0050803

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 653784

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 []	Jim G. Field, Data Assessment and Interpretation, R2-12, 376-3753	[] Yes [X] No	05/24/99
	6. Project Title/No./Work Order No. Tank 241-AN-103	7. Bldg./Sys./Fac. No. 241-AN-103	8. Approval Designator N/A
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) HNF-SD-WM-ER-702, Rev. 0-C	10. Related ECN No(s). ECNs: 635582, 635590, 644478	11. Related PO No. N/A

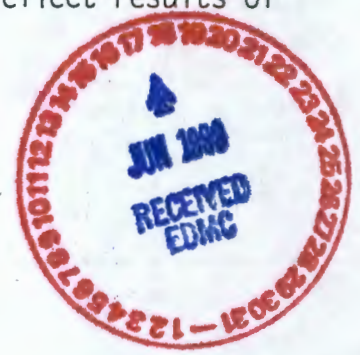
12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 12b) [X] No (NA Blks. 12b, 12c, 12d)	N/A	N/A Design Authority/Cog. Engineer Signature & Date	N/A Design Authority/Cog. Engineer Signature & 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: 4-1, 4-2 and 5-1 through 5-4.



14a. Justification (mark one)

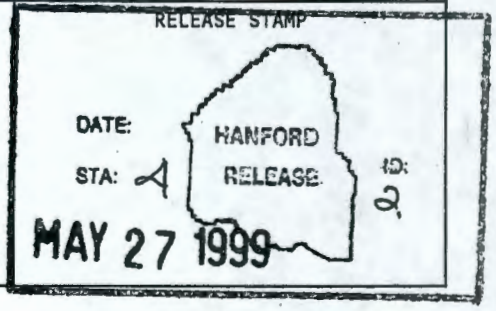
Criteria Change	[X]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

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.



A-7900-013-2 (05/96) GEF095

ENGINEERING CHANGE NOTICE	Page 2 of 2	1. ECN (use no. from pg. 1) ECN-653784

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.G. Field	J G Field	5/27/99	PE	
Cog. Mgr. ~~K.M. Hall~~		5/27/99	QA	
QA			Safety	
Safety			Design	
Environ.			Environ.	
Other			Other	
			DEPARTMENT OF ENERGY	
			Signature or a Control Number that tracks the Approval Signature	
			ADDITIONAL	

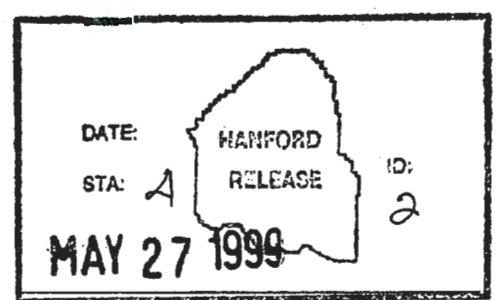
Tank Characterization Report for Double-Shell Tank 241-AN-103

Jim G. Field
Lockheed Martin Hanford Corp., Richland, WA 99352
U.S. Department of Energy Contract 8023764-9-K001

EDT/ECN: ECN-653784 UC: 2070
Org Code: 74B20 CACN/COA: 102217/EI00
B&R Code: EW 3120074 Total Pages: 325

Key Words: Waste Characterization, Double-Shell Tank, DST, Tank 241-AN-103, Tank AN-103, AN-103, AN Farm, Tank Characterization Report, TCR, Waste Inventory, TPA Milestone M-44

Abstract: N/A



Release Approval 5/27/99 Date

Release Stamp

Approved for Public Release

RECORD OF REVISION	(1) Document Number HNF-SD-WM-ER-702	Page 1

(2) Title
Tank Characterization Report for Double-Shell Tank 241-AN-103

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 08/25/97 on EDT-617663.	N.E. Wilkins	K.M. Hall
0-A RS	Incorporate per ECN-635582.	N.E. Wilkins N.E. Wilkins	K.M. Hall Kathleen M. Hall
0-B RS	Incorporate per ECN-635590.	N.E. Wilkins N.E. Wilkins	K.M. Hall Kathleen M. Hall
OC RS	Incorporate per ECN-644478	M.J. Kupfer 7/30/98	K. M. Hodgson 7-28-98
0-D RS	Incorporate per ECN-653784.	J.G. Field 5/27/99	K.M. Hall 5/27/99

