DISTRIBUTION SHEET

To	From	Page 1 of 1
DISTRIBUTION	MF ERHART	Date 01-16-95
Project Title/Work Order		EDT No. NA
OTP FOR 244-U RADIATION MONITORING SYSTEM		ECN No. 613309

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
Central Files (2)	L8-04	X			
OSTI (2)	L8-0	X			
GT BEAR	R1-R1	X			
TK BETTGE	T4-01	X			
RC BOLDEN	R1-49	X			
GM CRUMMEL	R1-51	X			
MF ERHART (2)	R1-51	X			
OM JAKA	R3-08	X			
JJ KLOS	T4-08	X			
MR KOCH	R1-49	X			
BK RARIG	G7-57	X			
N RAZFAR (2)	T4-07	X			
AR TEDESCHI	T4-07	X			
WL ADAMS	S1-57	X			
BJ WEBB	R1-49	X			
RD WIGGINS	R1-49	X			

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COMPLETE

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 613309

Proj.
ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☒ Cancel/Void ☒	3. Originator's Name, Organization, MSIN, and Telephone No. MF ERHART, R1-51, 373-4743		3a. USQ Required? [X] Yes [] No	4. Date 01-16-95
	5. Project Title/No./Work Order No. 244-U DCRT		6. Bldg./Sys./Fac. No. 241-U-271	7. Approval Designator ESQ
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) <i>MS E 2-7-95</i> WHC-SD-ER3641-OTP-004 REV 0		9. Related ECN No(s).	10. Related PO No.
11a. Modification Work [] Yes (fill out Blk. 11b) [N] No (NA Blks. 11b, 11c, 11d)	11b. Work Package No. N/A	11c. Modification Work Complete NA _____ Cog. Engineer Signature & Date	11d. Restored to Original Condi- tion (Temp. or Standby ECN only) NA _____ Cog. Engineer Signature & Date	
12. Description of Change These changes update the procedure to incorporate the new system changes.				
13a. Justification (mark one) Criteria Change [] Design Improvement [X] Environmental [] Facility Deactivation [] As-Found [] Facility Const. [] Const. Error/Omission [] Design Error/Omission []				
13b. Justification Details These changes allow the new system to have an Operability Test conducted.				

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

RELEASE STAMP

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DATE MAR 13 1995

ENGINEERING CHANGE NOTICE				Page 2 of 2	1. ECN (use no. from pg. 1) 613309																																												
15. Design Verification Required ☐ Yes ☒ No	16. Cost Impact <table style="width: 100%; border: none;"> <tr> <th style="text-align: center; border: none;">ENGINEERING</th> <th style="text-align: center; border: none;">CONSTRUCTION</th> </tr> <tr> <td style="border: none;">Additional ☐ \$</td> <td style="border: none;">Additional ☐ \$</td> </tr> <tr> <td style="border: none;">Savings ☐ \$</td> <td style="border: none;">Savings ☐ \$</td> </tr> </table>			ENGINEERING	CONSTRUCTION	Additional ☐ \$	Additional ☐ \$	Savings ☐ \$	Savings ☐ \$	17. Schedule Impact (days) Improvement ☐ Delay ☐																																							
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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	☐																																												
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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.																																																	
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20. Approvals <table style="width: 100%; border: none;"> <tr> <th style="text-align: left; border: none;">Signature</th> <th style="text-align: left; border: none;">Date</th> <th style="text-align: left; border: none;">Signature</th> <th style="text-align: left; border: none;">Date</th> </tr> <tr> <td colspan="4">OPERATIONS AND ENGINEERING</td> </tr> <tr> <td>Cog. Eng. N RAZFAR</td> <td><i>[Signature]</i></td> <td>Feb. 15, 1995</td> <td>PE</td> </tr> <tr> <td>Cog. Mgr. AR TEDESCHI</td> <td><i>[Signature]</i></td> <td>2-15-95</td> <td>QA</td> </tr> <tr> <td>QA WL ADAMS</td> <td><i>[Signature]</i></td> <td>3/13/95</td> <td>Safety</td> </tr> <tr> <td>Safety OM JAKA</td> <td><i>[Signature]</i></td> <td>3/13/95</td> <td>Design</td> </tr> <tr> <td>Environ. GM CRUMEL</td> <td><i>[Signature]</i></td> <td>3/10/95</td> <td>Environ.</td> </tr> <tr> <td>OPS. JJ KLOS</td> <td><i>[Signature]</i></td> <td>3-13-95</td> <td>Other</td> </tr> <tr> <td>Originator MF ERHART</td> <td><i>[Signature]</i></td> <td>3/12/95</td> <td></td> </tr> <tr> <td>Originator Mgr. GT BEAR</td> <td><i>[Signature]</i></td> <td>1-25-95</td> <td></td> </tr> <tr> <td colspan="4" style="padding-top: 20px;"> DEPARTMENT OF ENERGY Signature or a Control Number that tracks the Approval Signature _____ _____ _____ ADDITIONAL INDEPENDENT REVIEW _____ _____ </td> </tr> </table>						Signature	Date	Signature	Date	OPERATIONS AND ENGINEERING				Cog. Eng. N RAZFAR	<i>[Signature]</i>	Feb. 15, 1995	PE	Cog. Mgr. AR TEDESCHI	<i>[Signature]</i>	2-15-95	QA	QA WL ADAMS	<i>[Signature]</i>	3/13/95	Safety	Safety OM JAKA	<i>[Signature]</i>	3/13/95	Design	Environ. GM CRUMEL	<i>[Signature]</i>	3/10/95	Environ.	OPS. JJ KLOS	<i>[Signature]</i>	3-13-95	Other	Originator MF ERHART	<i>[Signature]</i>	3/12/95		Originator Mgr. GT BEAR	<i>[Signature]</i>	1-25-95		DEPARTMENT OF ENERGY Signature or a Control Number that tracks the Approval Signature _____ _____ _____ ADDITIONAL INDEPENDENT REVIEW _____ _____			
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RELEASE AUTHORIZATION

