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Tank 241-AP-106 Tank Characterization Plan (WHC-SD-WM-TP-277)		ECN No. 617818

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Page 1 of 2

1. ECN № 617818

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.		4. Date
Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	R. D. SCHREIBER, 71520, R2-12, 373-5589		11-16-94
	5. Project Title/No./Work Order No. TANK 241-AP-106 TANK CHARACTERIZATION PLAN	6. Bldg./Sys./Fac. No. 241-AP	7. Impact Level N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-TP-277, REV. 0	9. Related ECN No(s). N/A	10. Related PO No. N/A

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

Deleted some analyses requested and corrected Table 2.

13a. Justification (mark one)		Criteria Change	[X]	Design Improvement	[]	Environmental	[]
As-Found	[]	Facilitate Const.	[]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

The Program requested removal of some analytes since historical information was available and would be used in the decision making process. Corrections to Table 2 were done per comments given after release of revision 0.

14. Distribution (include name, MSIN, and no. of copies)

See attached Distribution Sheet

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STA 4

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1. ECN (use no. from pg. 1) 617818

15. Design Verification Required
[] Yes
[X] No

16. Cost Impact

	ENGINEERING		CONSTRUCTION	
Additional	[]	$	[]	$
Savings	[]	$	[]	$

17. Schedule Impact (days)
Improvement []
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18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]		[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
N/A	N/A	N/A

20. Approvals

	Signature	Date
OPERATIONS AND ENGINEERING		
Cog Engineer B. D. VALENZUELA	B D Valenzuela	11/17/94
Cog. Mgr. C. S. HALLER	C S Haller	11/16/94
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Safety		
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Projects/Programs		
Tank Waste Remediation System		
Facilities Operations		
Restoration & Remediation		
Operations & Support Services		
Other J. G. KRISTOFZSKI	R D Schreiber per telecon	11/17/94
B. H. VON BARGEN	Paul [illegible] for BHV	11/17/94

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RELEASE AUTHORIZATION

Document Number:	WHC-SD-WM-TP-277, REV 1
Document Title:	TANK 241-AP-106 TANK CHARACTERIZATION PLAN
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This document was reviewed following the procedures described in WHC-CM-3-4 and is:

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November 17, 1994

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SUPPORTING DOCUMENT

1. Total Pages ~~32~~ 30

2. Title	3. Number	4. Rev No.
TANK 241-AP-106 TANK CHARACTERIZATION PLAN	WHC-SD-WM-TP-277	1

5. Key Words	6. Author
CHARACTERIZATION, EVAPORATOR FEED, SAFETY SCREENING, DOUBLE-SHELL TANK, SAMPLING, ANALYSIS, TANK CHARACTERIZATION PLAN	Name: B. D. VALENZUELA
APPROVED FOR PUBLIC RELEASE KMB 11/17/94	B.D. Valenzuela 11/17/94 Signature
	Organization/Charge Code 71520/N4168

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-106.

8. RELEASE STAMP

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A-6400-073 (08/94) WEF124

RECORD OF REVISION		(1) Document Number WHC-SD-WM-TP-277		Page 1

(2) Title
TANK 241-AP-106 TANK CHARACTERIZATION PLAN

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		(5) Cog. Engr.	(6) Cog. Mgr. Date
0	(7) WHC-SD-WM-TP-277, REV 0, EDT 609592, November 8, 1994		
1 RS	Complete revision, ECN 617818	B.D. Valenzuela 11/17/94	[signature] 94/11/16

WHC-SD-WM-TP-277
Revision 1

Tank 241-AP-106
Tank Characterization Plan

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

CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

ACL	Analytical Chemistry Laboratory
AP-106	tank 241-AP-106
DOE	Department of Energy
DQO	data quality objective
DSC	differential scanning calorimetry
DST	double-shell tank
IC	ion chromatography
ICP	inductively coupled plasma - atomic emission spectroscopy
NCPLX	non-complexed waste
PNL	Battelle Pacific Northwest Laboratory
QC	quality control
TGA	thermogravimetric analysis
TIC	total inorganic carbon
TOC	total organic carbon
TWRS	Tank Waste Remediation System
WHC	Westinghouse Hanford Company

1.0 TANK AND WASTE INFORMATION

This section summarizes some of the available information for tank AP-106. 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).

1.1 CONFIGURATION OF TANK AP-106

Double-shell tank AP-106 was constructed and went into service in 1986 as a Dilute Receiver Tank. Tank AP-106 has a design capacity for storing 4.39M L (1.16M gal) of waste; however, safety considerations require a maximum operating capacity of 4.32M L (1.14M gal). Table 1 summarizes the fill history from when AP-106 was first placed on active status to the present time (De Lorenzo 1994).

1.2 AGE AND PROCESS HISTORY OF TANK AP-106

Tank AP-106 entered service with the introduction of 72,000 L (19,000 gal) of flush water in August 1986. In July 1988, the tank received 1.04M L (275,000 gal) of dilute non-complex waste from the 242-A Evaporator by way of tank 241-AW-106. Another 1.093M L (289,000 gal) were received from the same source in August. Only one additional transaction occurred during the remainder of 1988 as 11,300 L (3,000 gal) of waste were sent from tank AP-106 to the Hanford Grout Treatment Facility in September (De Lorenzo 1994).