4.0 RECOMMENDATIONS

With the exception of two samples, analytical results for the safety screening DQO (Dukelow et al. 1995) were within the safety notification limits. One sample had upper limits of the one-sided 95 percent confidence interval above the notification limit for DSC results. The average TOC for this sample was 2,610 μg/g. Well below the limit of 30,000 μg/g for TOC, indicating that energetics is not an issue for this tank. The sampling and analysis activities performed for tank 241-AN-103 have met all requirements for the safety screening DQOs. Retained Gas Sampler samples were obtained to address the flammable gas DQO (McDuffie and Johnson 1995). Large gas pockets were found in the non-convective layer of the tank waste. Additional evaluation of RGS results and flammable gas issues are in progress to determine the safety status for the tank. Vapor samples to address the organic solvents screening DQO have not been obtained, but are scheduled for FY 1998.

The privatization LAW DQO (Jones and Wiemers 1996) also applies to tank 241-AN-103. Sampling and analytical results are being assessed by the privatization program to determine whether the 1996 push core sample meets the needs of the privatization LAW DQO.

Table 4-1 summarizes the status of the Project Hanford Management Contractor (PMHC) TWRS Program review and acceptance of the sampling and analysis results reported in this tank characterization report. All DQO issues required to be addressed by sampling and analysis are listed in column one of Table 4-1. The second column indicates whether the requirements of the DQO were met by the sampling and analysis activities performed and is answered with a "yes" or a "no." The third column indicates concurrence and acceptance by the program in TWRS that is responsible for the DQO that the sampling and analysis activities performed adequately meet the needs of the DQO. A "yes" or "no" in column three indicates acceptance or disapproval of the sampling and analysis information presented in the TCR.

Table 4-1. Acceptance of Tank 241-AN-103 Sampling and Analysis.

Issue	Sampling and Analysis Performed	TWRS[1] Program Acceptance
Safety Screening DQO	Yes	Yes
Flammable Gas Tank Safety Program	Yes	Yes
Organic Solvents Screening	No	No
Privatization LAW DQO	ND	ND

Notes:

ND = not determined

[1] PHMC Program Office.

Table 4-2 summarizes the status of PHMC TWRS Program review and acceptance of the evaluations and other characterization information contained in this report. Column one lists the different evaluations performed in this report. Columns two and three are in the same format as Table 4-1. The manner in which concurrence and acceptance are summarized is also the same as that in Table 4-1.

Table 4-2. Acceptance of Evaluation of Characterization Data and Information for Tank 241-AN-103.

Issue	Evaluation Performed	TWRS[1] Program Acceptance
Safety Screening DQO	Yes[2]	Yes[2]
Flammable Gas Tank Safety Program	In Progress	ND
Organic Solvent Screening	No	ND
Applicability of Privatization Data	In Progress	ND

Note:

ND = not determined

[1] PHMC Program Office.

[2] Reynolds et al. (1999)

The waste currently in tank 241-AN-103 should be monitored continuously because of gas release events. Vapor samples to further assess the organic solvent screening issue are scheduled for FY 1998. No additional liquid and solid characterization samples are needed at this time.

An evaluation of RGS results, to assess tank safety, is in progress.

5.0 REFERENCES

Agnew, S. F., J. Boyer, R. A. Corbin, T. B. Duran, J. R. Fitzpatrick, K. A. Jurgensen, T. P. Ortiz, and B. L. Young, 1997, *Hanford Tank Chemical and Radionuclide Inventories: HDW Model Revision 4*, LA-UR-96-3680, Los Alamos National Laboratory, Los Alamos, New Mexico.

Brown, T. M., S. J. Eberlein, J. W. Hunt, and L. J. Fergestrom, 1997, *Tank Characterization Sampling Basis*, WHC-SD-WM-TA-164, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

Cash, R. J., 1996, *Scope Increase of "Data Quality Objective to Support Resolution of the Organic Complexant Safety Issue" Rev. 2,* (internal memo 79300-96-029 to S. J. Eberlein, July 12), Westinghouse Hanford Company, Richland, Washington.

DOE-RL, 1996, *Recommendation 93-5*, 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*, HNF-SD-WM-SP-004, Rev. 3, Lockheed Martin Hanford Corporation, 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.

Hanlon, B. M., 1997, *Waste Tank Summary Report for Month Ending March 31, 1997*, HNF-EP-0182-108, Lockheed Martin Hanford Corporation, Richland, Washington.

