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VAPOR & GAS SAMPLING OF SST 241-AX-101 USING THE
VAPOR SAMPLING SYSTEM

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VAPOR AND GAS SAMPLING OF SINGLE-SHELL TANK 241-AX-101 USING THE VAPOR SAMPLING SYSTEM

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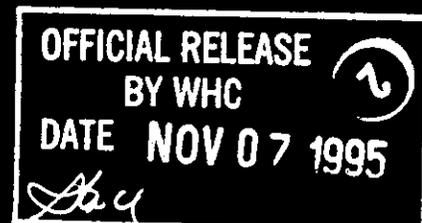
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7. Abstract

THIS DOCUMENT PRESENTS SAMPLING DATA RESULTING FROM THE JUNE 15, 1995, SAMPLING OF SST 241-AX-101 USING THE VAPOR SAMPLING SYSTEM.

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Using the Vapor Sampling System

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LIST OF TERMS

CGI	Combustible Gas Indicator
COC	Chain Of Custody
DOT	U.S. Department of Transportation
GC	Gas Chromatograph
GC/FID	Gas Chromatograph/Flame Ionization Detector
GEA	Gamma Energy Analysis
HEPA	High-Efficiency Particulate Air (filter)
NH ₃	Ammonia
NO ₂	Nitrogen Dioxide
NO	Nitric Oxide
H ₂ O	Water Vapor
OPC	Offsite Property Control
ORNL	Oak Ridge National Laboratory
OVM	Organic Vapor Meter
PNL	Pacific Northwest Laboratory
SML	Sampling and Mobile Laboratories
SST	Single-Shell Tank
TCP	Tank Characterization Plan
team	SML Vapor Team
TOC	Total Organic Carbon
TST	Triple Sorbent Trap
VSS	Vapor Sampling System
WHC	Westinghouse Hanford Company

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**VAPOR AND GAS SAMPLING OF SINGLE-SHELL TANK 241-AX-101
USING THE VAPOR SAMPLING SYSTEM**

1.0 SCOPE

The Vapor Issue Resolution Program tasked the Sampling and Mobile Laboratories (SML) to collect representative headspace samples from Hanford Site single-shell tank (SST) 241-AX-101. This document presents sampling data resulting from the June 15, 1995 sampling of SST 241-AX-101. Analytical results will be presented in separate reports issued by the laboratories that supplied and analyzed the sampling media.

2.0 SAMPLING EQUIPMENT DESCRIPTION

2.1 VAPOR SAMPLING SYSTEM

The SML vapor team (the team) used the vapor sampling system (VSS) to collect representative samples of the air, gases, and vapors from the headspace of SST 241-AX-101 on June 15, 1995. Mahon et al. (1994) describes in detail the VSS, its performance, and its operation. The team used the VSS to collect sorbent trap and SUMMA¹ canister headspace samples from SST 241-AX-101. The team then sent these samples to the analytical laboratories for analysis.

The VSS comprises a mobile laboratory, a hot-water-jacketed stainless-steel probe that is inserted into the tank headspace, and stainless-steel transfer tubing that connects the mobile laboratory to the probe. A vacuum pump draws sample vapor from the tank headspace and through all transfer tubing and the sampling manifold. Electrically activated, pneumatically actuated, valves direct sample flow within the VSS. Instrumentation housed in the mobile laboratory monitors and controls system temperature, monitors absolute and differential system pressure, meters and controls vapor mass flow, and monitors sample vapor total organic carbon (TOC) content using a gas chromatograph/flame ionization detector (GC/FID).

A key feature of the VSS is its use of heated transfer tubing and a heated sampling manifold. Maintaining the system temperature at an electronically controlled, elevated temperature prevents vapor condensation and reduces vapor adsorption on surfaces exposed to sample vapor. Mahon et al. (1994) describes various tests and observations that indicate the VSS sample transfer efficiency is consistently high.

Sorbent trap samples are collected at the sorbent trap station of the sampling manifold. Sorbent traps are pencil-size stainless-steel or glass tubes that

¹SUMMA is a registered trademark of Moleetrics, Inc., Cleveland, Ohio.

contain vapor-adsorbing media. A known amount of sample vapor is passed through the tube, which traps (by adsorption) virtually all the target analytes. The concentration of analytes in the vapor sampled is calculated from the quantity of analyte found in the sorbent media and the volume of vapor passed through the sorbent trap.

The sorbent trap station uses highly accurate mass flow controllers to measure and control the flow rate of sample vapor through the sorbent traps. The controllers FICV-1 through FICV-9 are mounted on top of the sorbent station between the inlet and outlet valves. Controllers FICV-10 and FICV-11 are located downstream of the sorbent trap station and the in-line driers, which remove moisture from the sample vapor before it is metered. Errors associated with the mass flow controllers were determined by the Westinghouse Hanford Company (WHC) Standards Laboratory before the SST 241-AX-101 sampling event (see Table 1). Flow rates and the duration of flow are specified by the analytical laboratories that supply and analyze the sorbent traps.

Table 1. Flow Control Calibration.

Flow-indicating Control valve	Typically used Flow (stdcm ³ /min)	% Change from 647 to Actual	% Change from Datalogger to Actual
1	200	-0.7	-0.85
2	200	0.05	-0.10
3	200	-0.45	-0.60
4	200	0.05	-0.10
5	200	0.55	0.35
6	200	0.25	0.05
7	200	0.4	0.20
8	200	0.25	-1.81
9	50	-0.128	-0.27
10	200	-1.1	-1.20
11	5000	0.332	0.17

The VSS is also equipped with a gas chromatograph (GC). The Hewlett Packard 5890 Series II GC is equipped with a flame-ionization detector (FID), a 1 mL sample loop, a 10 port injection valve, a 2 meter chromatographic column, a programmable oven, and a portable computer loaded with the HP-Chemstation² software used to control the GC. The GC is plumbed to directly transfer sample from the VSS manifold to the GC sample loop. After the sample is

² HP-Chemstation is a registered trademark of the Hewlett Packard Company, Avondale, Pennsylvania.

transferred into the sample loop and reaches equilibrium, the run is initiated manually. HP-Chemstation™ software activates the 10 port valve to transfer the sample from the sample loop to the column. The sample passes through the column and the FID generates a signal for total organic carbon (TOC). All data is then transmitted to the computer where it is stored for further analysis.

The GC is equipped with a HP-5 column which is 2 meters long, 0.25 mm inside diameter, and which contains a 0.25 um phenyl methyl silicone phase. The GC oven is programmed to heat from 50 °C to 270 °C at a rate of approximately 70 °C per minute. Helium is the carrier gas, air and hydrogen the combustion gases, and nitrogen the make-up gas.

The GC/FID is configured to quantitatively estimate concentrations of total organic carbon (TOC). The GC/FID confirms sampling system cleanliness, ambient air background TOC concentrations during sampling, and TOC concentration of tank vapor samples. The system is multi-point calibrated at the weather station on a as available basis, the last time being January 1995. The GC/FID has displayed a high degree of stability over a period of months. For further details, see Section 3.6, Field GC/FID Results.

