START 9613456.1723 14 0042064 PAGE

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN № 625692

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 []	S. E. Kelly/Characterization Plans, Coordination and Reports/R2-12/373-1027	[] Yes [X] No	09/11/95
	5. Project Title/No./Work Order No. Tank 241-C-201	6. Bldg./Sys./Fac. No. N/A	7. Approval Designator N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-ER-476, Rev. 0-A	9. Related ECN No(s). N/A	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

Vapor sampling and gas flammability sections are being incorporated into Sections 3 and 4 of this document. Editorial changes to other sections are also being made.

13a. Justification (mark one)

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

13b. Justification Details

Tank vapor flammability assessment is required to satisfy the safety screening requirements for this tank.

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

See attached distribution sheet.

OCT 1995 RECEIVED EDMC

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OFFICIAL RELEASE 58 BY WHC DATE SEP 19 1995 Sta. 4

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A-7900-013-1

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) ECN-625692

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. S.E. Kelly	SE Kelly	9/18/95	PE		
Cog. Mgr. J.G. Kristofzski	[signature] for JK	9/18/95	QA		
QA			Safety		
Safety			Design		
Environ.			Environ.		
Other			Other		
			DEPARTMENT OF ENERGY		
			Signature or a Control Number that tracks the Approval Signature		
			ADDITIONAL		

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SUPPORTING DOCUMENT

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2. Title	3. Number	4. Rev No.
Tank Characterization Report for Single-Shell Tank 241-C-201	WHC-SD-WM-ER-476	0-B

5. Key Words	6. Author
Waste Characterization, Single-Shell Tank, C-201, Tank Characterization Report, C Farm, Waste Inventory, TPA Milestone M-44	Name: Steve E. Kelly Signature: [signature] 9/18/95 Organization/Charge Code 75310/N4162

7. Abstract

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Tank Characterization Report for Single-Shell Tank 241-C-201

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(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
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		L. M. Sasaki	J.G. Kristofzski for JGK 9/1/95
0-B RS	Incorporate per ECN-625692.	S.E. Kelly	J.G. Kristofzski
		S E Kelly	J.G. Kristofzski for JGK 9/18/95

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EXECUTIVE SUMMARY

This tank characterization report summarizes information on the historical uses, present status, and the sampling and analysis results of waste stored in the single-shell underground storage tank 241-C-201. This report supports the requirements of the *Hanford Federal Facility Agreement and Consent Order*, Milestone M-44-08 (Ecology et al. 1994).

Tank 241-C-201 is located in the C-Tank Farm in the Hanford Site 200 East area. The tank went into service during 1947 and initially was used to store metal waste from the bismuth phosphate process. This waste subsequently was removed, and strontium semi-works waste was added beginning in the second quarter of 1955. In 1970, a large transfer of supernatant to tank 241-C-104 occurred, leaving approximately 4 kiloliters (1 kilogallons) of waste material in the tank. The tank was then removed from service in 1976 and classified as inactive in 1977. Tank 241-C-201 is said to presently contain approximately 8 kiloliters (2 kilogallons) of noncomplexed waste. Tank 241-C-201 was interim stabilized in March 1982, and intrusion prevention was completed in December 1982. The tank is classified as an assumed leaker. Currently, the tank is not on a watch list.

Tank 241-C-201 is described and its status summarized in Table ES-1. This report summarizes one auger sampling and analysis event as well as one vapor space sampling event, both were performed to satisfy the requirements of the *Tank Safety Screening Data*

Quality Objectives (Babad and Redus 1994). All requested analyses on the sludge material were performed. In addition to this event, one sampling and analysis event from 1978 is used to support this report's conclusions.

