

RMIS View/Print Document Cover Sheet

This document was retrieved from the Boeing ISEARCH System.

Accession #: D196069788

Document #: SD-WM-TP-216

Title/Desc:

TANK 241AN102 TANK CHARACTERIZATION PLAN

ENGINEERING CHANGE NOTICE

1. ECN No 625721
Proj. ECN

2. ECN Category (mark one) <input type="checkbox"/> Supplemental <input checked="" type="checkbox"/> Direct Revision <input type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedure <input type="checkbox"/> Cancel/Void	3. Originator's Name, Organization, MSIN, and Telephone No. C. S. HOMI, 75320, R2-12, 373-1097	3a. USQ Required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4. Date 10/04/95	
	5. Project Title/No./Work Order No. TANK 241-AN-102 TANK CHARACTERIZATION PLAN	6. Bldg./Sys./Fac. No. AN-102	7. Approval Designator N/A	
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-TP-216 REV <i>10</i> ^{KMB} _{10/4/95}	9. Related ECN No(s). N/A	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
Format change.

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

RELEASE STAMP

OFFICIAL RELEASE 

BY WHC

DATE OCT 04 1995

Ste 4.

RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-TP-216, REV 1

Document Title: Tank 241-AN-102 Tank Characterization Plan

Release Date: 10/4/95

**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



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 //

2. Title

TANK 241-AN-102 TANK CHARACTERIZATION PLAN

3. Number

WHC-SD-WM-TP-216

4. Rev No.

1

5. Key Words

CHARACTERIZATION, GENERAL SAFETY ISSUES, SPECIFIC SAFETY ISSUES, INFORMATION REQUIREMENTS, PRIORITY

6. Author

Name: C. S. HOMI

Signature

Organization/Charge Code 75320/N4G6A

7. Abstract

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 (SST) 241-AN-102.

8. RELEASE STAMP

OFFICIAL RELEASE (2)
BY WHC
DATE OCT 04 1995
St. 4.

Tank 241-AN-102 Tank Characterization Plan

C. S. Homi
Westinghouse Hanford Company

Date Published
October 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-AN-102 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 2

 2.3 CONTINUING OPERATIONS 3

 2.2.1 Compatibility/Stabilization 3

 2.2.2 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

4.0 PRIORITY OF INFORMATION REQUIREMENTS 4

5.0 HOW INFORMATION WILL BE OBTAINED 4

6.0 REFERENCES 5

LIST OF TABLES

Table 4-1: Integrated DQO Requirements 4

LIST OF ABBREVIATIONS

DQO	Data Quality Objective
NCPLX	Non-complexed
DSSF	Double Shell Slurry Feed
DST	Double-Shell Tank
TCP	Tank Characterization Plan
TOC	Total Organic Carbon
AN-102	Tank 241-AN-102
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-AN-102 (AN-102). It should be understood that the various needs and issues surrounding tank AN-102 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 DST AN-102. As necessary, this Tank Characterization Plan will be revised to reflect those changes or deviations.

Tank AN-102 was constructed between 1978 and 1980 and was put into service in September 1981. Initially tank AN-102 received non complexed waste from September 1981 until December 1982. The tank received complexant concentrate waste from January 1983 until October 1983. From November 1983 until June 1984 the tank received non-complexed waste. From July 1984 until the present the tank received complexant concentrate waste. The tank is presently considered a concentrated waste holding tank. Presently, the tank waste is classified as complexant concentrate. This tank currently contains waste with a total waste volume of 4,114.9 kL (1,087 kgal), which is equivalent to 1,004 centimeters (395.3 inches) of waste as measured from the baseline of the tank. The waste is comprised of 3,797 kL (1,003 kgal) of supernatant and 336.9 kL (89 kgal) of sludge with 3,797 kL (1,003 kgal) of pumpable liquid remaining (Brevick 1994a).

The tank is sound, is currently inactive and is considered a concentrated waste holding tank. The last solids volume update was obtained on August 22, 1989 and; presently, photos of the tank interior have not been acquired (Hanlon 1995).

Two samples were obtained in February 1985 and analyzed for chemical and radiological components. The samples were supernate and were obtained at a level of 15 feet above the bottom of the tank and from the bottom of the tank. The samples ranged in color from opaque to coffee black to translucent brilliant red. These colors are indicative of the formation of organometallic species. The sample obtained from 15 feet above the bottom contained several cations, primarily sodium and some aluminum with other constituents in lesser quantities. The anions were comprised of nitrates and nitrites with some carbonates and sulfates. Radionuclides were present with strontium and cesium having the highest concentration. The bottom sample was equivalent with the 15 foot sample in cation and anion constituents except a greater concentration of carbonate was detected.