The sampling manifold also has a station for sampling vapor with evacuated SUMMA™ canisters. SUMMA™ canisters are stainless-steel vessels with internal surfaces that have been prepared by the SUMMA™ process, which passivates active sites on the canister walls to minimize adsorption of gases and vapors. An analytical laboratory must clean and evacuate SUMMA™ canisters before use. The evacuated canister is filled with sample vapor through a manually operated valve, which is then closed to seal the sample inside. SUMMA™ canisters essentially allow collection and transfer of whole-air samples from the sample site to an analytical laboratory where the sample is analyzed. The standard capacity of each SUMMA™ canister is 6 liters.

3.0 SAMPLING EVENT DESCRIPTION

3.1 SPECIFICATIONS

The Vapor Issue Resolution Program specifies sampling requirements in WHC-SD-WM-TP-335, Rev. 0D, *Vapor Sampling and Analysis Plan* (Homi 1995). The sampling and analysis plan also specifies the types and number of samples to be collected, flow rates, and durations. These key sampling parameters are summarized on the sample log sheets in Appendix A. In addition to the sample log sheets, checksheets for each individual sample help ensure correct sampling procedures. SML retains these documents in the project file. This sample event's project-specific number is S5-028.

3.2 OPERATIONS AND SAMPLING PERSONNEL

Steve Carter was the Tank Farm Operations person-in-charge. The other SML vapor team members included:

- G. S. Caprio, VSS Technician
- R. D. Mahon, VSS Lead Scientist
- T. B. Utecht, VSS Technician
- R. A. Westberg, Field Scientist.

The VSS was set up at SST 241-AX-101 on June 14, 1995 and was allowed to warm up overnight. Sampling began shortly after 10:00 a.m. on June 15, 1995, and was completed by 3:00 p.m. the same day.

3.3 INDUSTRIAL HYGIENE FIELD RESULTS

Before hooking up to SST 241-AX-101, an industrial hygiene technician field tested tank vapors. The technician purged the vapor probe sample tube for 5 minutes and then field measured vapor stream contents using a combustible gas indicator (CGI) and an organic vapor meter (OVM). The measurements were verbally reported, LEL 0.0%, HCN 0 ppm, NH₃ 30 ppm, and O₂ 20.9%.

3.4 AMBIENT CONDITIONS

The weather the day of the sampling event, June 15, 1995 was approximately 60 °F and cloudy with a light breeze from the north. Graphs of ambient temperatures and pressures taken at the Hanford Meteorological Station, which is about 6 miles west of AX-Farm, are provided in Appendix B.

3.5 SAMPLE COLLECTION

The hot-water-jacketed sampling probe was located in Riser R9F of SST 241-AX-101. The probe length, from the sample inlet to the top of the riser flange, was 7.3 meters.

All zones of the VSS were heated to 60 °C during setup of the VSS at SST 241-AX-101 on June 14, 1995. The team stabilized the VSS temperature zones by 10:00 a.m. on June 15, 1995, and the system was ready to collect samples. Measured according to the VSS operating procedure, the pressure and temperature of SST 241-AX-101 were 970 mbar (737.3 torr) and 25.6 °C, respectively. The sample log sheets in Appendix A provide a complete chronology of the sample event including start and end times, flow rates, volumes, and specific sample identifiers.

Approximately 23 hours before the first samples were collected, the team began heating the VSS transfer tubing and sampling manifold. During this warmup period, the team began a purge of all vapor transfer tubing and the sampling manifold with ambient air. Before sampling tank vapors on June 15, 1995, the team collected two SUMMA[™] canister samples of ambient air, one manually

10 meters upwind of the VSS connection with SST 241-AX-101, and the other using the VSS sampling manifold. The former was collected to establish background levels of trace organic vapors, and the latter was collected to establish the cleanliness of the sampling manifold.

A leak check of the VSS sampling manifold and transfer tubing (up to the connection to the sampling probe) was performed prior to opening the tank probe vapor sampling valve. The system was evacuated to 285 mbar (214.0 torr) and leakage of ambient air into the system was observed by monitoring system pressure for 15 minutes. Leakage resulted in an increase of 10.9 mbar (8.2 torr) in system pressure during the 15 minute test. Given a system volume of not more than 10 L, this pressure increase corresponds to a leak rate of approximately 25.5 mL/min at a 285 mbar (214 torr). This leak rate was then estimated for average SUMMA™, triple sorbent trap (TST), and sorbent sampling pressures. It was found that for the SUMMA™ canisters, dilution by ambient air was approximately 0.3%, for TSTs sampled at 50 mL/min the dilution was approximately 0.7%, for TSTs sampled at 200 mL/min the dilution was approximately 0.9%, and for sorbent traps the dilution was approximately 0.8%.

The tank probe vapor sampling valve was opened and the VSS was purged with sample vapor from SST 241-AX-101 for 30 minutes at a total flow rate of 5.46 L/min. This purge was performed to flush ambient air from the system and saturate the system's active adsorption sites. Because the volume of transfer tubing and the sampling manifold upstream of the sampling devices is estimated to be no more than 10 L, this purge provided about 16.4 air turnovers in the system.

Two analytical laboratories provided sample media. Oak Ridge National Laboratory (ORNL) provided TSTs for organic vapors; and Pacific Northwest Laboratory (PNL) provided SUMMA™ canisters, TSTs, and sorbent traps for organic vapors, ammonia (NH₃), nitrogen dioxide (NO₂), and water vapor (H₂O).

3.6 FIELD GC/FID RESULTS

The GC was single point calibrated on the day of sampling using 6.0 ppmC Propane standard by Scott Specialty Gas. The standard is an E.P.A. Protocol Gas that is ±2% NIST traceable.

Table 2 displays the Field GC/FID results from the sampling of SST 241-AX-101.

Table 2. TOC Results.

Number of Runs	Description	Average TOC Concentration (ppmC)	% Standard Deviation
3	Propane	6.00	1.37
4	Ambient	2.81	1.13
4	Tank Vapor	5.42	0.48

3.7 RADIATION SCREENING

Samples are unconditionally released from the SST farm in accordance with 1995-33300-RSP-03, *Release of Vapor Sampling Equipment* (WHC 1995c). Radiological screening results are used to determine (1) if the samples must be shipped as radioactive or nonradioactive in accordance with U.S. Department of Transportation (DOT) regulations and (2) if the samples meet the laboratory acceptance criteria.

The DOT limits for shipping a nonradioactive sample are 2,000 combined pCi/g of beta-gamma activity and alpha activity. Samples exceeding these DOT limits may be shipped as radioactive material if the samples do not exceed the following laboratory acceptance criteria:

- ORNL: Beta-gamma activity <450 pCi/g of sample media. Alpha activity <135 pCi/g.
- PNL: Beta-gamma activity <400 pCi/g of sample media. Alpha activity <100 pCi/g of sample media.