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Release Date: 3/13/95

This document was reviewed following the
procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara M. Broz

March 13, 1995

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TANK FARM PLANT OPERATIONS PROCEDURE

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TANK FARM PLANT OPERATIONS PROCEDURE

1.0 PURPOSE

- 1.1 This Operability Test Procedure (OTP) will be used to ensure the operability of the beta/gamma alarms for the Continuous Air Monitoring System installed in 244-U DCRT (Double Containment Receiver Tank). The complete system consists of two subsystems: one for Exhaust Stack Monitoring and one for Annulus Monitoring.

Completion of this OTP will provide the necessary verification for the operability of the Exhaust Stack and Annulus Monitoring Systems, and for determining the operability of the Receiver Vessel 244-U. This OTP may be performed in conjunction with or following the vendor's *Site Acceptance Test Procedure of Continuous Air Monitoring System for 244-U DCRT*.

2.0 INFORMATION

2.1 SCOPE

2.1.1 EXHAUST STACK MONITORING

The Exhaust Stack portion of the monitoring system measures the airflow of the DCRT exhaust to atmosphere and records beta and gamma activity. Alarms are provided when system parameters are exceeded to notify personnel of the potential for release to the atmosphere.

This OTP will verify that all applicable alarm signals will initiate on a high radiation condition simulated at the AMS-4 unit and a simulated failure condition. The alarm signals to be checked include beacons mounted on top of the Exhaust Stack monitor cabinet, audible bell and horn, and common alarm annunciators in the 244-U Instrument Building and inside building 241-U-271.

In addition to the alarm signals, this OTP will verify that the Data Logger properly records the simulated conditions and that a calibration bypass timer functions as designed. The Data Logger functions will be checked both on the paper record and the digital display. The calibration bypass timer temporarily bypasses alarm signals sent to the remote common alarm panels. After one hour the timer returns the bypass relay to the normal configuration.

TANK FARM PLANT OPERATIONS PROCEDURE

2.1.2 ANNULUS MONITORING

The Annulus monitoring subsystem is used as a Gross Leakage Monitoring System to detect leakage from the DCRT to the annulus. This subsystem is very similar to the Exhaust Stack monitoring subsystem described above.

This OTP will conduct the same verifications on the Annulus monitoring system as those described for the Exhaust monitoring system.

2.2 TERMS AND DEFINITIONS

- 2.2.1 CASS - Computer Automated Surveillance System
- 2.2.2 DCRT - Double Contained Receiver Tank
- 2.2.3 DOE - Department Of Energy
- 2.2.4 HPT - Health Physics Technician
- 2.2.5 JHA - Job Hazards Analysis
- 2.2.6 OTP - Operational Test Procedure
- 2.2.7 OE - Operations Engineering
- 2.2.8 RWP - Radiation Work Permit
- 2.2.9 SST - Single Shell Tanks
- 2.2.10 TFO - Tank Farm Operations
- 2.2.11 TWRS - Tank Waste Remediation System

2.3 RESPONSIBILITIES

- 2.3.1 The Maintenance craft personnel are responsible for:
 - Providing assistance during the test.
 - Providing the necessary tools to conduct and complete the test.
- 2.3.2 The Operations personnel are responsible for:
 - Performing High Radiation Simulation via Check Source.
 - Witnessing vendor's Site Acceptance Test Procedure.