The entire contents of the tank, 2.195M L (580,000 gal) were sent to the 242-A Evaporator in February 1989; 1.855M L (490,000 gal) were returned for a volume reduction of approximately 20%. Tank AP-106 ended the first quarter of 1989 43% full (De Lorenzo 1994).

In July 1989, Tank AP-106 received 314,000 L (83,000 gal) of dilute non-complexed supernate from Tank 241-AW-106. Also, 1.344M L (355,000 gal) of dilute non-complexed supernate were transferred from tank 241-AP-106 to tank 241-AP-105. In late July, the tank received its largest transfer; 2.684M L (709,000 gal) of supernate were transferred from tank 241-AY-102 raising the total waste volume in tank 241-AP-106 to 3.508M L (927,000 gal). At the time of transfer, Tank 241-AY-102 contained mostly B-Plant Vessel Clean-Out and B-Plant Strontium Processing wastes. Then in October, tank AP-106 received another 810,000 L (214,000 gal) from tank 241-AY-102. The waste sources of tank 241-AY-102 had changed considerably since the earlier transfer with the addition of waste from tank 241-SY-102 (De Lorenzo 1994).

With the October transfer, tank AP-106 reached its peak waste volume of 4.318M L (1,141,000 gal), slightly beyond it's maximum operating capacity but still below the original design capacity. Small unknown losses in waste volume since then have lowered the waste volume to 99% of capacity. Unknown losses are most likely caused by evaporation of water. 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 current volume for the tank was reported at 4.266M L (1,127,000 gal) following a loss of 45,400 L (12,000 gal) over four years. This gradual and constant decline in waste level represents a loss of approximately nine gallons per day, an amount likely attributable to evaporation from the waste surface (De Lorenzo 1994).

Table 1: Fill History of Tank AP-106[a]

Qtr:Year	Waste Type and Description	Total Volume (kgal)
8:1986	Received Flush Water	19
7:1988	Received Dilute NCPLX Waste	294
8:1988	Received Dilute NCPLX Waste	583
9:1988	Waste Transfer to Grout Facility	580
2:1989	Waste Sent to 242-A	0
2:1989	Waste Returned After Treatment	490
7:1989	Received NCPLX from AW-106	573
7:1989	Transfer to AP-105	218
7:1989	Received supernate from AY-102	927
10:1989	Received waste from AY-102	1,141
1994	Current Volume	1,127

[a] Koreski 1994

1.3 EXPECTED TANK CONTENTS

The waste in tank AP-106 is liquid. The total volume in the tank currently is 4.266M L (1,127,000 gal). The most recent sampling event of tank AP-106 occurred on March 16, 1993. Supernate samples were taken from the dilute waste tank AP-106 to evaluate whether the waste could be used for blending with concentrated grout waste feeds. The samples were analyzed for inorganic, radioactive, and organic constituents. A summary of the analytical data (inorganic, radiological, and bulk organic constituents) is provided in Table 2.

Table 2: Historical Waste Constituents for Tank AP-106[a]

Analyte	Concentration	Analyte	Concentration
Al (μg/mL)	2.11E+02	% Water	1.00E+02
Sb (μg/mL)	< 5.2	SpG (g/mL)	9.96E-01
Ba (μg/mL)	1.61E-01	TIC (μg/mL)	4.86E+02

Analyte	Concentration	Analyte	Concentration
Be (μg/mL)	< 3.83	TOC (μg/mL)	4.97E+02
Cd (μg/mL)	< 5.92	$^{239/240}Pu$ (μCi/mL)	< 1.36E-04
Cr (μg/mL)	4.74	^{238}Pu (μCi/mL)	< 2.32E-04
Fe (μg/mL)	6.89	^{14}C (μCi/mL)	7.74E-06
Pb (μg/mL)	< 1.55	^{99}Tc (μCi/mL)	1.34E-03
Ni (μg/mL)	< 4.08E-01	^{237}Np (μCi/mL)	< 4.18E-04
K (μg/mL)	8.18E+02	^{241}Am (μCi/mL)	9.54E-08
Ag (μg/mL)	< 6.38	$^{243/244}Cm$ (μCi/mL)	< 6.37E-07
Na (μg/mL)	5.53E+03	Se (μCi/mL)	< 2.5E-01
P (μg/mL)	8.52E+01	^{90}Sr (μCi/mL)	6.89E-04
^{137}Cs (μCi/mL)	4.57E+00	^{129}I (μCi/mL)	< 9.07E-05
^{134}Cs (μCi/mL)	1.26E+01	OH^- (μg/mL)	1.43E+03
^{60}Co (μCi/mL)	< 1.92E-03	CN^- (μg/mL)	5.03E-01
$^{144}Ce/Pr$ (μCi/mL)	< 4.61E-02	U (μg/mL)	3.71E+00
^{125}Sb (μCi/mL)	< 1.88E-02	As (μg/mL)	< 2.50E-01
$^{106}Ru/Rh$ (μCi/mL)	< 6.36E-02	Hg (μg/mL)	< 2.50E-03
^{94}Nb (μCi/mL)	< 1.10E-03	NH_3/NH_4^+ (μg/mL)	< 1.60E+02
F^- (μg/mL)	1.73E+02	^{3}H (μCi/mL)	4.90E-03
Cl^- (μg/mL)	5.63E+01	EDTA (μg/mL)	< 2.00E+01
NO_2^- (μg/mL)	1.16E+03	HEDTA (μg/mL)	< 2.00E+01
NO_3^- (μg/mL)	4.23E+03	Citrate (μg/mL)	< 4.40E+01
PO_4^{3-} (μg/mL)	2.11E+02	Oxalate (μg/mL)	7.57E+01
SO_4^{2-} (μg/mL)	1.40E+02	Glycolate (μg/mL)	6.43E+01

[a] De Lorenzo 1994

2.0 REFERENCES

Anderson, J. D., 1992, *A History of the 200 Area Tank Farms*, WHC-MR-0132, Westinghouse Hanford Company, Richland, Washington.