To protect the sampling manifold and sampling devices from radioactive particulates, all sample vapor for the June 15, 1995, SST 241-AX-101 vapor sampling event was drawn through a series of four glass-fiber high-efficiency particulate air (HEPA) filters placed upstream of the sampling manifold. These four filters were in place any time tank vapors were flowing through the system. When sampling was complete, the filters were removed and assigned unique sample identifiers. All four HEPA filters were submitted to Laboratory 222-S for total alpha, total beta, and gamma energy analysis (GEA). The HEPA filter closest to the sampling manifold was analyzed to determine if the samples met DOT shipping criteria and laboratory acceptance criteria. Moisture from the tank vapors was collected in a silica gel trap through one of the sorbent station ports and analyzed for tritiated water. SST 241-AX-101 filter and silica gel analysis results are shown in Table 3. SML scientists use the activity results in Table 3 to calculate pCi/g of sample media. SML maintains this information in the project-specific file. The results in Table 3 indicate that the samples collected from SST 241-AX-101 met the laboratory acceptance criteria and the DOT definition of a nonradioactive shipment.

Table 3. Radionuclide Analysis Results.

Filter	Sample Identifier	Activity Results ^a (pCi/sample)	Activity ^b (pCi/L of tank gas)
Upstream HEPA filter (box)	S5028-A51.OU1	Total Alpha = 79.7 Total Beta = 364 GEA = 112 (²⁰⁸ Tl) GEA = 296 (²¹² Pb)	= 0.24 = 1.09 = 0.33 = 0.88
Downstream HEPA filter (box)	S5028-A52.OD1	Total Alpha = <0.721 Total Beta = <1.51 GEA = <detectable	= <0.002 = <0.005 = <detectable
Upstream HEPA filter (VSS)	S5028-A53.OU2	Total Alpha = <0.721 Total Beta = <1.51 GEA = <detectable	= <0.002 = <0.005 = <detectable
Downstream HEPA filter (VSS)	S5028-A54.OD2	Total Alpha = <0.721 Total Beta = <1.51 GEA = <detectable	= <0.002 = <0.005 = <detectable
Tritium trap	S5028-A03.OT1	Total activity = <50.0	= <50.0 ^c

Notes:

The samples are nonradioactive. These results were evaluated against laboratory acceptance criteria and DOT limits.

^aAll less than (<) values represent the minimum detection limits at Laboratory 222-S.

^bNumbers based on an approximation of the total volume of tank vapor through the HEPA filters. Appendix A and the sample checksheets were used to estimate a total flow through the VSS of 335 L.

^cNumber is calculated using a total volume of 1 L passing through the tritium trap.

4.0 SAMPLE CHAIN OF CUSTODY: RECEIPT, STORAGE, AND SHIPMENT

All sorbent trains, sorbent tubes, and SUMMA[™] canisters received by SML are kept in a custody locked storage area maintained by SML. Sorbent trains and tubes were maintained at 4 ± 2 °C in a refrigeration unit. SUMMA[™] canisters were stored in the same locked storage area, but were not refrigerated.

TSTs are supplied by ORNL and ORNL initiates the chain-of-custody (COC) forms. The sample media is placed in 40-mL volatile organic analysis vials. Evidence tape is applied to the vials, which are then placed in a shipping container along with the relinquished COC forms and shipped to SML. TSTs are shipped to SML in a cooler containing "blue" ice.

The TSTs were received, inventoried against the COC forms, and the "received by" block on the COC form was signed by SML. They were maintained at 4 ± 2 °C before and after the sampling event in the storage area refrigeration unit.

The TSTs were shipped back to ORNL after the sampling event using offsite property control (OPC W95-0-0435-12). Table 4 lists the sample identifiers,

sample types, and COC form numbers for all ORNL samples. The samples were delivered to shipping on June 20, 1995 with instructions to ship by Federal Express, next-day delivery.

Table 4. Oak Ridge National Laboratory Samples.

Sample Identifier	Sample Type	COC Number
S5028-A7.971	TST	006766
S5028-A8.972	TST	006766
S5028-A9.974	TST	006766
S5028-A10.973	TST field blank	006766
S5028-A11.975	TST	006766
S5028-A12.976	TST	006766
S5028-A13.977	TST	006766
S5028-A14.978	TST	006766
S5028-A15.649	TST	006766
S5028-A16.980	TST	006766
S5028-A17.624	TST field blank	006766
S5028-A18.981	TST	006766
S5028-A19.982	TST	006766
S5028-A20.983	TST	006766
S5028-A21.984	TST trip blank	006766
S5028-A22.985	TST trip blank	006766

PNL supplied sorbent chain traps, TSTs, and SUMMA™ canisters, including COC forms. These sampling devices were picked up from PNL by SML and transported in a government vehicle to a custody locked storage area. The sorbent trains were maintained at 4 ± 2 °C before and after the sampling event in storage area refrigeration unit.

After sampling, the PNL sorbent tubes and SUMMA™ canisters were transported by government vehicle directly to PNL and delivered to J. A. Edwards on June 20, 1995. Table 5 lists the sample identifiers, sample types, and COC form numbers for all PNL samples.

Table 5. Pacific Northwest Laboratory Samples.

Sample Identifier	Sample Type	COC Number
S5028-A01.062	Ambient upwind SUMMA™	008892
S5028-A02.095	Ambient SUMMA™ (VSS)	008892
S5028-A04.147	SUMMA™	008892
S5028-A05.151	SUMMA™	008892
S5028-A06.222	SUMMA™	008892
S5028-A23.99U	NH ₃ /NO _x /H ₂ O sorbent	008893
S5028-A24.U01	NH ₃ /NO _x /H ₂ O sorbent	008893
S5028-A25.U02	NH ₃ /NO _x /H ₂ O sorbent	008893
S5028-A26.U03	NH ₃ /NO _x /H ₂ O sorbent	008893
S5028-A27.U04	NH ₃ /NO _x /H ₂ O sorbent	008893
S5028-A28.U05	NH ₃ /NO _x /H ₂ O sorbent	008893
S5028-A29.U06	NH ₃ /NO _x /H ₂ O trip blank	008893
S5028-A30.U07	NH ₃ /NO _x /H ₂ O trip blank	008893
S5028-A31.U08	NH ₃ /NO _x /H ₂ O trip blank	008893
S5028-A32.U21	NH ₃ /NO _x /H ₂ O field blank	008893
S5028-A33.U22	NH ₃ /NO _x /H ₂ O field blank	008893
S5028-A34.U23	NH ₃ /NO _x /H ₂ O field blank	008893
S5028-A35.043	PNL TST	008904
S5028-A36.044	PNL TST	008904
S5028-A37.045	PNL TST	008904
S5028-A38.046	PNL TST field blank	008904
S5028-A39.047	PNL TST	008904
S5028-A40.048	PNL TST	008904
S5028-A41.049	PNL TST	008904
S5028-A42.050	PNL TST	008904
S5028-A43.051	PNL TST	008904
S5028-A44.052	PNL TST	008904
S5028-A45.053	PNL TST field blank	008904
S5028-A46.054	PNL TST	008904
S5028-A47.055	PNL TST	008904
S5028-A48.056	PNL TST	008904
S5028-A49.057	PNL TST trip blank	008904
S5028-A50.058	PNL TST trip blank	008904

From the time that samples are received by SML until they are shipped back to the analytical laboratory, all COCs are maintained by SML in accordance with WHC-IP-1127-1.3, *Chain-of-Custody/Special Analysis Request for RCRA and CERCLA Protocol Samples* (WHC 1995a). Copies of the completed COC forms for this sampling event are included in Appendix C.