TANK FARM PLANT OPERATIONS PROCEDURE

2.3 RESPONSIBILITIES (Continued)

2.3.3 Quality Control (QC) is responsible for:

- Verifying that the procedure sections have been performed accurately.

2.3.4 HPT personnel are responsible for:

- Providing assistance handling the Check Sources during the test.

2.3.5 Test Director

- Conducts the pre-job safety meeting.
- Verifies equipment conditions and records data through the test.

2.4 REFERENCES

2.4.1 The following documents were used to write or are referenced in this procedure:

- AIR SAMPLING SYSTEM FOR THE 244-U DCRT EXHAUST STACK AND ANNULUS; CVI# 22661
- WHC-IP-0842, WASTE TANK ADMINISTRATION
- ARP-T-501-00001, RESPOND TO 241-U TANK FARM AND 244-U DCRT ALARMS

2.5 SAFETY

Warning - Energized circuits and leads are contained inside the panel cabinet. Comply with WHC-CM-4-3, Standard E-2, ELECTRICAL SAFETY PRACTICES.

Warning - The AMS-4 radiation detector is energized. Comply with WHC-CM-4-3, Standard E-2, ELECTRICAL SAFETY PRACTICES.

Warning - The circuit board is energized. Comply with WHC-CM-4-3, Standard E-2, ELECTRICAL SAFETY PRACTICES.

2.5.1 The following administrative procedures control work performed in this procedure:

- Industrial Safety Manual, WHC-CM-4-3, Vols 1-4
- Building Emergency Plan, WHC-IP-0263-TF
- Industrial Hygiene Manual, WHC-CM-4-40.
- Tank Farm Health and Safety Plan (HASP), WHC-SD-WM-HSP-002

TANK FARM PLANT OPERATIONS PROCEDURE

2.6 RADIATION AND CONTAMINATION CONTROL

- 2.6.1 HPT assistance is required in accordance with RWP.
- 2.6.2 The following administrative procedures control work performed in this procedure:
 - Hanford Site Radiological Control Manual (HSRCM)
 - Industrial Safety Manual, WHC-CM-4-3, Vols 1-4

2.7 QUALITY ASSURANCE

- 2.7.1 The QC Inspector shall verify that each section of this procedure has been performed correctly.

2.8 GENERAL INFORMATION

- 2.8.1 Complete each procedure step in the given order, unless otherwise noted or as directed by the Test Director.
- 2.8.2 All entries recorded in this procedure shall be made in black ink.
- 2.8.3 Note any discrepancies or unexpected results from the performance of this procedure on the attached OTP EXCEPTION LOG.
- 2.8.4 Do not perform any part of this procedure on faulty equipment. If faulty equipment is discovered, STOP the execution of this procedure and resolve the problem.
- 2.8.5 If the performance of this procedure is suspended for any reason, ensure the requirements of the Lock and Tag System are met before leaving the test site.
- 2.8.6 This procedure DOES NOT contain any separate data/verification sheets. Verification of procedural steps and data entry is indicated by the presence of the Test Director's and QC Inspector's signature at the end of each section.
- 2.8.7 There are no interface areas.
- 2.8.8 Changes to this procedure shall be made in accordance with WHC-CM-6-1, *Standard Engineering Practices*, Engineering Document Change Control, EP-2.2.
- 2.8.9 Any non-conformance of the instrumentation or unexpected results during testing shall be logged and recorded on the OTP EXCEPTION LOG, found in section 5.6 of this procedure.

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TANK FARM PLANT OPERATIONS PROCEDURE

3.0 RECORDS

- 3.1 The completed working copy of this procedure and all exception logs and exception records generated by this procedure will be kept as permanent records.

4.0 PREREQUISITES

- 4.1 The following supplies shall be available at the workplace (if appropriate, tools shall be rated for use on 120 VAC per WHC-CM-4-3, E-2 ELECTRICAL SAFETY PRACTICES):
- Check Source (Sr 90) of sufficient strength (10E+05 cpm) to simulate a High Radiation Signal
 - Screw drivers, electrical jumpers and journeyman hand tools
 - Electronic manometer
 - Digital multimeters
 - Laminar flow element
 - Signal generator
 - Thermometer
- 4.2 The following documents will be needed to perform this procedure:
- Air Monitor Corporation (AMC) Operation and Maintenance Manuals (Air Sampling System for the 244-U DCRT Exhaust Stack and Annulus; CVI# 22661)
 - WHC-IP-0842, Section 5.9.1, LOCKOUT/TAGOUT
 - Air Monitor Corporation (AMC) drawing W21592KD
- 4.2.1 A pre-job safety meeting has been held in accordance with WHC-IP-0842, Section 15.3, PRE-JOB SAFETY MEETING FORM.