Results from the 1995 auger sampling and analysis event indicate that high levels of fuel are present in tank 241-C-201 (the fuel energy content results by differential scanning calorimetry were above 481 joules/gram on a dry weight basis). Further, the moisture level of the sludge is below the 17 percent safety-screening criteria (Babad and Redus 1994). Because the fuel energy content notification limit was exceeded, secondary analysis for total organic carbon was performed. It was found that the total organic carbon content in tank 241-C-201 was approximately 4.6 weight percent (on a dry weight basis), which exceeded the Operating Specification Document (OSD) safety criterion of 3 weight percent (WHC 1995). However, these results did not exceed the criterion of 5 weight percent stated in *Data Quality Objective to Support Resolution of the Organic Fuel Rich Tank Safety Issue* (Buckley 1995). Based on the OSD requirements, interim measures and controls are in place pending a final determination of watch list status by engineering personnel.

Tank waste heat production estimates were available from historical tank content estimate model predictions of heat producing radionuclides (cesium-137 and strontium-90) and tank temperature surveillance records. Based on these model predictions, the heat generated by the radioactivity in the tank is estimated to be 670 watts, which would categorize this tank as a low-heat producer. Insufficient analyses were performed on the 1995 auger samples to confirm this estimate, although the 1978 data supports this conclusion.

The temperature of the tank has been consistently less than 21 °Celsius (69 °Fahrenheit) since 1992. This temperature reading represents the temperature in the vapor space, not the sludge waste. The total alpha activity levels in the sludge were measured in 1995 to be in the range of 11.9 to 21.2 microcuries/gram, or about half of the criticality safety criterion (Babad and Redus 1994).

The flammable gs concentration measurement in the tank vapor space was 0 percent of the lower flammability limit which satisfies the safety screening crierion.

This report does not include sufficient chemical, radiochemical, or physical data necessary to support successful pretreatment, retrieval, or disposal activities.

An estimate of the concentration and tank inventory for chemical and radiochemical components in the waste is summarized in Table ES-2. These estimates are based on the Hanford defined waste reference (Agnew 1994) and the revised historical tank content estimate information provided in Appendix A of this report, and represents information regarding both metal waste and strontium semi-works waste, the two waste types stored in tank 241-C-201.

CONTENTS

CONTENTS (Continued)

LIST OF FIGURES

1.0 INTRODUCTION

This tank characterization report is an overview of single-shell tank 241-C-201 and its waste contents. It provides estimated concentrations and inventories of the waste components based on background tank information which is supported by sampling and analysis data. This report describes the results of recent sampling events in accordance with the requirements of the *Tank Safety Screening Data Quality Objective* (Babad and Redus 1994). The sampling events were auger sampling in May 1995 and vapor space sampling which occurred in August 1995. In addition, this report uses historical analytical data from 1978 to strengthen its conclusions. This report supports the requirements of the *Hanford Federal Facility Agreement and Consent Order,* Milestone M-44-08 (Ecology et al. 1994). For those unfamiliar with the Hanford Site tank farms, refer to the *Tank Characterization Reference Guide* (De Lorenzo et al. 1994) for an introduction to the history surrounding the generation, storage, and management, and information on sampling, analysis, and modeling activities that support the current waste characterization. A glossary of terminology can also be found in De Lorenzo (1994).

1.1 PURPOSE

This report summarizes the best available information about the use and contents of tank 241-C-201. This information primarily will be used to assess waste safety issues. In addition, this report will provide a reference point for future tank 241-C-201 sampling, analysis, and waste characterization activities.

1.2 SCOPE

The auger and vapor space samples taken in 1995 supported completion of requirements in the *Tank Safety Screening Data Quality Objectives* (Babad and Redus 1994) and evaluation of decision criteria found therein. There were three primary analyses identified by Schreiber (1995a) that were performed on sludge samples. The analyses were fuel content and energetics by differential scanning calorimetry (DSC); percent moisture by thermogravimetric analysis (TGA); and total alpha activity to evaluate criticality concerns. Total organic carbon (TOC) analysis was also performed on the samples as a secondary analysis.

Because of the limited analysis set performed on the 1995 samples and because data generated before 1989 may not be considered valid for some applications under the constraints of the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1994), the chemical and radiochemical concentrations for most components are estimated from the Historical Tank Content Estimate (HTCE; see Appendix A) and the Hanford Defined Waste: Chemical and Radionuclide Compositions (HDW) (Agnew 1994).

