

START

ENGINEERING CHANGE NOTICE

1. ECN No **617814**

Proj.
ECN

2. ECN Category (mark one) Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedeure <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	3. Originator's Name, Organization, MSIN, and Telephone No. C. S. HOMI, 71520, R2-12, 373-1097		4. Date 11-4-94
	5. Project Title/No./Work Order No. TANK 241-BY-110 TANK CHARACTERIZATION PLAN	6. Bldg./Sys./Fac. No. 241-BY	7. Impact Level N/A
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-TP-279, REV. 0	9. Related ECN No(s). N/A	10. Related PO No. N/A
11a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 11b) <input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)	11b. Work Package No. N/A	11c. Modification Work Complete N/A _____ Cog. Engineer Signature & Date	11d. Restored to Original Condition (Temp. or Standby ECN only) N/A _____ Cog. Engineer Signature & Date

12. Description of Change
Changed work package number and corrected typographical error.

13a. Justification (mark one)	Criteria Change <input checked="" type="checkbox"/>	Design Improvement <input type="checkbox"/>	Environmental <input type="checkbox"/>
As-Found <input type="checkbox"/>	Facilitate Const. <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>	Design Error/Omission <input type="checkbox"/>

13b. Justification Details
Correction to package number necessary in order to support sampling event.

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

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15. Design Verification Required <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	16. Cost Impact				17. Schedule Impact (days) Improvement <input type="checkbox"/> Delay <input type="checkbox"/>
	ENGINEERING		CONSTRUCTION		
	Additional <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	

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	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

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
N/A	N/A	N/A

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog Engineer C. S. HOMS <i>C. S. Homs</i>	11/4/94	PE	_____
Cog. Mgr. C. S. HALLER <i>C. S. Haller</i>	11/4/94	QA	_____
QA	_____	Safety	_____
Safety	_____	Design	_____
Security	_____	Environ.	_____
Environ.	_____	Other	_____
Projects/Programs	_____		_____
Tank Waste Remediation System	_____		_____
Facilities Operations	_____	DEPARTMENT OF ENERGY	
Restoration & Remediation	_____	Signature or Letter No.	
Operations & Support Services	_____		_____
Other	_____	ADDITIONAL	_____
	_____		_____
	_____		_____

SUPPORTING DOCUMENT

1. Total Pages 20¹⁻²⁸

2. Title TANK 241-BY-110 TANK CHARACTERIZATION PLAN	3. Number WHC-SD-WM-TP-279	4. Rev No. 0A
5. Key Words CHARACTERIZATION, DQO, HEALTH AND SAFETY VAPOR ISSUE, FERROCYANIDE, QUALITY CONTROL, SINGLE-SHELL TANK, VAPOR SAMPLING, ANALYSIS, TANK CHARACTERIZATION PLAN, ORGANIC	6. Author Name: G.S. HOMI Signature: <i>G.S. HOMI</i> 11/4/94 Organization/Charge Code 71520/N4168	
7. Abstract This document is a plan which serves as the contractual agreement between the Characterization Program, Sampling Operations, WHC 222-S Laboratory, Oak Ridge National Laboratory, and PNL 329 Laboratory. The scope of this plan is to provide guidance for the sampling and analysis of vapor samples from tank 241-BY-110.		
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WHC-SD-WM-TP-279, APPENDIX A, REV OA