5.0 QUALITY ASSURANCE AND CONTROLS

5.1 VAPOR SAMPLING SYSTEM CLEANING

Immediately prior to sampling of SST 241-AX-101, the VSS manifold and vapor sample transfer tubing was heated to 60 °C and ambient air was purged through the system for 23 hours. Also, all pertinent system valves were actuated to release any contaminants that may have collected in the VSS valves themselves. After this purge an ambient air sample was drawn through the VSS manifold and a GC/FID run was initiated. No significant level of contaminants was detected. A second ambient air GC/FID run confirmed that the VSS manifold and transfer tubing was free of organic remnant residue down to ambient levels. A SUMMA™ canister ambient air sample was then collected to confirm by laboratory analysis that the VSS sampling manifold was free of trace organic contaminants (or to determine which contaminants were present and at what concentration), as discussed in Section 3.5. For further details, refer to Appendix E of WHC-IP-1127-4.10 (WHC 1995b) and the project-specific file located with SML.

In compliance with LO-080-405/A0, *Vapor Space Probe Cleaning Procedure* (WHC 1993) the team cleaned the hot-water-jacketed probe before it was installed in SST 241-AX-101. This procedure requires a solvent rinse of all internal probe surfaces with acetone and methanol to clear the sample line of possible contamination remaining from the construction process. The probes are then heated to 90 °C, and dry air is passed through the probe to evaporate the solvents. Before the probes are released, the team ensures by a hand-held organic vapor meter that the total organic concentration in the sample line is below 1 ppmv.

5.2 INSTRUMENT CALIBRATION

Instruments located in the VSS are calibrated on an annual basis at the WHC Standards Laboratory. VSS instrumentation calibration data, maintained in files by SML, are summarized in Table 6. According to the calibration schedule shown in Table 6, all instrumentation was within its calibration period during the SST 241-AX-101 sampling event.

Table 6. Calibration Data.

Element	Calibration Date	Expiration Date	WHC Standards Laboratory Code
FICV-1	5/08/95	5/08/96	518-28-03-012
FICV-2	5/08/95	5/08/96	518-28-03-008
FICV-3	5/08/95	5/08/96	518-28-03-004
FICV-4	5/08/95	5/08/96	518-28-03-006
FICV-5	5/08/95	5/08/96	518-28-03-011
FICV-6	5/08/95	5/08/96	518-28-03-009
FICV-7	5/08/95	5/08/96	518-28-03-014
FICV-8	5/08/95	5/08/96	518-28-03-013
FICV-9	5/08/95	5/08/96	518-28-03-007
FICV-10	5/08/95	5/08/96	518-28-03-010
FICV-11	5/08/95	5/08/96	518-28-03-005
PE-1	5/04/95	5/04/96	518-80-02-005
PE-2	5/04/95	5/04/96	518-80-02-006
PE-3	5/04/95	5/04/96	518-80-02-008
PE-4	5/04/95	5/04/96	518-80-02-007
PD-1	5/04/95	5/04/96	518-80-02-004
PD-2	5/04/95	5/04/96	518-80-02-003
Temperature Control System	3/30/95	3/30/96	804-67-74-009

5.3 BLANK SAMPLES

Trip blanks are samples that accompany the sample media from the point of generation through sample analysis. They are transported to the field with the sample collection media but remain unopened during the sampling event. Analysis of trip blanks is used to assess cross-contamination of sample media during field transport and storage.

Field blanks are sampling devices similar to trip blanks. They are prepared and handled in the same manner as the sampling media, but no tank vapors are drawn through them.

Spiked blanks are prepared as regular sampling media but also contain a known amount of special analyte. Tank vapors are drawn through these blanks and

they are handled and analyzed just like any other sample. Analysis of the spiked blanks is used to evaluate potential sample loss during shipment or storage.

Ambient blanks are samples of ambient air collected at the sampling location. Analysis of ambient blanks is used to assess contamination that may be present in the atmosphere or in the transfer tubing or sampling manifold of the VSS immediately prior to sampling operations.

Tables 4 and 5 also list sample blanks used during the sampling of SST 241-AX-101.

6.0 ANOMALIES

All samples were collected in accordance with the Tank Characterization Plan (TCP) and WHC-IP-1127-4.5, *Collection of SUMMA Canisters and Sorbent Tube Samples Using the Vapor Sampling System* (1995b). There were no anomalies during the sample collection and the samples maintained their integrity. It is important to note, however, that the SML vapor sampling team suspects that the thermocouple within the sampling probe is in contact with the water line. The SML vapor team suspects this because the initial tank reading indicated 26 °C but after the NESLAB was connected to the water line and began heating the thermocouple reading began to increase until the thermocouple reading matched the NESLAB temperature of 59 °C.

7.0 REFERENCES

- 49 CFR 100-177, 1992, "Transportation," *Code of Federal Regulations*, as amended.
- Homi, C. S., 1995, *Vapor Sampling and Analysis Plan*, WHC-SD-WM-TP-335, Rev. 0D, Westinghouse Hanford Company, Richland, Washington.
- Mahon, R. D., C. M. Jones, and M. S. Story, 1994 (draft), *Evaluation of the Capabilities and Use of the Vapor Sampling System for Tank Headspace Sampling and Characterization*, SD-WM-RPT-094, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1995a, *Chain-of-Custody/Special Analysis Request for RCRA and CERCLA Protocol Samples*, Procedure WHC-IP-1127-1.3, Rev. 1, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1995b, *Collection of Parallel Sorbent Tube and SUMMA Canister Samples Using the Vapor Sampling System*, Procedure WHC-IP-1127-4.10, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1995c, *Release of Vapor Sampling Equipment*, Procedure 1995-33300-RSP-03, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1993, *Vapor Space Probe Cleaning Procedure*, Procedure LO-080-405/A0, Westinghouse Hanford Company, Richland, Washington.

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APPENDIX A
SAMPLE LOG SHEETS

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Waste Tank
241-AX-101

Date: 6/15/95

VSS Personnel: Mahon, Caprio, Westberg, Utecht

Trailer Personnel: Utecht

Set up VSS (Secton A)|Temperature set point = 60°C)

Ensure HEPA filters are installed

Ensure connection to sample probe

System status check sheet. (Verify zones are to temp)

Tank Temperature 25.6 C

GC Standard Runs

GC Ambient Air Runs through port 10

WHC Sample ID	PNL	ORNL	Port	Description	Desired		Desired		Actual		Actual	
					Flow Rate SCCM	Duration (min.)	Total Flow SCCM	Flow Rate SCCM	Start Time	End Time	Total Time (min.)	Total Flow Liters
Purge with ambient air for 30 min.												
S5028-A01.062	062			Overnight	5500	30	165000	5500	6/14-10:15	6/15-9:40	1405	7,728
S5028-A01.062 AMBIENT #1 10:09 10:10												
GC Run #1 Ambient air/Cleanliness check 10:14												
S5028-A02.095	095	15		AMBIENT #2		1			10:22	10:23		
GC RUN#2 Ambient air 10:26 10:27												
LEAK CHECK(APPENDIX A) Leak Rate: <u>32.8 torr/hr</u>												
Purge with tank air for 30 min												
Measure tank pressure					5500	30	165000	5500	11:00	11:30	30	165.00
PE-1 = 737.3												
S5028-A03.0T1			8	Tritium Trap	200	5	1000	200.00	11:38	11:43	5	1.00
GCRUN #3 (Tank run #1) 11:46												
S5028-A04.147	147	11		SUMMA #3		1			12:23	12:24	1	6.00
S5028-A05.151	151	13		SUMMA #4		1			12:28	12:29	1	6.00
S5028-A06.222	222	15		SUMMA #5		1			12:32	12:33	1	6.00
GCRUN #4 (Tank run #2) 12:36												

Waste Tank
241-AX-101

WHC Sample ID	PNL ORNL Sample ID	Port Valve #	Description	Desired		Desired		Actual		Actual		
				Flow Rate SCCM	Duration (min.)	Total Flow SCCM	Flow Rate SCCM	Start Time	End Time	Total Time (min.)	Total Flow Liters	
S5028-A07.971	TST#971	1	TST #1	50	4	200	50.00	12:43	12:47	4	0.20	
S5028-A35.043	PNL TST#043	2	PNL TST #1	50	4	200	50.00	12:43	12:47	4	0.20	
S5028-A08.972	TST#972	3	TST #2	50	4	200	50.00	12:43	12:47	4	0.20	
S5028-A36.044	PNL TST#044	4	PNL TST #2	50	4	200	50.00	12:43	12:47	4	0.20	
S5028-A09.974	TST#974	5	TST #3	50	4	200	50.00	12:43	12:47	4	0.20	
S5028-A37.045	PNL TST#045	6	PNL TST #3	50	4	200	50.00	12:43	12:47	4	0.20	
S5028-A11.975	TST#975	7	TST #4	50	4	200	50.00	12:43	12:47	4	0.20	
S5028-A39.047	PNL TST#047	8	PNL TST #4	50	4	200	50.00	12:43	12:47	4	0.20	
<hr/>												
S5028-A12.976	TST#976	1	TST #5	200	5	1000	200.00	13:04	13:09	5	1.00	
S5028-A40.048	PNL TST#048	2	PNL TST #5	200	5	1000	200.00	13:04	13:09	5	1.00	
S5028-A13.977	TST#977	3	TST #6	200	5	1000	200.00	13:04	13:09	5	1.00	
S5028-A41.049	PNL TST#049	4	PNL TST #6	200	5	1000	200.00	13:04	13:09	5	1.00	
S5028-A14.978	TST#978	5	TST #7	200	5	1000	200.00	13:04	13:09	5	1.00	
S5028-A42.050	PNL TST#050	6	PNL TST #7	200	5	1000	200.00	13:04	13:09	5	1.00	
S5028-A15.649	TST#649	7	TST #8	200	5	1000	195.00	13:04	13:09	5	0.98	
S5028-A43.051	PNL TST#051	8	PNL TST #8	200	5	1000	193.00	13:04	13:09	5	0.97	

Waste Tank
241-AX-101

WHC Sample ID	PNL ORNL Sample ID	Port Valve #	Description	Desired		Actual		Actual Total Time (min.)	Actual Total Flow Liters	
				Flow Rate SCCM	Duration (min.)	Flow Rate SCCM	Start Time			End Time
S5028- A16. 980	TST#980	1	TST # 9	200	20	200.00	13:28	13:48	20	4.00
S5028- A44. 052	PNL TST#052	2	PNL TST # 9	200	20	200.00	13:28	13:48	20	4.00
S5028- A18. 981	TST#981	3	TST # 10	200	20	200.00	13:28	13:48	20	4.00
S5028- A46. 054	PNL TST#054	4	PNL TST # 10	200	20	200.00	13:28	13:48	20	4.00
S5028- A19. 982	TST#982	5	TST # 11	200	20	200.00	13:28	13:48	20	4.00
S5028- A47. 055	PNL TST#055	6	PNL TST # 11	200	20	200.00	13:28	13:48	20	4.00
S5028- A20. 983	TST#983	7	TST # 12	200	20	190.60	13:28	13:48	20	3.81
S5028- A48. 056	PNL TST#056	8	TST # 12	200	20	192.20	13:28	13:48	20	3.84
S5028- A10. 973	TST#973		TST FIELD BLANK #1				13:55	13:56		
S5028- A17. 624	TST#624		TST FIELD BLANK #2				13:55	13:56		
S5028- A38. 046	PNL TST#046		PNL TST FIELD BLANK #1				13:55	13:56		
S5028- A45. 053	PNL TST#053		PNL TST FIELD BLANK #2				13:55	13:56		
GCRUN#5 (Tank run #3)							13:58			
S5028- A23. 99U	99U	1	NH3/NOx/H2O #1	200	15	200.00	14:18	14:33	15	3.00
S5028- A24. U01	U01	2	NH3/NOx/H2O #2	200	15	200.00	14:18	14:33	15	3.00
S5028- A25. U02	U02	3	NH3/NOx/H2O #3	200	15	200.00	14:18:20	14:33	14.67	2.93
S5028- A26. U03	U03	4	NH3/NOx/H2O #4	200	15	200.00	14:18	14:33	15	3.00
S5028- A27. U04	U04	5	NH3/NOx/H2O #5	200	15	200.00	14:18	14:33	15	3.00
S5028- A28. U05	U05	6	NH3/NOx/H2O #6	200	15	200.00	14:18	14:33	15	3.00
S5028- A32. U21	U21		NH3/NOx/H2O FIELD BLANK #1				14:26	14:27		
S5028- A33. U22	U22		NH3/NOx/H2O FIELD BLANK #2				14:26	14:27		
S5028- A34. U23	U23		NH3/NOx/H2O FIELD BLANK #3				14:29	14:30		
GCRUN#6 (Tank run # 4)							14:54			

TOTAL TANK GAS USED DURING SAMPLING RUNS 78.13

Waste Tank
241-AX-101

PNL	ORNL	Sample ID	Port	Valve #	Description	Desired Flow Rate SCCM	Desired Duration (min.)	Desired Total Flow SCCM	Actual Flow Rate SCCM	Actual Start Time	Actual End Time	Actual Total Time (min.)	Actual Total Flow Liters
-----	------	-----------	------	---------	-------------	------------------------	-------------------------	-------------------------	-----------------------	-------------------	-----------------	--------------------------	--------------------------

S5028-A51.0U1	T-2016 (222S)				Upstream HEPA(box)								
S5028-A52.0D1	T-2017 (222S)				Downstream HEPA(box)								
S5028 A53.0U2	T-2018 (222S)				Upstream HEPA(VSS)								
S5028-A54.0D2	T-2019 (222S)				Downstream HEPA (VSS)								

