START 9413322.1093

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ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 615025

Proj. ECN

2. ECN Category (mark one) Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	3. Originator's Name, Organization, MSIN, and Telephone No. R. B. SIMMONS, 7E720, R2-12, 373-4925		4. Date 9-12-94
	5. Project Title/No./Work Order No. TANK CHARACTERIZATION REPORT FOR SINGLE-SHELL TANK 241-C-110	6. Bldg./Sys./Fac. No. 2750E	7. Approval Designator N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-ER-367, REV. 0	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

CHANGED THE UNIT FOR MEASURING THE PHYSICAL PROPERTY OF HEAT LOAD FROM KILOWATTS TO WATTS.

OCT 1994 RECEIVED EDMC

13a. Justification (mark one)							
	Criteria Change	[X]	Design Improvement	[]	Environmental	[]
As-Found []	Facilitate Const.	[]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

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

SEE ATTACHED DISTRIBUTION SHEET.

RELEASE STAMP

OFFICIAL RELEASE BY WHC (13)

DATE OCT 12 1994

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A-7900-013-2 (06/94) GEF095

A-7900-013-1 (04/94)

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ENGINEERING CHANGE NOTICE

SKB 10/12/94

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1. ECN (use no. from pg. 1) 615025

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

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog. Eng. B.C. SIMPSON [signature]	10/10/94	PE	
Cog. Mgr. C.S. HALLER [signature]	10/07/94	QA	
QA		Safety	
Safety		Design	
Environ.		Environ.	
Other	10/06/94	Other	
ERG. R.B. SIMMONS [signature]			
		DEPARTMENT OF ENERGY	
		Signature or a Control Number that tracks the Approval Signature	
		ADDITIONAL	

A-7900-013-3 (06/94) GEF096

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SUPPORTING DOCUMENT

1. Total Pages 137

2. Title	3. Number	4. Rev No.
TANK CHARACTERIZATION REPORT FOR SINGLE-SHELL TANK 241-C-110	WHC-SD-WM-ER-367	0A

5. Key Words

WASTE CHARACTERIZATION; SINGLE-SHELL TANK; C-110; TANK CHARACTERIZATION REPORT; WASTE INVENTORY; C FARM; TPA MILESTONE M-10; TPA MILESTONE M-44

6. Author

Name: D.S. DeLORENZO

Signature

Name: B. C. SIMPSON

Signature

Organization/Charge Code 7E720/N4E54

7. Abstract

This document provides the characterization information and interprets the data for Single-Shell Tank C-110

8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed.

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9. Impact Level NA

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC

DATE OCT 12 1994

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RECORD OF REVISION	(1) Document Number WHC-SD-WM-ER-367	Page 1

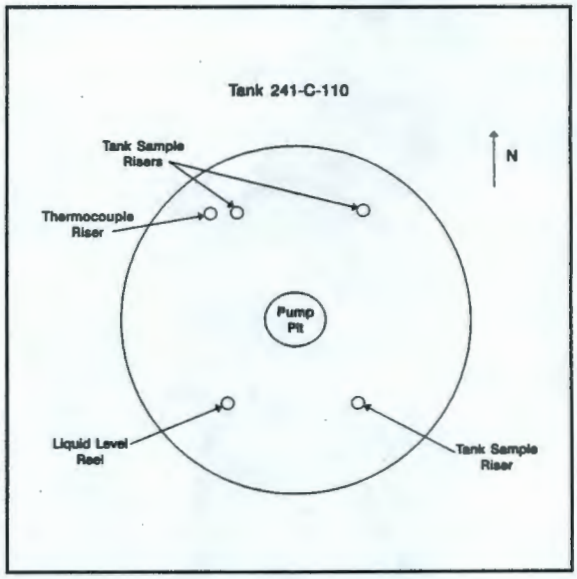
(2) Title
TANK CHARACTERIZATION REPORT FOR SINGLE-SHELL TANK 241-C-110

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) WHC-SD-WM-ER-367, REV. 0, EDT 608062, SEPTEMBER 7,1994		
0A RS	CHANGED PAGE ii OF EXECUTIVE SUMMARY	[illegible]	[illegible] 10/1/4
	PER ECN 615025		