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3.0 TANK SAMPLING OVERVIEW

This section describes two waste sampling events from tank 241-C-201: a sampling event in 1978 and an auger sampling event in 1995. Section 3.1 describes the 1978 sampling event, and the data from this event are provided in Appendix B. A description of the two auger samples collected on May 3, 1995 for safety screening purposes is given in Sections 3.2, while the results are reported in Section 4.0 of this document. The 1995 sampling event followed the requirements of the Westinghouse Hanford Company *Tank Safety Screening Data Quality Objective* (Babad and Redus 1994) and *Tank 241-C-201 Tank Characterization Plan* (TCP) (Schreiber 1995a). Sample handling and analytical results may be found in the *45-Day Safety Screen Results for Tank 241-C-201, Auger Samples 95-AUG-025 and 95-AUG-026* (Schreiber 1995b). A further description of sampling procedures may be found in De Lorenzo (1994).

This section also describes a vapor space sampling event performed on tank 241-C-201. This sampling event also followed requirements outlined by the Tank Safety Screening DQO.

3.1 DESCRIPTION OF SAMPLING EVENT (1978)

A description of the technique used to extract the 1978 sample from tank 241-C-201 was not available from the historical records. However, based on knowledge of sampling technology commonly used during that time, it was most likely acquired using a split-tube sampler. The sample appears to be a sludge sample analyzed for primary cations, anions, and radiological constituents (refer to Appendix B).

3.1.1 Sample Handling (1978)

The sample (3421) was black in color with the consistency of tar. No procedures or associated explanations for the sampling and analytical treatment are available (Horton 1978).

3.1.2 Sample Analysis (1978)

For the 1978 project, both a water and an acid digestion were performed prior to analysis of the sample. The post-digestion samples were then analyzed for major cations, anions, and radiological constituents, as well as such compounds as total organic carbon. Detailed analysis results are reported in Appendix B. It should be noted that because tank 241-C-201 was interim stabilized in 1982, the results from this early sampling and analysis event may not represent the tank's present contents with respect to percent moisture. However, the tank had been declared inactive prior to the sampling event, indicating that no waste transfers occurred after these 1978 results were obtained. Therefore, the data summarized in Appendix B may provide some insight into the current sludge content of the tank. Because data generated before 1989 may not be considered valid for some applications under the constraints of the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1994), these results are presented merely as supporting evidence; no direct conclusions are to be drawn based solely on these results.

3.2 DESCRIPTION OF SAMPLING EVENT (1995)

On May 3, 1995, two auger samples were collected from riser 7 of tank 241-C-201 using 20-in. augers. Sample 95-AUG-025 was collected from the eastern coordinate and sample 95-AUG-026 was collected from the western coordinate of the riser. Auger sampling was used because approximately 13 in. of sludge material was expected. Although core sampling systems could have been used, the latter methods would have been more complicated and would not necessarily have added additional value. The 20-in. augers were expected to recover about 12 in. of waste material for sample 95-AUG-025 and 13 in. for sample 95-AUG-026. The dose rates through the drill strings were not recorded.

3.2.1 Sample Handling (1995)

The two auger samples were received at the Westinghouse Hanford Company 222-S Laboratory on May 4, 1995 and extruded on May 8, 1995. Table 3-1 summarizes the sampling data and describes the material collected on the augers. The recoveries for both auger samples were small and consisted of 3.7 and 12.09 grams (g) of solid material for samples 95-AUG-025 and 95-AUG-026, respectively. No drainable liquid was obtained. Color photographs of the auger samples were taken and are provided in Appendix D of this document. No discrete layers were noted in the samples, but yellow solids were intermixed throughout both samples. Descriptions of the sample material are provided in Table 3-1.

The samples were not divided into half segments as directed in the TCP. Because of the small amount of sample obtained from sample 95-AUG-025, all material was collected as one specimen, and no material was archived. Sample 95-AUG-026 also was collected as one specimen, but it was possible to archive material. Specimens removed from the augers were to be analyzed for energetics (fuel energy content), percent moisture, and total alpha activity as directed by the TCP (Schreiber 1995a). Subsampling information, sample identification, and completed analyses are presented in Table 3-2.

3.2.2 Sample Analysis (1995)

Following the requirements of the TCP (Schreiber 1995a), energetics by DSC, percent moisture by TGA, and total alpha activity analyses were completed on the samples as summarized in Section 3.2.1. TOC analysis was also performed on each auger sample because the DSC notification limit of 481 joules per gram (J/g) (dry weight basis) was exceeded. With concurrence from the Ferrocyanide and Organic Safety Program management, a decision was made not to run the secondary cyanide analysis as directed by the TCP. This decision was based on the existing knowledge of the tank fill history and the fact that very little waste material was obtained from the auger samples. Discussions regarding secondary energetics analysis by reactive system screening tool (RSST) adiabatic calorimetry are currently pending, and the results of this analysis shall be included in a revision to this tank characterization report.

As is typical, the DSC and TGA analyses for tank 241-C-201 waste were performed directly on 15- to 35-milligram (mg) specimens of the waste material. The total alpha activity specimens, however, had to be dissolved before analysis. This dissolution is accomplished by fusing a solid aliquot (0.2 to 0.5 g) of the waste material in potassium hydroxide and dissolving, or digesting, the resultant fluxed material in hydrochloric acid. Total alpha activity is then determined on a liquid aliquot of the dissolved waste material. The TOC secondary analysis used the persulfate oxidation method on a direct sample.

Laboratory control standards, spikes, blank analysis, and duplicate analysis quality control checks were applied to the TOC and total alpha activity analyses. Because spikes and blank analyses are not applicable to DSC and TGA methods, only laboratory control standards and duplicate analysis quality control checks were used for these analyses. An assessment of the quality control data from this analysis event is presented in Section 5.1.2.

All reported analyses were completed using approved laboratory procedures. No deviations from or modifications to the procedures were noted by the laboratory. Total alpha activity spike recoveries have typically been below the specified lower limit when solids are observed on the sample mount, as occurred during these analyses.

The preparation used for each analysis is shown in Table 3-2, and the laboratory's preparation and analytical procedures used for these analyses are presented in Appendix C.

3.3 DESCRIPTION OF VAPOR SAMPLING EVENT (1995)

The tank vapor space was sampled on August 31, 1995, using a combustible gas meter in accordance with work package ES-95-00495. Sampling was performed through riser 7 at approximately 19, 11, and 3 ft above the waste surface (18, 26, and 34 ft below the top of the riser). Tubing was lowered to each specified depth, purged, and then the combustible gas measurements taken. In all cases, the combustible gas meter read 0 percent of the lower flammability limit (LFL).

4.3.2 TOC Results

Secondary analysis of the tank 241-C-201 auger samples for TOC was required because the program notification limit of 481 J/g (dry weight basis) for DSC analysis was exceeded. The auger samples were analyzed for TOC by the direct persulfate method. Duplicate runs were completed for TOC and results exceeded the OSD notification limit of 3 weight percent carbon [30,000 micrograms carbon per gram (μg C/g)], although the 5 weight percent limit specified in Buckley (1995) was not violated. The results of the TOC analyses are presented in Table 4-4. The *Average* column is the average of the duplicate analyses. The *Mean* column is the average of the *Average* column values, or the overall average of the reported results.

Table 4-4. Tank 241-C-201 Analytical Data: Total Organic Carbon.

Sample number	Auger identification	Sample type	Result (μg C/g)	Average (μg C/g)	Mean (μg C/g)	Projected inventory (kg)
S95T000895	95-AUG-025	Primary	37,700	39,900	41,650	473
		Duplicate	42,100			
S95T000898	95-AUG-026	Primary	45,700	43,400		
		Duplicate	41,000			

Notes:

Values given on wet weight basis. Dry weight basis results will be higher.
μg C/g = microgram carbon per gram
kg = kilogram

4.4 VAPOR FLAMMABILITY

The tank vapor space was sampled for combustible gases through riser 7 at approximately 19, 11, and 3 ft above the waste surface. In all cases, the combustible gas meter read 0 percent of the LFL, indicating no flammability concerns with this tank.

