START 9613456.2507

0042162 PAGE

ENGINEERING CHANGE NOTICE

Page 1 of 3

1. ECN No 621328

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 []	C. S. HOMI, 71520, R2-12, 373-1097	[] Yes [X] No	03/29/95
	5. Project Title/No./Work Order No. TANK 241-TY-103 TANK CHARACTERIZATION PLAN	6. Bldg./Sys./Fac. No. 2750E/200E	7. Approval Designator N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-TP-300 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

Added changes to pages A2, A3, and A7.

13a. Justification (mark one)

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

13b. Justification Details

Page changes made to add sorbent tube field blanks.

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

See attached Distribution Sheet

OCT 1995 RECEIVED EDMC

RELEASE STAMP

OFFICIAL RELEASE BY WHC 5

DATE MAR 30 1995

Sta. 4

A-7900-013-2 (11/94) GEF095

A-7900-013-1

9613456.2508

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 621328

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.	C. S. Homi	3/29/95	PE	
Cog. Mgr.	S. J. Eberlein	3/29/95	QA	
QA			Safety	
Safety			Design	
Environ.			Environ.	
Other			Other	
Proj.	J. W. Osborne	3/29/95		
Proj.	D. L. Edwards	3/29/95		
Proj.	S. C. Goheen	See Attached Sheet	DEPARTMENT OF ENERGY	
Proj.			Signature or a Control Number that tracks the Approval Signature	
			ADDITIONAL	

ENGINEERING CHANGE NOTICE

Page 3 of 3

1. ECN (use no. from pg. 1): 621328

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

OPERATIONS AND ENGINEERING	Signature	Date
Cog. Eng. C. S. Homi	C S Homi	3/29/95
Cog. Mgr. S. J. Eberlein		
QA		
Safety		
Environ.		
Other		
Proj. J. W. Osborne		
Proj. D. L. Edwards		
Proj. S. C. Goheen	Steven C. Goheen	3/29/95
Proj.		

ARCHITECT-ENGINEER	Signature	Date
PE		
QA		
Safety		
Design		
Environ.		
Other		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

9613456.2510

SUPPORTING DOCUMENT

1. Total Pages 28

2. Title	3. Number	4. Rev No.
TANK 241-TY-103 TANK CHARACTERIZATION PLAN	WHC-SD-WM-TP-300	0A

5. Key Words

CHARACTERIZATION, DQO, HEALTH AND SAFETY VAPOR ISSUE, FERROCYANIDE, FLAMMABLE, QUALITY CONTROL, SINGLE-SHELL TANK, VAPOR SAMPLING, ANALYSIS, TANK CHARACTERIZATION PLAN

6. Author

Name: C. S. HOMI

C S Homi 3/29/95

Signature

Organization/Charge Code 71520/N4168

7. Abstract

This document is a plan which serves as the contractual agreement between the Characterization Program, Sampling Operations, Oak Ridge National Laboratory, and PNL tank vapor program. The scope of this plan is to provide guidance for the sampling and analysis of vapor samples from tank 241-TY-103.

8. RELEASE STAMP

OFFICIAL RELEASE BY WHC 5

DATE MAR 30 1995

Sta. 4

A-6400-073 (08/94) WEF124

9613456.2511

RECORD OF REVISION	(1) Document Number WHC-SD-WM-TP-300	Page 1

(2) Title
TANK 241-TY-103 TANK CHARACTERIZATION PLAN

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) EDT 610023		
OA RS	Changed pages A2, A3, and A7 to reflect addition of sorbent tube field blanks.	C.H.	S.J. Eberhart 9/29/95
	Per ECN-621328		

A2.1.2 Sample Collection Using SUMMA® Canisters And Sorbent Tubes

SML shall provide sample identification numbers to the laboratories according to the format given in Section A3.1. SML shall use labeled sample containers supplied by the laboratory (see Section A2.2.1, Preparation of Sample Media Containers) to collect vapor samples. The VSS shall be used to collect vapor from tank TY-103 in accordance with SML procedure WHC-IP-1127(4.5) "Collection of SUMMA® Canisters and Sorbent Tube Sampling Using the Vapor Sampling System (VSS)". The sample type, type of collection media to be used, and the number of samples requested are given in Table A-1.

Table A-1. General Sampling Information for Tank TY-103.

Sample Container	Prepared By	Preparation Procedure	Sample Type	Number of Samples
SUMMA® Canisters	PNL	PNL-TVP-02	Tank Air	3
SUMMA® Canisters	PNL	PNL-TVP-02	Ambient Air [1]	2
Triple Sorbent Traps	ORNL	AC-OP-3000907 CASD-AM-300-WP01 [2]	Tank Air	12
	ORNL	AC-OP-300-0907	Field Blank	2
	ORNL	AC-OP-300-0907	Trip Blank	2
Sorbent Trap System for NH_3, NO_2, NO, H_2O	PNL	PNL-TVP-09	Tank Air	6
	PNL	PNL-TVP-09	Trip Blank	3
	PNL	PNL-TVP-09	Field Blank	3
Tritium Trap	WHC	LA-548-111	Tank Air	1
HEPA Filters	WHC	N/A	Tank Air	4

1 One sample taken through the VSS, one sample taken upwind of the tank.
2 Preparation procedure for samples spiked with surrogate(s).