Test Director

Date

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TANK FARM PLANT OPERATIONS PROCEDURE

5.0 PROCEDURE

5.1 EXHAUST MONITORING CABINET - BETA/GAMMA ALARM VERIFICATION SETUP

5.1.1 ENSURE that the exhaust ventilation system is at steady state operation.

☐

5.1.2 VERIFY that the following are NOT indicating an alarm condition:

- Red beacon (top of 244U EXHAUST STACK MONITOR PANEL)

☐

- Yellow beacon (top of 244U EXHAUST STACK MONITOR PANEL)

☐

- EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-U-A), window #9A on panel ANN-U in 244-U Instrument Bldg.

☐

- EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-244-U), window #9 on panel ANN-271-U in 241-U-271)

☐

5.1.3 TEST the indicator bulb for the following annunciator windows, by PRESSING the green TEST button on panel ANN-U (located in 244-U Instrument Bldg) and observing that the 3 windows illuminate (when the green TEST button is pushed, all functioning annunciators on the panel will illuminate):

- EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-U-A), window #9A

☐

- HIGH BETA-GAMMA EXHAUST STACK (RA-244-U-2A), window #11

☐

- EXHAUST FAN SHUTDOWN (MSA-4A), window #7A

☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.1 EXHAUST MONITORING CABINET - BETA/GAMMA ALARM VERIFICATION SETUP (Continued)

5.1.4 TEST the indicator bulb for the following annunciator windows, by PRESSING the green TEST button on panel ANN-271-U (located in 241-U-271) and observing that the 3 windows illuminate (when the green TEST button is pushed, all functioning annunciators on the panel will illuminate):

- EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-244-U), window #9 ☐

- HIGH BETA-GAMMA EXHAUST STACK (RA-244-U-2), window #11 ☐

- EXHAUST FAN SHUTDOWN (MSA-4), window #7 ☐

5.1.5 Test Director SHALL VERIFY that section 5.1 is COMPLETE by SIGNING below.

Test Director Signature

Date

5.1.6 QC Inspector SHALL VERIFY that section 5.1 is COMPLETE by SIGNING below.

QC Inspector Signature

Date

QC Stamp

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK

WARNING

Energized circuits and leads are contained inside the panel cabinet. Comply with WHC-CM-4-3, Standard E-2, ELECTRICAL SAFETY PRACTICES.

- 5.2.1 OPEN the front door of 244U EXHAUST STACK MONITOR PANEL AND LOCATE the Eberline AMS-4 Beta/Gamma Particulate Monitor. ☐
- 5.2.2 OPEN the AMS-4 detector housing (hinged cover on top, right of unit). ☐
- 5.2.3 POSITION AND EXPOSE the check source near the AMS-4 detector head to SIMULATE a high radiation condition. ☐
- 5.2.4 VERIFY the following alarm responses to the SIMULATED High radiation alarm condition:
- 5.2.4.1 Red Beacon light on top of the 244U EXHAUST STACK MONITOR PANEL is ILLUMINATED. ☐
- 5.2.4.2 244U EXHAUST STACK MONITOR PANEL cabinet bell is RINGING AUDIBLY. ☐
- 5.2.4.3 COMMON FAULT ALARM red light, located on the 244U EXHAUST STACK MONITOR PANEL, is ILLUMINATED. ☐
- 5.2.4.4 EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-U-A) annunciator window #9A, located on the ANN-U panel in the 244-U Instrument Bldg, is ILLUMINATED. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

