

ENGINEERING CHANGE NOTICE

1. ECN 681543

Proj.
ECN

2. ECN Category (mark one) Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedeure <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	3. Originator's Name, Organization, MSIN, and Telephone No. Clarence Homi, Data Assessment and Interpretation, R2-12, 373-1097	3a. USD Required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4. Date 05/07/96	
	5. Project Title/No./Work Order No. Tank 241-A-104	6. Bldg./Sys./Fac. No. 241-A-104	7. Approval Designator N/A	
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-TP-247, Rev. 0-A	9. Related ECN No(s). ECN-617813	10. Related PO No. N/A	

11a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 11b) <input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)	11b. Work Package No. N/A	11c. Modification Work Complete N/A _____ Cog. Engineer Signature & Date	11d. Restored to Original Condition (Temp. or Standby ECN only) N/A _____ Cog. Engineer Signature & Date
---	------------------------------	---	---

12. Description of Change
 Complete revision.

13a. Justification (mark one)

Criteria Change <input checked="" type="checkbox"/>	Design Improvement <input type="checkbox"/>	Environmental <input type="checkbox"/>	Facility Deactivation <input type="checkbox"/>
As-Found <input type="checkbox"/>	Facilitate Const. <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>	Design Error/Omission <input type="checkbox"/>

13b. Justification Details
 Changed to comply with new template and DOE-RL recommended modifications.

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

RELEASE STAMP

DATE: _____

STA: 4

MAY 10 1996

HANFORD RELEASE

ID. (2)

Tank 241-A-104 Tank Characterization Plan

C. S. Homi
Westinghouse Hanford Company, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: ECN-631543 UC: 2070
Org Code: 79200 Charge Code: N4G6A
B&R Code: EW 3120074 Total Pages: 7

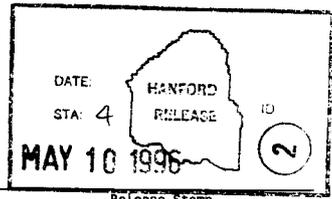
Key Words: Characterization, General Safety Issues, Specific Safety Issues, Information Requirements, Schedule

Abstract: This document is a plan that identifies the information needed to address relevant issues concerning short-term and long-term storage and long-term management of single-shell tank 241-A-104.

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: WHC/BCS Document Control Services, P.O. Box 1970, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.

Kara Brown 5/10/96
Release Approval Date



Approved for Public Release

RECORD OF REVISION

(1) Document Number
WHC-SD-WM-TP-247

Page 1

(2) Title
TANK 241-A-104 TANK CHARACTERIZATION PLAN

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		(5) Cog. Engr.	(6) Cog. Mgr. Date
0	(7) WHC-SD-WM-TP-247, REV 0, EDT 159072, September 16, 1994		
0A RS	Replaced pages 6, 7, 8, and 11, ECN 617813	R.D. Schmitt "1/9/94	R.D. Schmitt per telecon "1/9/94
1 RS	Incorporate per ECN-631543.	C.S. Homi C.H.	J. Kristofzski 5/9/94

Tank 241-A-104 Tank Characterization Plan

R. D. Schreiber
Westinghouse Hanford Company

Date Published
May 1996

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 TANK 241-A-104	2
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	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	3
3.0	HOW INFORMATION WILL BE OBTAINED	4
4.0	PRIORITY OF INFORMATION REQUIREMENTS	4
5.0	WHEN INFORMATION WILL BE AVAILABLE	4
6.0	REFERENCES	5

LIST OF TABLES

4-1	Integrated DQO Requirements and Priorities	4
-----	--	---

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 single-shell tank 241-A-104 (A-104). It should be understood that the various needs and issues surrounding tank A-104 are evolving as new information about the tank is uncovered. As a result of this progression, this TCP 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 A-104. As necessary, this TCP will be revised to reflect those changes or deviations. This plan reflects the best information available as of May 1996.

