Sta# 4 (15)
JAN 31 2000

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
EDT 627271

2 To (Receiving Organization) Distribution		3 From (Originating Organization) Data Development and Interpretation		4 Related EDT No N/A	
5 Proj /Prog /Dept /Div Tank 241-AZ-101/Waste Management/DD&I/Process Engineering		6 Design Authority/ Design Agent/Cog Engr Andrew M Templeton		7 Purchase Order No N/A	
8 Originator Remarks This document is being released into the supporting document system for retrievability purposes				9 Equip /Component No N/A	
				10 System/Bldg /Facility 241-AZ-101	
				12 Major Assm Dwg No N/A	
11 Receiver Remarks For release 11A Design Baseline Document? ☐ Yes ☒ No				13 Permit/Permit Application No N/A	
				14 Required Response Date 01/11/00	
15 DATA TRANSMITTED					
(A) Item No	(B) Document/Drawing No	(C) Sheet No	(D) Rev No	(E) Title or Description of Data Transmitted	(F) Approval Designator
1	RPP-5534	N/A	0	Tank 241-AZ-101 Mixer Pump Test Vapor Sampling and Analysis Plan	Q
16 KEY					
Approval Designator (F)		Reason for Transmittal (G)		Disposition (H) & (I)	
E S Q D or N/A (see WHC CM 3 5 Sec 12 7)		1 Approval 4 Review 2 Release 5 Post Review 3 Information 6 Dist (Receipt Acknowledged Required)		1 Approved 4 Reviewed no/comment 2 Approved w/comment 5 Reviewed w/comment 3 Disapproved w/comment 6 Receipt acknowledged	
17 SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)					
(G) Reason	(H) Disposition	(J) Name	(K) Signature (M) MSIN	(L) Date	
		Design Authority			
		Design Agent			
2	1	Cog Eng A M Templeton		1-28-00	
2	1	Cog Mgr J G Field		1-28-00	
2	1	QA W L Adams		1-31-00	
2	1	Env C H Mulkey		1-31-00	
21 DOE APPROVAL (if required) Ctrl No ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments					
18 L R Webb Signature of EDT Date Originator		19 N/A Authorized Representative Date for Receiving Organization		20 J G Field Design Authority Date Cognizant Manager	

DISTRIBUTION SHEET

To Distribution	From Data Development and Interpretation	Page 1 of 2	
		Date	01/11/00
Project Title/Work Order RPP-5534, Rev 0, "Tank 241-AZ-101 Mixer Pump Test Vapor Sampling and Analysis Plan"		EDT No	EDT-627271
		ECN No	N/A

Name	MSIN	Text With All Attach	Text Only	Attach / Appendix Only	EDT/ECN Only
------	------	----------------------	-----------	------------------------	--------------

Office of River Protection

W	Abduhl	H6-60	X
E	J Cruz	H6-60	X
W	Liu	H6-60	X
J	A Poppitt	H6-60	X
	DOE Reading Room	H2-53	X

CH2MHILL Hanford Group, Inc.

M	R Adams	R2-12	X
W	L Adams	S5-15	X
D	G Baide	S5-05	X
D	L Banning	R2-12	X
J	H Baldwin	R3-73	X
J	R Bellomy	R1-56	X
R	J Brown	S7-70	X
K	G Carothers	R2-11	X
T	W Crawford	R3-73	X
R	N Dale	S7-12	X
R	A Dodd	R3-72	X
J	G Field	R2-12	X
R	V Gutierrez	S5-03	X
J	L Homan	R3-72	X
E	I Husa	R2-12	X
J	Jo	R2-12	X
J	A Johnston	S7-03	X
S	G McKinney	R2-12	X
R	J Praznik	S7-03	X
R	M Orme	R3-73	X
R	W Powell	R3-75	X
J	H Rasmussen	R2-12	X
J	F Sickels	S7-03	X
G	A Stanton	S7-01	X
G	R Tardiff	S5-05	X
A	M Templeton	R2-12	X
R	R Thompson	R2-12	X
T	C S R C	R1-10	X

Cogema

L	A Pingel	S3-31	X
M	P Rung	H1-19	X
T	W Staehr	R3-74	X
M	Stauffer	S3-31	X

DISTRIBUTION SHEET

To		From		Page 2 of 2		
Distribution		Data Development and Interpretation		Date	01/11/00	
Project Title/Work Order				EDT No	EDT-627271	
RPP-5534, Rev 0, "Tank 241-AZ-101 Mixer Pump Test Vapor Sampling and Analysis Plan"				ECN No	N/A	
Name		MSIN	Text With All Attach	Text Only	Attach / Appendix Only	EDT/ECN Only
Y S Tran		H3-27	X			
<u>Fluor Hanford</u>						
R	Akita	T6-50	X			
K E	Bell	T6-12	X			
R A	Esch	T6-12	X			
R K	Fuller	T6-12	X			
D B	Hardy	S3-30	X			
J C	Person	T6-07	X			
K L	Powell	T6-04	X			
K	Sathyanarayana	H0-34	X			
F H	Steen	T6-12	X			
R S	Viswanath	S3-30	X			
<u>Lockheed Martin Services, Inc</u>						
Central Files		B1-07	X			
<u>MACTEC</u>						
R D	Potter	R3-73	X			
<u>Numatec Hanford Corporation</u>						
A B	Carlson	R3-73	X			
P J	Certa	R3-73	X			
D R	Hansen	T6-50	X			
D L	Herting	T6-07	X			
R A	Kirkbride	R3-73	X			
W I	Winters	T6-50	X			
<u>Pacific Northwest National Laboratory</u>						
I E	Burgeson	P7-25	X			
M J	Truex	K2-10	X			
K D	Wiemers	H6-61	X			
Y	Onishi	K7-15	X			
<u>Waste Management Federal Services of Hanford, Inc</u>						
C M	Seidel	G1-32	X			

Tank 241-AZ-101 Mixer Pump Test Vapor Sampling and Analysis Plan

Andrew M Templeton

CH2MHill Hanford Group, Inc , Richland, WA 99352

U S Department of Energy Contract DE-AC06-96RL13200

EDT/ECN EDT-627271 UC 2070
Org Code 74B20 CACN/COA 102264/ES11
B&R Code EW 3120074 Total Pages 33

Key Words Tank 241-AZ-101, 241-AZ-101, Tank AZ-101, AZ-101, AZ Farm,
Mixer Pump Test Vapor Sammpling, Vapor Sampling, Vapor, Sampling,
Analysis

Abstract N/A

TRADEMARK DISCLAIMER Reference herein to any specific commercial product process or service by trade name trademark manufacturer or otherwise does not necessarily constitute or imply its endorsement recommendation or favoring by the United States Government or any agency thereof or its contractors or subcontractors

