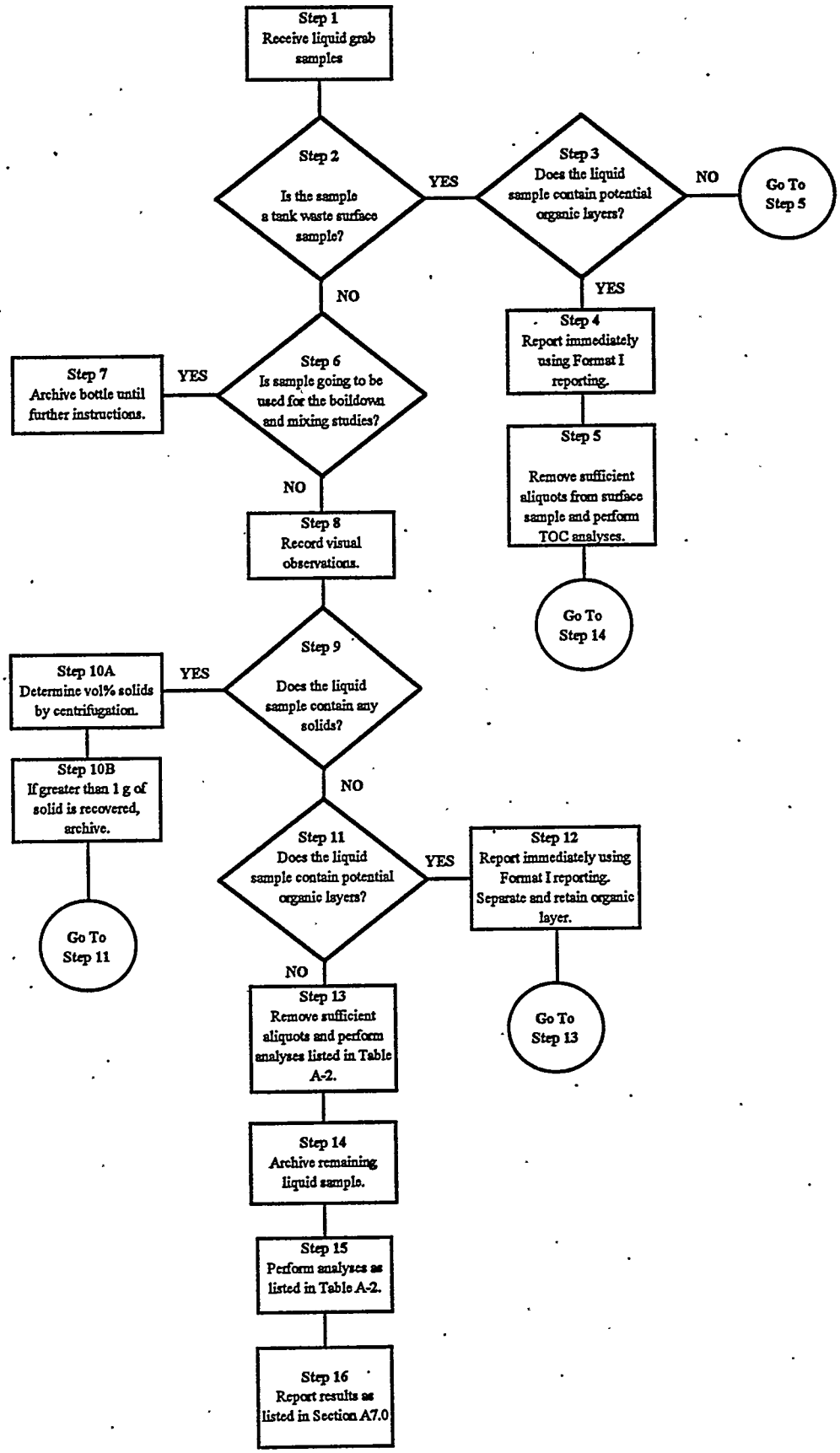
Step 15 Perform analyses as listed in Table A-2.

Step 16 Report and deliver data obtained using reporting requirements (Section A7.0).

