RMIS View/Print Document Cover Sheet

This document was retrieved from the Documentation and Records Management (DRM) ISEARCH System. It is intended for Information only and may not be the most recent or updated version. Contact a Document Service Center (see Hanford Info for locations) if you need additional retrieval information.

Accession #: D295186472

Document #: SD-WM-TP-414

Title/Desc:

TANK 241AP104 TANK CHARACTERIZATION PLAN

Pages: 13

NOV 08 1995

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT No 613586

2. To: (Receiving Organization) DISTRIBUTION		3. From: (Originating Organization) TWRS/TECHNICAL BASELINE INTEGRATION		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: TWRS CHAR/TECHNICAL BASELINE INTEGRATION		6. Cog. Engr.: C. S. HOMI		7. Purchase Order No.: N/A	
8. Originator Remarks: N/A For release				9. Equip./Component No.: N/A	
				10. System/Bldg./Facility: AP-104	
11. Receiver Remarks:				12. Major Assm. Dwg. No.: N/A	
				13. Permit/Permit Application No.: N/A	
				14. Required Response Date: 11/06/95	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-WM-TP-414		0	TANK 241-AP-104 TANK CHARACTERIZATION PLAN	N/A	1	1	

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 2. Release 3. Information		4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)		1. Approved 2. Approved w/comment 3. Disapproved w/comment		4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged			
(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)						(G)	(H)		
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1		Cog. Eng. C. S. HOMI	<i>[Signature]</i>	11/6/95							
1		Cog. Mgr. S. J. EBERLEIN	<i>[Signature]</i>	11/6/95							
		Safety									
		Env.									
18.		19.			20.			21. DOE APPROVAL (if required)			
C. S. HOMI <i>[Signature]</i> 11/6/95 Signature of EDT Originator		N/A Authorized Representative Date for Receiving Organization			S. J. EBERLEIN <i>[Signature]</i> 11/6/95 Cognizant Manager Date			Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments			

RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-TP-414, REV 0

Document Title: Tank 241-AP-104 Tank Characterization Plan

Release Date: 11/7/95

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara Broz

11/7/95

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.

This report has been reproduced from the best available copy. Available in paper copy. Printed in the United States of America. To obtain copies of this report, contact:

Westinghouse Hanford Company - Document Control Services
P.O. Box 1970, Mailstop H6-08, Richland, WA 99352
Telephone: (509) 372-2420; Fax: (509) 376-4989

SUPPORTING DOCUMENT		1. Total Pages <i>10</i>
2. Title TANK 241-AP-104 TANK CHARACTERIZATION PLAN	3. Number WHC-SD-WM-TP-414	4. Rev No. 0
5. Key Words CHARACTERIZATION, GENERAL SAFETY ISSUES, SPECIFIC SAFETY ISSUES, INFORMATION REQUIREMENTS, PRIORITY	6. Author Name: <i>G. S. HOMI</i> <i>[Signature]</i> <i>11/6/95</i> Signature <div style="text-align: right;">E44330</div> Organization/Charge Code 75320/N465A	
7. Abstract <p>This document is a plan that identifies the information needed to address relevant issues concerning short-term and long-term safe storage and long-term management of Double-Shell Tank (DST) 241-AP-104.</p>		
8. <div style="border: 1px solid black; padding: 10px; text-align: center;"> RELEASE STAMP <div style="border: 1px solid black; padding: 5px;"> OFFICIAL RELEASE BY WHC DATE NOV 0 8 1995 <i>Sta. 4</i> </div> </div>		

Tank 241-AP-104

Tank Characterization Plan

C. S. Homi
Westinghouse Hanford Company

Date Published
November 1995

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

Westinghouse
Hanford Company

P.O. Box 1970
Richland, Washington

Management and Operations Contractor for the
U.S. Department of Energy under Contract DE-AC06-87RL10930

