S

ENGINEERING CHANGE NOTICE

0050785

1. ECN 653789

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	Julie A. Johnston, Data Assessment and Interpretation, R2-12, 376-9889	[] Yes [X] No	05/24/99
	6. Project Title/No./Work Order No. Tank 241-AN-101	7. Bldg./Sys./Fac. No. 241-AN-101	8. Approval Designator N/A
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-ER-578, Rev. 0-B	10. Related ECN No(s). ECNs: 612284, 644476	11. Related PO No. N/A

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 12b) [X] No (NA Blks. 12b, 12c, 12d)	N/A	N/A Design Authority/Cog. Engineer Signature & Date	N/A Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [] Yes [X] No

This ECN has been generated in order to update the document to reflect results of recent data/information evaluation.

Replace pages:

Es-~~4~~5, ES-~~5~~6, 5-1, 5-2, 5-7, 5-8, 6-1, 6-2, 7-1, and 7-2

RECEIVED EDMC JUN 1999

14a. Justification (mark one)

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

14b. Justification Details

A tank characterization report page change revision is required to reflect the results of recent evaluation of data/information pertaining to adequacy of tank sampling for safety screening purposes (Reynolds et al. 1999, Evaluation of Tank Data for Safety Screening, HNF-4217, Rev. 0, Lockheed Martin Hanford Corporation, Richland, Washington).

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

See attached distribution.

RELEASE STAMP

DATE: 6-4-99

HANFORD RELEASE

ID: 19

STA 4

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) ECN-653789

16. Design Verification Required	17. Cost Impact				18. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[]

19. 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 13. Enter the affected document number in Block 20.

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	[]		[]

20. 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		

21. Approvals

	Signature	Date		Signature	Date
Design Authority			Design Agent		
Cog. Eng.	J.A. Johnston Julie A Johnston	6.3.99	PE		
Cog. Mgr.	K.M. Hall	6/3/99	QA		
QA			Safety		
Safety			Design		
Environ.			Environ.		
Other			Other		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

Tank Characterization Report for Double-Shell Tank 241-AN-101

Julie A. Johnston
Lockheed Martin Hanford Corp., Richland, WA 99352
U.S. Department of Energy Contract 8023764-9-K001

EDT/ECN: ECN-653789 UC: 2070
Org Code: 74B20 CACN/COA: 102217/EI00
B&R Code: EW 3120074 Total Pages: 111

Key Words: Waste Characterization, Double-Shell Tank, DST, Tank 241-AN-101, Tank AN-101, AN-101, AN Farm, Tank Characterization Report, TCR, Waste Inventory, TPA Milestone M-44

Abstract: N/A

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.

6-4-99
DATE:
HANFORD RELEASE
STA: 4
ID:

6/4/99
Release Approval Date Release Stamp

Approved for Public Release

RECORD OF REVISION	(1) Document Number WHC-SD-WM-ER-578	Page 1

(2) Title
Tank Characterization Report for Double-Shell Tank 241-AN-101

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) Initially released 8/8/96 on EDT 617505.	C. J. Benar	J. G. Kristofzski
0A RS	Incorporate per ECN-612284.	M. J. Kupfer 7-25-97	K. M. Hodgson 7-25-97
0B RS	Incorporate per ECN-644476	M.J. Kupfer 8/5/98	K.M. Hodgson 8-3-98
0-C RS	Incorporate per ECN-653789.	J.A. Johnston 6.3.99	K.M. Hall 6/3/99

A-7320-005 (08/91) WEF168

After the December 1995 sampling event, it was discovered that in September and October 1995, tank AN-101 received waste from saltwell liquid pumping and an unknown source. Because the tank contents changed during the time between sampling events, only the December 1995 results were used to complete the safety screening evaluation.

Comparisons were made between the analytical results and the notification limits of the safety screening DQO. No exothermic reactions were observed for any samples. The average weight percent water value by thermogravimetric analysis (TGA) was 65.4 weight percent. The overall total alpha activity mean was < 0.00147 μCi/mL, which was far below the notification limit. The concentration of the tank headspace gases was 0 percent of the lower explosive limit (LEL), which more than satisfied the safety screening requirement.