A3.2 INSUFFICIENT LIQUID GRAB SAMPLE

In the event that the sample volume from tank AP-107 is found to be insufficient to perform the requested analyses in Table A-2, Characterization Support and Analytical Services shall be notified (for points of contact, see Section A5.0, Table A-3). A prioritization of the analyses required in this Sampling and Analysis Plan is given in Section A6.2. Any analyses prescribed by this document, but not performed, shall be identified in the appropriate data report.

Table A-1: Test Plan Flowchart for Tank AP-107



A4.0 SPECIFIC ANALYTE, QUALITY ASSURANCE, AND DATA CRITERIA

A4.1 SPECIFIC METHODS AND ANALYSES

Table A-2 summarizes the analyses to be performed on the tank AP-107 grab samples. The laboratory procedure numbers which shall be used in the analyses are included in the table. These analyses are based on the 242-A Evaporator DQO (Von Bargen 1994a). For these analyses, the laboratory and sampling organizations should strive to meet SW-846 holding times. However, adherence to SW-846 holding times is not strictly required if documented cases show that additional time was required to ship, process, and analyze the samples (Morant 1994).

A4.2 QUALITY ASSURANCE

A4.2.1 Laboratory Operations

The performing laboratories shall use the *242-A Evaporator Candidate Feed Tank and Process Condensate Sampling Quality Assurance Project Plan* (Tucker 1994) as direction for the quality assurance involved in analyzing the AP-107 tank waste samples. Additionally, the *Hanford Analytical Services Quality Assurance Plan* (DOE 1994), when implemented, shall be used as quality assurance guidance.

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 A-2. If no criteria are provided in Table A-2, the performing laboratory shall perform to Tucker (1994).

A4.2.2 Sample Collection

Seventeen grab samples (see Section A2.2) from tank AP-107, as well as three field blanks and two trip blanks, are to be taken and shipped to the performing laboratory by Sampling Operations in accordance with work package ES-94-1235. In order to maintain the same working and environmental conditions, all samples and blanks must be collected within 4 calendar days (Tucker 1994). That work package shall initiate the chain-of-custody for the samples. The following documents will be used as guidance in the handling and shipment of the tank AP-107 liquid 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 (onsite)."
- 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 A-1). The field and trip blanks should also be considered samples. 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 transport the samples to the laboratory within one working day, if possible, of removing each sample from the tank, but must send the samples within eight calendar days of removal from the tank. It should be noted, however, that in accordance with the Safety and Analysis Report for Packaging (SARP), grab sample shipping containers must be vented every four days. If a sample cannot be transported within three days of closing the shipping container, provisions need to be made by Sampling Operations to vent the container in the field. If Sampling Operations vents the container in the field, this shall be noted on the chain of custody form sent to the laboratory. Sampling Operations is responsible for verbally notifying the project coordinator or shift manager at the 222-S Laboratory at least 24 hours in advance of an expected shipment. If the samples are sent to the 325 Analytical Chemistry Laboratory (ACL), Sampling Operations shall notify the project manager at least 72 hours in advance of an expected shipment.

A4.2.3 Sample Custody

The chain-of-custody form is initiated by the sampling team as described in the work package. 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 procedure LO-090-101. Receipt and control of samples in the Pacific Northwest 325 ACL is described in procedure PNL-ALO-051.

Table A-2: AP-107 Chemical, Radiol

Project Name	AP-107 Liquid Grab Sample	
Plan Number	WHC-SD-WM-TP-286, REV. 0	
PROGRAM	**PROGRAM CONTACTS**	
A. Safety Screening	Safety Screening	H. Babad
B. Evaporator	Evaporator	B. H. Von Bargen
	TWRS	R. D. Schreiber
	222-S Laboratory	G. L. Miller
	325 Laboratory	K. L. Silvers