Approved for Public Release

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	PROGRAM ELEMENTS REQUIRING INFORMATION FOR 241-AP-104	1
2.1	GENERAL SAFETY ISSUES	2
2.2	SPECIFIC SAFETY ISSUES	2
2.2.1	Ferrocyanide	2
2.2.2	Organic	2
2.2.3	High Heat	2
2.2.4	Flammable Gas	2
2.2.5	Vapor	2
2.2.6	Criticality	2
2.2.7	Screening Approach Evaluation	3
2.3	CONTINUING OPERATIONS	3
2.3.1	Compatibility/Stabilization	3
2.3.2	Evaporator	3
2.4	DOUBLE-SHELL TANK WASTE ANALYSIS PLAN	3
2.5	DISPOSAL	3
2.5.1	Retrieval	3
2.5.2	Pretreatment/Vitrification	3
2.6	HISTORICAL MODEL EVALUATION	4
3.0	HOW INFORMATION WILL BE OBTAINED	4
4.0	PRIORITY OF INFORMATION REQUIREMENTS	4
5.0	WHEN INFORMATION IS NEEDED	4
6.0	REFERENCES	5

LIST OF TABLES

4-1	Integrated DQO Requirements	4
-----	---------------------------------------	---

LIST OF ABBREVIATIONS

AP-104	241-AP-104
DQO	Data Quality Objective
DSSF	Double-Shell Slurry Feed
HTCE	Historical Tank Content Estimate
NCPLX	Non-complexed waste
TCP	Tank Characterization Plan
TLM	Tank Layering Model
TOC	Total Organic Carbon
USQ	Unreviewed Safety Question
WHC	Westinghouse Hanford Company

1.0 INTRODUCTION

This Tank Characterization Plan (TCP) identifies the information needed to address relevant issues concerning short-term and long-term safe storage and long-term management of Double Shell Tank 241-AP-104 (AP-104). It should be understood that the various needs and issues surrounding tank AP-104 are evolving as new information about the tank is uncovered. As a result of this progression, this Tank Characterization Plan addresses only the issues that, to this date, have been identified. It is expected that deviations from this plan may occur as additional issues or needs arise which impact the management of tank AP-104. As necessary, this Tank Characterization Plan will be revised to reflect those changes or deviations.

Tank AP-104 was constructed in the mid-1980s and entered into service in October 1986. From July 1986 until May 1990, AP-104 received Hanford facility waste. From the first quarter until the third quarter of 1987, tank AP-104 received N Reactor waste. From June 1990 until March 1994, the tank waste was designated as dilute non-complexed. AP-104 is currently active and has received 1,625 kL of non-complexed waste from Tank SY-102 in July 1995. This tank currently contains waste with a total waste volume of 1,798 kL (475 kgal), which is equivalent to 439 centimeters (172.7 inches) of waste as measured from the baseline of the tank (Hanlon 1995).

A single waste sample (identified as T-513) was obtained from tank AP-104 and was analyzed on August 5, 1987. The sample was a yellow brown liquid with almost no solids. The chemical analysis revealed a high concentration of sodium and phosphorous cations with phosphate and sulfate anions (Brevick 1995b). The phosphorous cation as measured by inductively couple plasma is the same phosphorous in the phosphate anion as measured by ion chromatography. Terbium and cobalt were the primary radionuclides found during the analysis.

This tank is not on any Watch list. Near-term sampling and analysis activities are focused on either verification of the non-watchlist tank status, identification of any new safety issues or changing the non-Watch List status. Should any safety issues be identified additional analysis will occur consistent with the identified issue.

In addition to the resolution of the safety issues, it is intended that all tank waste will be subject to pretreatment and retrieval to prepare for final storage or disposal. Presently, these long-range plans have yet to be fully identified and are, therefore, not included in this document.

2.0 PROGRAM ELEMENTS REQUIRING INFORMATION FOR TANK 241-AP-104

This section identifies the various program elements, and identifies which of these programs require characterization data from tank AP-104.