Tank A-104 was constructed between 1954 and 1955 and was put into service in 1957. Initially tank A-104 received waste water from the second quarter of 1957 until the second quarter of 1959. From the third quarter of 1959 until the fourth quarter of 1961, the tank received Plutonium Uranium Extraction (PUREX) high activity neutralized acid waste. From the third quarter of 1960 until the first quarter of 1968, the tank received organic wash waste from the PUREX plant. The tank waste was the self-concentrating or boiling type. Between the second and fourth quarters of 1969, tank A-104 was sluiced for strontium and cesium recovery, and it was declared a spare tank in the fourth quarter of 1969. The tank contained sluicing water from the fourth quarter of 1969 until the third quarter of 1972. The tank received B plant waste in the fourth quarter of 1972. From the first quarter of 1973 until the third quarter of 1974, the tank received washed PUREX sludge. The tank was sluiced starting in the third quarter of 1974 to reduce the sludge heel and for saltcake storage. The tank was declared an assumed leaker in 1975. Tank A-104 is actively ventilated and was interim stabilized in September 1978 with intrusion prevention completed in 1983 (Anderson 1990; Brevick et al. 1994).

Tank A-104 currently contains a total waste volume of 106 kL (28 kgal), which is equivalent to approximately 25 cm (10 in) of waste as measured from the baseline of the tank (Hanlon 1996).

This tank is not on any Watch List.

Near-term sampling and analysis activities are focused on either verifying or changing the Watch List tank status, and identifying any new safety issues. 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-A-104

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

2.1 GENERAL SAFETY ISSUES

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

2.2 SPECIFIC SAFETY ISSUES

2.2.1 Ferrocyanide

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

2.2.2 Organic

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

2.2.3 High Heat

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

2.2.5 Vapor

All 177 underground tanks must be vapor-sampled for organic solvent screening as per *Recommendation 93-5 Implementation Plan* (DOE-RL 1996). Some tanks may require additional vapor sampling due to other program needs. These tanks 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 exhaust permit requirements); (2) tanks on the Organic or Ferrocyanide Watch Lists; (3) tanks in C farm; and (4) tank 241-BX-104, due to vapor exposure. Information needs must satisfy *Data Quality Objectives for Tank Hazardous Vapor Safety Screening* (Osborne and Buckley 1995), and for rotary mode only, *Rotary Core Vapor Sampling Data Quality Objective* (Price 1994) and *Data Quality Objective for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis* (Mulkey and Markillie 1995) as amended by *Status of the Current Understanding of*

the Toxic Air Pollutants (TAPS) and Hanford Tank Farm Vapor Space Characterization; Recommended Path Forward and Justification for Continued RMCS Exhauster Operations (Laws 1996).

2.2.6 Criticality

No information separate from that for the general safety issue of tank A-104 are currently identified for this program element. However, if the general safety screening of tank A-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 (DQO).

2.3 CONTINUING OPERATIONS

2.3.1 Compatibility/Stabilization

This section does not apply to tank A-104.

2.3.2 Evaporator

This section does not apply to tank A-104.

2.4 DOUBLE-SHELL TANK WASTE ANALYSIS PLAN

This section does not apply because tank A-104 is a single-shell tank.

2.5 DISPOSAL

2.5.1 Retrieval

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

2.5.2 Pretreatment/Vitrification

Tank A-104 has not been identified as a bounding tank for pretreatment/disposal process development strategy (Kupfer et al. 1995). All tanks were prioritized using the pretreatment strategy in the *Tank Waste Characterization Basis* (Brown et al. 1995) document and a portion of archive sample material could be used for pretreatment testing if available. The strategy does not require any specific analyses to be done on the samples.

2.6 HISTORICAL MODEL EVALUATION

Bounding tanks and data requirements for historical model evaluations are found in *Historical Model Evaluation Data Requirements* (Simpson and McCain 1995). Tank A-104 has been identified as a primary bounding tank for the AR waste type

WHC-SD-WM-TP-247, REV 1

(waste from various washes of sludge in the AR Vault). All single-shell tanks were prioritized in the *Tank Waste Characterization Basis* (Brown et al. 1995) document using the historical DQO.

3.0 HOW INFORMATION WILL BE OBTAINED

The number of samples required to characterize a tank is a function of waste heterogeneity and the desired confidence to make a correct decision. As directed by the safety screening DQO, if inadequate information exists to determine an appropriate number of samples, two vertical profiles will be obtained. These vertical profiles may be obtained using core, auger (for shallow tanks), or grab samples. If analysis of these profiles reveals that additional profiles are necessary to meet data needs, more sample profiles will be requested.