PROGRAM	PRIMARY ANALYSES							
	METHOD	ANAL.	WHC PROCEDURE	PNL PROCEDURE	PREP[2]	FB	TB[3]	HC
A,B	DSC	Energy	LA-514-113	PNL-ALO-508	d[8]			
A	TGA	% H_2O	LA-560-112	PNL-ALO-508	d[8]			
B	Electrode	pH	LA-212-102	PNL-ALO-290	d[8]			
A,B	Visual (surface sample)	Organic Layer	LA-519-151	PNL-ALO-501	d[8]			
B	Visual	Mixing and Compatibjlity Study	LT-519-183	N/A	d[8]			
B	Visual/ Thermometric/ Gravimetric	Boildown Study	LT-519-183	N/A	d[8]			
B	Gravimetric	SpG	LA-510-112	PNL-ALO-501	d[8]			
B	Titration	OH^-	LA-211-102	PNL-ALO-228	d[8]	X		X
B	IC	NO_2^- NO_3^- F^- PO_4^{3-} SO_4^{2-}	LA-533-105	PNL-ALO-212	d[8]	X		X
B	ICP	Al Na	LA-505-151 LA-505-161	PNL-ALO-211	a	X		X
B	Combustion/ Coulometry	TC	LA-344-105	PNL-ALO-380	d[8]	X	X	X
B	Coulometric Autotitration	TIC	LA-622-102	PNL-ALO-381	d[8]	X	X	X
B	Combustion/ Coulometric Autotitration	TOC	LA-344-105	PNL-ALO-380	d[8]	X		X
B	Combustion/ Coulometric Autotitration	TOC (Surface)	LA-344-105	PNL-ALO-380	d[8]			X
B	Kjeldahl or ISE	NH_3	LA-634-102 LA-631-001	PNL-ALO-226[15]	d[8]	X		X
B	GC/MS	Acetone	LA-523-405	PNL-ALO-335	d[8]	X	X	X

ical and Physical Analytical Requirements

COMMENTS	REPORTING LEVELS	
Homogenization Test - Not Required	FORMAT I	Early Notify
Field Blank - Required	FORMAT II	Process Control
Trip Blank - Required	FORMAT III	Safety Screen
Hot Cell Blank - Performed as Necessary	FORMAT IV	Waste Management
	FORMAT V	RCRA Compliance
	FORMAT VI	Special

TANK	#SAMPLES	RISER#
AP-107	17	1 (90° N), 1 (210° N), and 1 (330° N)

QUALITY CONTROL[1,18]						CRITERIA			FOR-MAT
DUP	SPK/ MSD	BLK	CALIB STD	PR[5]	AC[6]	UNITS	NOTIFICATION LIMIT[7]	EXPECTED RANGE[7]	
ea smpl	N/A	N/A	ea AB	±10	90-110	J/g	see 9 below[10]	unknown	I, III, V
ea smpl	N/A	N/A	ea AB	±10	90-110	wt%	< 17	unknown	I, III, IV
1/SE[12]	N/A	N/A	ea AB	±3[11]	N/A	pH	none specified	11.5 to 13.5	IV
N/A	N/A	N/A	N/A	N/A	N/A	N/A	presence	not present	I, III, IV
N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unusual changes in color, temperature, clarity, etc.	no unusual changes	II[19], V
N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unusual changes in color, temperature, clarity, etc.	N/A	II[19], V.
1/SE[12]	N/A	N/A	ea AB	±20[11]	N/A	g/mL	> 1.41	0.79 to 1.19	I, IV
1/SE[12]	N/A	ea PB	ea AB	±20[11]	N/A	µg/mL	≤ 170 or ≥ 170,000	1,460 to 2,180	I, IV
N/A	1/SE[12]	ea PB	ea AB	±20	75-125	µg/mL	≤ 506 or ≥ 253,000 ≤ 341,000 none specified > 9,450 none specified	2,100 to 3,140 7,610 to 11,400 1,850 to 2,770 150 to 224 unknown	I, IV I. IV IV I, IV IV
N/A	1/SE[12]	ea PB	ea AB	±20	75-125	µg/mL	none specified > 184,000	70.8 to 106 7,710 to 11,600	IV I, IV
N/A	1/SE[12]	ea PB	ea AB	±20	75-125	µg/mL	TC - TIC > 87	unknown	I, V
N/A	1/SE[12]	ea PB	ea AB	±20	75-125	µg/mL	TC - TIC > 87	386 to 578	I, V
N/A	1/SE[12]	ea PB	ea AB	±20	75-125	µg/mL	none specified	410 to 616	V
N/A	1/SE[12]	ea PB	ea AB	±20	75-125	µg/mL	> 2,600	410 to 616	I, IV
N/A	1/SE[12]	ea PB	ea AB	±20	75-125	µg/mL	> 5,000	1,000 to 4,000	I, V
N/A	1/SE[12]	ea PB	ea AB	±25	40-110	µg/mL	> 87[13]	unknown	I, V