2.1 GENERAL SAFETY ISSUES

The Tank Safety Screening Data Quality Objective (Dukelow 1995) describes the sampling and analytical requirements that are used to screen waste tanks for unidentified safety issues. The primary analytical requirements for the safety screening of a tank are energetics, total alpha activity, moisture content, and flammable gas concentration.

2.2 SPECIFIC SAFETY ISSUES

2.2.1 Ferrocyanide

This tank is not on the Ferrocyanide Watch List and; therefore, no information needs are currently identified for this program element.

2.2.2 Organic

This tank is not on the Organic Watch List and; therefore, no information needs are currently identified for this program element.

2.2.3 High Heat

This tank is not listed as high heat and; therefore, no information needs are currently identified for this program element.

2.2.4 Flammable Gas

This tank is not on the Flammable Gas Watch List and; therefore, no information needs are currently identified for this program element.

2.2.5 Vapor

The tanks currently scheduled to be vapor sampled may be classified into four categories: (1) those tanks which are to be rotary mode core sampled (as a consequence of the rotary sampling system); (2) tanks on the Organic or Ferrocyanide Watch Lists; (3) tanks in C farm; and (4) tank BX-104, due to vapor exposure. This tank is not categorized in one of the above four groups, therefore characterization of the tank headspace is not needed.

2.2.6 Criticality

No information separate from that for the general safety issue of tank AP-104 are currently identified for this program element. However, if the general safety screening of tank AP-104 identifies a potential criticality concern, analyses for fissile materials and neutron sorbers and poisons will be performed as identified in the safety screening data quality objective.

2.2.7 Screening Approach Evaluation

The safety screening approach is currently under review. Information is required from key tanks to determine if a revised approach to screening may be adopted, as proposed in Meacham 1995.

2.3 CONTINUING OPERATIONS

2.3.1 Compatibility/Stabilization

Tank AP-104 waste will be sampled to determine compatibility. Sampling and analysis requirements must be performed as per *Data Quality Objectives for the Waste Compatibility Program* (Fowler 1995). The analyses employed will be for transuranics (TRUs) such as ²³⁹Pu and ²⁴¹Am, Total Organic Content (TOC), heat generation (by determining the amount of ⁹⁰Sr and ¹³⁷Cs) and measuring the "pumpability" of the waste (i.e. density, viscosity, percent of volume composed of solids...etc).

2.3.2 Evaporator

No information needs are currently identified for this program element.

2.4 DOUBLE-SHELL TANK WASTE ANALYSIS PLAN

No information needs are currently identified for this program element, although work to identify these needs is in progress and expected to be completed in fiscal year 1995.

2.5 DISPOSAL

2.5.1 Retrieval

Current retrieval needs (Bloom 1995) do not call for test samples to be taken from tank AP-104.

2.5.2 Pretreatment/Vitrification

Tank AP-104 has not been identified as a bounding tank for pretreatment/disposal process development (Kupfer 1995).

2.6 HISTORICAL MODEL EVALUATION

Bounding tanks and data requirements for historical model evaluations are found in DQO *Historical Model Evaluation Data Requirements* (Simpson and McCain 1995). Tank AP-104 is not identified as a primary bounding tank for historical model evaluations.

3.0 HOW INFORMATION WILL BE OBTAINED

The safety screening DQO requires that a vertical profile of the tank waste be obtained from at least two widely spaced risers. This vertical profile may be obtained using core, auger (for shallow tanks), or grab samples. A grab sampling has been scheduled in fiscal year 1996. No other sampling is scheduled through fiscal year 1996 (Stanton 1995).

4.0 PRIORITY OF INFORMATION REQUIREMENTS

Grab sampling has been scheduled for December 1995. Further sampling activities are not presently scheduled or required.