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-AN-102

This section identifies the various program elements, and identifies which of these programs require characterization data from tank AN-102.

2.1 GENERAL SAFETY ISSUES

The *Tank Safety Screening Data Quality Objective* (Redus 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

Tank AN-102 is not on the Organics Watch List and; 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 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. Since tank AN-102 is NOT categorized in one of the above four groups, vapor sampling is not required for this tank.

2.2.6 Criticality

No information separate from that for the general safety issue of tank AN-102 are currently identified for this program element. However, if the general safety screening of tank AN-102 identifies a potential criticality concern, analyses for fissile materials and neutron absorbers 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 AN-101 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 ^{239}Pu and ^{241}Am , Total Organic Content (TOC), heat generation (by determining the amount of ^{90}Sr and ^{137}Cs) 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 AN-102.

2.5.2 Pretreatment/Vitrification

Tank AN-102 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 1995). Tank AN-102 has not been identified as a primary bounding tank.

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. Three grab sampling events are scheduled and required. No other sampling is scheduled through fiscal year 1996 (Stanton 1995). The push mode sampling type has been chosen over other sampling modes due to both the depth of the tank (making auger sampling inadequate) and the fact that the surface of tank AN-102 is comprised of supernatant and sludge.

4.0 PRIORITY OF INFORMATION REQUIREMENTS

Two grab sampling activities have been completed as of October 19, 1994 and February 14, 1995. Future grab sampling events are planned for December 1995 and March 1996 (Stanton 1995).

Table 4-1: Integrated DQO Requirements

Sampling Event	Applicable DQO	Sampling Requirements	Analytical Requirements
Grab Sampling	-Compatibility DQO -Safety Screening DQO	3 grab samples from 2 separate risers	Energetics, Moisture, Major Anions, Cations & Radionuclides, SpG & pH, Total Organic Carbon, Separable Organics

5.0 PRIORITY OF INFORMATION REQUIREMENTS

Data are required for Tank AN-102 during FY 1996 for safety screening and to prepare a Tank Characterization Report.

6.0 REFERENCES

- Babad, H. K. S. Redus, and J. W. Hunt, 1995a, *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev 1, Westinghouse Hanford Company, Richland, Washington.
- Babad, H., S. M. Blacker, and K. S. Redus, 1995b, *Data Quality Objective to Support Resolution of the Organic Fuel Rich Tank Safety Issue*, WHC-SD-WM-DQO-006, Rev. 1, 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., 1994a, *Historical Tank Content Estimate for the Northeast Quadrant of the Hanford 200 East Areas*, WHC-SD-WM-ER-349, Rev. 0A, ICF Kaiser Hanford Company, Richland, Washington.
- Brevick, C. H., 1994b, *Supporting Document for the Historical Tank Content Estimate for BX Tank Farm*, WHC-SD-WM-ER-311, Rev. 0, ICF Kaiser Hanford Company, Richland, Washington.
- Brown, T. M., S. J. Eberlein, D. A. Dodd, T. J. Kunthara, B. C. Simpson, and N. W. Kirch, *Tank Waste Characterization Plan and Basis*, 1995, WHC-SD-WM-TA-164, Rev 0, Westinghouse Hanford Company, Richland, Washington.
- Hanlon, B.M., 1995, *Waste Tank Summary for Month Ending May, 1995*, WHC-EP-0182-82, Westinghouse Hanford Company, Richland, Washington.
- Homi, C. S., and 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, 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.
- Meacham, J. E., R. J. Cash, B. A. Pulsipher, and 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.
- Osborne, J.W., J.L. Huckaby, E.R. Hewitt, C.M. Anderson, D.D. Mahlum, B.A. Pulsipher, and J.Y. Young, 1995, *Data Quality Objectives for Generic In-Tank Health and Safety Vapor Issue Resolution*, WHC-SD-WM-DQO-002, Rev. 1, Westinghouse Hanford Company, Richland, Washington.
- 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. 0, Westinghouse Hanford Company, Richland, Washington.

Stanton, G. A., 1995, Baseline Sampling Schedule, Revision 4.4, (internal memo 74320-95-04, to distribution, March 24), Westinghouse Hanford Company, Richland, Washington.

Toth, J. J., P. G. Heasler, M. E. Lerchen, J. G. Hill, and P. D. Whitney, 1995, *Analysis of Organic Carbon and Moisture in Hanford Single-Shell Tank Waste*, PNL-10360, Pacific Northwest Laboratory, Richland, Washington.