- 5.2.4.5 HIGH BETA-GAMMA EXHAUST STACK (RA-244-U-2A) annunciator window #11A, located on the ANN-U panel in the 244-U Instrument Bldg, is ILLUMINATED. ☐
- 5.2.4.6 EXHAUST FAN SHUTDOWN (MSA-4A) annunciator window #7A, located on the ANN-U panel in the 244-U Instrument Bldg, is ILLUMINATED. ☐
- 5.2.4.7 EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-244-U) annunciator window #9, located on the ANN-271-U panel in 241-U-271, is ILLUMINATED. ☐
- 5.2.4.8 HIGH BETA-GAMMA EXHAUST STACK (RA-244-U-2) annunciator window #11, located on the ANN-271-U panel in 241-U-271, is ILLUMINATED. ☐
- 5.2.4.9 EXHAUST FAN SHUTDOWN (MSA-4) annunciator window #7, located on the ANN-271-U panel in 241-U-271, is ILLUMINATED. ☐
- 5.2.5 PRESS the ACKNOWLEDGE pushbutton on panel ANN-U in 244-U Instrument Bldg. ☐
- 5.2.6 PRESS the ACKNOWLEDGE pushbutton on panel ANN-271-U in 241-U-271. ☐
- 5.2.7 VERIFY that the Exhaust Fan (EF-1) has SHUT DOWN. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.2.8 PRESS the BETA/GAMMA HIGH-RADIATION ALARM ACKNOWLEDGE pushbutton (located on the front of the 244U EXHAUST STACK MONITOR PANEL) AND VERIFY the following:

5.2.8.1 Red Beacon light on top of the 244U EXHAUST STACK MONITOR PANEL is STILL ILLUMINATED. ☐

5.2.8.2 244U EXHAUST STACK MONITOR PANEL cabinet bell is SILENT. ☐

5.2.8.3 BETA/GAMMA ALARM HIGH-RADIATION ALARM ACKNOWLEDGE red light, located on the 244U EXHAUST STACK MONITOR PANEL, is ILLUMINATED. ☐

5.2.9 VERIFY that the Data Logger XR-244U-1 (inside 244U EXHAUST STACK MONITOR PANEL) has recorded the alarm condition, as follows:

5.2.9.1 PRESS the HOME (Δ) key on the Data Logger keypad several times until the bottom of the 2-line display presents the top level menu, as shown:

[Operator: Select a category]				
DISPLAY	CHART	ALARM	CHANNEL	MORE

5.2.9.2 PRESS the softkey under the displayed word "ALARM" (this will change the display). ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.2.9.3 VERIFY that the top line of the 2-line display indicates a 08 (underlined) as shown.

I/P CHANS <u>08</u> ,				
OLDEST	NEWEST	ACK	CHANNEL	MORE

☐

5.2.9.4 PRESS the softkey under the displayed word "ACK" to acknowledge the alarm.

☐

5.2.10 REMOVE the check source from the AMS-4 detector.

☐

5.2.11 VERIFY that EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-U-A) annunciator window #9A (on panel ANN-U in 244-U Instrument Bldg) is NOT ILLUMINATED.

☐

5.2.12 VERIFY that HIGH BETA-GAMMA EXHAUST STACK (RA-244-U-2A) annunciator window #11A (on panel ANN-U in 244-U Instrument Bldg) is NOT ILLUMINATED.

☐

5.2.13 VERIFY that EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-244-U) annunciator window #9 (on panel ANN-271-U in 241-U-271) is NOT ILLUMINATED.

☐

5.2.14 VERIFY that HIGH BETA-GAMMA EXHAUST STACK (RA-244-U-2) annunciator window #11 (on panel ANN-271-U in 241-U-271) is NOT ILLUMINATED.

☐

5.2.15 VERIFY COMMON FAULT ALARM red indicator light (front door of 244U EXHAUST STACK MONITOR PANEL) is NOT ILLUMINATED.

☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.2.16 VERIFY red beacon (top of 244U EXHAUST STACK MONITOR PANEL) is NOT ILLUMINATED (OFF). ☐

5.2.17 PRESS the BETA/GAMMA MONITOR CALIBRATION TEST IN PROGRESS red pushbutton (on front of 244U EXHAUST STACK MONITOR PANEL) AND RECORD the time.

Time: _____

5.2.18 POSITION AND EXPOSE the check source near the AMS-4 detector head to SIMULATE a high radiation condition. ☐

5.2.19 VERIFY the following alarm responses to the SIMULATED High radiation alarm condition:

5.2.19.1 Red Beacon light on top of the 244U EXHAUST STACK MONITOR PANEL is ILLUMINATED. ☐

5.2.19.2 244U EXHAUST STACK MONITOR PANEL cabinet bell is RINGING AUDIBLY. ☐

5.2.19.3 COMMON FAULT ALARM red light, located on the 244U EXHAUST STACK MONITOR PANEL, is ILLUMINATED. ☐

5.2.19.4 BETA/GAMMA MONITOR CALIBRATION TEST IN PROGRESS red pushbutton light, located on the 244U EXHAUST STACK MONITOR PANEL, is ILLUMINATED. ☐