Comparisons also were made between the analytical results and the safety and operational limits identified in the waste compatibility DQO. The safety issues of the DQO include energetics, criticality, flammable gas accumulation, and corrosion. All analytical results satisfied their respective safety criteria. In addition, all the operational limits evaluated were satisfied; the transuranic (TRU) content, and heat load were below levels which would cause the waste to be segregated.

The tank heat load, based on radionuclide analytical data, was 2,380 W (8,120 Btu/hr), much lower than the 20,500 W (70,000 Btu/hr) operating specification limit. The historical tank content estimate (HTCE) prediction for heat load was 102 W (349 Btu/hr) (Brevick et al.

1995a). The average tank temperature between July 1983 and March 1996 was 22.1 °C (71.8 °F), with a minimum of 11 °C (52 °F) and a maximum of 32.4 °C (90.3 °F). March 21, 1996 surveillance data show a waste level of 9.977 m (32.73 ft).

Table ES-2 provides concentration and inventory estimates for the most prevalent analytes and analytes of concern. The sample results used for this table are from the August/September 1995 sampling event. Since that time, waste transactions have occurred and the table is no longer representative of the tank contents.

Table ES-2. Major Analytes and Analytes of Concern for Tank 241-AN-101.[1] (2 sheets)

Analyte	Overall Mean Concentration	Relative Standard Deviation (Mean)	Projected Inventory
METALS	**μg/mL**	**%**	**kg**
Aluminum	20,900	3.5	85,500
Sodium	1.28E+05	3.0	5.24E+05
ANIONS	**μg/mL**	**%**	**kg**
Chloride	3,300	1.0	13,500
Hydroxide	31,400	2.5	1.28E+05
Nitrate	97,100	1.8	3.97E+05
Nitrite	48,200	2.7	1.97E+05
Phosphate	2,120	19.2	8,670
Sulfate	3,040	24.5	12,400
RADIONUCLIDES	**μCi/mL**	**%**	**Ci**
^{137}Cs	123	0.6	5.03E+05
^{90}Sr	0.378	28.3	1,550
Total alpha	< 0.00059	---	< 2.41
CARBON	**μg/mL**	**%**	**kg**
Total inorganic carbon	2,450	2.7	10,000
Total organic carbon	2,630 (7,670)[2]	18.0	10,800
PHYSICAL PROPERTIES			

5.0 INTERPRETATION OF CHARACTERIZATION RESULTS

The purpose of this section is to discuss the overall quality and consistency of the current sampling results for tank 241-AN-101 and to assess and compare these results against historical information and program requirements.

5.1 ASSESSMENT OF SAMPLING AND ANALYTICAL RESULTS

This section evaluates sampling and analysis factors that may impact interpretation of the data. These factors are used to assess the overall data quality and consistency and to identify limitations in data use.

5.1.1 Field Observations

No problems were noted during the sampling operations. All seven samples (including the field blank) achieved 100 percent recovery.

5.1.2 Quality Control Assessment

The usual quality control assessment includes an evaluation of the appropriate standard recoveries, spike recoveries, duplicate analyses, and blanks that are performed in conjunction with the chemical analyses. All pertinent quality control tests were conducted on the 1995 analyses, allowing a full assessment regarding the accuracy and precision of the data. The SAPs (Benar 1995 and Jones 1995) established the specific criteria for all quality control checks. Sample and duplicate pairs exhibiting one or more quality control results outside the SAP target levels are identified (by footnoting) in Appendix A data tables.

The standard and spike recovery results provide an estimate of analysis accuracy. If a standard or spike recovery is above or below the given criterion, then the analytical results may be biased high or low, respectively. All standard recoveries were within the defined criterion. The single spikes conducted for chloride and fluoride were below the target level of 80 to 120 percent recovery. The laboratory chemist noted an interference on the chromatogram in the region in which chloride and fluoride elute. This was most likely responsible for the poor spike recoveries. The precision (estimated by the relative percent difference, which is defined as the absolute value of the difference between the primary and duplicate samples, divided by their mean, times one hundred) between all sample pairs for all analytes was within the limits. Finally, none of the samples exceeded the criterion for preparation blanks; therefore, contamination was not a problem.