Printed in the United States of America To obtain copies of this document contact Document Control Services P O Box 950 Mailstop H6 08 Richland WA 99352 Phone (509) 372 2420 Fax (509) 376 4989

Release Approval 1/31/00
Date

Release Stamp

Approved for Public Release

Tank 241-AZ-101 Mixer Pump Test Vapor Sampling and Analysis Plan

A M Templeton
CH2M HILL Hanford Group, Inc

Date Published
January 2000

Prepared for the U S Department of Energy
Office of River Protection

TABLE OF CONTENTS

1 0 SAMPLING AND ANALYSIS OBJECTIVES	1
2 0 SAMPLING EVENT REQUIREMENTS	2
2 1 SAMPLE PREPARATION	2
2 2 SAMPLE COLLECTION	3
2 3 RADIATION SCREENING	11
3 0 LABORATORY ANALYSIS REQUIREMENTS	12
4 0 QUALITY ASSURANCE AND QUALITY CONTROL	18
4 1 LABORATORY OPERATIONS	18
4 2 SAMPLE COLLECTION	18
4 3 SAMPLE CUSTODY	19
5 0 EXCEPTIONS, CLARIFICATIONS, AND ASSUMPTIONS	20
5 1 CLARIFICATIONS	20
5 2 EXCEPTIONS	20
6 0 ORGANIZATION	21
7 0 DELIVERABLES	22
7 1 FORMAT I REPORTING	22
7 2 FORMAT II REPORTING	22
7 3 FORMAT VI REPORTING	22
8 0 CHANGE CONTROL	25
9 0 REFERENCES	26
 APPENDICES	
APPENDIX A AZ-101 CORE PROFILE	A 1

LIST OF TABLES

Table 2-1	Sample Preparation Procedures	2
Table 2-2	Sample Set Summary	4
Table 2-3	List of Samples and Activities for 241-AZ 101 Headspace	5
Table 2-4	Vapor Sampling Summary	10
Table 3-1	Chemical and Radiological Analytical Requirements	13
Table 3-2	Vapor Analytes and Quantitation Limits	14
Table 6-1	Project Key Personnel	21
Table 7-1	Data Package Required Elements	23

LIST OF ABBREVIATIONS

CAS	Chemical Abstracts Service
CHG	CH2M HILL Hanford Group, Inc
CPO	Characterization Project Operations
DBP	dibutyl phosphate
FID	flame ionization detector
ft	feet
GC/MS	gas chromatography/mass spectrometry
GC/TCD	gas chromatography/thermal conductivity detector
HASQARD	Hanford Analytical Services Quality Assurance Requirements Document
IC	ion chromatography
IDLH	immediately dangerous to life and health
kgal	kilogallon
kL	kiloliter
L	liter
L/min	liters per minute
LFL	lower flammability limit
LMHC	Lockheed Martin Hanford Corporation
m	meter
mg/m ³	milligrams per cubic meters
mL	milliliters
mL/min	milliliters per minute
min	minutes
Mgal	million gallons
N/A	not applicable or not available
NHC	Numatec Hanford Corporation
ppbv	parts per billion by volume
ppm	parts per million
ppmv	parts per million by volume
PNNL	Pacific Northwest National Laboratory
PUF	polyurethane foam
QA	quality assurance
QC	quality control
rpm	revolutions per minute
RPP	River Protection Project
SAP	Sampling and Analysis Plan
STT	sorbent tube train
TBP	tributyl phosphate
TST	triple sorbent trap
VOC	Volatile Organic Compounds
WSCF	Waste Sampling and Characterization Facility
%	percent

1 0 SAMPLING AND ANALYSIS OBJECTIVES

This sampling and analysis plan (SAP) identifies characterization objectives pertaining to sample collection, laboratory analytical evaluation, and reporting requirements for vapor samples obtained during the operation of mixer pumps in tank 241-AZ-101. The primary purpose of the mixer pump test (MPT) is to demonstrate that the two 300 horsepower mixer pumps installed in tank 241-AZ-101 can mobilize the settled sludge so that it can be retrieved for treatment and vitrification. Sampling will be performed in accordance with *Tank 241-AZ-101 Mixer Pump Test Data Quality Objective* (Banning 1999) and *Data Quality Objectives for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis* (Mulkey 1999). The sampling will verify if current air emission estimates used in the permit application are correct and provide information for future air permit applications.

Tank 241-AZ-101 has been selected for the first full-scale demonstration testing of a retrieval system. Tank 241-AZ-101 is located in the 241-AZ Tank Farm in the 200 East Area. The tank is a 3,785,400-L (1 Mgal), 23-m (75-ft) diameter double-shell underground storage tank. As of January 2, 2000, the surface level ENRAF¹ indicated that tank 241-AZ-101 contained a total waste volume of approximately 3,213 kL (849 kgal). Based upon sludge level measurements taken in August of 1997, tank 241-AZ-101 contains 3,024 kL (799 kgal) of supernate and 178 kL (47 kgal) of sludge. This waste volume is equivalent to 7.8 meters (308.6 inches) of waste as measured from the inside bottom of the tank. A physical profile based on waste sampling information is provided in Appendix A. Previous characterization data indicate that the waste consists primarily of aging waste (Hodgson 1995).

A series of tests will be conducted in which the two mixer pumps in tanks 241-AZ-101 will be operated in fixed and oscillating modes and at different speeds. Vapor samples will be obtained to determine constituents that may be present in the tank headspace during mixer pump operation in tank 241-AZ-101 as the waste is disturbed. During the testing, vapor samples will be obtained from the headspace of tank 241-AZ-101 via riser 15G or 15L using the Type IV cart. Riser 16B, the unused port on the standard hydrogen monitoring system (SHMS), will provide as a backup. Results will be used to provide the waste feed delivery program with environmental air permitting data for tank waste disturbing activities. Because of radiological issues, some samples may be extracted at the 222-S laboratory if contaminated. All SUMMA canister and Triple Sorbent Trap (TSTs) samples sent to the Waste Sampling and Characterization Facility (WSCF) laboratory will be filtered for particulates. It is recognized that this may remove some organic compounds. A duplicate set of unfiltered TST's samples will also be collected.

The following sections provide the general methodology and procedures to be used in the preparation, retrieval, transport, analysis, and reporting of results from vapor samples retrieved during the mixer pump testing.

¹ ENRAF is a trademark of the ENRAF Corporation, Houston, Texas.