Table A-2: AP-107 Chemical, Radiolo

PROGRAM	PRIMARY ANALYSES								
	METHOD	ANAL.	WHC PROCEDURE	PNL PROCEDURE	PREP[2]	FB	TB[3]	HCE
B	GC/MS	1-Butanol	LA-523-405	PNL-ALO-345	d[8]	X	X	X
B	GC/MS	2-Butoxyethanol	LA-523-406	PNL-ALO-345	d[8]	X	X	X
B	GC/MS	2-Butanone	LA-523-405	PNL-ALO-335	d[8]	X	X	X
B	GC/MS	2-Hexanone	LA-523-405	PNL-ALO-335	d[8]	X	X	X
B	GC/MS	Methyl Isobutyl Ketone	LA-523-405	PNL-ALO-335	d[8]	X	X	X
B	GC/MS	2-Pentanone	LA-523-405	PNL-ALO-335	d[8]	X	X	X
B	GC/MS	Tetrahydrofuran	LA-523-405	PNL-ALO-335	d[8]	X	X	X
B	GC/MS	Tributyl Phosphate	LA-523-406	PNL-ALO-345	d[8]	X	X	X
B	Ion Exchange/ Solvent Extraction/AEA	$^{239/240}Pu$	LA-503-156	PNL-ALO-466 PNL-ALO-496 PNL-ALO-469	a	X		X
B	Laser Induced Fluorimetry	U-gross	LA-925-009	PNL-ALO-445	d[8]	X		X
B	Alpha	Total Alpha	LA-508-101	PNL-ALO-420 PNL-ALO-421	a	X		X
B	Beta	Total Beta	LA-508-101	PNL-ALO-430 PNL-ALO-431	a	X		X
B	Distillation/ Liquid Scintillation	^{3}H	LA-218-114	PNL-ALO-441 PNL-ALO-474	d[8]	X		X
B	Persulfate Oxidation/ Liquid Scintillation	^{14}C	LA-348-104	PNL-ALO-474 PNL-ALO-482	d[8]	X		X
B	Anion-Cation Exchange/ Dist./Liquid Scintillation	^{79}Se	LA-365-132	PNL-ALO-440 PNL-ALO-474	a	X		X
B	Sep. & β counting	^{90}Sr	LA-220-101	PNL-ALO-431 PNL-ALO-476	a	X		X
B	HPGE/MCA	GEA ^{60}Co ^{137}Cs	LA-548-121	PNL-ALO-450	a	X		X
B	HPGE/MCA	GEA ^{106}Ru ^{134}Cs ^{144}Ce ^{154}Eu ^{155}Eu ^{94}Nb ^{226}Ra	LA-548-121	PNL-ALO-450	a	X		X
B	Solvent Extraction/Liquid Scintillation	^{99}Tc	LA-438-101	PNL-ALO-432 PNL-ALO-431	a	X		X