De Lorenzo, D. S., A. T. DiCenso, L. C. Amato, R. H. Stephens, D. B. Hiller, 1994, *Tank Characterization Report for Double Shell Tank 241-AP-106*, WHC-SD-WM-ER-361, Rev. 0, Los Alamos Technical Associates, Kennewick, Washington.

Hanlon, B. M., 1994, *Tank Farm Surveillance and Waste Status Summary Report for July 1994*, WHC-EP-0182-75, Westinghouse Hanford Company, Richland, Washington.

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

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ACL	Analytical Chemistry Laboratory
AP-106	tank 241-AP-106
DOE	Department of Energy
DQO	data quality objective
DSC	differential scanning calorimetry
DST	double-shell tank
IC	ion chromatography
ICP	inductively coupled plasma - atomic emission spectroscopy
NCPLX	non-complexed waste
PNL	Battelle Pacific Northwest Laboratory
QC	quality control
TGA	thermogravimetric analysis
TIC	total inorganic carbon
TOC	total organic carbon
TWRS	Tank Waste Remediation System
WHC	Westinghouse Hanford Company

1.0 SPECIFIC TANK OBJECTIVES

1.1 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 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-106 (AP-106) is a candidate feed tank which is expected to be processed at the 242-A Evaporator. 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 Tank Characterization Plan shall help determine whether tank AP-106 may be used as a candidate feed tank for the Evaporator operations without creating safety, compliance, or operational problems.

1.1.1 Tank AP-106 Characterization Objectives

The characterization efforts of this Tank Characterization 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-106. These analyses are discussed in Section 4.0. Only decisions based on sampling and analysis of liquid waste from tank AP-106 will be addressed within this document; operational issues such as plugged pipelines and equipment problems are not within the scope of the Tank Characterization Plan. Once the characterization of tank AP-106 has been performed, the waste compatibility and safety assessment shall be conducted. This effort is discussed in *242-A Evaporator/Liquid Effluent Retention Facility Data Quality Objectives* (Von Bargen 1994).

1.1.2 242-A Evaporator and Safety Screening Data Quality Objectives

As described below, the sampling and analytical needs associated with candidate feed tanks, and the safety screening of the tank have been identified through the Data Quality Objective (DQO) process. Additional data needs associated with tank AP-106 may be identified in subsequent DQO efforts, which may then be incorporated into future revisions of this Tank Characterization Plan.

Von Bargen (1994) 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.

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

1.1.2.1 Data Quality Objectives Integration

Both the 242-A Evaporator and the safety screening DQOs require samples be taken from a minimum of two risers separated radially to the 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 risers will be used.

The Safety Screening DQO (Babad and Redus 1994) 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-106 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.

2.0 SAMPLING INFORMATION

Tank AP-106 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 tank AP-106, consisting of one 100 mL bottle. Samples from three subsurface locations will be taken as well. At each subsurface sampling location, four 100 mL bottles will be drawn: one for boildown and mixing studies, two for organics (one for SVOA and one for VOA), and one for inorganic and radionuclide analyses. Of the thirteen total surface and subsurface 100 mL bottles, four will be taken from each of two separate depths from Riser 1 located northeast of AP-106 central pump pit (30 degrees from North direction), and four will be taken from Riser 1 located southeast of AP-106 central pump pit (150 degrees from North direction); the tank waste surface sample will be taken from Riser 1 (150 degrees from North direction). The sample bottles for organic (sVOA), inorganic/radiochemical analyses, and mixing/boildown studies must be a 100 mL, precleaned, amber colored bottle with a certification of EPA level 1 procedure A sealed with a Teflon[1] cap. Sample bottles used for organic (VOA) analyses must be 100 mL, precleaned, amber colored bottles with a certification of EPA level 1 procedure A, sealed with a septum cap (Von Bargen 1994a). For detailed information regarding the tank AP-106 grab sampling activities refer to work package ES-94-1149. 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 four 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 two 100 mL bottles for inorganic/radiochemical analyses. Two trip blanks (100 mLs 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 (Von Bargen 1994a).

Records indicate tank AP-106 contains 4.266M L (1,127,000 gal) of waste, all of which is supernate (Hanlon 1994). The volume corresponds to approximately 1040.9 cm (409.8 in) of waste. Tank AP-106 contains dilute non-complexed waste and is considered sound with respect to tank integrity.