2 0 SAMPLING EVENT REQUIREMENTS

The mixer pumps will be operated during a series of tests. Sample sets will be taken prior to mixer pump operation, during the initial startup of pump #1 in fixed mode, when pump #1 is first operated in oscillating mode and when both pumps are operated in oscillating mode and at maximum speed (1200 rpm). The exact sample time during these activities except the baseline will be determined by headspace monitoring using an organic vapor monitor (OVM). A minimum set of four sample sets will be collected even if no organics are detected with the OVM. If a release of organics is detected then additional optional sets of samples will be collected as directed by Process Engineering. Before and after sample collection, the SUMMA canister line on the Type IV cart will be monitored continuously with an OVM. Riser 16B will be monitored continuously during the mixer pump test under a separate industrial hygiene (IH) sampling/monitoring plan (Fogg 2000). This IH plan will also include headspace monitoring for lower flammability limit (LFL), Notice of Construction (NOC) required stack monitoring and personnel monitoring. Tank vapor will also be monitored via the Standard Hydrogen Monitoring System (SHMS) cabinet. Details of the SHMS is included in the *Data Collection Plan for AZ-101 Mixer Pump Test*, HNF-3839.

2 1 SAMPLE PREPARATION

SUMMA² canister samples, triple sorbent trap (TST) samples, sorbent tube train (STT) samples, and polyurethane foam (PUF) samples will be collected and sent to the laboratory for analysis, field and trip blanks will accompany the samples. The analytical laboratory for this sampling event is Waste Management Hanford (WMH) WSCF. Particulate filter samples will be collected for radiation screening of the samples. WSCF shall prepare the SUMMA canisters, TSTs, STTs, and PUFs for sample collection. WSCF shall also prepare the particulate filter assemblies for use at the 702-AZ stack, each particulate filter assembly shall contain two particulate filters mounted in series. Sample preparation procedures are listed in Table 2 1.

Table 2-1 Sample Preparation Procedures

Sample container	Organization	Preparation Procedure
SUMMA canister	WSCF	LO-080 406
TST	WSCF	LA-549-403
STT	WSCF	LA-549-402
PUF	WSCF	N/A
Particulate filter assembly	WSCF	N/A

Notes N/A = not applicable
PUF = polyurethane foam

STT = sorbent tube train
TST = triple sorbent trap

²SUMMA is a trademark of Molectrics of Ohio

2.2 SAMPLE COLLECTION

Characterization Project Operations (CPO) will be responsible for the collection of all SUMMA canister samples, particulate filter, TST, STT, and PUF samples using the Type IV Cart. Samples will be collected in accordance with procedure TO-080-627. If the Type IV Cart is not available, the non-electrical vapor sampling system (NEVS) will be used in accordance with procedure LO-080-400, *Vapor Sampling Using the Non-Electrical Vapor Sampling System (NEVS)*. CPO baseline sampling activities will be performed in accordance with work package ES-00-00030.

Tubing used in the collection of vapor samples must be stainless steel, Teflon³, or Teflon-coated, and the length of the tubing used should be minimized. No C-flex or tygon tubing can be used upstream of the sample containers.

The samples shall include the following quality control (QC) samples: one each SUMMA, TST, STT, and PUF ambient air field blank, and one each STT, and PUF trip blank and up to 8 TST trip blanks. The trip and field blanks are to accompany the vapor samples to the laboratory. For specific information concerning sample and blank handling, custody, and transport, refer to the requirements in Section 4.0.

Characterization Project Operations (CPO) shall record (or calculate) the following information for each sample collected: sample number, start and stop times for the collection of each sample, sample volumes, and any anomalous sampling conditions. The volatile organic compounds (VOC) reading will be collected at the beginning and at the end of the collection of each sample set. The samples shall be stored and shipped in a cooler at 4 degrees Celsius except the SUMMA canisters and the particulate filters.

Particulate filter samples shall be shipped by CPO to WSCF for radiation screening analysis within one working day. The remaining filtered samples shall be stored by CPO until radiation screening is completed and the samples can be released for analysis. Upon completion of the radiation screening and release of the samples, the samples shall be transferred by CPO to WSCF for analysis.

All unfiltered samples shall be shipped directly to 222-S if they have a reading of 5 mrem or greater on contact.

Table 2-3 provides the sequence of sampling activities for the blanks and the tank 241-AZ-101 headspace air samples. The samples are summarized in Table 2-4. SUMMAs and one set of TST samples will be collected through particulate filters. The particulate filter samples shall be collected upstream of the SUMMA canisters and TSTs.

³Teflon is a registered trademark of I. E. DuPont De Nemours and Company.

At a minimum, the following samples are required from the 241-AZ-101 headspace

- One set of samples before the pumps are started (baseline samples)
- One set of samples after pump #1 is initially started and operating in a fixed mode at minimum speed (700 rpm) and at the direction of Process Engineering (additional optional samples may be collected at the direction of Process Engineering)
- One set when pump #1 is first operated in oscillating mode
- One set when both pumps are operated at maximum speed in oscillating mode

A sample set is summarized in Table 2-2. If a release is detected in the headspace as indicated by the OVM, one of the optional sample sets will be collected. The collection of these samples will be determined and directed by Process Engineering.

Table 2-2 Sample Set Summary

Sample Container	Number	Analyte	Procedure
SUMMA	1	Organic Speciation	LA-523-404
SUMMA	1	Permanent Gases	LA-523-409
SUMMA	1	Total Nonmethane hydrocarbons	LA-523-407
STT	2	NH ₃ , Oxides of Nitrogen	LA-523-400/402
TST	4	Organic Speciation	LA-523-408
PUF	2	TBP, DPB, SVOCs	LA-523-428
Particulate Filter	1	Total Alpha, Total Beta and Gamma Energy	LA-523-428

The sampling activities of CPO shall be coordinated so that, for each set of samples, the SUMMA canisters, TSTs, STTs, and PUFs are obtained at about the same time.

Any decisions, observations, or deviations affecting this SAP shall be documented in controlled notebooks, work packages and justified in the deliverable report.

Table 2-3 List of Samples and Activities for 241-AZ-101 Headspace (5 sheets)