In summary, nearly all quality control results were within the boundaries specified in the SAPs. The spike recovery difficulties with chloride and fluoride should not impact data validity or use.

5.1.3 Data Consistency Checks

Comparing different analytical methods can help to assess data consistency and quality. The quantity of data made it possible to compare total alpha activity to the sum of specific alpha emitters and to calculate mass and charge balances.

5.1.3.1 Comparison of Results from Different Analytical Methods. The following data consistency check compares the results from two different analytical methods. A close correlation between the two methods strengthens the credibility of both results, whereas a poor correlation brings the reliability of the data into question.

A comparison was made between the total alpha activity mean and the sum of the means of the individual alpha emitters in Table 5-1. The sum of the activities of the individual alpha emitters was determined by adding the ^{241}Am and $^{239/240}$Pu mean activities.

The analytical result of total alpha activity for all tank 241-AN-101 samples was below the detection limit. The sum of the alpha emitters compared well with the total alpha activity mean which is less than 0.00059 μCi/mL.

Table 5-1. Comparison of the Total Alpha Activity with the Sum of the Individual Activities.

Analyte	Overall Mean[1] μCi/mL
^{241}Am	5.15E-05
$^{239/240}$Pu	5.98E-05
Sum of alpha emitter means	1.11E-04
Total alpha activity mean	< 5.90E-04

Note:

[1]Calculated using sample results from the August/September 1995 sampling event.

Both DQOs requested analyses for energetics (by DSC) to evaluate the fuel content and total alpha activity to determine the criticality potential, although the specific limits set by the DQOs differed. The safety screening DQO requires the determination of the percent of the LFL of the gases in the tank headspace, while the waste compatibility DQO used specific gravity to evaluate the potential for flammable gas accumulation within the waste. In addition, the waste compatibility DQO imposes waste composition limits on the tank contents to control corrosion. For each required analysis, a notification threshold was established which, if exceeded, could warrant further investigation to assure the safety of the tank. Tables 5-5 and 5-6 list the applicable safety issues, decision variables, and thresholds for the safety screening and waste compatibility DQOs and the mean analytical results from the 1995 grab sampling events.

For safety assessment, the safety screening DQO suggests vertical profiles of the waste from at least two widely-spaced risers. Data from one riser only was used. However, further technical evaluation has shown that safety screening sampling is sufficient (Reynolds et al. 1999).

The safety screening DQO has a notification limit of 480 J/g (dry weight) for the DSC analyses (Dukelow et al. 1995). The waste compatibility DQO mandated that the value of the exotherm/endotherm ratio must be $\leq$ 1.0 for any transfer to be allowed. Because no exothermic reactions were noted in any sample, neither DQO limit was exceeded, and the calculation of a 95 percent upper confidence limit (per the safety screening DQO) was unnecessary.

The potential for criticality can be assessed from the total alpha activity data. The safety screening notification limit is 1 g/L (Dukelow et al. 1995). Because the laboratory reported total alpha activity in units of μCi/mL, the 1 g/L threshold was converted to 61.5 μCi/mL using the formula in footnote 1, Table 5-5. The calculated overall mean, based on the nondetected results, was $<$ 0.00147 μCi/mL, well below the 61.5 μCi/mL safety screening DQO limit. Because total alpha activity was not detected in any sample, the statistical calculation of a 95 percent upper confidence limit was unnecessary. The waste compatibility DQO limit for total alpha activity was $\leq$ 0.05 g/gal. This converts to 0.812 μCi/mL (using the ^{239}Pu specific activity of 0.0615 Ci/g), which was almost a factor of three above the estimated analytical result (see Table 5-6).