5.2.19.5 EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-U-A) annunciator window #9A, located on the ANN-U panel in the 244-U Instrument Bldg, is NOT ILLUMINATED. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

- 5.2.19.6 HIGH BETA-GAMMA EXHAUST STACK (RA-244-U-2A) annunciator window #11A, located on the ANN-U panel in the 244-U Instrument Bldg, is NOT ILLUMINATED. ☐
- 5.2.19.7 BETA-GAMMA SYSTEM FAILURE EXHAUST STACK (RA-244-U-4A) annunciator window #12A, located on the ANN-U panel in the 244-U Instrument Bldg, is NOT ILLUMINATED. ☐
- 5.2.19.8 EXHAUST FAN SHUTDOWN (MSA-4A) annunciator window #7A, located on the ANN-U panel in the 244-U Instrument Bldg, is NOT ILLUMINATED. ☐
- 5.2.19.9 EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-244-U) annunciator window #9, located on the ANN-271-U panel in 241-U-271, is NOT ILLUMINATED. ☐
- 5.2.19.10 HIGH BETA-GAMMA EXHAUST STACK (RA-244-U-2) annunciator window #11, located on the ANN-271-U panel in 241-271-U, is NOT ILLUMINATED. ☐
- 5.2.19.11 BETA-GAMMA SYSTEM FAILURE EXHAUST STACK (RA-244-U-4) annunciator window #12, located on the ANN-271-U panel in 241-U-271, is NOT ILLUMINATED. ☐
- 5.2.19.12 EXHAUST FAN SHUTDOWN (MSA-4) annunciator window #7, located on the ANN-271-U panel in 241-271-U, is NOT ILLUMINATED. ☐
- 5.2.20 PRESS the ACKNOWLEDGE pushbutton on panel ANN-U in 244-U Instrument Bldg. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.2.21 PRESS the ACKNOWLEDGE pushbutton on panel ANN-271-U in 241-U-271.

☐

5.2.22 PRESS the BETA/GAMMA HIGH-RADIATION ALARM ACKNOWLEDGE pushbutton (on front of 244U EXHAUST STACK MONITOR PANEL) AND VERIFY the following:

5.2.22.1 Red Beacon light on top of the 244U EXHAUST STACK MONITOR PANEL is STILL ILLUMINATED.

☐

5.2.22.2 244U EXHAUST STACK MONITOR PANEL cabinet bell is SILENT.

☐

5.2.22.3 BETA/GAMMA ALARM HIGH-RADIATION ALARM ACKNOWLEDGE red light, located on the 244U EXHAUST STACK MONITOR PANEL, is ILLUMINATED.

☐

NOTE - The BETA/GAMMA MONITOR CALIBRATION TEST IN PROGRESS pushbutton initiates a timer that bypasses the remote alarm signals for 1 hour. The remote signals affected are the alarm panels in 244-U Instrument Bldg and 241-U-271.

5.2.23 RECORD the time when EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-U-A), window #9A annunciator window alarms on panel ANN-U in 244-U Instrument Bldg.

Time: _____

5.2.24 VERIFY that EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-244-U) annunciator window #9 alarms on panel ANN-U-271 in 241-U-271.

☐

5.2.25 ACKNOWLEDGE the alarms on ANN-U and ANN-271-U in 244-U Instrument Bldg and 241-U-271 respectively.

☐

5.2.26 CALCULATE the elapsed time between steps 5.2.17 and 5.2.23 AND RECORD below:

Elapsed Time: _____

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.2.27 REMOVE the check source from the AMS-4 detector AND REPLACE the hinged cover over the detector head.

☐

NOTE - When re-starting the exhauster it may be necessary to hold down the start button for approximately 30 seconds until differential pressure on 2nd stage HEPA filters is sufficient to prevent automatic shutdown.

5.2.28 PRESS the red 244-U RECEIVER TANK EXHAUST FAN (MS-4) START Button to re-start the exhauster.

☐

5.2.29 VERIFY Exhaust Fan (EF-1) is operating.

☐

5.2.30 VERIFY the following alarm responses to the REMOVAL of the SIMULATED High radiation alarm condition:

5.2.30.1 Red Beacon light on top of the 244U EXHAUST STACK MONITOR PANEL is NOT ILLUMINATED.

☐

5.2.30.2 244U EXHAUST STACK MONITOR PANEL cabinet bell is SILENT.

☐

5.2.30.3 BETA/GAMMA MONITOR CALIBRATION TEST IN PROGRESS pushbutton red light, located on the 244U EXHAUST STACK MONITOR PANEL, is NOT ILLUMINATED.

