COMPLETE

ENGINEERING CHANGE NOTICE

1. ECN [illegible]567

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	3a. USQ Required?	4. Date
Supplemental [ ] Direct Revision [X] Change ECN [ ] Temporary [ ] Standby [ ] Supersedure [ ] Cancel/Void [ ]	Clarence Homi, Evaluation and Planning, R2-12, 373-1097	[ ] Yes [X] No	05/09/96
	5. Project Title/No./Work Order No. Tank 241-TX-105	6. Bldg./Sys./Fac. No. 241-TX-105	7. Approval Designator N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-TP-293, Rev. 0-A	9. Related ECN No(s). ECN-625427	10. Related PO No. N/A

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[ ] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

Complete revision.

13a. Justification (mark one)

Criteria Change	[X]	Design Improvement	[ ]	Environmental	[ ]	Facility Deactivation	[ ]
As-Found	[ ]	Facilitate Const	[ ]	Const. Error/Omission	[ ]	Design Error/Omission	[ ]

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

MAY 10 1996

DATE

HANFORD RELEASE ID

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ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) ECN-631567

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[ ] Yes	Additional	[ ] $	Additional	[ ] $	Improvement	[ ]
[X] No	Savings	[ ] $	Savings	[ ] $	Delay	[ ]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[ ]	Seismic/Stress Analysis	[ ]	Tank Calibration Manual	[ ]
Functional Design Criteria	[ ]	Stress/Design Report	[ ]	Health Physics Procedure	[ ]
Operating Specification	[ ]	Interface Control Drawing	[ ]	Spares Multiple Unit Listing	[ ]
Criticality Specification	[ ]	Calibration Procedure	[ ]	Test Procedures/Specification	[ ]
Conceptual Design Report	[ ]	Installation Procedure	[ ]	Component Index	[ ]
Equipment Spec.	[ ]	Maintenance Procedure	[ ]	ASME Coded Item	[ ]
Const. Spec.	[ ]	Engineering Procedure	[ ]	Human Factor Consideration	[ ]
Procurement Spec.	[ ]	Operating Instruction	[ ]	Computer Software	[ ]
Vendor Information	[ ]	Operating Procedure	[ ]	Electric Circuit Schedule	[ ]
OM Manual	[ ]	Operational Safety Requirement	[ ]	ICRS Procedure	[ ]
FSAR/SAR	[ ]	IEFD Drawing	[ ]	Process Control Manual/Plan	[ ]
Safety Equipment List	[ ]	Cell Arrangement Drawing	[ ]	Process Flow Chart	[ ]
Radiation Work Permit	[ ]	Essential Material Specification	[ ]	Purchase Requisition	[ ]
Environmental Impact Statement	[ ]	Fac. Proc. Samp. Schedule	[ ]	Tickler File	[ ]
Environmental Report	[ ]	Inspection Plan	[ ]		[ ]
Environmental Permit	[ ]	Inventory Adjustment Request	[ ]		[ ]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
N/A		

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog. Eng. C.S. Homi	5/9/96	PE	
Cog. Mgr. J.W. Hunt	5/9/96	QA	
QA		Safety	
Safety		Design	
Environ.		Environ.	
Other T.M. Brown	5/9/96	Other	
		DEPARTMENT OF ENERGY	
		Signature or a Control Number that tracks the Approval Signature	
		ADDITIONAL	

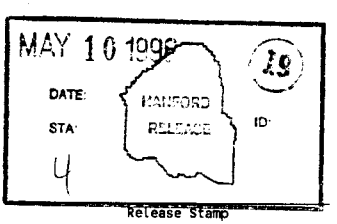
Tank 241-TX-105 Tank Characterization Plan

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

EDT/ECN: ECN-631567 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-TX-105.