cal and Physical Analytical Requirements

QUALITY CONTROL[1,18]						CRITERIA			FOR-MAT
DUP	SPK/ MSD	BLK	CALIB STD	PR[5]	AC[6]	UNITS	NOTIFICATION LIMIT[7]	EXPECTED RANGE[7]	
N/A	1/SE[12]	ea PB	ea AB	±25	30-110	µg/mL	> 226[13]	unknown	I, V
N/A	1/SE[12]	ea PB	ea AB	±25	30-110	µg/mL	> 95.2[13]	unknown	I, V
N/A	1/SE[12]	ea PB	ea AB	±25	40-110	µg/mL	> 58[13]	unknown	I, V
N/A	1/SE[12]	ea PB	ea AB	±25	40-110	µg/mL	none specified	unknown	V
N/A	1/SE[12]	ea PB	ea AB	±25	40-110	µg/mL	none specified	unknown	V
N/A	1/SE[12]	ea PB	ea AB	±25	40-110	µg/mL	none specified	unknown	V
N/A	1/SE[12]	ea PB	ea AB	±25	30-110	µg/mL	none specified	unknown	V
N/A	1/SE[12]	ea PB	ea AB	±25	40-110	µg/mL	> 10,150 [13]	unknown	I, V
1/SE[12,14]	N/A	ea PB	ea AB	±25[11]	70-130	µCi/mL	[239/240]Pu + 1.077E-10 * (U-gross) > 0.0026 g/L	2.28E-05 to 3.42E-05	I, IV
N/A	1/SE[12]	ea PB	ea AB	±20	70-130	µg/mL	[239/240]Pu + 1.077E-10 * (U-gross) > 0.0026 g/L	unknown	I, IV
N/A	1/SE[12]	ea PB	ea AB	±25	70-130	µCi/mL	> 0.10*SpG	unknown	I, IV
N/A	1/SE[12]	ea PB	ea AB	±25	70-130	µCi/mL	none specified	unknown	IV
N/A	1/SE[12]	ea PB	ea AB	±25	70-130	µCi/mL	none specified	unknown	IV
N/A	1/SE[12]	ea PB	ea AB	±25	70-130	µCi/mL	> 0.26	unknown	I, IV
1/SE[12,14]	N/A	ea PB	N/A	±25[11]	N/A	µCi/mL	> 0.078	unknown	I, IV
N/A	1/SE[12]	ea PB	ea AB	±20	75-125	µCi/mL	> 220	5.23E-03 to 7.85E-03	I, IV
1/SE[12]	N/A	ea PB	ea AB	±25[11]	N/A	µCi/mL	> 1.2 > 1,500	unknown 4.17 to 6.25	I, IV I, IV
1/SE[12]	N/A	ea PB	N/A	±25[11]	N/A	µCi/mL	> 53 > 15 none specified > 5 > 7 > 0.098 > 0.033	unknown 1.14 to 1.70 unknown unknown unknown unknown unknown	I, IV I, IV IV I, IV I, IV I, IV I, IV
1/SE[12]	N/A	ea PB	ea AB	±20[11]	75-125	µCi/mL	> 2	unknown	I, IV

Table A-2: AP-107 Chemical, Radio

PROGRAM	PRIMARY ANALYSES							
	METHOD	ANAL.	WHC PROCEDURE	PNL PROCEDURE	PREP[2]	FB	TB[3]	H
B	Extraction/ Filtration/GEA	^{129}I	LA-378-103	PNL-ALO-454 PNL-ALO-450	d[8]	X		
B	Extraction/ Alpha Count	^{237}Np	LA-933-141	PNL-ALO-422 PNL-ALO-425	d[8]	X		
B	Ion Exchange/ Solvent Extraction/AEA	^{238}Pu	LA-503-156	PNL-ALO-422 PNL-ALO-423	a	X		
B	Ion Exchange/ Solvent Extraction/AEA	^{241}Am	LA-953-103	PNL-ALO-466 PNL-ALO-467	a	X		
B	Ion Exchange/ Solvent Extraction/AEA	^{244}Cm	LA-953-103	PNL-ALO-496 PNL-ALO-469	a	X		
PROGRAM	SECONDARY ANALYSES							
	METHOD	ANAL.	WHC PROCEDURE	PNL PROCEDURE	PREP[2]	FB	TB[3]	H
A	RSST[16]	Energy	see 16 below	N/A	d[3]			
A	Distillation[17]	CN	LA-695-102	PNL-ALO-285	d[8]			
A	Hot Persulfate[17]	TOC	LA-342-100	PNL-ALO-381	d[8]			

[1]FB-field blank, TB-trip blank, HCB-hot cell blank, DUP-duplicate, SPK/MSD-spike and matrix spike duplicate, PR-p AC-accuracy, ea-each, smpl-sample, AB-anaiytical batch, PB-preparation batch, N/A-not applicable, mtrx-matrix

[2]d-direct, a-acid digestion

[3]Trip blank analyses to be performed only when detected in the field blank.