Table A-2 provides a sequence of sampling activities along with sample collection times and the flow rates through sample collection tubes. A cleanliness check of the sampling system shall be performed in accordance with procedure WHC-IP-1127(4.5) Appendix C. A cleanliness check of the VSS shall also be performed by collecting ambient air SUMMA® samples prior to sampling the tanks using the following conditions: 1) with the VSS manifold and transfer line fully heated, and 2) without the VSS, upwind of tank TY-103.

Organic vapors shall be monitored using the GC/FID during the sampling event. The operating procedure for the GC/FID is provided in the procedure WHC-IP-1127(4.5) and Bellus (1993). The sampling team is responsible for documenting any problems and procedural changes affecting the validity of the sample in a field notebook.

Table A-2. List of Samples and Activities for Tank TY-103.

SAMPLE CODE	SAMPLE/ACTIVITY DESCRIPTION	SAMPLER POSITION DURING COLLECTION	GAS FLOW RATE	SAMPLE DURATION
--	Adjust VSS temperature setpoint to 40°C [1]	N/A	N/A	N/A
--	Purge VSS with ambient air [2]	N/A	5,450 mL/min	30 min.
01	Collect ambient air sample SUMMA #1	Upwind of TY-103	N/A	1 min.
--	Perform cleanliness check	N/A	N/A	N/A
02	Collect ambient air sample SUMMA #2	Port 15	N/A	1 min.
--	Leak test	N/A	N/A	N/A
--	Purge VSS with tank air	N/A	5,450 mL/min	30 min.
--	Measure tank pressure	N/A	N/A	N/A
03	Collect Tritium Trap	Sorbent line 8	200 mL/min	5 min.
--	Collect GC sample and initiate GC run [3]	N/A	N/A	N/A
04	Collect SUMMA #3	Port 11	N/A	1 min.
05	Collect SUMMA #4	Port 13	N/A	1 min.
06	Collect SUMMA #5	Port 15	N/A	1 min.
07	Collect Triple Sorbent Trap (TST) sample #1	Sorbent line 9	50 mL/min	4 min.
08	Collect TST sample #2	Sorbent line 10	50 mL/min	4 min.
09	Collect TST sample #3	Sorbent line 8	50 mL/min	4 min.
10	Open, close, & store TST Field Blank #1	In VSS truck	0 mL/min	N/A
11	Collect TST sample #4	Sorbent line 10	50 mL/min	4 min.
12	Collect TST sample #5	Sorbent line 9	200 mL/min	5 min.
13	Collect TST sample #6	Sorbent line 10	200 mL/min	5 min.
14	Collect TST sample #7	Sorbent line 8	200 mL/min	5 min.
15	Collect TST sample #8	Sorbent line 10	200 mL/min	5 min.
16	Collect TST sample #9	Sorbent line 9	200 mL/min	20 min.
17	Open, close, & store TST Field Blank #2	In VSS truck	0 mL/min	N/A
18	Collect TST sample #10	Sorbent line 10	200 mL/min	20 min.
19	Collect TST sample #11	Sorbent line 8	200 mL/min	20 min.
20	Collect TST sample #12	Sorbent line 10	200 mL/min	20 min.
21, 22	Store TST Trip Blanks #1 & #2	None	None	None
23	Collect NH3/NOx/H2O Sorbent Trap #1	Sorbent line 9	200 mL/min	15 min.
24	Collect NH3/NOx/H2O Sorbent Trap #2	Sorbent line 10	200 mL/min	15 min.
25	Collect NH3/NOx/H2O Sorbent Trap #3	Sorbent line 8	200 mL/min	15 min.
26	Collect NH3/NOx/H2O Sorbent Trap #4	Sorbent line 10	200 mL/min	15 min.
27	Collect NH3/NOx/H2O Sorbent Trap #5	Sorbent line 9	200 mL/min	15 min.
28	Collect NH3/NOx/H2O Sorbent Trap #6	Sorbent line 10	200 mL/min	15 min.
29, 30, 31	Store NH3/NOx/H2O Trap Trip Blanks #1, #2, & #3	None	None	None
32, 33, 34	Open, close, & store NH3/NOx/H2O Trap Field Blanks #1, #2, & #3	Sorbent lines 8, 9, 10	0 mL/min	None
35	Remove upstream HEPA Filter from HEPA transfer box	Upstream of box	Continuous	
36	Remove downstream HEPA Filter from HEPA transfer box	Downstream of box	Continuous	
37	Remove upstream HEPA Filter from VSS	Upstream of VSS	Continuous	
38	Remove downstream HEPA Filter from VSS	Downstream of VSS	Continuous	

1 Current (12/12/94) waste temperature is 23.0 °C.
2 Not required if ambient air purge incorporated in VSS setup.
3 Additional GC runs may be performed to obtain organic data and to assure cleanliness of the system at the discretion of the sampling scientist and shall be identified in the deliverable report. Organic data obtained from the on-line GC is developmental.