performed. Based on these plutonium and americium results, a total alpha activity result can be calculated using the following equation:

$$Total\ \alpha(\frac{\mu Ci}{g}) = (\frac{g}{g}\ Pu) * (Activity\ Pu\ \frac{\mu Ci}{g}) + (\frac{g}{g}\ Am) * (Activity\ Am\ \frac{\mu Ci}{g})$$

This calculation assumes that all the plutonium is in the form of plutonium-239, and that all the americium is found as americium-241. For the 1978 sample, a total alpha activity value of 2.4 μCi/g was calculated. As with the total alpha activity result found during the 1995 analysis event, this data supports the hypothesis that, from a criticality perspective, tank 241-C-201 may be declared safe.

The flammability of the gas in the headspace of a tank is another safety screening consideration. Sampling was done through riser 7 at approximately 19, 11, and 3 ft above the waste surface (18, 26, and 34 ft below the top of the riser). The combustible gas meter reading was 0 percent of the LFL indicating no flammability concerns with this tank. Although the safety screening DQO specifies the determination of gas composition to estimate the percent of LFL, the Safety Program has determined that a combustible gas meter reading will satisfy the requirements of the DQO for concentrations less than 10 percent of the LFL.

5.5.2 Operational Evaluation

Tank 241-C-201 was sampled to comply with the requirements of the safety screening DQO. These requirements do not include a complete list of the analyses required for a compatibility assessment. Further, interim stabilization and intrusion prevention were completed in 1982, so this tank is not being considered for any further stabilization or operational efforts.

5.5.3 Environmental Evaluation

Tank 241-C-201 waste was not characterized to designate the waste or for evaluation of any environmental compliance issues. It has been characterized to meet requirements dictating that the waste be safely stored and managed. No specific organic (volatile or semi-volatile) analyses have been performed on the tank; therefore, no environmental assessment of these compounds in the waste can be made. However, in general, tank waste matrices are highly caustic, radioactive, and have soluble nitrates associated with them. In turn, each of these characteristics has environmental impacts associated with them.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The sludge in tank 241-C-201 was sampled and analyzed in 1995. Very low sample recoveries and limited data from different risers and waste depths make it difficult to accurately determine the variability of the waste composition in the tank. However, the available historical and 1995 analytical information does show that the waste composition exceeds the safety criteria for percent water and energetics, demonstrating that significant fuel may be present in the tank. This conclusion is supported by the secondary TOC results, which exceeded the OSD safety criteria. Based on the OSD requirements, interim measures and controls are in place on tank 241-C-201 pending a final determination of watch list status by engineering personnel. Although the 3 weight percent OSD limit was exceeded, the 5 weight percent organic DQO limit (Buckley 1995) was not exceeded. Further secondary analyses, which include adiabatic calorimetry and heat capacity measurements, are currently being planned for the waste material. When these results are available, this tank characterization report will be revised.

The vapor sapce of tank 241-C-201 was sampled for combustible gases in support of the flammable vapor requirements in the Safety Screening DQO. The tank vapor space contained 0 percent of the LFL of combustible vapors.

7.0 REFERENCES

Agnew, S. F., 1994, *Hanford Defined Wastes: Chemical and Radionuclide Compositions*, WHC-SD-WM-TI-629, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Agnew, S. F. and T. M. Brown, 1994, *Waste Status and Transaction Record Summary for the Northeast Quadrant*, WHC-SD-WM-TI-615, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Anderson, J. D., 1990, *A History of the 200 Area Tank Farms*, WHC-MR-0132, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Babad, H., and K. S. Redus, 1994, *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Brevick, C. H., 1994, *Historical Tank Content Estimate for the NE Quadrant of the Hanford 200 East Area*, WHC-SD-WM-ER-349, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Buckley, L. L., 1995, *Data Quality Objective to Support Resolution of the Organic Fuel Rich Tank Safety Issue*, WHC-SD-WM-DQO-006, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

De Lorenzo, D. S., A. T. DiCenso, D. B. Hiller, K. W. Johnson, J. H. Rutherford, and D. J. Smith, 1994, *Tank Characterization Reference Guide,* WHC-SD-WM-TI-648, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Dukelow, G. T., J. W. Hunt, H. Babad, and J. E. Meacham, 1995, *Tank Safety Screening Data Quality Objectives*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

Ecology, EPA, and DOE, 1994, *Hanford Federal Facility Agreement and Consent Order,* as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

Hanlon, B. L., 1995, *Waste Tank Summary Report for Month Ending April 30, 1995,* WHC-EP-0182-85, Westinghouse Hanford Company, Richland, Washington.