Heubach, E. C., 1996, *Double-Shell Tank Interim Operational Safety Requirements*, WHC-SD-WM-OSR-016, Rev. 0E, Westinghouse Hanford Company, Richland Washington.

Hendrickson, D. W., 1994, *Grout Treatment Facility Waste Feed Projections*, WHC-SD-WM-TI-528, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

Hodgson, K. M., and M. D. LeClair, 1996, *Work Plan for Defining a Standard Inventory Estimate for Wastes Stored in Hanford Site Underground Tanks*, WHC-SD-WM-WP-311, Rev. 1, Lockheed Martin Hanford Corporation for Fluor Daniel Hanford, Inc., Richland, Washington.

Jones, T. E., and K. D. Wiemers, 1996, *Data Requirements for TWRS Privatization Characterization of Potential Low Activity Waste Feed*, WHC-SD-WM-SP-023, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Kruger, A. A., 1996, *Tank 241-AN-103 Push Mode Core Sampling and Analysis Plan*, WHC-SD-WM-TSAP-105, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Kruger A. A., and Winkelman, W. D., 1996, *Tank 241-AN-103 Tank Characterization Plan*, WHC-SD-WM-TP-383, Rev. 3, Lockheed Martin Hanford Corporation, Richland, Washington.

Kummerer, M., 1995, *Topical Report on Heat Removal Characteristics of Waste Storage Tanks*, WHC-SD-WM-SARR-010, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

Kupfer, M. J., A. L. Boldt, B. A. Higley, K. M. Hodgson, L. W. Shelton, R. A. Watrous, S. L. Lambert, D. E. Place, R. M. Orme, G. L. Borsheim, N. G. Colton, M. D. LeClair, R. T. Winward, and W. W. Schulz, 1997, *Standard Inventories of Chemicals and Radionuclides in Hanford Site Tank Wastes*, HNF-SD-WM-TI-740, Rev. 0, Lockheed Martin Hanford Corporation for Fluor Daniel Hanford, Inc., Richland, Washington.

Meyer, P. A., M. E. Brewster, S. A. Bryan, G. Chen, L. R. Pederson, C. W. Stewart, and G. Terrones, 1997, *Gas Retention and Release Behavior in Hanford Double-Shell Waste Tanks*, PNNL-11536, Rev. 1, Pacific Northwest National Laboratory, Richland, Washington

Public Law 101-510, 1990, "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of *National Defense Authorization Act for Fiscal Year 1991*.

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

Shekarriz, A., R. E. Bauer, D. R. Rector, N. S. Cannon, L. A. Mahoney, B. E. Hey, M. A. Chieda, C. G. Linschooten, J. M. Bates, F. J. Reitz, and E. R. Siciliano, 1997, *Composition and Quantities of Retained Gas Measured in Hanford Waste Tanks 241-AW-101, A-101, AN-105, AN-104, and AN-103*, PNNL-11450, Rev. 1, Pacific Northwest National Laboratory, Richland, Washington.

Steen, F. H., 1997, *Tank 241-AN-103, Cores 166 and 167, Analytical Results for the Final Report*, HNF-SD-WM-DP-223, Rev. 0, Rust Federal Service of Hanford, Inc. for Fluor Daniel Hanford, Inc., Richland, Washington.

Stewart, C. W., J. M. Alzheimer, M. E. Brewster, G. Chen, R. E. Mendoza, H. C. Reid, C. L. Shepard, and G. Terrones, 1996, *In Situ Rheology and Gas Volume in Hanford Double-Shell Waste Tanks*, PNNL-11296, Pacific Northwest National Laboratory, Richland, Washington.

Watrous, R. A., and D. W. Wootan, 1997, *Activity of Fuel Batches Processed Through Hanford Separations Plants, 1944 Through 1989*, HNF-SD-WM-TI-794, Rev. 0, Lockheed Martin Hanford Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.

Wilkins, N. E., R. E. Bauer, and D. M. Ogden, 1997, *Results of Vapor Space Monitoring of Flammable Gas Watch List Tanks*, HNF-SD-WM-TI-797, Rev. 1, Lockheed Martin Hanford Corporation, Richland, Washington.

This page intentionally left blank.

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-103, HNF-SD-WM-ER-702, Rev. 0-D		ECN No. ECN-653784

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 Tank Characterization Report for Double-Shell Tank 241-AN-103, HNF-SD-WM-ER-702, Rev. 0-D		EDT No. N/A ECN No. ECN-653784

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. G. Field	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			