Sample Code	Sample/Activity Description	Sample Probe Line	Sampler Position During Collection	Sample Volume	Sample Duration or Flow Rate ¹
Leak Test					
	Perform leak test of Type IV Cart or NEVS	N/A	N/A	N/A	N/A
Ambient Samples					
001	Collect upwind ambient SUMMA before pump is started	N/A	AZ Tank farm	6 L	2 min
002	Collect system SUMMA before pump is started	N/A	AZ Tank farm	6 L	2 min
003	Collect ambient TST before pump is started	1	AZ Tank farm	4 L	50 200 mL/min
004	Collect ambient STT before pump is started	2	AZ Tank farm	8 L	50 200mL/min
005	Collect ambient PUF before pump is started	3	AZ Tank farm	25 L	2 5 5 L/min
Baseline headspace samples					
006	Collect particulate filter and tritium trap sample before pump is started	4	241 AZ 101 Headspace	1 L	50 200 mL/min
N/A	Purge SUMMA line with tank vapor	N/A	241 AZ 101 Headspace	5L	1 L/min
007	Collect baseline SUMMA canister before pump is started	N/A	241 AZ 101 Headspace	6 L	2 min
008	Collect baseline SUMMA canister before pump is started	N/A	241 AZ 101 Headspace	6 L	2 min
009	Collect baseline SUMMA canister before pump is started	N/A	241 AZ 101 Headspace	6 L	2 min
010	Collect baseline TST before pump is started	5	241 AZ 101 Headspace	0 2 L	50 200 mL/min
011	Collect baseline TST before pump is started	6	241 AZ 101 Headspace	0 2 L	50 200 mL/min
012	Collect baseline TST before pump is started	7	241 AZ 101 Headspace	0 4 L	50 200 mL/min
013	Collect baseline filtered TST before pump is started	8	241 AZ 101 Headspace	0 4 L	50 200 mL/min
014	Collect baseline STT before pump is started	9	241 AZ 101 Headspace	4L	300 500 mL/min
015	Collect baseline STT before pump is started	10	241 AZ 101 Headspace	8 L	300 500 mL/min
016	Collect baseline PUF trap before pump is started	11	241 AZ 101 Headspace	25 L	2 5 5 L/min
017	Collect baseline PUF trap before pump is started	12	241 AZ 101 Headspace	25 L	2 5-5 L/min

Table 2-3 List of Samples and Activities for 241-AZ-101 Headspace (5 sheets)

Sample Code	Sample/Activity Description	Sample Probe Line	Sampler Position During Collection	Sample Volume	Sample Duration or Flow Rate ¹
Sampling during mixer pump operation					
Collect sample set #2 during initial operation of Pump #1 at 700 rpm					
018	Collect particulate filter and tritium trap sample	1	241 AZ 101 Headspace	1 L	300 500 mL/min
N/A	Purge SUMMA line with tank vapor	N/A	241 AZ 101 Headspace	5L	1 L/min
019	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
020	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
021	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
022	Collect TST	2	241 AZ 101 Headspace	0 2 L	50 200 mL/min
023	Collect TST	3	241 AZ 101 Headspace	0 2 L	50 200 mL/min
024	Collect filtered TST	4	241 AZ 101 Headspace	0 4 L	50 200 mL/min
025	Collect TST	5	241 AZ 101 Headspace	0 4 L	50 200 mL/min
026	Collect STT	6	241 AZ 101 Headspace	4 L	300 500 mL/min
027	Collect STT	7	241 AZ 101 Headspace	8 L	300 500 mL/min
028	Collect PUF trap	8	241 AZ 101 Headspace	25 L	2 5 5 L/min
029	Collect PUF trap	9	241 AZ 101 Headspace	25 L	2 5 5 L/min
Collect sample set #3 (optional) at direction of Process Engineering					
030	Collect particulate filter and tritium trap sample	1	241 AZ 101 Headspace	1 L	300 500 mL/min
N/A	Purge SUMMA line with tank vapor	N/A	241 AZ 101 Headspace	5L	1 L/min
031	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
032	Collect TST	2	241 AZ 101 Headspace	0 4 L	50 200 mL/min
033	Collect filtered TST	3	241 AZ 101 Headspace	0 4 L	50 200 mL/min
034	Collect STT	4	241 AZ 101 Headspace	8 L	300 500 mL/min

Table 2-3 List of Samples and Activities for 241-AZ-101 Headspace (5 sheets)

Sample Code	Sample/Activity Description	Sample Probe Line	Sampler Position During Collection	Sample Volume	Sample Duration or Flow Rate ¹
035	Collect PUF trap	5	241 AZ 101 Headspace	25 L	2 5 5 L/min
Collect sample set #4 when pump #1 is first operated in oscillating mode					
036	Collect particulate filter and tritium trap sample	1	241 AZ 101 Headspace	1 L	300 500 mL/min
N/A	Purge SUMMA line with tank vapor	N/A	241 AZ 101 Headspace	5L	1 L/min
037	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
038	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
039	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
040	Collect TST	2	241 AZ 101 Headspace	0 2 L	50 200 mL/min
041	Collect TST	3	241 AZ 101 Headspace	0 2 L	50 200 mL/min
042	Collect filtered TST	4	241 AZ 101 Headspace	0 4 L	50 200 mL/min
043	Collect TST	5	241 AZ 101 Headspace	0 4 L	50 200 mL/min
044	Collect STT	6	241 AZ 101 Headspace	4 L	300 500 mL/min
045	Collect STT	7	241 AZ 101 Headspace	8 L	300 500 mL/min
046	Collect PUF trap	8	241 AZ 101 Headspace	25 L	2 5-5 L/min
047	Collect PUF trap	9	241 AZ 101 Headspace	25 L	2 5 5 L/min
Collect sample set #5 (optional) at direction of Process Engineering					
048	Collect particulate filter and tritium trap sample	1	241 AZ 101 Headspace	1 L	300 500 mL/min
N/A	Purge SUMMA line with tank vapor	N/A	241 AZ 101 Headspace	5L	1 L/min
049	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
050	Collect TST	2	241 AZ 101 Headspace	0 4 L	50 200 mL/min
051	Collect filtered TST	3	241 AZ 101 Headspace	0 4 L	50 200 mL/min
052	Collect STT	4	241 AZ 101 Headspace	8 L	300 500 mL/min

Table 2-3 List of Samples and Activities for 241-AZ-101 Headspace (5 sheets)

Sample Code	Sample/Activity Description	Sample Probe Line	Sampler Position During Collection	Sample Volume	Sample Duration or Flow Rate ¹
053	Collect PUF trap	5	241 AZ 101 Headspace	25 L	2 5 5 L/min
Collect sample set #6 (optional) at direction of Process Engineering					
054	Collect particulate filter and tritium trap sample	6	241 AZ 101 Headspace	1 L	300 500 mL/min
N/A	Purge SUMMA line with tank vapor	N/A	241 AZ 101 Headspace	5L	1 L/min
055	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
057	Collect TST	7	241 AZ 101 Headspace	0 4 L	50 200 mL/min
058	Collect filtered TST	8	241 AZ 101 Headspace	0 4 L	50 200 mL/min
059	Collect STT	9	241 AZ 101 Headspace	8 L	300 500 mL/min
060	Collect PUF trap	10	241 AZ 101 Headspace	25 L	2 5 5 L/min
061	Collect PUF trap	11	241 AZ 101 Headspace	25 L	2 5 5 L/min
Collect sample set #7 when both mixer pumps are oscillating and operating at maximum speed (1200 rpm)					
062	Collect particulate filter and tritium trap sample	1	241 AZ 101 Headspace	1 L	300 500 mL/min
N/A	Purge SUMMA line with tank vapor	N/A	241 AZ 101 Headspace	5L	1 L/min
063	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
064	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
065	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
066	Collect TST	2	241 AZ 101 Headspace	0 2 L	50 200 mL/min
067	Collect TST	3	241 AZ 101 Headspace	0 2 L	50 200 mL/min
068	Collect TST	4	241 AZ 101 Headspace	0 4 L	50 200 mL/min
069	Collect filtered TST	5	241 AZ 101 Headspace	0 4 L	50 200 mL/min
070	Collect STT	6	241 AZ 101 Headspace	4 L	300 500 mL/min
071	Collect STT	7	241 AZ 101	8 L	300 500