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

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

Table 1: Tank AP-106 Grab Sampling Depths

SAMPLE NUMBER	ANALYSES TO BE PERFORMED ON WASTE	WASTE TYPE	SAMPLE LOCATION*	SAMPLE DEPTH**
106-AP-1a	Organic/sVOA	Supernate	Riser 1 (30°)	343 inches
106-AP-1b	Organic/VOA	Supernate	Riser 1 (30°)	343 inches
106-AP-1c	Inorg/Rad	Supernate	Riser 1 (30°)	343 inches
106-AP-1d	Mixing/Boildown	Supernate	Riser 1 (30°)	343 inches
106-AP-2a	Organic/sVOA	Supernate	Riser 1 (30°)	547 inches
106-AP-2b	Organic/VOA	Supernate	Riser 1 (30°)	547 inches
106-AP-2c	Inorg/Rad	Supernate	Riser 1 (30°)	547 inches
106-AP-2d	Mixing/Boildown	Supernate	Riser 1 (30°)	547 inches
106-AP-3a	Organic/sVOA	Supernate	Riser 1 (150°)	590 inches
106-AP-3b	Organic/VOA	Supernate	Riser 1 (150°)	590 inches
106-AP-3c	Inorg/Rad	Supernate	Riser 1 (150°)	590 inches
106-AP-3d	Mixing/Boildown	Supernate	Riser 1 (150°)	590 inches
106-AP-4 (surface sample)	TOC	Supernate	Riser 1 (150°)	238 inches
106-AP-IB	Inorg/Rad	Field Blank	--	--
106-AP-IB	Inorg/Rad	Field Blank	--	--
106-AP-OB1	Organic/sVOA	Field Blank	--	--
106-AP-OB2	Organic/VOA	Field Blank	--	--
106-AP-TB1	Organic/sVOA	Trip Blank	--	--
106-AP-TB2	Organic/VOA	Trip Blank	--	--

* Riser 1 is located northeast of AP-106 central pump pit (30 degrees from North direction). Riser 1 is located southeast of AP-106 central pump pit (150 degrees from North direction).

** Sample depth is defined as the length measured from the bottle top on the sample bottle to the riser flange top.

3.0 LABORATORY SAMPLE RECEIPT AND ANALYSIS INSTRUCTIONS

A flowchart showing the general analysis scheme for tank AP-106 is presented in Figure 1. Each step in the flowchart shall 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 2 and are detailed in Section 7.0 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. 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 exist for grab samples with respect to transportation.

The laboratory will receive four 100 mL bottles corresponding to each of the sampling depths; one for boildown and mixing study, two bottles for organics (one for VOA, one for sVOA), and one for inorganic/radionuclide analysis. The sample remaining in the bottles for organic analyses may be used for inorganic and radionuclide analyses when organic analyses are completed. 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 tank AP-106 grab samples:

- Step 1 - Receive liquid grab samples. The discussion of sample receipt is discussed in Section 4.2.3, "Sample Custody" of this document.

- Step 2 - Is the sample a tank waste surface sample?
  Yes: Go to Step 3
  No : Go to Step 6

- Step 3 - Perform visual observations. Closely inspect the liquid sample for the presence and approximate volume of any potential organic layers. If no potential organic layers exist go to Step 5. However, if potential organic layers exist go to Step 4.

- Step 4 - Any potential organic layer shall be reported immediately by Format I reporting. Also report findings in Format V reporting.

- Step 5 - Remove sufficient aliquots and then perform a total organic carbon analysis on the tank waste surface sample. Once analysis has been performed, Go to Step 14.

- 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 6.1). Go to Step 1.
- Step 8 - Record visual observations such as color and clarity of the liquid, and the presence of any solid particles in the liquid sample.
- Step 9 - Closely inspect the liquid samples for the presence and approximate volume of any solids. If no solids exist, proceed to Step 11. However, if solids are detected in the liquid, go to Step 10A.
- Step 10A - Remove a portion of the liquid sample and determine the volume percent solids by centrifugation.
- Step 10B - If greater than 1 mL 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 potential organic layers. If no potential organic liquid layers exist, proceed to Step 13. However, if potential organic layers exist, go to Step 12.
- Step 12 - Any potential organic layer shall be reported immediately by Format I reporting. The potential organic layer shall be separated and retained in a jar. The next steps shall be performed on the remaining (possible aqueous) layer alone.
- Step 13 - Remove sufficient aliquots and then perform those analyses shown in Table 2.
- Step 14 - Retain 40 mL of any remaining liquid sample from each bottle as the liquid archive (Bratzel 1994).

3.1 INSUFFICIENT LIQUID GRAB SAMPLE

In the event that the sample volume from tank AP-106 is found to be insufficient to perform the requested analyses in Table 2, Characterization Support and Analytical Services shall be notified (for points of contact, see Section 5.0, Table 3). A prioritization of the analyses required in this Tank Characterization Plan is given in Section 6.2. Any analyses prescribed by this document, but not performed, shall be identified in the appropriate data report.