☐

5.2.30.4 EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-U-A) annunciator window #9A, located on the ANN-U panel in the 244-U Instrument Bldg, is NOT ILLUMINATED.

☐

5.2.30.5 HIGH BETA-GAMMA EXHAUST STACK (RA-244-U-2A) annunciator window #11A, located on the ANN-U panel in the 244-U Instrument Bldg, is NOT ILLUMINATED.

☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

- 5.2.30.6 BETA-GAMMA SYSTEM FAILURE EXHAUST STACK (RA-244-U-4A) annunciator window #12A, located on the ANN-U panel in the 244-U Instrument Bldg, is NOT ILLUMINATED. ☐
- 5.2.30.7 EXHAUST FAN SHUTDOWN (MSA-4A) annunciator window #7A, located on the ANN-U panel in the 244-U Instrument Bldg, is NOT ILLUMINATED. ☐
- 5.2.30.8 EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-244-U) annunciator window #9, located on the ANN-271-U panel in 241-U-271, is NOT ILLUMINATED. ☐
- 5.2.30.9 HIGH BETA-GAMMA EXHAUST STACK (RA-244-U-2) annunciator window #11, located on the ANN-271-U panel in 241-271-U, is NOT ILLUMINATED. ☐
- 5.2.30.10 BETA-GAMMA SYSTEM FAILURE EXHAUST STACK (RA-244-U-4) annunciator window #12, located on the ANN-271-U panel in 241-U-271, is NOT ILLUMINATED. ☐
- 5.2.30.11 EXHAUST FAN SHUTDOWN (MSA-4) annunciator window #7, located on the ANN-271-U panel in 241-U-271, is NOT ILLUMINATED. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.2.31 ACKNOWLEDGE the alarm at the Data Logger:

5.2.31.1 PRESS the HOME ($\triangle$) key on the Data Logger keypad several times until the bottom of the 2-line display presents the top level menu, as shown:

[Operator: Select a category]				
DISPLAY	CHART	ALARM	CHANNEL	MORE

☐

5.2.31.2 PRESS the softkey under the displayed word "ALARM" (this will change the display).

☐

5.2.32 VERIFY that the top line of the 2-line display indicates a 08 (underlined) as shown below.

I/P CHANS <u>08</u> ,				
OLDEST	NEWEST	ACK	CHANNEL	MORE

☐

5.2.33 PRESS the softkey under the displayed word "ACK" to acknowledge the alarm.

☐

5.2.34 VERIFY that the Data Logger XR-244U-1 has printed HIGH RAD ALARM OFF and the time (data logger chart, located behind the window under the data logger keypad).

☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.2 EXHAUST MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.2.35 Test Director SHALL VERIFY that section 5.2 is COMPLETE by SIGNING below.

Test Director Signature

Date

5.2.36 QC Inspector SHALL VERIFY that section 5.2 is COMPLETE by SIGNING below.

QC Inspector Signature

Date

QC Stamp

TANK FARM PLANT OPERATIONS PROCEDURE

5.3 EXHAUST MONITORING CABINET - RADIATION MONITOR FAILURE CHECK

WARNING

The circuit board is energized. Comply with WHC-CM-4-3, Standard E-2, ELECTRICAL SAFETY PRACTICES.

5.3.1 **INSTALL** a temporary jumper from wire number 75 to wire number 76 on the data logger channel 9 (terminals V+, V-) or on relay K5, terminals 5 & 9 (RM-244U-3; inside 244U EXHAUST STACK MONITOR PANEL, upper RH side) to **SIMULATE** a radiation monitor failure condition. In addition, install a second jumper from wire number 7 to wire number 14 on relay K5 (RM-244-U-3) terminals 6 & 10). ☐

5.3.2 **VERIFY** the following alarm responses to the **FAILURE** condition:

5.3.2.1 Amber Beacon light on top of the 244U EXHAUST STACK MONITOR PANEL is **ILLUMINATED**. ☐

5.3.2.2 244U EXHAUST STACK MONITOR PANEL cabinet bell is **RINGING AUDIBLY**. ☐

5.3.2.3 **COMMON FAULT ALARM** red light, located on the 244U EXHAUST STACK MONITOR PANEL, is **ILLUMINATED**. ☐

5.3.2.4 EXHAUST STACK PANEL **COMMON FAILURE** (EXH-RM-U-A) annunciator window #9A, located on the ANN-U panel in the 244-U Instrument Bldg, is **ILLUMINATED**. ☐

5.3.2.5 **BETA-GAMMA SYSTEM FAILURE** EXHAUST STACK (RA-244-U-4A) annunciator window #12A, located on the ANN-U panel in the 244-U Instrument Bldg, is **ILLUMINATED**. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.3 EXHAUST MONITORING CABINET - RADIATION MONITOR FAILURE CHECK (Continued)

5.3.2.6 EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-244-U) annunciator window #9, located on the ANN-271-U panel in 241-U-271, is **ILLUMINATED**.