Table 2-3 List of Samples and Activities for 241-AZ-101 Headspace (5 sheets)

Sample Code	Sample/Activity Description	Sample Probe Line	Sampler Position During Collection	Sample Volume	Sample Duration or Flow Rate ¹
			Headspace		mL/min
072	Collect PUF trap	8	241 AZ 101 Headspace	25 L	2 5 5 L/min
073	Collect PUF trap	9	241 AZ 101 Headspace	25 L	2 5 5 L/min
Collect sample set #8 (optional) at direction of Process Engineering					
074	Collect particulate filter and tritium trap sample	1	241 AZ 101 Headspace	1 L	300 500 mL/min
N/A	Purge SUMMA line with tank vapor	N/A	241 AZ 101 Headspace	5L	1 L/min
075	Collect SUMMA canister	N/A	241 AZ 101 Headspace	6 L	2 min
076	Collect TST	2	241 AZ 101 Headspace	0 4 L	50 200 mL/min
077	Collect filtered TST	3	241 AZ 101 Headspace	0 4 L	50 200 mL/min
078	Collect STT	4	241 AZ 101 Headspace	8 L	50 200 mL/min
079	Collect PUF trap	5	241 AZ 101 Headspace	25 L	2 5 5 L/min
Blanks					
080	Store TST Trip Blank for ambient samples	N/A			
081	Store TST Trip Blank for event #1	N/A			
082	Store TST Trip Blank for event #2	N/A			
083	Store TST Trip Blank for event #3	N/A			
084	Store TST Trip Blank for event #4	N/A			
085	Store TST Trip Blank for event #5	N/A			
086	Store TST Trip Blank for event #6	N/A			
087	Store TST Trip Blank for event #7	N/A			
088	Store STT Trip Blank for event #2	N/A			
089	Store PUF Trip Blank for event #2	N/A			

Note

¹CPO and WSCF may adjust sample durations and flow rates as necessary to collect the samples

Table 2-4 Vapor Sampling Summary

Sample Location	Sample Time	Sample Type	Sample Container	Number of Samples
---	Baseline	Trip blank	TST	Up to 8
			SST	1
			PUF	1
---	Baseline	Ambient	SUMMA	2
			TST	1
			STT	1
			PUF	1
241-AZ-101 Headspace	Baseline	Headspace	SUMMA	3
			TST	4
			STT	2
			PUF	2
			Particulate filter assembly	1
	During initial pump operation of Pump #1	Headspace	SUMMA	Up to 4
			TST	Up to 6
			STT	Up to 3
			PUF	Up to 3
			Particulate filter assembly	Up to 2
	When Pump #1 is first operated in oscillating mode	Headspace	SUMMA	Up to 5
			TST	Up to 8
			STT	Up to 4
			PUF	Up to 5
			Particulate filter assembly	Up to 2
	When both mixer pumps are operating at maximum speed	Headspace	SUMMA	Up to 4
			TST	Up to 6
			STT	Up to 3
			PUF	Up to 3
			Particulate filter assembly	Up to 2

Notes

Baseline = prior to pump startup

Each particulate filter assembly contains two particulate filters mounted in series

2.3 RADIATION SCREENING

Surveys using particulate filter samples and tritium traps from the 241-AZ-101 headspace will be performed during the test on selected samples. Particulate filters will be located upstream of the SUMMA canisters and one set of the TSTs during sample collection. The particulate filters will be used to allow the samples to obtain a radiological release and ensure that the samples meet the WSCF laboratory acceptance criteria. The particulate filter samples will be collected by CPO and sent to WSCF for analysis of both the upstream and downstream particulate filters in each particulate filter assembly. Analytical procedures are specified in Section 3.0. If the samples exceed the WSCF acceptance criteria, the samples will be shipped to 222-S. The results from the radiation screening shall be submitted to CPO, WSCF and the Process Engineering point of contact for vapor sampling for evaluation.

3 0 LABORATORY ANALYSIS REQUIREMENTS

The responsibilities of the analytical laboratories are given in this section. Additional quality control and deliverable requirements are given in Sections 4 0 and 7 0.

Vapor samples shall be analyzed by WSCF in accordance with Table 3-1. Sorbent tube trains shall be analyzed for ammonia and oxides of nitrogen (nitric oxide and nitrogen dioxide). SUMMA canisters shall be analyzed for total non-methane hydrocarbons, hydrogen, nitrous oxide, methane, carbon monoxide, carbon dioxide, and selected organic analytes. TSTs shall be analyzed for selected organic analytes. PUF samples shall be analyzed for TBP and DBP.

Required analytes are those listed in Tables 3-2. Quantitation limit goals for the Class A and B toxic air pollutants in these tables are documented in Mulkey (1999). In addition to the compounds listed, a determination is to be made for all other peaks that are at least 10 percent of the nearest internal standard. If possible, peaks smaller than 10 percent of the nearest internal standard should also be identified. All major constituents in the sample should be identified.

It is possible that not all samples will be analyzed. It is expected that, at a minimum, the laboratory will be directed to analyze all trip blanks, field blanks, baseline samples, and at least four sets of samples from tank 241-AZ-101 headspace. Prior to the receipt of the samples at the laboratory, the Process Engineering point of contact for vapor sampling shall provide WSCF with a list identifying the samples not to be analyzed if necessary.

Particulate filter samples shall be analyzed at the WSCF as discussed in Section 2 3 and in accordance with Table 3-1.

If any requested analyses cannot be performed, the Process Engineering point of contact for vapor sampling shall be notified.

Table 3-1 Chemical and Radiological Analytical Requirements

VAPOR ANALYSES										
Project Name	AZ-101 Mixer Pump Test		Comments			Reporting Formats				
Plan Number		RPP 5534 Rev 0	Field Blank Required	Trip Blank Required		Format I	Immediate Notification			
						Format II	Process Control			
Program Contact	A B Carlson					Format III	Safety Screen			
RPP Contact	A M Templeton					Format IV	Waste Management			
Lab Contact	R S Viswanath/Kathy Powell					Format V	RCRA Compliance			
Environmental	C H Mulkey					Format VI	Special			
PRIMARY ANALYSES										
ANALYSIS METHOD	PRIMARY ANALYTE	PROCEDURE	LAB	SAMPLE PREP	SAMPLE CONTAINER	SURROGATE SPIKE	NOTIFICATION LIMIT	PRECISION	ACCURACY	REPORT FORMAT
GC/MS	Organic Speciation	LA 523 404	WSCF	Direct	SUMMA	none	≥ 20% LFL and/or 50% IDLH	±25%	70 130%	I VI
GC/TCD	CO ₂ CO CH ₄ H ₂ and N ₂ O	LA 523 409	WSCF	Direct	SUMMA	none	≥ 20% LFL and/or 50% IDLH	±25%	70 130%	I VI
GC/FID	Total nonmethane hydrocarbons	LA 523-407	WSCF	Direct	SUMMA	none	≥ 20% LFL	±25%	70 130%	I VI
IC	NH ₃	LA 533-402	WSCF	H ₂ O Extraction	STT	none	≥ 150 ppmv	±25%	70 130%	I VI
IC	Oxides of nitrogen	LA 533 400	WSCF	H ₂ O Extraction	STT	none	≥ 150 ppmv	±25%	70 130%	I VI
GC/MS	Organic Speciation	LA 523 408	WSCF	Thermal Desorption	TST	all	≥ 20% LFL and/or 50% IDLH	±25%	70 130%	I VI
GC/MS	TBP DBP	LA 523 428	WSCF	Solvent Extraction	PUF	none	≥ 20% LFL and/or 50% IDLH	±25%	70 130%	I VI
Total α total β γ Energy	Radionuclides	LA 548 421 LA 508 415 LA 508 462	WSCF	Direct	Particulate Filter	N/A	N/A	±25%	70 130%	II

Notes

N/A = not applicable

FID = flame ionization detector

GC/MS = gas chromatography/mass spectrometry

GC/TCD = gas chromatography/thermal conductivity detector

IDLH = immediately dangerous to life and health

LFL = lower flammability limit

RPP = River Protection Project

RCRA = Resource Conservation and Recovery Act

IC = ion chromatography

Table 3-2 Vapor Analytes and Quantitation Limits (4 sheets)

Analyte	CAS Number	VPROL (mg/m ³)	VPROL (ppbv)
VOCs in TST Samples			
Acetone	67-64-1	0.15	63
Acetonitrile	75-05-8	0.15	89
Benzene	71-43-2	0.15	47
1-Butanol	71-36-3	0.15	49
Dodecane	112-40-3	0.15	22
n-Hexane	110-54-3	0.15	43
Propanenitrile	107-12-0	0.15	67
Tridecane	629-50-5	0.15	20
Dichloromethane (methylene chloride)	75-09-2	0.15	43
Butanenitrile	109-74-0	0.15	53
2-Pentanone	107-87-9	0.15	43
n-Heptane	142-82-5	0.15	37
Methoyl benzene (toulene)	108-88-3	0.15	40
Pentanenitrile	110-59-8	0.15	44
2-Hexanone (methyl butyl ketone)	591-78-6	0.15	37
Octane	111-65-9	0.15	32
Hexanenitrile	628-73-9	0.15	38
2-Heptanone	110-43-0	0.15	32
n-Nonane	111-84-2	0.15	29
Heptanenitrile	629-08-3	0.15	33
2-Octanone	111-13-7	0.15	29
Decane	124-18-5	0.15	26
Undecane	1120-21-4	0.15	23
Dodecane	112-40-3	0.15	22
Methanol	7-56-1	0.15	110
Ethanol	64-17-5	0.15	80
1-Propanol	71-23-8	0.15	61
Tetrahydrofuran	109-99-9	0.15	51
1, 2, 4-Trimethylbenzene	95-63-6	0.15	30
o-Xylene	95-47-6	0.15	34
Carbon tetrachloride	56-23-5	0.15	24

Table 3-2 Vapor Analytes and Quantitation Limits (4 sheets)

Analyte	CAS Number	VPRQL (mg/m ³)	VPRQL (ppbv)
Chloroform	67-66-3	0 15	31
1,2 dichloroethane	107-06-2	0 15	TBD
1,1 dichloroethylene	75-35-4	0 15	TBD
2,4 dinitrotoluene	121-14-2	0 15	TBD
Hexachlorobutadiene	87-68-3	0 15	TBD
Hexachloroethane	67-72-1	0 15	TBD
Methyl ethyl ketone	78-93-3	0 15	TBD
Nitrobenzene	98-95-3	0 15	TBD
Pyridine	110-86-1	0 15	TBD
Trichloroethylene	79-01-6	0 15	TBD
2,4,5 trichlorophenol	95-95-4	0 15	TBD
Vinyl chloride	75-01-4	0 15	TBD
Tetrachloroethylene	127-18-4	0 15	22
Permanent Gases in SUMMA Samples			
Carbon Dioxide	124-38-9	90	50 ppmv
Carbon Monoxide	630-08-0	57	50 ppmv
Hydrogen	1333-74-0	4 1 0	50 ppmv
Methane	74-82-8	33	50 ppmv
Nitrous oxide	10024-97-2	90	50 ppmv
TNMOC in SUMMA Samples			
Total non-methane organic compounds		0 07	150
VOCs in SUMMA Samples			
Acetone	67-64-1	0 012	5 0
Acetonitrile	75-05-8	0 008	5 0
Benzene	71 43-2	0 016	5 0
Butanal	123-72-8	0 015	5 0
1-Butanol	71-36-3	0 015	5 0
Propanenitrile	107-12-0	0 011	5 0
Chloroethane	75-00-3	0 013	5 0
Trichlorodifluoromethane (Freon 12)	75-71-8	0 025	5 0
Methylbenzene	108-88-3	0 019	5 0
Ethylbenzene	100-41-4	0 022	5 0

Table 3-2 Vapor Analytes and Quantitation Limits (4 sheets)

Analyte	CAS Number	VPROL (mg/m ³)	VPROL (ppbv)
2-Butanone	78-93-3	0.015	5.0
n-Heptane	142-72-5	0.020	5.0
Tetrahydrofuran	109-99-9	0.015	5.0
2-Propanol	67-63-0	0.012	5.0
1-Propanol	71-23-8	0.012	5.0
Trichlorofluoromethane (Freon 11)	75-69-4	0.028	5.0
o-Xylene	95-47-6	0.022	5.0
m-Xylene	108-38-3	0.022	5.0
p-Xylene	106-42-3	0.022	5.0
1,2,4-Trimethylbenzene	95-63-6	0.024	5.0
Decane	124-18-5	0.029	5.0
4-Methyl-2-pentanone	108-10-1	0.020	5.0
Butanenitrile	109-74-0	0.014	5.0
Octane	111-65-9	0.023	5.0
Tetrachloroethylene	127-18-4	0.034	5.0
Chloromethane	74-87-3	0.010	5.0
Dichloromethane (methylene chloride)	75-09-2	0.017	5.0
Chloroform (trichloromethane)	67-66-3	0.024	5.0
Carbon tetrachloride (tetrachloromethane)	56-23-5	0.031	5.0
Pentane	109-66-0	0.015	5.0
2-Methylpentane	107-83-5	0.018	5.0
1-Hexene	592-41-6	0.017	5.0
n-Butane	106-97-8	0.012	5.0
3-Methyl hexane	598-34-4	0.020	5.0
1,4-Diethylene dioxide (dioxin)	123-91-1	0.018	5.0
Chlorobenzene	108-90-7	0.023	5.0
Styrene	100-42-5	0.021	5.0
3-Heptanone	106-35-4	0.023	5.0
Cyclohexanone	108-94-1	0.020	5.0
Furan	110-00-9	0.014	5.0
n-Nonane	111-84-2	0.026	5.0