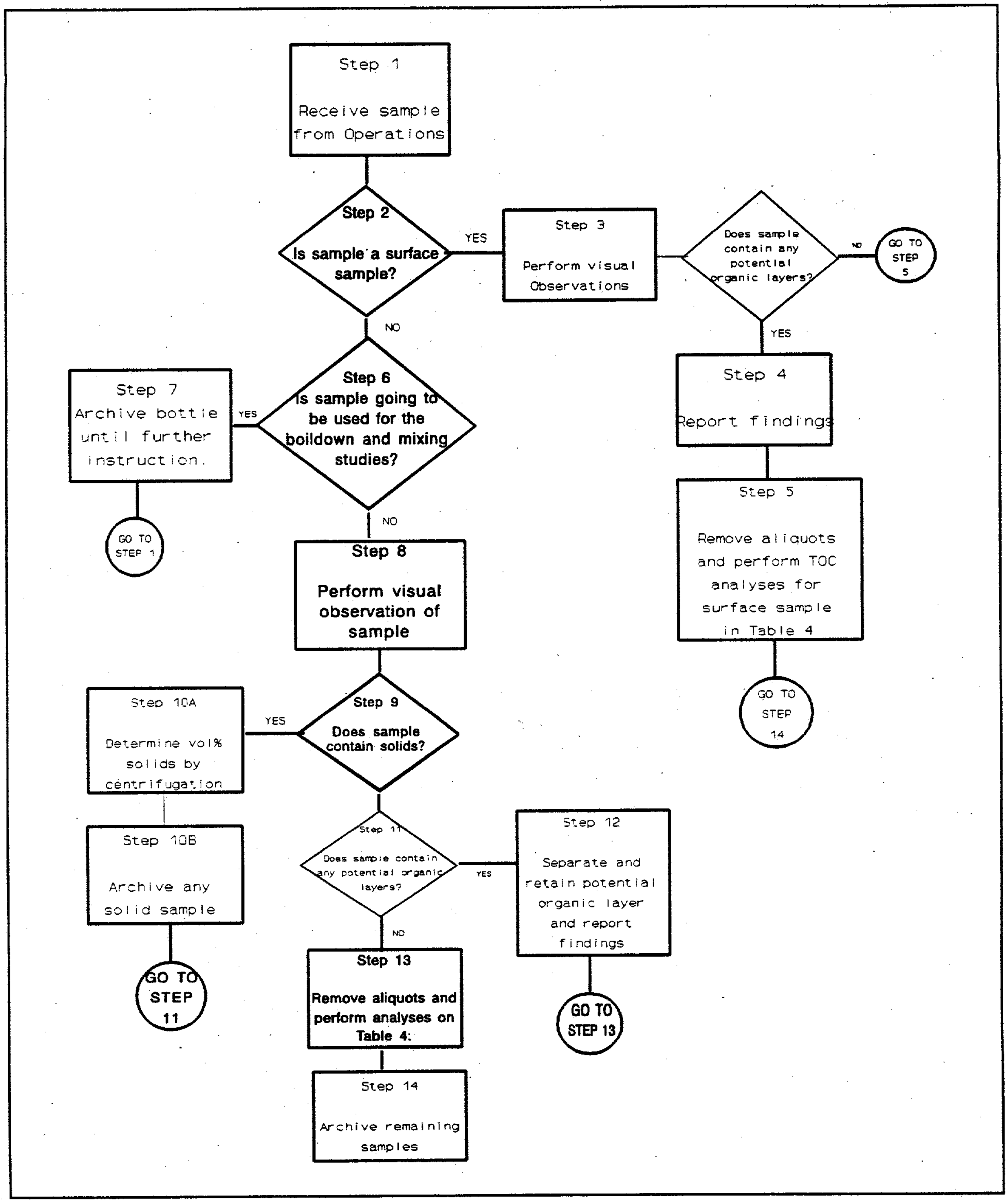

Figure 1: Test Plan Flowchart for Tank AP-106

4.0 SPECIFIC ANALYTE, QUALITY CONTROL, AND DATA CRITERIA

4.1 SPECIFIC METHODS AND ANALYSES

Table 2 summarizes the analyses to be performed on the tank AP-106 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 1994). 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).

4.2 QUALITY ASSURANCE/QUALITY CONTROL

4.2.1 Laboratory Operations

The laboratories shall follow the *242-A Evaporator Candidate Feed Tank and Process Condensate Sampling Quality Assurance Project Plan* (Tucker 1994) to provide the primary direction for the quality assurance/quality control of analyzing the AP-106 tank waste samples. Additionally the *Hanford Analytical Services Quality Assurance Plan* (DOE 1994), when implemented, shall be used as quality assurance/quality control 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 2. If no criteria are provided in Table 2, the performing laboratory shall perform to (Tucker 1994).

4.2.2 Sample Collection

Thirteen grab samples (see Section 2.4) from tank AP-106, as well as four 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-94-1149. 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-106 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 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 each grab sample collected to the performing laboratory within 1 working day of removing the grab sample from the tank, but must transport each grab sample within 3 calendar days. Sampling Operations is responsible for verbally notifying the laboratory (373-2435 for 222-S Laboratory; 373-6704 for 325 Laboratory) at least 24 hours in advance of an expected shipment. If samples are going to be delivered after 3:00 pm, the laboratory shall be notified at least twenty-four (24) hours in advance of actual sample shipment so that proper shift operations can be planned.

4.2.3 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 LO-090-101. Receipt and control of samples in the Pacific Northwest 325 ACL is described in PNL-ALO-051.