The flammability of the gas in the tank headspace is the final safety screening DQO consideration. According to the DQO, any flammable gas present must be $\leq$ 25 percent of the LFL. The analytical result was 0 percent of the LEL, which is equivalent to 0 percent of the LFL (see Section 4.1.3). The waste compatibility DQO flammable gas decision rule requires that the specific gravity of the waste be $<$ 1.3 before any transfer is allowed. The analytical result of 1.24 was below this limit.

The waste compatibility DQO also specifies several waste composition limits to control corrosion; these are listed in Table 5-6. The analytical results from the 1995 grab samples for hydroxide, nitrate, and nitrite all met the criteria listed.

Table 5-5. Decision Variables and Criteria for the Safety Screening Data Quality Objective.

Safety Issue	Primary Decision Variable	Decision Criteria Threshold	Mean Analytical Result[1]
Ferrocyanide/Organics	Total fuel content	480 J/g	No exotherms
Criticality	Total alpha activity	1 g/L[2] (61.5 μCi/mL)	< 0.00147 μCi/mL
Flammable gas	Flammable gas	25% of the LFL	0 percent LEL

Notes:

[1]December 1995 sampling event.

[2]Although the actual decision criterion listed in the DQO was 1 g/L, total alpha was measured in μCi/mL rather than g/L. To convert the notification limit for total alpha into the same units as the laboratory, it was assumed that all alpha decay originated from ^{239}Pu. Using the specific activity of ^{239}Pu (0.0615 Ci/g), the decision criterion may be converted to 61.5 μCi/mL as shown:

$$\left(\frac{1\ \text{g}}{\text{L}}\right)\left(\frac{1\ \text{L}}{10^3\ \text{mL}}\right)\left(\frac{0.0615\ \text{Ci}}{1\ \text{g}}\right)\left(\frac{10^6\ \mu\text{Ci}}{1\ \text{Ci}}\right) = 61.5\ \frac{\mu\text{Ci}}{\text{mL}}$$

Table 5-6. Decision Variables and Criteria for the Waste Compatibility Data Quality Objective.

Safety Issue	Primary Decision Variable	Decision Criteria Threshold	Mean Analytical Result[1]
Energetics	Total fuel content	Exotherm/endotherm ratio < 1.0	No exotherms
Criticality	Total alpha activity	0.05 g/gal (0.812 μCi/mL)	< 0.00147 μCi/mL
Flammable gas accumulation	Waste-specific gravity	< 1.3	1.24
Corrosion	Concentration of hydroxide, nitrate, and nitrite	1.0 $\underline{M}$ < $[NO_3^-]$ ≤ 3.0 $\underline{M}$; 0.1 x $[NO_3^-]$ ≤ $[OH^-]$ < 10.0 $\underline{M}$; $[OH^-]$ + $[NO_2^-]$ ≥ 0.4 x $[NO_3^-]$	$[NO_3^-]$ = 1.57 $\underline{M}$ $[OH^-]$ = 1.85 $\underline{M}$ $[NO_2^-]$ = 1.05 $\underline{M}$

Note:

[1]August/September 1995 sampling event.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Tank 241-AN-101 was grab sampled in August/September and December 1995. The August/September sampling event was performed to evaluate the waste for compatibility issues in accordance with *Data Quality Objectives for the Waste Compatibility Program* (Fowler 1995). The December sampling event was performed to provide sample results from a second riser as required by the *Tank Safety Screening Data Quality Objective* (Dukelow et al. 1995) so that a safety screening assessment of the tank could be completed. The sampling and analysis of the December grab samples were performed as mandated in the safety screening DQO. Because the total alpha analyses were not required for the August/September sampling event, they were later performed on the archived August/September 1995 samples.

A safety screening evaluation for tank 241-AN-101 was performed with only the December 1995 sample results, which were from one riser. It was discovered that tank AN-101 received waste from saltwell liquid pumping and an unknown source in September and October 1995. Because the tank contents changed during the time between sampling events, the sample results from riser 22A (August/September 1995 sampling event) were not used for the safety screening evaluation. Further technical evaluation has shown that safety screening sampling is sufficient (Reynolds et al. 1999).