Horton, J. E., Letter Report to J. E. Mirabella, *Analysis of Tanks 011-BXR, 201-C and 204-T,* 60120-78-132 J, dated December 4, 1978.

Meacham, J. E., H. Babad, R. J. Cash, G. T. Dukelow, S. J. Eberlein, D. W. Hamilton, G. D. Johnson, J. W. Osborne, M. A. Payne, D. J. Sherwood, D. A. Turner, and J. L. Huckaby, *Approach for Tank Safety Characterization of Hanford Site Waste*, WHC-EP-0843, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Scheele, R. D., R. L. Sell, J. L. Sobolik, and L. L. Burger, *Organic Tank Safety Project: Preliminary Results of Energetics and Thermal Behavior Studies of Model Organic Nitrate and/or Nitrite Mixtures and a Simulated Organic Waste*, PNL-10213, Rev. 0, Battelle Pacific Northwest Laboratory, Richland, Washington.

Schreiber, R. D., 1995a, *Tank 241-C-201 Tank Characterization Plan*, WHC-SD-WM-TP-304, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Schreiber, R. D., 1995b, *45-Day Safety Screen Results for Tank 241-C-201, Auger Samples 95-AUG-025 and 95-AUG-026*, WHC-SD-WM-DP-116, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC, 1995, *Operating Specification for Watch List Tanks*, OSD-T-151-00030, Rev. B-8, Westinghouse Hanford Company, Richland, Washington.

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D. A. Barnes	R1-80	X	
G. R. Bloom	H5-61	X	
T. M. Brown	R2-12	X	
T. H. Bushaw	T6-30	X	
R. J. Cash	S7-15	X	
C. S. Chongsoo	~~G3-20~~ B4-55	X	
W. L. Cowley	H4-65	X	
M. L. Dexter	R1-51	X	
R. A. Dodd	S5-07	X	
G. L. Dunford	S7-81	X	
S. J. Eberlein	R2-12	X	
D. B. Engelman	R1-49	X	
K. O. Fein	H4-65		X
G. D. Forehand	S7-21	X	
J. S. Garfield	H5-49	X	
J. D. Guberski	R2-06		X
R. D. Gustavson	R1-51	X	
D. L. Herting	T6-09	X	
B. A. Higley	H5-27	X	
G. Jansen	H6-33	X	
L. Jensen	T6-07	X	
G. D. Johnson	S7-15	X	
K. K. Kawabata	S7-55	X	
T. J. Kelley	S7-21	X	
N. W. Kirch	R2-11	X	
J. G. Kristofzski	R2-12	X	
M. J. Kupfer	H5-49	X	
D. L. McGrew	R3-25	X	
W. C. Miller	R1-30	X	
C. T. Narquis	T6-16	X	
D. E. Place	H5-27	X	
D. A. Reynolds	R2-11	X	
L. M. Sasaki (10)	R2-12	X	
F. A. Schmittroth	H0-35	X	
N. J. Scott-Proctor	S5-01	X	
L. W. Shelton, Jr.	H5-49	X	
B. C. Simpson	R2-12	X	
G. L. Smith	H4-62		X
G. L. Troyer	T6-50	X	
D. A. Turner	S7-15	X	
D. J. Washenfelder	H5-27	X	
M. S. Waters	S6-30	X	
W. I. Winters ~~(3)~~	T6-50	X	
TFIC (Tank Farm Information Center)	R1-20	X	

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Central Files	A3-88	X
EDMC	H6-08	X
OSTI (2)	A3-36	X
TCRC	R2-12	X

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