Table 2. AP-106 Grab Sample Chemical, Physical, and Radiological Analytical Requirements

Project Name	AP-106 Grab Sample
Plan Number	WHC-SD-WM-TP-277, Rev. 0
Tank	AP-106
13 Grabs	Risers No. 1 (30°) and 1 (150°)
A. Safety Screening	H. Babad
B. Evaporator	B. H. Von Bargen
TWRS Contact	R. D. Schreiber
222-S Laboratory	G. L. Miller
325 Laboratory	K. L. Silvers

COMMENTS

Homogenization test - Not Required
Field Blank - Required
Trip Blank - Required
Hot Cell Blank - Performed as Necessary

REPORTING FORMATS	
FORMAT I	Early Notify
FORMAT II	Process Control
FORMAT III	Safety Screen
FORMAT IV	Waste Management
FORMAT V	RCRA Compliance
FORMAT VI	Special

ANALYSES					QUALITY CONTROL[1] (see 15)								CRITERIA					REPORT	PGM
METHOD	ANALYTE	WHC PROCEDURE	PNL PROCEDURE	PREP	FB	TB[2]	HCB[16]	DUP	SPK/MSD	PREP BLNK	CALIB STD	PR[13]	AC[14]	UNITS	NOTIFICATION LIMIT[3]	EXPECTED RANGE		
DSC	Energy	LA-514-113	PNL-ALO-508	d[4]				ea smpl	N/A	N/A	ea AB	±10	90-110	J/g	See 6[7]	unknown	I,III,V	A,B
TGA	% H_2O	LA-560-112	PNL-ALO-508	d[4]				ea smpl	N/A	N/A	ea AB	±10[8]	90-110	wt %	< 17 wt%	100 wt %	I,III,	A
Electrode	pH	LA-212-102	PNL-ALO-290	d[4]				1/SE [10]	N/A	N/A	ea AB	< 3[8]	N/A	N/A	No specific limit	unknown	I,IV	B
Visual (surface sample)	Organic Layer	LA-519-151	PNL-ALO-501	d[4]				N/A	N/A	N/A	N/A	N/A	N/A	N/A	presence	unknown	I,III, IV	A,B
Visual	Mixing and Compatibility Study	N/A	N/A	d[4]				N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unusual changes in color, temperature, clarity, etc.	unknown	I,V	B
Visual/ Thermometric/ Gravimetric	Boildown Study	LT-519-183	N/A	d[4]				N/A	N/A	N/A	N/A	N/A	N/A	N/A	Unusual changes in color, temperature, clarity, etc.	unknown	I,IV	B
Titration	OH^-	LA-661-103	PNL-ALO-228	d[4]	X		X	1/SE [10]	N/A	ea AB	ea AB	<20[8]	N/A	µg/mL	$[OH^-] \leq 170$ µg/mL or $[OH^-] \geq 170,000$	1,430 µg/mL	I,IV	B
Combustion/ Coulometry	TC	LA-344-105	PNL-ALO-380	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<20	75-125	µg/mL	TC - TIC > 87 µg/mL	983 µg/mL	I,V	B
Coulometric Autotitration	TIC	LA-622-102	PNL-ALO-381	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<20	75-125	µg/mL	TC - TIC > 87 µg/mL	486 µg/mL	I,V	B

ANALYSES					QUALITY CONTROL[1] (see 15)							CRITERIA					REPORT	PGM
METHOD	ANALYTE	WHC PROCEDURE	PNL PROCEDURE	PREP	FB	TB[2]	HCB[16]	DUP	SPK/MSD	PREP BLNK	CALIB STD	PR[13]	AC[14]	UNITS	NOTIFICATION LIMIT[3]	EXPECTED RANGE		
Combustion/ Coulometric Autotitration	TOC	LA-344-105	PNL-ALO-380	d[4]	X		X	N/A	1/SE [10]	ea AB	ea AB	<20	75-125	µg/mL	No Specific Limit	497 µg/mL	V	B
Combustion/ Coulometric Autotitration	TOC on Surface Sample	LA-344-105	PNL-ALO-380	d[4]			X	N/A	1/SE [10]	ea AB	ea AB	<20	75-125	µg/mL	> 2600 mg/L	497 µg/mL	I,IV	B
Kjeldahl or Ion Selective Electrode	NH_3	LA-634-102 or LA-631-001	PNL-ALO-226 See 17	d[4]	X		X	N/A	1/SE [10]	ea AB	ea AB	<20	75-125	µg/mL	0.29 M (5,000 mg/L)	< 160 µg/mL	V	B
GC/MS	Acetone	LA-523-405	PNL-ALO-335	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<25	40-110	µg/L	> 87,000 µg/L[9]	unknown	I,V	B
GC/MS	1-Butanol	LA-523-405 or LA-523-406	PNL-ALO-345	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<25	30-110	µg/L	> 226,000 µg/L[9]	unknown	I,V	B
GC/MS	2-Butoxyethanol	LA-523-406	PNL-ALO-345	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<25	30-110	µg/L	> 95,200 µg/L[9]	unknown	I,V	B
GC/MS	2-Butanone	LA-523-405	PNL-ALO-335	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<25	40-110	µg/L	> 58,000 µg/L[9]	unknown	I,V	B
GC/MS	2-Hexanone	LA-523-405	PNL-ALO-335	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<25	40-110	µg/L	No Specific Limits	unknown	V	B
GC/MS	Methyl Isobutyl Ketone	LA-523-405	PNL-ALO-335	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<25	40-110	µg/L	No Specific Limits	unknown	V	B
GC/MS	2-Pentanone	LA-523-405	PNL-ALO-335	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<25	40-110	µg/L	No Specific Limits	unknown	V	B
GC/MS	Tetrahydro-furan	LA-523-405 or LA-523-406	PNL-ALO-335	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<25	30-110	µg/L	No Specific Limits	unknown	V	B
GC/MS	Tributyl Phosphate	LA-523-406	PNL-ALO-345	d[4]	X	X	X	N/A	1/SE [10]	ea AB	ea AB	<25	40-110	µg/L	10,150,000 µg/L[9]	unknown	I,V	B
Laser Induced Phosphorescence or Laser Fluorimetry	U-gross	LA-925-106 or LA-925-009	PNL-ALO-445	d[4]	X		X	N/A	1/SE [10]	ea AB	ea AB	<20	70-130	µg/mL	Pu239/240 + 1.077E-10 * (U-gross): > 0.0026 g/L	unknown	I,IV	B
Proportional Counter	AT	LA-508-101	PNL-ALO-420 PNL-ALO-421	a[5]	X		X	N/A	1/SE [10]	ea AB	ea AB	<25	70-130	µCi/mL	> (0.10 * SPG) µCi/mL	unknown	I,IV	B
Proportional Counter	TB	LA-508-101	PNL-ALO-430 PNL-ALO-431	a[5]	X		X	N/A	1/SE [10]	ea AB	ea AB	<25	70-130	µCi/mL	No Specific Limits	unknown	IV	B