[4]Analyses on the hot cell blank shall be performed only when applicable.

[5]The unit for precision is RPD.

[6]The unit for accuracy is percent recovery.

[7]Units for notification limits and expected range are those listed in the "units" column unless otherwise indicated.

[8]Direct liquid samples may be diluted in acid or water to adjust to proper sample size and/or pH.

[9]Absolute value of ratio of exotherm to endotherm > 1 or exotherm < 335° F (168 °C).

[10]Action limit is applicable up to 500 °C. Notification limit is for the Evaporator DQO.

[11]Precision is evaluated on the deviation between a sample (unspiked) and sample replicate.

[12]SE indicates the total number of samples for that analysis on the tank. 1/SE means that only one sample from the total number of samples must be spiked or run as duplicates.

ical and Physical Analytical Requirements

QUALITY CONTROL[1,18]						CRITERIA			FOR-MAT
DUP	SPK/ MSD	BLK	CALIB STD	PR[5]	AC[6]	UNITS	NOTIFICATION LIMIT[7]	EXPECTED RANGE[7]	
N/A	1/SE[12,14]	ea PB	ea AB	±20	75-125	µCi/mL	> 0.0026	unknown	I, IV
N/A	1/SE[12]	ea PB	ea AB	±20	75-125	µCi/mL	none specified	unknown	IV
1/SE[12,14]	N/A	ea PB	N/A	±25[11]	N/A	µCi/mL	> 0.0013	unknown	I, IV
1/SE[12,14]	N/A	ea PB	ea AB	±20[11]	N/A	µCi/mL	> 1	3.35E-04 to 5.03E-04	I, IV
1/SE[12,14]	N/A	ea PB	N/A	±20[11]	N/A	µCi/mL	> 0.013	unknown	I, IV

QUALITY CONTROL[1]						CRITERIA			FOR-MAT
DUP	SPK/ MSD	BLK	CALIB STD	PR[5]	AC[6]	UNITS	NOTIFICATION LIMIT[7]	EXPECTED RANGE[7]	
ea smpl	N/A	N/A	ea AB	±10	90-110	J/g	> 481	unknown	I, III, IV
ea smpl	1/SE[12]	ea PB	ea AB	±10	90-110	µg/mL	> 58,000	unknown	I, III, IV
N/A	1/SE[12]	ea PB	ea AB	±10	90-110	µg/mL	none specified	410 to 616	III, IV

sion,

[13]For individual organic species limits in the candidate feed tank, the sum of the fractions rule applies.

[14]Tracer or carrier may be used in place of a spike and results corrected for recovery.

[15]PNL does not analyze ammonia by Kjeldahl's method. If analysis performed at PNL, ammonia shall be analyzed using procedure PNL-ALO-226.

[16]RSST performed only if DSC exotherm exceeds 481 J/g (dry wt basis). The RSST method, yet to be proceduralized, may be found in WHC-SD-WM-TP-104.

[17]This analysis required if DSC exotherm exceeds 481 J/g (dry wt basis).

[18]If a QC standard does not meet the QC criteria, no rerun samples can be analyzed until the QC problem is resolved.

[19]The mixing and compaibility study as well as the boildown study are to be completed only after all tanks designated for a campaign are sampled. When the studies are complete, an Internal Memo will be issued from the performing laboratory to Treatment Systems Plant Engineering describing the results.

A5.0 ORGANIZATION

The organization and responsibility of key personnel involved in this tank AP-107 characterization project are listed in Table A-3.

Table A-3: Tank AP-107 Project Key Personnel List

Individual	Organization	Responsibility
J. G. Kristofzski	222-S Analytical Operations	Program Support Manager of Analytical Operations
K. L. Silvers	325 Analytical Chemistry Laboratory	Project Manager, Tank Waste Characterization
R. D. Schreiber	TWRS Characterization Support	Tank AP-107 Tank Characterization Plan Cognizant Engineer
B. H. Von Bargen	Treatment Systems Plant Engineering	Cognizant Engineer for Evaporator Process Engineering
H. Babad	Characterization Program	Safety Screening Point of Contact
J. L. Deichman	Analytical Services	Manager of Analytical Services Program Management and Integration
East Tank Farm Operations Shift Manager	Tank Farm Operations	200 East Tank Farm Point of Contact if Action Limit is Exceeded (373-2689)

A6.0 EXCEPTIONS AND PRIORITIES

A6.1 EXCEPTIONS FOR TANK AP-107

As a result of the writing of the 242-A Evaporator Quality Assurance Project Plan (QAPjP) (Tucker 1994) and the Tank Characterization Plan (TCP) for tank AP-106, the following additions and/or modifications associated with candidate feed tank sampling will be included in the next revision to WHC-SD-WM-DQO-014, *242-A Evaporator/LERF Data Quality Objectives* (Von Bargen 1994b):

- pH analysis shall be included for candidate feed tanks (no specific action limit is applied, used for indication).
- An action level for SpG > 1.41 will be added

- Two field blanks shall be taken for organic analyses (one 100 mL bottle for semi-volatile organics and one 100 mL bottle for volatile organics) as well as one field blank for inorganic/radiochemical analyses (200 mL total volume) per sampling event (a sampling event in this case is defined as per tank).

- Two trip blanks shall be taken per sampling event (one for semi-volatile organics and one for volatile organics) and will only be analyzed for those constituents that are detected in the field blanks.

- Total Carbon (TC) shall be spiked with a precision of "< 20" and accuracy of "75-125".

- Sodium (Na) shall have a precision of "< 20" and accuracy of "75-125".

- In the event that insufficient sample is available for all analyses, analysis prioritization shall be based on holding time (i.e. analyses on the shortest allowable holding time analytes will be performed first).

- Sampling Operations shall use "certified" clean bottles.

- If a rerun QC standard does not meet QC criteria, no samples can be analyzed until the QC problem is resolved.

- Define relative percent difference (RPD) as an absolute value.

- Four 100 mL bottles shall be collected from each sample location; one for volatile organic analysis, one for semi-volatile organic analysis, one for inorganic/radiochemical analyses, and one for the boildown and mixing study.

- Septum lids will be used on all samples taken for volatile organic analyses. This includes trip blanks and field blanks.

- Samples taken for the boildown and mixing study shall be archived until samples have been collected from all tanks designated for this evaporator campaign. At this time, engineering will provide the parameters necessary to define the requirements of the boildown and mixing study.

The 242-A Evaporator DQO lists ^{241}Pu as an analyte of concern; however, no procedure has been developed, therefore the concentration for ^{241}Pu will be calculated by the Evaporator program.

The 242-A Evaporator DQO lists $^{239/240}Pu$, ^{99}Tc, and ^{241}Am as analytes to be analyzed for precision and accuracy by matrix spike/matrix spike duplicate analysis; however, the 242-A Evaporator Quality Assurance Project Plan (QAPjP) (Tucker 1994) lists the precision and accuracy of these analytes to be obtained by duplicate analyses.

No calibration standards will be performed for ^{238}Pu or ^{244}Cm since calibration for these analytes will be interpolated from calibration standards on $^{239/240}Pu$ and ^{241}Am respectively. No calibration standards are available for ^{79}Se, ^{94}Nb, ^{106}Ru, ^{134}Cs, ^{144}Ce, ^{154}Eu, ^{155}Eu, or ^{226}Ra; therefore, no calibration standard will be performed for these analytes.

The precision and accuracy of the analytes given in Table A-2 are those given by the DQO with the more stringent requirements.

A6.2 PRIORITIES FOR TANK AP-107

In order to complete the entire compatibility, safety, and compliance assessments for tank AP-107, results from all of the analyses in Table A-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 an order based on holding times. Those analyses with the shortest holding times shall be analyzed first.

A6.3 CLARIFICATIONS AND ASSUMPTIONS

The Safety Screening DQO effort does not adequately address the analyses to be performed on liquid samples. To adequately characterize the tank, all safety screening analyses required by the Safety Screening DQO shall be performed on the drainable liquid with the exception of total alpha. Results shall be reported by volume (mL).