A-7320-005 (08/91) WEF168

Single-Shell Tank 241-C-110 Concentrations and Inventories for Critical List Analytes (as of April 1992)				
Physical Properties				
Specific Gravity	Solid: 1.45	Liquid: 1.09		
H_2O (Sludge)	59.8 wt%	616,000 kg		
pH	Solid: 11.0	Liquid: 10.4		
Heat Load	~ 136 W			
Chemical Constituents	**Average Solid Concentration**	**Solid Bulk Inventory**	**Average Liquid Concentration**	**Liquid Bulk Inventory**
Al (Aluminum)	1.4 wt%	14,900 kg	0.00806 wt%	2.33 kg
Bi (Bismuth)	1.7 wt%	17,200 kg	0.00581 wt%	1.68 kg
Fe (Iron)	1.1 wt%	11,300 kg	0.00433 wt%	1.25 kg
Si (Silicon)	0.71 wt%	7,350 kg	0.00602 wt%	1.74 kg
Na (Sodium)	8.2 wt%	84,800 kg	4.12 wt%	1,190 kg
F^- (Fluoride)	0.76 wt%	7,830 kg	0.00474 wt%	13.7 kg
NO_3^- (Nitrate)	11.1 wt%	114,000 kg	8.34 wt%	2,410 kg
NO_2^- (Nitrite)	0.69 wt%	7,070 kg	0.720 wt%	208 kg
PO_4^{3-} (Phosphate)	2.8 wt%	28,800 kg	0.509 wt%	147 kg
SO_4^{2-} (Sulfate)	1.5 wt%	15,200 kg	1.02 wt%	294 kg
Total Organic Carbon	0.080 wt%	823 kg	0.0543 wt%	15.7 kg
Total Inorganic Carbon	0.14 wt%	1,440 kg	0.186 wt%	< 53.8 kg
Radionuclides				
$^{239/240}Pu$	116 μCi/L	82.4 Ci	1.76 μCi/L	0.0466 Ci
Total Uranium	0.15 μCi/L	1,520 kg	0.0295 wt%	8.53 kg
^{137}Cs	28,200 μCi/L	20,000 Ci	7,300 μCi/L	211 Ci
^{90}Sr	7,250 μCi/L	5,140 Ci	25.5 μCi/L	0.737 Ci
^{99}Tc	47.5 μCi/L	33.7 Ci	14.8 μCi/L	0.429 Ci
Total Alpha	180 μCi/L	128 Ci	6.44 μCi/L	0.186 Ci
Total Beta	61,300 μCi/L	43,500 Ci	3,350 μCi/L	99.6 Ci



TANK 241-C-110	
Tank Description	
Type:	Single-Shell
Constructed:	1944 and 1945
In-Service:	May 1946
Out of Service:	1976
Diameter:	75 feet
Usable Depth:	16 Feet
Operating Capacity:	530,000 gallons (2,000,000 L)
Bottom Shape:	Dish
Hanford Coordinates:	42.932° North 48.540° West
Total Risers	9
Usable Risers	4
Ventilation:	Passive
Tank Status (as of June 1994)	
Contents:	Dilute Complexed Waste
Total Waste:	187,000 gallons (708,000 L)
Supernate Volume:	-0- gallons
Drainable Interstitial Liquid:	7,000 gallons (26,500 L)
Sludge:	187,000 gallons (708,000 L)
Manual Tape Surface Level:	65.5 inches (2/94)
Temperature:	66° F (05/19/94)
Integrity Category:	Assumed Leaker
Date Declared Leaker:	1984
Leak Volume Estimate:	2,000 gallons (1989) (7,570 L)
Isolation Status	
Interim Stabilized:	09/79
Partially Interim Isolated:	12/15/82

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P. Segall	H4-19	X
E. J. Shen	S4-58	X
B. C. Simpson (10)	R2-12	X
G. L. Smith	H4-61	X
M. J. Sutey	T4-07	X
L. D. Swenson	G3-20	X
J. D. Thomson	R2-76	X
G. L. Troyer	T6-50	X
D. A. Turner	S7-15	X
C. J. Udell	L6-12	X
D. J. Washenfelder	L4-75	X
M. S. Waters	S6-30	X
G. R. Wilson	S7-14	X
TFIC (Tank Farm Information Center)	R1-20	X
Central Files (2)	L8-04	X
EDMC	H6-08	X
Information Release Administration (3)	~~R1-05~~	X L8-07