Trip Blanks (DO NOT EXPOSE)

S5028-A21.984	TST#984				TST TRIP #1								
S5028-A22.985	TST#985				TST TRIP #2								
S5028-A29.U06	U06				NH3/NOx/H2O TRIP #1								
S5028-A30.U07	U07				NH3/NOx/H2O TRIP #2								
S5028-A31.U08	U08				NH3/NOx/H2O TRIP #3								
S5028-A49.057	PNL TST#057				PNL TST TRIP #1								
S5028-A50.058	PNL TST#058				PNL TST TRIP #2								

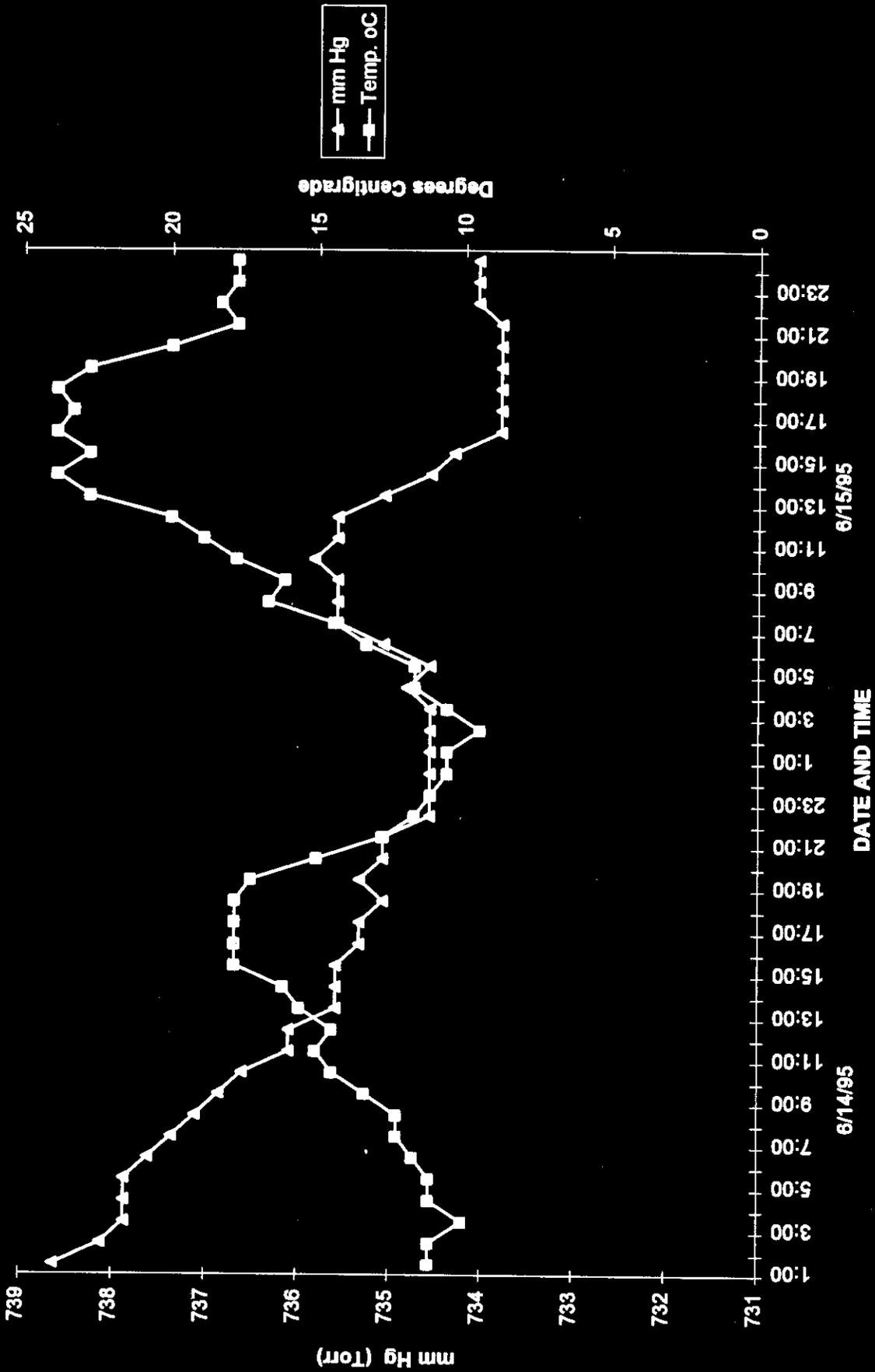
AX-101
TOTAL TANK VAPOR USED

	NUMBER OF EVENTS	TIME IN MINUTES	VOLUME IN SCCM	TOTAL VOLUME, LITERS
LEAK CHECKS	1	0	5600	5.60
TANK PURGE PUMP DOWNS	3	1	5600	16.80
TANK PURGE TIME (From Spreadsheet)	1	30	5500	165.00
GC PURGES	4	2	5000	40.00
SUMMA PURGES	3	2	5000	30.00
ALL SAMPLES COLLECTED				78.13
TOTAL FOR TANK SAMPLING RUN				335.53

APPENDIX B
AMBIENT CONDITIONS

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WEATHER DURING VSS SAMPLING OF 241-AX-101



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APPENDIX C
CHAIN-OF-CUSTODY FORMS

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009204

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUIRED COPY

Westinghouse Hanford Company		Company Contact: R.D. Mehan		Telephone No: 373-7937	
Collector: T.B. Citecht		Sampling Location: 241 AX-101		SAF No: SS028	
Project Designation: 241-AX		Field Logbook No: WHC-N-647#10		Method of Shipment: Box Vehicle #920	
Lot Chart No: N/A		Office Property No: N/A		EM of Loading/AF EM No: N/A	
Shipped To: 222-S LABJ		Preservative: N/A			
Possible Sample Hazards/Remarks: NONE		Type of Container: Petri Dish			
		No. of Containers: (5)			
		Volume: 47ml			
Special Handling and/or Storage: NONE					
SAMPLE ANALYSIS					
Sample No.	Matrix*	Date Sampled	Time Sampled	Signature/Print Name	Date/Time
SS028-071	Substrate	6-15-95	1430	T-2015	
SS028-001	Filter			T-2016	
SS028-001				T-2017	
SS028-000				T-2018	
SS028-002				T-2019	

SPECIAL INSTRUCTIONS

Please fax info to Tim Citecht at 373-7076. Thanks
X = silica gel + Hepa filters

- Matrix*
- S Soil
 - SE Sediment
 - SO Soil
 - SL Sludge
 - W Water
 - O Air
 - A Asbestos
 - DS Drums Solids
 - DL Drums Liquids
 - T Tires
 - W Wipes
 - L Liquid
 - V Vegetation
 - O Other

Signature/Print Names

Received By: T.B. Citecht	Date/Time: 0845	Received By: T.B. Citecht	Date/Time: 10-16-95
Retransmitted By:	Date/Time:	Retransmitted By:	Date/Time:
Retransmitted By:	Date/Time:	Retransmitted By:	Date/Time:
Retransmitted By:	Date/Time:	Retransmitted By:	Date/Time:

Received By: _____ Title: _____ Date/Time: _____

Disposal Method: _____ Disposed By: _____ Date/Time: _____

ORNL	CHAIN OF CUSTODY (Rev 1)	# 006766
Custody Form Initiator	Amy Dindal	Sampling Location
ORNL Contact	Roger Jenkins	Telephone
Method of Shipment	Federal Express	Shipped to
		241-AX-101 (VSS)
		(615) 576-8594
		Rick Mahon

Sample Identification

WHC Identifier	TST #	Trap Type	Received at WHC (✓)	Received at ORNL (✓)
S5028-A7.971	971	SAMPLE	✓	✓
S5028-A8.972	972	SAMPLE	✓	✓
S5028-A9.974	974	SAMPLE	✓	✓
S5028-A11.975	975	SAMPLE	✓	✓
S5028-A12.976	976	SAMPLE	✓	✓
S5028-A13.977	977	SAMPLE	✓	✓
S5028-A14.978	978	SAMPLE	✓	✓
S5028-A15.649	649	SAMPLE	✓	✓
S5028-A16.980	980	SAMPLE	✓	✓
S5028-A18.981	981	SAMPLE	✓	✓
S5028-A19.982	982	SAMPLE	✓	✓
S5028-A20.983	983	SAMPLE	✓	✓
S5028-A21.984	984	TRIP BLANK	✓	✓
S5028-A22.985	985	TRIP BLANK	✓	✓
S5028-A10.973	973	FIELD BLANK	✓	✓
S5028-A17.624	624	FIELD BLANK	✓	✓

ML COMMENTS: Sample Date: 6-15-95 Logbook No: WHC-N-647-10
 Refrigerator failed from 1100 ~~5~~ MAY 95 to 0800 8 MAY 95. Temperature recorder shows that 72 degrees Fahrenheit was reached and held for most of this time. Amy Dindal was contacted and informed. Amy directed that sample media is still good and can be used to sample. 11 MAY 95 RM

[] Field Transfer of Custody Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
ABDindal / ABDindal	4/27/95	759	T. Blum / T. Blum	4-28-95	1400
T. Blum / T. Blum	6-15-95	1130	RA Westby / RA Westby	6-15-95	1130
RA Westby / RA Westby	6-15-95	1440	T. Blum / T. Blum	6-15-95	1440
T. Blum / T. Blum	6-20-95	1000	A Dindal / ABDindal	6/21/95	1420

Cooler Temperature Status

Temperature (°C)	Min	Max
When Shipped from ORNL	-1°	3°
When Received at WHC	-3	5°
When Shipped from WHC	-4	7°
When Received at ORNL	-4	3

**Battelle
Pacific Northwest Lab**

CHAIN OF CUSTODY

WHC 008892

Custody Form Initiator **J. A. Edwards - PNL** Telephone **(509) 373-0141**
 Page **85-3009 / FAX 376-0418**

Company Contact **R. D. Mahon - WHC** Telephone **(509) 373-7437**
 Page **85-9656 / FAX 373-7076**

Project Designation/Sampling Locations **200 West Tank Farm** Collection date **06 - 15 - 95**
241-AX-101 Tank Vapor Sample **SAF S5-028** Preparation date **04 - 29 - 95**
 (VSS Truck)

Ice Chest No. Field Logbook No. **WHC-~~N-447-10~~**

Bill of Lading/Airbill No. **N/A** Offsite Property No. **N/A**

Method of Shipment **Government Truck**

Shipped to **PNL**

Possible Sample Hazards/Remarks **Unknown at time of sampling**

Sample Identification

S5-028 - A01 . 062 Ambient Air SUMMA #1 Upwind of AX-101
 S5-028 - A02 . 095 Ambient Air SUMMA #2 Through Port 15

S5-028 - A04 . 147 SUMMA #3 Port 11
 S5-028 - A05 . 151 SUMMA #4 Port 13
 S5-028 - A06 . 222 SUMMA #5 Port 15

Field Transfer of Custody		Chain of Possession (Sign and Print Names)			
Relinquished By	Date	Time	Received By	Date	Time
J A Edwards <i>[Signature]</i>	06/14/95	1050	Tim Utecht <i>[Signature]</i>	06-14-95	1050
Tim Utecht <i>[Signature]</i>	6-20-95	1030	J A Edwards <i>[Signature]</i>	06-20-95	1030

Final Sample Disposition

Comments:

- | | | |
|------------------------------------|---------------------------|------------------------|
| PNL (only) Checklist | Pick-up / Delivery | Comments: |
| ◊ Media labeled and checked? | <i>[Y]</i> /N | |
| ◊ Letter of instruction? | <i>[Y]</i> /N | |
| ◊ Media in good condition? | <i>[Y]</i> /N | |
| ◊ COC info/signatures complete? | <i>[Y]</i> /N | |
| ◊ Rad release stickers on samples? | <i>[Y]</i> /N | |
| ◊ Activity report from 222S? | <i>[Y]</i> /N | |
| ◊ COC copy for LRB, RIDS filed? | <i>[Y]</i> /N | |
| | POC <i>[Signature]</i> | POC <i>[Signature]</i> |

(Revised 10/17/94 PNL)

Custody Form Initiator J. A. Edwards - PNL

Telephone (509) 373-0141
Page 85-3009 / FAX 376-0418

Company Contact R. D. Mahon - WHC

Telephone (509) 373-7437
Page 85-9656 / FAX 373-7076

Project Designation/Sampling Locations 200 West Tank Farm
241-AX-101 Tank Vapor Sample SAF S5-028
(VSS Truck)

Collection date 06 - 15 - 95
Preparation date 04 - 27 - 95

Ice Chest No.

Field Logbook No. WHC-~~N-647-10~~

Bill of Lading/Airbill No. N/A

Offsite Property No. N/A

Method of Shipment Government Truck

Shipped to PNL

Possible Sample Hazards/Remarks Unknown at time of sampling

Sample Identification

S5-028 - A23 . 99U	NH ₃ /NO _x /H ₂ O (Sorbent Trap # 1)	Line # 9
S5-028 - A24 . U01	NH ₃ /NO _x /H ₂ O (Sorbent Trap # 2)	Line # 10
S5-028 - A25 . U02	NH ₃ /NO _x /H ₂ O (Sorbent Trap # 3)	Line # 8
S5-028 - A26 . U03	NH ₃ /NO _x /H ₂ O (Sorbent Trap # 4)	Line # 10
S5-028 - A27 . U04	NH ₃ /NO _x /H ₂ O (Sorbent Trap # 5)	Line # 9
S5-028 - A28 . U05	NH ₃ /NO _x /H ₂ O (Sorbent Trap # 6)	Line # 10
S5-028 - A29 . U06	NH ₃ /NO _x /H ₂ O (Trap Trip Blank # 1)	
S5-028 - A30 . U07	NH ₃ /NO _x /H ₂ O (Trap Trip Blank # 2)	
S5-028 - A31 . U08	NH ₃ /NO _x /H ₂ O (Trap Trip Blank # 3)	
S5-028 - A32 . U21	NH ₃ /NO _x /H ₂ O (Trap Field Blank # 1)	Line # 8
S5-028 - A33 . U22	NH ₃ /NO _x /H ₂ O (Trap Field Blank # 2)	Line # 9
S5-028 - A34 . U23	NH ₃ /NO _x /H ₂ O (Trap Field Blank # 3)	Line # 10