Release Approval Date

Release Stamp

Approved for Public Release

RECORD OF REVISION	(1) Document Number WHC-SD-WM-TP-293	Page 1

(2) Title

TANK 241-TX-105 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) EDT 610001, 11/23/94		
RS 0A	Replaced first section per ECN 625427.	[signature]	[signature] 6/27/95
RS 1	Incorporate per ECN-631567.	C.S. Homi [signature]	J.W. Hunt [signature] 5/9/96

WHC-SD-WM-TP-293
Revision 1
UC-2070

Tank 241-TX-105
Tank Characterization Plan

T. M. Brown
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

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

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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-TX-105 (TX-105). It should be understood that the various needs and issues surrounding tank TX-105 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 TX-105. 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 TX-105 was constructed between 1947 and 1948 and was put into service in the first quarter of 1951. This tank received metal waste from the first quarter of 1951 until the second quarter of 1956. Tank TX-105 began receiving metal waste and tributyl phosphate waste in the second quarter of 1952. During the third quarter of 1952, the tank received uranium recovery waste. In the second and third quarters of 1956 the tank received decontamination waste. The tank was sluiced during 1955 and 1956 and declared empty during the first quarter of 1957. The tank began receiving Reduction Oxidation (REDOX) waste in the second quarter of 1957. During the second quarter of 1971, the tank received evaporator bottoms, cladding waste, PUREX organic wash waste, and REDOX ion exchange waste. In the third quarter of 1971, the tank began receiving evaporator bottoms from the 242-T Evaporator. In the third quarter of 1976, the waste was classified as evaporator feed. The tank was removed from service in 1976. Tank TX-105 was interim stabilized in April 1983 and intrusion prevention was completed in August 1984. The tank is passively ventilated and is classified as a stabilized assumed leaker (Brevick et al. 1995).

TX-105 currently contains a total volume of 2,305 kL (609 kgal) of waste (Hanlon 1996), which is equivalent to 582 cm (229 in) of waste as measured from the baseline of the tank (Hanlon 1996).

This tank is on the Organic 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-TX-105

This section identifies the various program elements, and identifies which of these programs require characterization data from tank TX-105.

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 on the Organic Watch List. Sampling and analysis requirements must be performed per the *Data Quality Objective to Support Resolution of the Organic Complexant Safety Issue* (Turner et al. 1995). The analyses employed will determine the total organic carbon (TOC), energetics, presence of a free organic liquid phase, and moisture content.

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 exhauster 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).

Tank TX-105 was vapor sampled in December 1994 in support of Osborne et al. (1995).

2.2.6 Criticality

No information separate from that for the general safety issue of tank TX-105 are currently identified for this program element. However, if the general safety screening of tank TX-105 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 (DQO).

2.3 CONTINUING OPERATIONS

2.3.1 Compatibility/Stabilization

This section does not apply to tank TX-105.

2.3.2 Evaporator

This section does not apply to tank TX-105.

2.4 DOUBLE-SHELL TANK WASTE ANALYSIS PLAN

This section does not apply because tank TX-105 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 TX-105.

2.5.2 Pretreatment/Vitrification

Tank TX-105 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

This tank is identified as an acceptable alternative for bounding tanks T-108, TX-111, and TX-118 in *Historical Model Evaluation Data Requirements* (Simpson and McCain 1995). The applicability of these analyses will be determined based on tanks T-108, TX-111, and TX-118's sampling and analysis and will be documented in the tank specific sample and analysis plan.

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. Prior to rotary sampling it is necessary to vapor sample the tank per the requirements of *Rotary Core Vapor Sampling Data Quality Objective* (Price 1994).

4.0 PRIORITY OF INFORMATION REQUIREMENTS

Vapor sampling was completed in December 1994. Rotary mode core sampling is scheduled to begin in 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*
Vapor Sampling	-Organic Solvent Layer 93-5 Vapor Issue -Rotary Mode Sampling DQO -Hazardous Vapor DQO	Steel canisters, Triple Sorbent Traps, Sorbent Trap Systems.	Flammable Gas Organic Vapors Permanent Gases
Rotary Mode Core Sampling	-Safety Screening DQO -Organic DQO -Historical DQO	Core samples from 2 risers separated radially to maximum extent possible. Combustible gas measurement.	Flammability, Energetics, Total alpha activity, Moisture, Density, TOC, Separable organics

* 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 rotary mode core sampling event for tank TX-105 in August 1997. This time may be altered if the sampling schedule changes. Data are available from the December 1994 vapor sampling.

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DISTRIBUTION SHEET

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