ENGINEERING CHANGE NOTICE

1. ECN 627062

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 []	Brett C. Simpson, Data Assessment and Interpretation, R2-12, 373-5915	[] Yes [X] No	01/08/97
	6. Project Title/No./Work Order No. Tank 241-S-107	7. Bldg./Sys./Fac. No. 241-S-107	8. Approval Designator N/A
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-ER-589, Rev. 0	10. Related ECN No(s). N/A	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 was generated in order to correct typographical errors in the executive summary and add missing pages in the table of contents, list of figures, list of tables, and list of terms.

14a. Justification (mark one)

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

14b. Justification Details

Initial release of this document was deficient.

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

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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. B.C. Simpson	Bill Simpson	1/8/97	PE		
Cog. Mgr. K.M. Hall	Kathleen M. Hall	1/9/97	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 Single-Shell Tank 241-S-107

Brett C. Simpson
Lockheed Martin Hanford Corp., Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

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Abstract: N/A

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RECORD OF REVISION	(1) Document Number WHC-SD-WM-ER-589	Page 1

(2) Title
Tank Characterization Report for Single-Shell Tank 241-S-107

CHANGE CONTROL RECORD

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LIST OF TERMS

1C	first-cycle decontamination waste
2C	second-cycle decontamination waste
ANOVA	analysis of variance
Bsltck	242-B Evaporator saltcake
Btu/hr	British thermal units per hour
C	Celsius
Ci	curies
Ci/L	curies per liter
CWR1	type 1 REDOX cladding waste
CWR2	type 2 REDOX cladding waste
CWZ1	type 1 zirconium cladding waste
DBP	dibutyl phosphate
DL	drainable liquid
DQO	data quality objective
DSC	differential scanning calorimetry
EDTA	ethylenediaminetetraacetic acid
F	Fahrenheit
FIC	Food Instrument Corporation level gage
ft	feet
g	grams
g/cc	grams per cubic centimeter
g/L	grams per liter
g/mL	grams per milliliter
gal	gallons
HDW	Hanford Defined Wastes
HEDTA	N-(hydroxylethyl)-ethylenediaminetriacetic acid
HHF	hydrostatic head fluid
HTCE	Hanford Tank Content Estimate
IC	ion chromatography
ICP/AES	inductively coupled plasma atomic emission spectrometry
in.	inches
J/g	joules per gram
kg	kilograms
kgal	kilogallons
kL	kiloliters
kW	kilowatts
L	liters
LFL	lower flammability limit
m	meters
mg	milligrams
mL	milliliters
mm	millimeters

LIST OF TERMS (Continued)

mol/L	moles per liter
mrad	millirads
N/A	not available
NTA	nitrilotriacetic acid
ppm	parts per million
ppmv	parts per million volume
QC	quality control
R1	type 1 high level REDOX waste
RSD	relative standard deviation
Rsltck	REDOX saltcake
RPD	relative percent difference
SAP	sample and analysis plan
SMM	supernatant mixing model
SMM S1	type 1 242-S evaporator concentrate waste
SMM S2	type 2 242-S evaporator concentrate waste
SMM T2	type 2 evaporator concentrate waste
TGA	thermogravimetric analysis
TMACS	tank monitoring and control system
TLM	Tank Layer Model
TOC	Total Organic Carbon
WSTRS	Waste Status and Transaction Record Summary
μCi/g	microcuries per gram
μCi/L	microcuries per liter
μCi/mL	microcuries per milliliter
μg/g	micrograms per gram
μg C/g	micrograms carbon per gram
μg/mL	micrograms per milliliter
ΔH	change in enthalpy

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Table ES-2. Major Analytes and Analytes of Concern.[1]

Analyte	Mean Concentration	RSD (Mean)	Projected Inventory
Safety Screening Analytes			
Water Content (solids)	32.1 weight percent	7.2 percent	8.12E+05 kg
Total alpha activity	0.9 μCi/g	13.6 percent	2,200 Ci
Flammable Gas	5 percent lower flammability limit		
Anions	**μg/g**	**percent**	**kg**
Chloride	2,080	7.0	5,080
Fluoride	14,300	30.5	34,800
Nitrate	57,900	5.3	141,000
Nitrite	30,900	7.1	75,300
Phosphate	21,600	29.4	52,700
Oxalate	4,180	24.3	10,200
Sulfate	2,430	19.5	5,930
Metals	**μg/g**	**percent**	**kg**
Aluminum[3]	49,700 *149,100*	16.2	121,000 *363,000*
Chromium	3,530	26.5	8,610
Iron	2,300	18.1	5,610
Nickel	1,280	24.7	3,120
Silicon	2,180	28.9	5,210
Sodium	86,700	9.2	211,000
Uranium	6,830	10.4	16,700
Zirconium	9,720	33.6	23,700
Radionuclides	**μCi/g**	**percent**	**Ci**
^{137}Cs	83.6	9.0	204,000
^{90}Sr	158.3	13.6	385,000
Physical Properties	**g/mL**	**percent**	
Density[2]	1.78	1.86	n/a
Carbon	**μg C/g**	**percent**	**kg C**
TOC Carbon	1,700	11.8	4,150

Notes:

n/a = not applicable

RSD (Mean) = relative standard deviation of the mean

[1]Calculations are based on 1.78 g/mL density of sludge and 1,370 kL solid waste volume.

[2]Average of selected segment density analyses.

[3]Italics indicate total estimated aluminum concentration. Regular font indicates quantitated value.

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