Table 4-1: Integrated DQO Requirements

Sampling Event	Applicable DQO	Sampling Requirements	Analytical Requirements
Grab Sampling	-Compatibility DQO -Safety Screening DQO	3 vertical profile grab samples	Energetics, Moisture, Major Anions, Cations & Radionuclides, SpG & pH, Pu, U, Separable Organics

5.0 WHEN INFORMATION IS NEEDED

Data are required for Tank AP-104 during FY 1996 for safety screening and to prepare a Tank Characterization Report.

6.0 REFERENCES

- Bloom, G. R., *Characterization Data Needs for Development, Design and Operation of Retrieval Equipment Developed Through the Data Quality Objective Process*, WHC-SD-WM-DQO-008, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- Brevick, C. H., 1995a, *Historical Tank Content Estimate for the Southeast Quadrant of the Hanford 200 East Areas*, WHC-SD-W-ER-350, Rev. 0, ICF Kaiser Hanford Company, Richland, Washington.
- Brevick, C. H., 1995b, *Supporting Document for the Southeast Quadrant Historical Tank Content Estimate Report for AP Tank Farm, Vol I*, WHC-SD-W-ER-315, Rev. 0, ICF Kaiser Hanford Company, Richland, Washington.
- Dukelow, G. T., J. W. Hunt, H. Babad, and J. E. Meacham, 1995, *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev 2, Westinghouse Hanford Company, Richland, Washington.
- Fowler, K.D., 1995, *Data Quality Objectives for the Waste Compatibility Program*, WHC-SD-WM-DQO-001, Rev. 1, April 1995, Westinghouse Hanford Company, Richland, Washington.
- Hanlon, B.M., 1995, *Waste Tank Summary for Month Ending August 31, 1995*, WHC-EP-0182-89, Westinghouse Hanford Company, Richland, Washington.
- Homi, C. S., S. J. Eberlein, 1995, *Fiscal Year 1996 Tank Waste Remediation System Tank Waste Analysis Plan*, WHC-SD-WM-PLN-101, Rev 0, Westinghouse Hanford Company, Richland, Washington
- Kupfer, M. J., W. W. Schultz, J. T. Slankas, 1995, *Strategy for Sampling Hanford Site Tank Wastes for Development of Disposal Technology*, WHC-SD-WM-TA-154, Rev. 1, Westinghouse Hanford Company, Richland, Washington.
- Meacham, J. E., R. J. Cash, B. A. Pulsipher, G. Chen, 1995, *Data Requirements for the Ferrocyanide Safety Issue Developed through the Data Quality Objectives Process*, WHC-SD-WM-DQO-007, Rev. 1, Westinghouse Hanford Company, Richland, Washington.
- Simpson, B. C., D. J. McCain, 1995, *Historical Model Evaluation Data Requirements*, WHC-SD-WM-DQO-018, Rev. 0A, Westinghouse Hanford Company, Richland, Washington.
- Stanton, G. A., 1995, *Baseline Sampling Schedule, Revision 4.4*, Westinghouse Hanford Company, Richland, Washington.

DISTRIBUTION SHEET

To Distribution	From Technical Baseline Integration	Page 1 of 1			
		Date 11-06-95			
Project Title/Work Order Tank 241-AP-104 Tank Characterization Plan (WHC-SD-WM-TP-414)		EDT No. 613586			
		ECN No.			
Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only

ONSITE

DOE-RL

W. Liou	S7-54	X	
N. W. Willis	S7-54	X	

Westinghouse Hanford Company

J. M. Conner	R2-12	X
S. J. Eberlein	R2-12	X
G. D. Forehand	S7-31	X
C. S. Homi	R2-12	X
J. G. Kristofzski	R2-12	X
R. D. Schreiber	R2-12	X
Central Files	A3-88	X
TCRC	R2-12	X

OFFSITE

U.S. Department of Energy - Headquarters
Office of Environmental Restoration
and Waste Management EM-563
12800 Middlebrook Road
Germantown, MD 20874

K. T. Lang		X	
J. A. Poppitti		X	