Comparisons were made between the analytical results and the decision criteria of the safety screening and waste compatibility DQOs. All analytical results satisfied the DQO criteria. No exothermic reactions were observed in any samples. The total alpha activity mean of < 0.00147 μCi/mL was well below the safety screening limit of 61.5 μCi/mL and the 0.05 g/gal waste compatibility safety limit, and the TRU content of 9.05E-05 μCi/g was below the waste compatibility operations limit of 0.1 μCi/g. The flammable gas concentration in the tank headspace was found to be 0 percent of the LEL, and the waste specific gravity was 1.24, below the waste compatibility safety limit of 1.3 for the flammable gas accumulation issue.

The requirements for the remaining waste compatibility issues, corrosion, and heat load also were satisfied. The concentrations of NO_3^-, OH^-, and NO_2^- were within their prescribed boundaries. The tank heat load calculated from radionuclide data was 2,380 W (8,120 Btu/hr), less than the operating specification limit of 20,500 W (70,000 Btu/hr).

This page intentionally left blank.

7.0 REFERENCES

Agnew, S. F., 1995, *Hanford Defined Wastes: Chemical and Radionuclide Compositions*, LA-UR-94-2657, Rev. 2, Los Alamos National Laboratory, Los Alamos, New Mexico.

Agnew, S. F., P. Baca, R. A. Corbin, K. A. Jurgensen, and B. Young, 1995, *Tank Layer Model (TLM)*, LA-UR-94-4269, Rev. 1, Los Alamos National Laboratory, Los Alamos, New Mexico.

Agnew, S. F., R. A. Corbin, T. B. Duran, K. A. Jurgensen, T. P. Ortiz, and B. L. Young, 1996, *Waste Status and Transaction Record Summary for the Southeast Quadrant of the Hanford 200 Area*, WHC-SD-WM-TI-689, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

Alstad, A. T., 1992, *Riser Configuration Document for Double-Shell Waste Tanks*, WHC-SD-RE-TI-093, Rev. 3, Westinghouse Hanford Company, Richland, Washington.

Benar, C. J., 1995, *Tank 241-AN-101 Grab Sampling and Analysis Plan*, WHC-SD-WM-TSAP-037, Rev. 0A, Westinghouse Hanford Company, Richland, Washington.

Brevick, C. H., L. A. Gaddis, W. W. Pickett, 1995a, *Historical Tank Content Estimate for the Southeast Quadrant of the Hanford 200 Areas*, WHC-SD-WM-ER-350, Rev. 0, ICF Kaiser Hanford Company, Richland, Washington.

Brevick, C. H., L. A. Gaddis, S. D. Consort, 1995b, *Supporting Document for the Southeast Quadrant Historical Tank Content Estimate Report for AN Tank Farm*, WHC-SD-WM-ER-314, Rev. 0, ICF Kaiser Hanford Company, Richland, Washington.

Carothers, K. G., 1994, *Data Quality Objectives for the Waste Compatibility Program*, WHC-SD-WM-DQO-001, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

DeLorenzo, D.S., A.T. DiCenso, D.B. Hiller, K.W. Johnson, J.H. Rutherford, D.J. Smith, and B.C. Simpson, 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 Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

Ecology, EPA, and DOE, 1996, *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.

Esch, R., 1995, *60-Day Waste Compatibility Safety Issue and Final Results for Tank 241-AN-101, Grab Samples 1AN-95-1, 1AN-95-2, and 1AN-95-3*, WHC-SD-WM-DP-148, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Esch, R., 1996, *Revised Final Report for Tank 241-AN-101, Grab Samples 1AN-95-1 through 1AN-95-7*, WHC-SD-WM-DP-148, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

Fowler, K. D, 1995, *Data Quality Objectives for the Waste Compatibility Program*, WHC-SD-WM-DQO-001, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

Hanlon, B. M., 1996, *Waste Tank Summary Report for Month Ending December 31, 1995*, WHC-EP-0182-93, Westinghouse Hanford Company, Richland, Washington.

Harris, J.P., 1994, *Unclassified Operating Specifications for the 241-AN, AP, AW, AY, AZ, & SY Tank Farms*, OSD-T-151-00007, Rev. H-8, Westinghouse Hanford Company, Richland, Washington.