4.0 PRIORITY OF INFORMATION REQUIREMENTS

Auger sampling is scheduled for September 1996. Vapor sampling is scheduled for May 1997 (Stanton 1996). Refer to Table 4-1 for the current DQO requirements and planned sampling and analytical requirements.

Table 4-1: Integrated DQO Requirements and Priorities

Sampling Event	Applicable Issues	Sampling Requirements*	Analytical Requirements*
Auger Sampling	-Safety Screening DQO -Historical DQO	Auger samples from 2 risers separated to the maximum extent possible Combustible gas measurement	Flammability, Energetics, Moisture, Total alpha activity, Density, Anions, Metals, Radionuclides, TOC
Vapor Sampling	-Organic Solvent Layer 93-5 Vapor Issue -Hazardous Vapor DQO	Steel canisters, Triple Sorbent Traps, Sorbent Trap Systems	Flammable Gas Organic Vapors Permanent Gases

* Consult each applicable DQO in force at the time for sampling and analytical requirements.

5.0 WHEN INFORMATION WILL BE AVAILABLE

According to Stanton (1996), data are expected to be available from the auger sampling event for tank A-104 in January 1997. The vapor sampling data are expected in July 1997. These times may be altered if the sampling schedule changes.

6.0 REFERENCES

- Anderson, J. D., 1990, *A History of the 200 Area Tank Farms*, WHC-MR-0132, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- Bloom, G. R. and Q. H. Nguyen, 1995, *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., L. A. Gaddis, and A. C. Walsh, 1994, *Supporting Document for Northeast Quadrant Historical Tank Content Estimate Report for A-Tank Farm*, WHC-SD-WM-ER-308, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- Brown, T. M., S. J. Eberlein, and T. J. Kunthara, 1995, *Tank Waste Characterization Basis*, WHC-SD-WM-TA-164, Rev. 1, Westinghouse Hanford Company, Richland, Washington.
- DOE-RL, 1996, *Recommendation 93-5 Implementation Plan*, DOE/RL-94-0001, Rev. 1, U.S. Department of Energy, 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, Richland, Washington.
- Hanlon, B.M., 1996, *Waste Tank Summary for Month Ending January 31, 1996*, WHC-EP-0182-94, Westinghouse Hanford Company, Richland, Washington.
- Kupfer, M. J., W. W. Schultz, and 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.
- Laws, G. L., 1996, *Status of the Current Understanding of the Toxic Air Pollutants (TAPS) and Hanford Tank Farm Vapor Space Characterization; Recommended Path Forward and Justification for Continued RMCS Exhauster Operations*, (telephone conference memorandum 01830-96-022, to Distribution, March 8), Westinghouse Hanford Company, Richland, Washington.
- Mulkey, C.H., and K. D. Markillie, 1995, *Data Quality Objective for Regulatory Requirements for Hazardous and Radioactive Air Emissions Sampling and Analysis*, WHC-SD-WM-DQO-021, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- Osborne, J. W., and L. L. Buckley, 1995, *Data Quality Objectives for Tank Hazardous Vapor Safety Screening*, WHC-SD-WM-DQO-002, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-WM-TP-247, REV 1

Price, D. N., 1994, *Rotary Core Vapor Sampling Data Quality Objective*, WHC-SD-WM-SP-003, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Simpson, B. C., and D. J. McCain, 1995, *Historical Model Evaluation Data Requirements*, WHC-SD-WM-DQO-018, Rev. 0A, Westinghouse Hanford Company, Richland, Washington.

Stanton, G. A., *Baseline Sampling Schedule, Change 96-02* (Internal memo 75610-96-06, to Distribution, April 17), Westinghouse Hanford Company, Richland, Washington.

DISTRIBUTION SHEET

To Distribution	From Data Assessment and Interpretation	Page 1 of 1
		Date 05/07/96
Project Title/Work Order WHC-SD-WM-TP-247, Rev. 1, "Tank 241-A-104 Tank Characterization Plan"		EDT No. N/A
		ECN No. ECN-631543

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

ONSITEU. S. Department of Energy -
Richland Field Office

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

Westinghouse Hanford Company

G. D. Forehand	S7-21	X			
C. S. Homi	R2-12	X			
R. D. Schreiber	R2-12	X			
Central Files	A3-88	X			
T.C.R.C.	R2-12	X			

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

J. A. Poppiti					X
---------------	--	--	--	--	---