Field Transfer of Custody

Chain of Possession

(Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
G W Dennis <i>A.W.D.</i>	06-12-95	1335	J A Edwards <i>J.A. Edwards</i>	06-12-95	1335
J A Edwards <i>J.A. Edwards</i>	06-14-95	1040	Tim Utecht <i>T. Utecht</i>	06-14-95	1040
<i>T.D. Utecht / T.E. Blum</i>	06-20-95	1030	<i>J.A. Edwards / J.A. Edwards</i>	06-20-95	1030

Final Sample Disposition

Comments:

PNL (only) Checklist	Pick-up / Delivery	Comments:
<input type="checkbox"/> Media labeled and checked?	<input checked="" type="checkbox"/> Y / N	
<input type="checkbox"/> Letter of instruction?	<input checked="" type="checkbox"/> Y / N	
<input type="checkbox"/> Media in good condition?	<input checked="" type="checkbox"/> Y / N	
<input type="checkbox"/> COC info/signatures complete?	<input checked="" type="checkbox"/> Y / N	
<input type="checkbox"/> Sorbents shipped on ice? (<5°C)	<input checked="" type="checkbox"/> Y / N	
<input type="checkbox"/> Rad release stickers on samples?	<input checked="" type="checkbox"/> Y / N	
<input type="checkbox"/> Activity report from 222S?	<input checked="" type="checkbox"/> Y / N	
<input type="checkbox"/> COC copy for LRB, RIDS filed?	<input checked="" type="checkbox"/> Y / N	
<input type="checkbox"/> COC copy for sorbent follow-on?	<input checked="" type="checkbox"/> Y / N/A	
POC <i>[Signature]</i>	POC <i>[Signature]</i>	

(Revised 10/17/94 PNL)

Battelle Pacific Northwest Laboratory

CHAIN OF CUSTODY

WHC 008904

Custody Form Initiator **J. A. Edwards - PNL**
 Company Contact **R. D. Mahon - WHC**
 Project Designation/Sampling Locations **200 West Tank Farm**
241-AX-101 Tank Vapor Sample SAF S5-028
(VSS Truck)
 Ice Chest No.
 Ertco Hi/Lo thermometer No. **PNL-T-002**
 Bill of Lading/Airbill No. **N/A**
 Method of Shipment **Government Truck**
 Shipped to **WHC**
 Possible Sample Hazards/Remarks **Unknown at time of sampling**

Telephone (509) 373-0141
 Page 85-3009 / P8-08 / FAX 376-0418
 Telephone (509) 373-7437
 Page 85-9656 / S3-27 / FAX 373-7076
 Collection date **06 - 15 - 95**
 Preparation date **06 - 09 - 95**
 Field Logbook No. **WHC-N-447.10**

Sample Identification

• S5-028 - A35 . 043 /	Collect PNL Triple Sorbent Trap (TST) Sample # 1	Line # <u>2</u>
• S5-028 - A36 . 044 .	PNL TST Sample # 2	Line # <u>7</u>
• S5-028 - A37 . 045 ;	PNL TST Sample # 3	Line # <u>6</u>
• S5-028 - A38 . 046 .	Open, close & store PNL TST Field Blank # 1	In VSS truck
• S5-028 - A39 . 047 \	PNL TST Sample # 4	Line # <u>8</u>
• S5-028 - A40 . 048 .	PNL TST Sample # 5	Line # <u>2</u>
• S5-028 - A41 . 049 .	PNL TST Sample # 6	Line # <u>4</u>
• S5-028 - A42 . 050 /	PNL TST Sample # 7	Line # <u>6</u>
• S5-028 - A43 . 051 .	PNL TST Sample # 8	Line # <u>8</u>
• S5-028 - A44 . 052 .	PNL TST Sample # 9	Line # <u>2</u>
• S5-028 - A45 . 053 ;	Open, close & store PNL TST Field Blank # 2	In VSS truck
• S5-028 - A46 . 054 .	PNL TST Sample # 10	Line # <u>4</u>
• S5-028 - A47 . 055 .	PNL TST Sample # 11	Line # <u>6</u>
• S5-028 - A48 . 056 .	PNL TST Sample # 12	Line # <u>8</u>
• S5-028 - A49 . 057 \	Store PNL TST Trip Blank # 1	None
• S5-028 - A50 . 058 \	Store PNL TST Trip Blank # 2	None

[] Field Transfer of Custody		[] Chain of Possession		(Sign and Print Names)	
Relinquished By	Date	Time	Received By	Date	Time
J A Edwards <i>J A Edwards</i>	06-14-95	1030	Tim Utecht <i>T Utecht</i>	06-14-95	1030
<i>T Utecht</i>	06-20-95	1030	J A Edwards <i>J A Edwards</i>	06-20-95	1030

Final Sample Disposition

Comments:

<input type="checkbox"/> PNL (only) Checklist	Pick-up / Delivery	Comments:
<input type="checkbox"/> Media labeled and checked?	<input checked="" type="checkbox"/> Y / <input type="checkbox"/> N	
<input type="checkbox"/> Letter of instruction?	<input checked="" type="checkbox"/> Y / <input type="checkbox"/> N	
<input type="checkbox"/> Media in good condition?	<input checked="" type="checkbox"/> Y / <input type="checkbox"/> N	
<input type="checkbox"/> COC info/signatures complete?	<input checked="" type="checkbox"/> Y / <input type="checkbox"/> N	
<input type="checkbox"/> Sorbents shipped on ice? (<5°C)	<input checked="" type="checkbox"/> Y / <input type="checkbox"/> N	
<input type="checkbox"/> Hi/Lo thermometer - reset @ <u>5</u> °C	<input checked="" type="checkbox"/> Y / <input type="checkbox"/> N	Hi <u>6</u> °C / Lo <u>6</u> °C (at delivery from PNL to WHC)
<input type="checkbox"/> Hi/Lo thermometer - <i>Keep upright!</i>	<input type="checkbox"/> Y / <input type="checkbox"/> N	Hi <u>6</u> °C / Lo <u>9</u> °C (upon return to PNL from WHC)
<input type="checkbox"/> Rad release stickers on samples?	<input type="checkbox"/> Y / <input type="checkbox"/> N	
<input type="checkbox"/> Activity report from 222S?	<input type="checkbox"/> Y / <input type="checkbox"/> N	
<input type="checkbox"/> COC copy for LRB, RIDS filed?	<input type="checkbox"/> Y / <input type="checkbox"/> N	
POC <i>(Signature)</i>	POC <i>(Signature)</i>	

(Revised 05/10/95 PNL)

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