Table A.4. BY-110 Sample Chemical, Physical, and Radiological Analytical Requirements														
PROJECT		COMMENTS				REPORT FORMATS			NUMBER OF SAMPLE/BLANK CONTAINERS PROCESSED					
Plan Number	WHC-SD-WM-TP-279	Type 3 vapor sampling system (VSS) using heated vapor probes.				I	Early Notify	Organization	WHC/OGI	PNL	ORNL	TOTAL		
Tank	BY-110					II	Process Control	SUMMA® Canister	3	3/2			8 ^a	
Program Contact	J. W. Osborne J. L. Huckaby					III	Safety Screen	Sorbent Trap System ^b	6/3				9	
TWRS Contact	B. C. Carpenter C. S. Homi					IV	Waste Management	Triple Sorbent Trap			12/4	16		
Lab Project Coordinator	S. C. Goheen (PNL) R. A. Jenkins (ORNL)					V	RCRA Compliance	HEPA Filter	4				4	
						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 SAMPLE	SURR SPIKE ^d	BLANK	ACTION LIMIT ^e	EXPECTED RANGE	PRECN	ACCURACY		
GCM	Flammability	CGIMX251 CGITMX410	N/A	N/A	N/A	1	N/A	N/A	>20% LFL	<10% LFL	N/A	N/A	I	
EPA TO-12	TNMHC	PNL-TVP-004	PNL	Direct	SUMMA®	3	none	2	N/A	100-200 mg/m ³	±30%	50-150%	VI	
EPA TO-14 GC/MS	Organic* Speciation	PNL-TVP-003 PNL-TVP-001	PNL	Direct	SUMMA®	3	none	2	≥ 4000 ppmv n-Butanol 50% IDLH for all others*	<100 ppbv	±25%	70-130%	I, VI	
GC/TCD	CO ₂ CO CH ₄ H ₂ N ₂ O	PNL-TVP-006	PNL	Direct	SUMMA®	3	none	2	N/A ≥ 20% LFL ≥ 20% LFL ≥ 20% LFL not available	not available < 5 ppmv not available 600-800 ppmv 700-900 ppmv	±25% ±25% ±25% ±25%	70-130%	VI I, VI I, VI I, VI I, VI	
IC	NO NO ₂	PNL-ALO-009	PNL	H ₂ O Extraction	Sorbent Trap	4	none	1	≥ 50 ppmv ≥ 25 ppmv	not available not available	±25% ±25%	70-130%	I, VI I, VI	
Gravimetric	H ₂ O	PNL-ALO-009	PNL	Direct	Sorbent Trap	4	none	1	N/A	not available	±25%	70-130%	VI	
Selective Electrode	NH ₃	PNL-ALO-266	PNL	H ₂ O Extraction	Sorbent Trap	4	none	1	≥ 250 ppmv	not available	±25%	70-130%	I, VI	
GC/MS	Organics**	AC-MM-1-003153 AC-MM-1-003157	ORNL	Thermal Desorption	Triple Sorbent Trap	12	all	4 ^f	≥ 4000 ppmv n-Butanol 50% IDLH for all others**	< 100 ppbv	±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 ≥200 pCi/g β ≥200 pCi/g γ	<60 pCi/g α <200 pCi/g β <200 pCi/g γ	±10% ±10% ±10%	90-110%	I, II	
Liq. Scin.	Tritium	LA-548-111	WHC	Direct	Tritium Trap	1	N/A	N/A	N/A	not available	±10%	N/A	II	
GC/FID	Organics	LO-080-450	FAS	Direct	On-line	N/A	N/A	N/A	N/A	N/A	N/A	N/A	II, VI	

N/A: Not Applicable

- a Three canisters will be archived at PNL until arrangements can be made for transport and analytical work at the OGIST laboratory.
- b System contains individual sorbent media sections for NO_x, NH₃, & H₂O.
- c Multiple samples and blanks are taken.
- d Samples are spiked with surrogates.
- e Action required if any compound exceed 50% IDLH.
- f Includes two trip and two field blanks.

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

3.0 QUALITY ASSURANCE/QUALITY CONTROL

This Tank Characterization Plan and resultant laboratory analysis data has been approved by the WHC Environmental Safety, Health, and Quality Assurance (ESH&QA) Program provided the following conditions are met.

- 1) Each laboratory has a quality assurance program that meets the applicable requirements of DOE order 5700.6C, NQA-1, QAMMS/005, and 10 CFR Part 830.120.
- 2) Each analysis and media preparation procedure given in Tables A.1 and A.3 are documented by the laboratory and available to ESH&QA.
- 3) Any modifications made to, or deviations from, the prescribed procedures are documented and justified in the deliverable report.

ESH&QA will qualify laboratories for continued use by the program after receipt of the Laboratory quality assurance plans, and an audit and corrective action phase.

3.1 Sampling Operations

The laboratory supplying the sample collection media shall initiate the chain of custody in accordance with the laboratory operating procedure LO-090-443, "Chain-of-Custody for RCRA and CERCLA Protocol Samples" using unique sample label and identification numbers provided by FAS. Each sample identification number shall have the following format:

SXXXX-WYY-LLL, where:

- | | | |
|-------------|---|--|
| XXXX | - | unique number assigned to the sampling event, |
| W | - | a letter code indicating the day of a multi-day sampling event, |
| YY | - | a 2-digit sample code found in Table A.2, List of Sample and Activities, column one. |
| LLL | - | a special lab assigned code. |

Once the sample collection media has been received by FAS from the laboratory, it shall remain in the physical control of the custodian, locked in a secure area, or prepared for shipping with tamper evident tape. The sample collection media shall also remain in a controlled area under conditions specified by the sample collection media supplier. TO-14 certified rental SUMMA® canisters from OGI shall have chain of custody initiated by FAS.

Applicable operating procedures for the tank BY-110 vapor space sampling activities are contained in work package ES-94-1224. Vapor samples, trip blanks, and field blanks are to be collected in accordance with Tables A.1 and A.2 and laboratory operating procedure LO-080-450 "Collection of SUMMA® Canisters & Sorbent Tube Samples Using the Vapor Sampling System (VSS)" and shipped to the laboratory in accordance with Hazardous Material Packaging and Shipping, WHC-CM-2-14.

All sampling activities shall be documented in controlled field logbooks maintained by sampling personnel (Sampling and Mobile Laboratories) and shall contain, but are not limited to: