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ENGINEERING CHANGE NOTICE

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Proj. ECN

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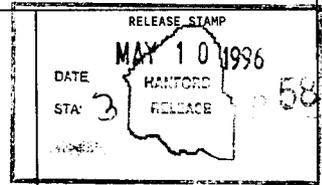
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13b. Justification Details
 Changed to comply with new template and DOE-RL recommended modifications.

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



Tank 241-TX-101 Tank Characterization Plan

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Westinghouse Hanford Company, Richland, WA 99352
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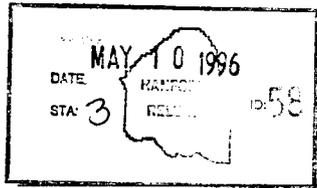
Abstract: This document is a plan that identifies the information needed to address relevant issues concerning short-term and long-term storage and long-term management of single-shell tank 241-TX-101.

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Tank 241-TX-101 Tank Characterization Plan

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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-101 (TX-101). It should be understood that the various needs and issues surrounding tank TX-101 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-101. 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-101 was constructed between 1947 and 1948 and was put into service in July 1949. Initially tank TX-101 received metal waste. During the fourth quarter of 1953, supernatant was pumped to tanks TX-106 and TX-115 in preparation of sluicing. The metal waste contained in the tank was sluiced in 1954. Tank TX-101 was sluiced again in 1955, 1956, and 1957. The tank was declared empty in the first quarter of 1957. From the second quarter of 1957 until the third quarter of 1971, TX-101 intermittently received Reduction Oxidation (REDOX) waste. Also, from the second quarter of 1971 until the second quarter of 1976, TX-101 periodically received waste water. In the third quarter of 1976, the waste was classified as evaporator feed. In the first quarter of 1978, the waste was reclassified as non-complexed. From the third quarter of 1979 until the first quarter of 1980, the tank contained partially neutralized feed. In the second quarter of 1980, the waste was again classified as non-complexed. (Brevick et al. 1995a). The tank is sound and was labeled inactive in 1980. Tank TX-101 is passively ventilated and was interim stabilized in February 1984 with intrusion prevention completed in August 1984. (Brevick et al. 1995b)

Tank TX-101 currently contains a volume of 329 kL (87 kgal), which is equivalent to 99 cm (39 in) of waste as measured from the baseline of the tank.

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-TX-101

This section identifies the various program elements, and identifies which of these programs require characterization data from tank TX-101.

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 TX-101 are currently identified for this program element. However, if the general safety screening of tank TX-101 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 TX-101.

2.3.2 Evaporator

This section does not apply to tank TX-101.

2.4 DOUBLE-SHELL TANK WASTE ANALYSIS PLAN

This section does not apply because tank TX-101 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-101.

2.5.2 Pretreatment/Vitrification

Tank TX-101 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 Plan and 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 TX-101 is not identified as a primary bounding tank for historical model evaluations.

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

A rotary mode sampling is scheduled to begin in June, 1997. Vapor sampling is scheduled for September, 1996 (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 Sampling	-Safety Screening DQO	Core samples from 2 risers separated radially to the maximum extent possible Combustible gas measurement	Flammability, Energetics, Moisture, Total alpha activity, Density

* Consult each applicable DQO in force at the time for 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 TX-101 in October 1997. Vapor data are expected in November 1996. These times may be altered if the sampling schedule changes.

6.0 REFERENCES

- 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 S. D. Consort, 1995a, *Supporting Document for the Northwest Quadrant Historical Tank Content Estimate Report for TX Tank Farm*, WHC-SD-WM-ER-321, Rev. 0, ICF Kaiser Hanford Company, Richland, Washington.
- Brevick, C. H., L. A. Gaddis, and W. W. Pickett, 1995b, *Historical Tank Content Estimate for the Northwest Quadrant of the Hanford 200 East Areas*, WHC-SD-WM-ER-351, Rev. 0, ICF Kaiser Hanford Company, Richland, Washington.
- Brown, T. M., S. J. Eberlein, and T. J. Kunthara, 1995, *Tank Waste Characterization Plan and 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, Westinghouse Hanford Company, 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.

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Osborne, J. W., 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.

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., 1996, *Baseline Sampling Schedule, Change 96-02 (internal memo 75610-96-06 to Distribution, April 17)*, Westinghouse Hanford Company, Richland, Washington.

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