ANALYSES					QUALITY CONTROL[1] (see 15)							CRITERIA					REPORT	PGM
METHOD	ANALYTE	WHC PROCEDURE	PNL PROCEDURE	PREP	FB	TB[2]	HCB[16]	DUP	SPK/MSD	PREP BLNK	CALIB STD	PR[13]	AC[14]	UNITS	NOTIFICATION LIMIT[3]	EXPECTED RANGE		
Distillation Liquid	^{3}H	LA-218-114	PNL-ALO-441 PNL-ALO-474	d[4]	X		X	N/A	1/SE [10]	ea AB	ea AB	<25	70-130	µCi/mL	No Specified Limits	0.00492 µCi/mL	IV	B
Anion-Cation Exchange/Dist. Liquid Scintillation	^{79}Se	LA-365-132	PNL-ALO-440 PNL-ALO-474	a[5]	X		X	1/SE [12,10]	N/A	ea AB	N/A	<25[8]	N/A	µCi/mL	> 0.078 µCi/mL	< 0.2 µCi/mL	I,IV	B
Extraction/ Filtration/GEA	^{129}I	LA-378-103	PNL-ALO-454 PNL-ALO-450	d[4]	X		X	N/A	1/SE[12,10]	ea AB	ea AB	<20	75-125	µCi/mL	> 0.0026 µCi/mL	< 0.000090 7 µCi/mL	I,IV	B
GEA	^{154}Eu	LA-548-121	PNL-ALO-450	a[5]	X		X	1/SE [10]	N/A	ea AB	N/A	<25[8]	N/A	µCi/mL	> 5.0 µCi/mL	unknown	I,IV	B
GEA	^{155}Eu	LA-548-121	PNL-ALO-450	a[5]	X		X	1/SE [10]	N/A	ea AB	N/A	<25[8]	N/A	µCi/mL	> 7.0 µCi/mL	unknown	I,IV	B
GEA	^{226}Ra	LA-548-121	PNL-ALO-450	a[5]	X		X	1/SE [10]	N/A	ea AB	N/A	<25[8]	N/A	µCi/mL	> 0.033 µCi/mL	unknown	I,IV	B
Extraction Alpha Count	^{237}Np	LA-933-141	PNL-ALO-422 PNL-ALO-425	d[4]	X		X	N/A	1/SE [10]	ea AB	ea AB	<20	75-125	µCi/mL	No Specific Limit	unknown	IV	B
Ion Exchange/ Solvent Extraction/AEA	^{244}Cm	LA-953-103	PNL-ALO-496 PNL-ALO-469	a[5]	X		X	1/SE [12,10]	N/A	ea AB	N/A	<20[8]	N/A	µCi/mL	> 0.013 µCi/mL	< 6.37E-07 µCi/mL	I,IV	B
Secondary Analysis								Secondary Analysis										
METHOD	ANALYTE	WHC PROCEDURE	PNL PROCEDURE	PREP	FB	TB[2]	HCB	DUP	SPK/MSD	PREP BLANK	CALIB STD	PR[13]	AC[14]	UNITS	NOTIFICATION LIMIT[3]	EXPECTED RANGE		
RSST[11]	Energy	See 10 below	N/A	d[4]				ea smpl	N/A	N/A	ea AB	± 20	80-120	J/g	net > 0	unknown	I,III, IV	A
Distillation[11]	CN^-	LA-695-102	PNL-ALO-285	d[4]				ea smpl	1/SE [10]	ea AB	ea AB	± 10	90-110	µg/mL	> 58,000 µg/mL	0.503 µg/mL	I,III, IV	A
Hot Persulfate [11]	TOC	LA-342-100	PNL-ALO-381	d[4]				ea smpl	1/mtrx	ea AB	ea AB	± 10	90-110	µg/mL	none	497 µg/mL	I,III, IV	A

1 ea - each, DUP - duplicate, SPK/MSD - spike / matrix spike duplicate, SE - sampling event, AB - analytical batch, N/A - not applicable, CALIB STD - calibration standard, PREP BLNK - preparation blank, FB - field blank, TB - trip blank, HCB - hot cell blanks (The blanks are marked by the analyses that shall be run).