Table 3-2 Vapor Analytes and Quantitation Limits (4 sheets)

Analyte	CAS Number	VPRQL (mg/m³)	VPRQL (ppbv)
Ethanol	64-17-5	0 009	5 0
2-Pentanone	107-87-9	0 018	5 0
2-Hexanone	591-78-6	0 020	5 0
2-Heptanone	110-43-0	0 023	5 0
1,2 dichloroethane	107-06-2	0 15	TBD
1,1 dichloroethylene	75-35-4	0 15	TBD
2,4 dinitrotoluene	121-14-2	0 15	TBD
Hexachlorobutadiene	87-68-3	0 15	TBD
Hexachloroethane	67-72-1	0 15	TBD
Methyl ethyl ketone	78-93-3	0 15	TBD
Nitrobenzene	98-95-3	0 15	TBD
Pyridine	110-86-1	0 15	TBD
Trichloroethylene	79-01-6	0 15	TBD
2,4,5 trichlorophenol	95-95-4	0 15	TBD
Vinyl chloride	75-01-4	0 15	TBD
2-Octanone	111-13-7	0 026	5 0
PUF			
Dibutyl phosphate	107-66-4		100
Tributyl phosphate	126-73-8		100
Inorganic Sorbent Tube Train Samples			
Ammonia	7664-41-7	10	14 ppmv
Nitrogen dioxide	10102-44-0	5 0	2 7 ppmv
Nitrous oxide	10102-43-9	5 0	4 1 ppmv

Notes

CAS = Chemical Abstracts Service

PUF = polyurethane foam

VPRQL = Vapor Program Required Quantitation Limit

4 0 QUALITY ASSURANCE AND QUALITY CONTROL

Vapor sampling and analysis shall be performed in accordance with approved quality assurance (QA) plans. These plans are required to meet the *Hanford Analytical Services Quality Assurance Requirements Document* (HASQARD) (DOE 1998) requirements. Validation of this compliance shall be verified either by a HASQARD assessment stating their quality program satisfactorily meets the appropriate requirements, or the quality program plan and applicable procedures will be submitted and approved prior to work performance on sampling or analytical work. Quality requirements for conducting Characterization Project sampling and analysis are described in *Tank Waste Remediation System Characterization Project Quality Policies* (Board 1998) and this sampling and analysis plan. Characterization Project sampling and analysis shall be conducted in conformance with these QA requirements.

Processes, services, activities, and conditions adverse to quality which do not conform to requirements specified in this sampling and analysis plan or references herein shall be controlled to prevent inadvertent use. Nonconforming sampling and analysis processes shall be identified, controlled, reported, and dispositioned as required by LMHC (1999).

4 1 LABORATORY OPERATIONS

Analytical procedures that are to be used for this sample and analysis plan shall be written and approved prior to the performance of analytical work within the laboratory. Analytical QC requirements are identified in Table 3-1. The laboratory shall also use calibration and calibration check standards appropriate for the analytical instrumentation being used (see DOE [1998] for definitions of QC samples and standards). The criteria presented are goals for demonstrating reliable method performance. It is understood that the laboratory will follow its internal QC system for required actions whenever QC failures occur. If sample QC failures occur or if all analyses cannot be performed (e.g., insufficient sample), analysts shall consult with supervisors/customers to determine the proper action. The laboratory should provide a suggested course of action at that time. All sample QC failures and limitations on the associated data shall be discussed in the narrative of the data report. Proper notification of all data not meeting QC requirements shall be included with the data.

4 2 SAMPLE COLLECTION

Sampling shall be performed in accordance with approved procedures and work plans included within the job control system. All data sheets and log entries completed during the performance of sampling shall be copied and included within the job control system package.

Each sample identification number shall have the following format

VLXXX-YYY-ZZZZ

where,

V indicates a vapor sample,

W = a letter code identifying the organization that prepared the sample container/sample media

W = WSCF,

XXX = a three-digit/letter code identifying the sample location

101 = 241-AZ-101 headspace

AMB = ambient air samples at 241-AZ tank farm

YYY = a three-digit sample code found in Table 2.3

ZZZZ = a special lab-assigned code

4.3 SAMPLE CUSTODY

Chain-of-custody will be carefully maintained to assure sample control at all times

5 0 EXCEPTIONS, CLARIFICATIONS, AND ASSUMPTIONS

5 1 CLARIFICATIONS

Trip Blanks and Field Blanks

Trip Blanks are sampling devices prepared and handled in the same manner as samples, except that they are never opened in the field. Field Blanks are sampling devices prepared and handled in the same manner as the samples, but no tank gases are drawn through them.

5 2 EXCEPTIONS

The analytes required for the vapor analyses are found in Mulkey (1999) (Table 8-3 and Table C-1). Only a subset of the analytes listed in Table C-1 will be included for analysis. This subset is the analytes included for the tank 241-C 106 vapor analyses and is shown in Table 3-2.

60 ORGANIZATION

The organization and responsibility of key personnel involved with these tank characterization projects are listed in Table 6-1

Table 6-1 Project Key Personnel

Responsibility	Organization	Individual
Data Development and Interpretation manager	RPP Process Engineering (CHG)	J G Field, 376 3753
Process Engineering point of contact for AZ-101 vapor sampling	RPP Process Engineering (CHG)	A M Templeton, 373-5589
Waste retrieval mixer pump test technical contact	Retrieval Engineering (NHC)	A B Carlson, 376 1642
Waste retrieval mixer pump operation	RPP Process Engineering, (CHG)	K G Carothers, 373-4556
Vapor sampling cognizant engineer	Characterization Field Engineering (CHG)	D D Wanner, 373-3297
Vapor Sampling manager	Characterization Project Operations (CPO) (CHG)	J F Sickels, 373-0259
Client Services, Analytical Services Project	Fluor Hanford	K, L Powell, 372-0939
Team Lead, Organic Chemistry, WSCF	Fluor Hanford	R S Viswanath, 373-9223
Analytical Production, WSCF	Fluor Hanford	K J Greenough, 373-7194
Analytical Production, WSCF	Fluor Hanford	S L Cobb, 373-7118
Industrial Hygiene and Safety points of contact	Tank Farm Facilities Operations, Field Safety Services (CHG)	R J Fogg, 373-0630 N K Butler, 376 5795
Double-Shell Tank Farm point of contact	Tank Farm Operations	Double-Shell Tank Farm Operations shift manager, 373-2689
Environmental point of contact	Environmental Services (CHG)	C H Mulkey, 373-0956