Jones, J. M., 1995, *Compatibility Grab Sampling Analysis Plan*, WHC-SD-WM-TSAP-037, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

Nuclear Regulatory Commission, 1988, *Statistical Methods for Nuclear Materials Management*, NUREG-CR-4604, PNL-5849, C. A. Bennett and W. M. Bowen (eds.), U.S. Government Printing Office, Washington, D.C., 20013-7082.

Reynolds, D. A., W. T. Cowley, J. A. Lechelt, B. C. Simpson, and C. DeFigh-Price, 1999, *Evaluation of Tank Data for Safety Screening*, HNF-4217, Rev. 0, Lockheed Martin Hanford Corporation, Richland, Washington.

Sutey, M. J., 1993, "Waste Compatibility Assessment of Tank 241-AN-101 with Tanks 241-BX-110 and 241-BX-111," (Internal Memo 7C242-93-029 to S. D. Godfrey, August 3), Westinghouse Hanford Company, Richland, Washington.

Vitro Engineering Corporation, 1987, "Plan Tank Penetrations 241-AN Tanks," Drawing No. H-2-71976, Rev. 5, ICF Kaiser Hanford, Richland, Washington.

WHC, 1992, "Piping Plan Tank AN-101," Drawing No. H-2-71991, Rev. 9, Westinghouse Hanford Company, Richland, Washington.

DISTRIBUTION SHEET

To	From	Page 1 of 2
Distribution	Data Assessment and Interpretation	Date 05/24/99
Project Title/Work Order		EDT No. N/A
Tank Characterization Report for Double-Shell Tank 241-AN-101, WHC-SD-WM-ER-578, Rev. 0-C		ECN No. ECN-653789

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
OFFSITE					
Sandia National Laboratory P.O. Box 5800 MS-0744, Dept. 6404 Albuquerque, NM 87815					
D. Powers		X			
Nuclear Consulting Services Inc. P. O. Box 29151 Columbus, OH 43229-01051					
J. L. Kovach		X			
Chemical Reaction Sub-TAP P.O. Box 271 Lindsborg, KS 67456					
B. C. Hudson		X			
SAIC 555 Quince Orchard Rd., Suite 500 Gaithersburg, MD 20878-1437					
H. Sutter		X			
Los Alamos Laboratory CST-14 MS-J586 P. O. Box 1663 Los Alamos, NM 87545					
S. F. Agnew		X			
Tank Advisory Panel 102 Windham Road Oak Ridge, TN 37830					
D. O. Campbell		X			

DISTRIBUTION SHEET

To	From	Page 2 of 2
Distribution	Data Assessment and Interpretation	Date 05/24/99
Project Title/Work Order		EDT No. N/A
Tank Characterization Report for Double-Shell Tank 241-AN-101, WHC-SD-WM-ER-578, Rev. 0-C		ECN No. ECN-653789

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
ONSITE					
Department of Energy - Richland Operations					
W. S. Liou	S7-54	X			
DOE/RL Reading Room	H2-53	X			
DE&S Hanford, Inc.					
G. D. Johnson	S7-73	X			
Fluor Daniel Hanford Corporation					
J. S. Hertzel	H8-67	X			
Lockheed Martin Hanford, Corp.					
J. W. Cammann	R2-11	X			
J. A. Johnston	R2-12	X			
L. M. Sasaki	R2-12	X			
B. C. Simpson	R2-12	X			
R. R. Thompson	R2-12	X			
ERC (Environmental Resource Center)	R1-51	X			
T.C.S.R.C.	R1-10	5			
Lockheed Martin Services, Inc.					
B. G. Lauzon	R1-08	X			
Central Files	B1-07	X			
EDMC	H6-08	X			
Numatec Hanford Corporation					
J. S. Garfield	R3-73	X			
D. L. Herting	T6-07	X			
Pacific Northwest National Laboratory					
A. F. Noonan	K9-91	X			
Scientific Applications International Corporation					
M. D. LeClair	R3-75	X			