2 Analyses to be performed only when detected in the field blank

3 Unless specified, action limits are for wet samples.

4 Direct liquid samples may be diluted in acid or water to adjust to proper sample size and/or pH

5 Samples shall be prepared by acid digestion

6 Absolute value of ratio of exotherm to endotherm > 1 or exotherm < 335 °F.

7 Action limit is applicable up to 500 °C. Notification limits are for the Evaporator DQO.

8 Precision is evaluated on the deviation between a sample (unspiked) and sample replicate

9 For individual organic species limits in the candidate feed tank, the sum of the fractions rule applies

10 RSST performed only if DSC exceeds 481 J/g. The RSST method, yet to be proceduralized, may be found in WHC-SD-WM-TP-104.

11 This analysis required if DSC exceeds notification limit

12 Tracer or carrier used.

13 The unit for precision is RPD

14 The unit for accuracy is percent recovery

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

16 Analyses on the hot cell blank shall be performed only when applicable

17 PNL does not use Kjeldahl's method for the analysis of ammonia. Ammonia analysis performed at 325 Laboratory will follow procedure number; PNL-ALO-226.

18 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.

5.0 ORGANIZATION

The organization and responsibility of key personnel involved in this tank AP-106 characterization project are listed in Table 3.

Table 3: Tank AP-106 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-106 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)

6.0 EXCEPTIONS AND PRIORITIES

6.1 EXCEPTIONS FOR TANK AP-106

As a result of writing the 242-A Evaporator Quality Assurance Project Plan (QAPjP) (Tucker 1994) and the Tank Characterization Plan (TCP) for 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 1994a):

- 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 will 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 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 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" cleaned 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 the 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; no procedure number has been developed, therefore the concentration for ^{241}Pu will be calculated by the Evaporator program.

The precision and accuracy given in Table 2 are those found in the DQO with the more stringent criteria.

Tank AP-106 was previously sampled for characterization purposes for the former Grout Program. Many of the results from that analytical event will be used for this campaign; therefore, the analytical suite given in Table 2 is only a subset of that in the Evaporator DQO. The analyses to be removed from the present analytical suite are given in (Johnson 1994).

6.2 PRIORITIES FOR TANK AP-106

In order to complete the entire compatibility, safety, and compliance assessments for tank AP-106, 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 order based on holding times. Those analyses with the shortest holding times shall be first.

6.3 CLARIFICATIONS AND ASSUMPTIONS

The safety screening DQO effort, upon which the analyses in Table 2 are based does not adequately address the analyses to be performed on liquid samples. To adequately characterize the tank, all safety screening analyses shall be performed with the exception of total alpha.

7.0 DELIVERABLES

All analyses of tank AP-106 waste material will be reported either as Formats I, III, IV or V as shown in Table 2. 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).

Currently, no preliminary results are being requested by the Evaporator Program. However, if there are delays in sampling or analysis of tank AP-106, it may become necessary for preliminary results to be obtained in order to meet the evaporator schedule. This preliminary information would consist of a summary of results, with no raw data included. If it becomes necessary for the program to receive preliminary data, an agreement shall need to be made at such time between the performing laboratory and the Evaporator Program.

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, 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 (Schreiber 1994b). This verbal notification must be followed within 1 working day by written notification to B. H. Von Bargen of Treatment Systems Plant Engineering, J. L. Deichman of Analytical Services, R. D. Schreiber of Characterization Support, T. J. Kelley, S. J. Eberlein, D. R. Bratzel, H. Babad of the Characterization Program, and N. W. Kirch of Data Trending, Interpretation, and Reporting, 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, by letter of instruction, or by a memorandum of understanding.

7.2 FORMAT III REPORTING

A Format III report, reporting the results of the primary safety screen analyses, shall be issued to H. Babad, R. D. Schreiber, S. J. Eberlein, P. Sathyanarayana, and N. W. Kirch within 45 days of receipt of the last sample at the laboratory loading dock. Although normally raw data would not be attached to this type of report, 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).

7.3 FORMAT IV REPORTING

Many of the analytical results requested for the characterization project of tank AP-106 shall be compiled into a Format IV type data package. These analyses are listed in Table 2. The data package should be provided to Analytical Services and the Treatment Systems Plant Engineering Program 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 P. Sathyanarayana and E. J. McAffee of Characterization Support for entry in the Tank Characterization Database. 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).

7.4 FORMAT V REPORTING

The analyses in Table 2 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 AS within 100 days of the sampling event, but must be delivered to AS within 140 days of the sampling event. In addition, an electronic version of the analytical results shall be provided via cc:Mail to E. J. McAffee and P. Sathyanarayana of Characterization Support, for entry into the Tank Characterization Database, at the time of delivery of the data package to AS. 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 by AS to Ecology, EPA, DOE-RL, Characterization Support and the Evaporator Program within 136 days beginning with the date of the sampling activities, but must transmit the results within 176 days beginning with the date of the sampling activities. In addition, an electronic version of the validation results (qualifiers) shall be provided via cc:Mail to E. J. McAffee and P. Sathyanarayana of Characterization Support, for entry into the Tank Characterization Database, at the time of package delivery or within 169 days beginning with the date of the sampling activities, whichever is earlier. The electronic format specified in (Bobrowski 1994b).

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 notebooks. 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 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.

9.0 REFERENCES

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