CHG = CH2MHILL Hanford Group Inc

7 0 DELIVERABLES

Sampling and analytical results shall be reported as Format VI reports. Any analyte exceeding the notification limit prescribed in Table 3-1 shall also be reported as a Format I report. In addition, Format II reports shall be provided by CPO, and WSCF as described in Section 7.2

7.1 FORMAT I REPORTING

Table 3-1 contains the notification limits for specific analytes. Analytes that exceed notification limits shall be reported by the Project Manager or delegate by calling the Double-Shell Tank Farms Operations shift manager as soon as the data are obtained and reviewed by the responsible scientist. This verbal notification must be followed within one hour by electronic notification to the Double-Shell Tank Farms Operations shift manager, the Industrial Hygiene and Safety point of contact, the RPP Process Engineering Data Development and Interpretation manager, and the Process Engineering point of contact for vapor sampling. A further review of the data, including quality control results and additional analyses for verification purposes may be contracted with the performing laboratory by either a revision to this sampling and analysis plan or by a letter.

7.2 FORMAT II REPORTING

WSCF shall provide the results of radiological analyses using the standard WSCF analytical laboratory report format. The results shall be faxed to WSCF and the Process Engineering vapor sampling point of contact within 48 hours of receipt of the samples and followed by transmittal of a copy of the results via plant mail.

CPO shall provide information on its sampling activities (copies of sampling data sheets, J-5 forms, chain of custody forms, and other pertinent documentation) to WSCF and the Process Engineering vapor sampling point of contact. The information provided shall include the sample collection sequence and volumes, start and stop times for the collection of each sample, the VOC reading at the start of the collection of each sample, and any anomalous sampling conditions. This information shall be provided within 48 hours of the collection of the last set of samples.

7.3 FORMAT VI REPORTING

The Format VI report shall consist of two deliverables, preliminary analytical results, and a final data package.

Preliminary sampling and analytical data shall be delivered within three weeks of the receipt of the samples at the laboratory. The preliminary data shall consist of, at a minimum, data tables reporting sample collection data, particulate filter analysis results, and the results of each analysis performed by the analytical laboratory. The following individuals shall be on distribution for the

preliminary results A B Carlson, C H Mulkey, K G Carothers, G M Crummel, A M Templeton, G R Tardiff, and L M Sasaki

A data package shall be issued as a supporting document within ten weeks of the receipt of the samples at the laboratory. The data package shall contain the elements listed in Table 7-1. The following individuals shall be on distribution for the entire data package: R A Bechtold, C H Mulkey, G M Crummel, A M Templeton, and A E Young. The following individuals require only the engineering data transmittal: K G Carothers, A B Carlson, and C A Simonen.

In addition to the data package, an electronic version of the analytical results shall be provided to the Tank Vapor Database representative within 4 calendar days from the day that the final data package is issued. The data must be available to the Washington State Department of Ecology within 7 calendar days of release of the data package. The electronic version shall be in the standard electronic format specified in Bobrowski and Simonen (1999).

Table 7-1 Data Package Required Elements (2 sheets) ¹

Prefatory Elements
Executive summary
Table of contents
List of abbreviations and acronyms
Quality assurance data package review results
Non-conformance reports
Sampling Elements
Sampling case narrative
Sample summary and event chronology
Sampling procedures table
Sampling logbook table
Field data
Radiation screening results
Chain of custody forms

Table 7-1 Data Package Required Elements (2 sheets) ¹

Analysis Elements
Analytical case narrative
Analytical procedures table
Data qualifier flag translation table
Target analytes concentration table
Tentatively identified compound concentration table
Laboratory blank summary
Field blank summary
Trip blank summary
Mass spectrometer instrument tune report
Target analyte initial calibration table
Internal standards area counts table
Laboratory control sample results table
Surrogate compounds results table
Quantitation reports
Chromatograms
Mass spectra of reported tentatively identified compounds

Note

¹Include all elements as applicable

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 Project. All significant changes shall be documented by RPP Process Engineering via an engineering change notice to this sampling and analysis plan or by a letter. All changes shall also be clearly documented in the final data report. Insignificant changes may be made by placing a notation in the permanent record (i.e., note change in log book or memorandum to file). Significance is determined by the Process Engineering point of contact for vapor sampling.

90 REFERENCES

- Banning, D L , 1999, *Tank 241-AZ-101 Mixer Pump Test Data Quality Objective*, RPP-5498, Rev 0, Lockheed Martin Hanford Corp , Richland, Washington
- Board, D C , 1998, *Tank Waste Remediation System, Characterization Project Quality Policies*, HNF-SD-WM-QAPP-025, Rev 4, Lockheed Martin Hanford Corp for Fluor Daniel Hanford, Inc , Richland, Washington
- Bobrowski, S F , and C A Simonen, 1999, *Standard Electronic Format Specification for Tank Vapor Data MSEXCEL Spreadsheets Version 1 0*, HNF-3815, Rev 0, prepared by Pacific Northwest National Laboratory for Lockheed Martin Hanford Corp, Richland, Washington
- DOE, 1998, *Hanford Analytical Services Quality Assurance Requirements Document*, DOE/RL-96-68, Rev 2, U S Department of Energy, Richland Field Office, Richland, Washington
- Fogg, R J , 2000, *241-AZ-101 IH Sampling/Monitoring Strategy - Rev/ 1*, (internal memorandum 7B100-RJF-00-002, to J L Homan, January 24), CH2M HILL Hanford Group, Inc , Richland, Washington
- Hodgson, K M , 1995, *Tank Characterization Report for Double-Shell Tank 241-AZ-101*, WHC-SD-WM-ER-410, Westinghouse Hanford Company, Richland, Washington
- CHG, 1999, *Nonconforming Item Reporting and Control*, HNF-PRO-298, Rev 0, CH2M Hill Hanford Group, Inc , Richland, Washington
- Mulkey, C H , 1999, *Data Quality Objectives for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis*, WHC-SD-WM-DQO-021, Rev 1, Lockheed Martin Hanford Corp , Richland, Washington

APPENDIX A

AZ-101 CORE PROFILE

AZ-101 PMCS CORE PROFILE

FILE Core Profile 241AZ101 C266 C269 CRD
DATE 12/15/99 FINAL