A7.0 DELIVERABLES

All analyses of tank AP-107 waste material will be reported as Formats I, II, III, IV, or V as shown in Table A-2. The data shall be reported in the units given by Table A-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).

A7.1 FORMAT I REPORTING

Table A-2 contains the notification limits for each analyte. Any results that exceed the notification limits defined in the DQO processes, as well as any observed immiscible layers shall be reported immediately by calling the East Tank Farm Operations Shift Manager at 373-2689 and the Characterization Program Office (Schreiber 1994b). This verbal notification must be followed within 1 working day by written notification to the Evaporator Program, Characterization Program Office, Waste Tanks Process Engineering, Analytical Services, and Characterization Support (Schreiber 1994c), documenting the observations. Additional analyses for verification purposes may be contracted between the performing laboratory and the contacts above either by a revision to this document, letter of instruction, or by a memorandum of understanding.

A7.2 FORMAT II REPORTING

The data found from these analyses will help determine whether waste from tank AP-107 may be used in the Evaporator operations without creating safety, compliance, or operational problems. The mixing and compatibility study as well as the boildown study are to be completed after all of the tanks designated for 242-A Evaporator Campaign 95-1 are sampled. When the studies are complete, an Internal Memo is to be issued to the Evaporator Program describing the results.

A7.3 FORMAT III REPORTING

A Format III report, reporting the results of the primary safety screen analyses, shall be issued to the Characterization Program Office, Characterization Support, Waste Tanks Process Engineering, and the Los Alamos Technical Associates (LATA), Tank Characterization Database (TCD) and Tank Characterization Resource Center (TCRC) representatives (Schreiber 1994c) within 45 days of receipt of the last sample at the laboratory loading dock. The DSC and TGA scans have been requested due to the interpretive nature of the analysis. If analyses for the safety screening secondary analytes are required, these results shall be provided within 90 days of receipt of the last sample at the laboratory loading dock. No calibration data are requested for these reports. Detailed information regarding the contents of this reporting format are given in (Schreiber 1994a).

A7.4 FORMAT IV REPORTING

Many of the analytical results requested for the characterization project of tank AP-107 shall be compiled into a Format IV type data package. These analyses are listed in Table A-2. The data package should be provided to Analytical Services and the Evaporator Program, and the TCRC representative within 136 days of the sampling event, but must transmit the data package within 176 days of the sampling event in accordance with the Tri-Party Agreement. Detailed information regarding the contents of this reporting format are given in (Schreiber 1994a).

In addition to this data package, an electronic version of the analytical results shall be provided to the LATA, TCRC and TCD representatives. The data must be available to the Washington State Department of Ecology within 176 days of the sampling event, so this electronic copy must be sent at the time of data package delivery or within 169 days of the sampling event, whichever is earlier, to allow time for data entry. The electronic version shall be in the standard electronic format specified in (Bobrowski 1994a).

A7.5 FORMAT V REPORTING

The analyses for tank AP-107 with a Format V reporting format (Tucker 1994) shall be compiled into a Format V type data package with Level B validation by Analytical Services. This data package should be delivered to Analytical Services within 100 days of the sampling event, but must be delivered to Analytical Services within 140 days of the sampling event. In addition, an electronic version of the analytical results shall be provided to the LATA, TCD and TCRC representatives at the time of delivery of the data package to Analytical Services. The electronic version shall be in the standard electronic format specified in (Bobrowski 1994a).

After validation the package will be issued as a supporting document. The narrative, summary tables, associated QC, and validation results should be transmitted to Ecology, EPA, DOE-RL, and the Evaporator Program within 136 days beginning with the final date of the sampling activities, but must transmit the results within 176 days beginning with the final date of the sampling activities. In addition, an electronic version of the validation results (qualifiers) shall be provided to the TCRC and TCD, at the time of package delivery or within 169 days beginning with the final date of the sampling activities, whichever is earlier. The electronic version shall be in the electronic format specified in (Bobrowski 1994b).

A8.0 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 Tank Characterization Plan. All changes shall also be clearly documented, with justification, in the final data report.

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

A9.0 REFERENCES

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