Table A-4. TY-103 Sample Chemical, Physical, And Radiological Analytical Requirements

TY-103 VAPOR		COMMENTS	REPORT FORMATS		NO. OF SAMPLE/BLANK CONTAINERS PROCESSED				
Plan Number	WHC-SD-WM-TP-300	Type 3 vapor sampling system (VSS) using heated vapor probes.	I	Early Notify	Organization	WHC	PNL	ORNL	TOTAL
Tank	TY-103		II	Process Control	SUMMA® Canister		3[a]/2		5
Program Contact	J. W. Osborne		III	Safety Screen	Sorbent Trap System [b]		6/6		12
TWRS Contact	R.D. Schreiber C. S. Homi		IV	Waste Management	Triple Sorbent Trap			12/4	16
			V	RCRA Compliance	HEPA Filter	4			4
Lab Project Coordinator	S. C. Goheen (PNL) R. A. Jenkins (ORNL)		VI	Special	Tritium Trap	1			1

PRIMARY ANALYSES						QUALITY CONTROL[c]			CRITERIA				REPORT FORMAT
ANALYSIS METHOD	PRIMARY ANALYTE	PROCEDURE	LAB	SAMPLE PREP	SAMPLE CONTAINER	NO. OF SAMPLES	SURR SPIKE[d]	NO. OF BLANKS	NOTIFICATION LIMIT (NL)[e]	EXPECTED RANGE	PRECN at NL	ACCURACY at NL	
EPA TO-14 GC/MS	Organic* Speciation	PNL-TVP-01 PNL-TVP-02 PNL-TVP-03	PNL	Direct	SUMMA®	3	none	2	≥ 4000 ppmv n-Butanol 50% IDLH for all others*	not available	±25%	70-130%	I, VI
GC/TCD	CO_2 CO^2 CH_4 H_2 N_2O	PNL-TVP-05 PNL-TVP-02	PNL	Direct	SUMMA®	3	none	2	N/A ≥ 20% LFL ≥ 20% LFL ≥ 20% LFL not available	not available	±25% ±25% ±25% ±25% ±25%	70-130%	VI I, VI I, VI I, VI I, VI
IC	NO NO_2	PNL-TVP-09 PNL-ALO-212	PNL	H_2O Extraction	Sorbent Trap	6	none	6	≥ 50 ppmv ≥ 25 ppmv	≥ 2 ppmv ≥ 0.1 ppmv	±25% ±25%	70-130%	I, VI I, VI
Gravimetric	H_2O	PNL-TVP-09	PNL	Direct	Sorbent Trap	6	none	6	N/A	≥ 3 mg/L	±25%	70-130%	VI
Selective Electrode	NH_3	PNL-TVP-09 PNL-ALO-226	PNL	H_2O Extraction	Sorbent Trap	6	none	6	≥ 250 ppmv	≥ 2 ppmv	±25%	70-130%	I, VI
GC/MS	Organics**	AC-MM-1-033153 CASD-OP-300-WP03 CASD-OP-300-WP04 CASD-OP-300-WP05 CASD-OP-300-WP06	ORNL	Thermal Desorption	Triple Sorbent Trap	12	all	4[f]	≥ 4000 ppmv n-Butanol, 50% IDLH for all others**	not available	±25%	70-130%	I, VI
Total α Total β Total γ	Radon Daughters	LA-508-110 LA-508-111 LA-508-162	WHC	Direct	HEPA Filter	4	N/A	N/A	≥60 pCi/g α ≥200pCi/g β ≥200 pCi/g γ	<60 pCi/g α <200 pCi/g β <200 pCi/g γ	±25% ±25% ±25%	70-130%	I, II
Liq. Scin.	Tritium [g]	LA-548-111	WHC	Direct	Tritium Trap	1	N/A	N/A	N/A	not available	N/A	N/A	II
GC/FID	Organics	WHC-IP-1127(1.3)	SML	Direct	On-line	N/A	N/A	N/A	N/A	N/A	N/A	N/A	II, VI

N/A: Not Applicable
a No extra canisters, except archive, will be stored by PNL.
b System contains individual sorbent media sections for NO_x, NH_3, & H_2O.
c Multiple samples and blanks are taken.
d Samples spiked with surrogates.
e Action required if any compound exceed 50% IDLH.
f Includes two trip and two field blanks.
g Survey purpose only.

*Acetone, acetonitrile, benzene, 1,3-butadiene, butanal, n-butanol, n-hexane, methane, propane nitrile. Other organic species detected at levels deemed sufficient by the Toxicology review Panel to be of potential toxicological concern shall be reported following Format I.

**Acetone, acetonitrile, benzene, butanol, n-dodecane, n-hexane, propane nitrile, tributyl phosphate, n-tridecane. Other organic species detected at level deemed sufficient by the Toxicology Review Panel to be of potential toxicological concern shall be reported following Format I.