☐

5.3.2.7 BETA-GAMMA SYSTEM FAILURE EXHAUST STACK (RA-244-U-4) annunciator window #12, located on the ANN-271-U panel in 241-271-U, is **ILLUMINATED**.

☐

5.3.3 ENSURE that the 244-U Exhauster has **NOT SHUT DOWN**.

☐

5.3.4 PRESS the ACKNOWLEDGE pushbutton on panel ANN-U in 244-U Instrument Bldg.

☐

5.3.5 PRESS the ACKNOWLEDGE pushbutton on panel ANN-271-U in 241-U-271.

☐

5.3.6 PRESS the BETA/GAMMA MONITOR FAILURE ALARM ACKNOWLEDGE pushbutton (on front of 244U EXHAUST STACK MONITOR PANEL) AND VERIFY the following:

5.3.6.1 Amber Beacon light on top of the 244U EXHAUST STACK MONITOR PANEL is **STILL ILLUMINATED**.

☐

5.3.6.2 244U EXHAUST STACK MONITOR PANEL cabinet bell is **SILENT**.

☐

5.3.6.3 BETA/GAMMA ALARM HIGH-RADIATION ALARM ACKNOWLEDGE pushbutton red light, located on the 244U EXHAUST STACK MONITOR PANEL, is **ILLUMINATED**.

☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.3 EXHAUST MONITORING CABINET - RADIATION MONITOR FAILURE CHECK (Continued)

5.3.7 VERIFY that the Data Logger XR-244U-1 (inside 244U EXHAUST STACK MONITOR PANEL) has recorded the failure condition, as follows:

5.3.7.1 PRESS the HOME (△) key on the Data Logger keypad several times until the bottom of the 2-line display presents the top level menu, as shown:

[Operator: Select a category]				
DISPLAY	CHART	ALARM	CHANNEL	MORE

☐

5.3.7.2 PRESS the softkey under the displayed word "ALARM" (this will change the display).

☐

5.3.8 VERIFY that the top line of the 2-line display indicates a 09 (underlined) as shown below.

I/P CHANS <u>09</u> ,				
OLDEST	NEWEST	ACK	CHANNEL	MORE

☐

5.3.8.1 PRESS the softkey under the displayed word "ACK" to acknowledge the alarm.

☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.3 EXHAUST MONITORING CABINET - RADIATION MONITOR FAILURE CHECK (Continued)

WARNING

The circuit board is energized. Comply with WHC-CM-4-3, Standard E-2, ELECTRICAL SAFETY PRACTICES.

5.3.9 REMOVE both sets of temporary jumpers used to connect wires numbers 75 and 76, and wire numbers 7 and 14. ☐

5.3.10 VERIFY the following alarm responses to the REMOVAL of the FAILURE condition:

5.3.10.1 Amber Beacon light on top of the 244U EXHAUST STACK MONITOR PANEL is NOT ILLUMINATED. ☐

5.3.10.2 244U EXHAUST STACK MONITOR PANEL cabinet bell is SILENT. ☐

5.3.10.3 COMMON FAULT ALARM red light, located on the 244U EXHAUST STACK MONITOR PANEL, is NOT ILLUMINATED. ☐

5.3.10.4 EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-U-A) annunciator window #9A, located on the ANN-U panel in the 244-U Instrument Bldg, is NOT ILLUMINATED. ☐

5.3.10.5 BETA-GAMMA SYSTEM FAILURE EXHAUST STACK (RA-244-U-4A) annunciator window #12A, located on the ANN-U panel in the 244-U Instrument Bldg, is NOT ILLUMINATED. ☐

5.3.10.6 EXHAUST STACK PANEL COMMON FAILURE (EXH-RM-244-U) annunciator window #9, located on the ANN-271-U panel in 241-U-271, is NOT ILLUMINATED. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.3 EXHAUST MONITORING CABINET - RADIATION MONITOR FAILURE CHECK (Continued)

5.3.10.7 BETA-GAMMA SYSTEM FAILURE EXHAUST STACK
(RA-244-U-4) annunciator window #12, located on
the ANN-271-U panel in 241-271-U, is NOT
ILLUMINATED. ☐

5.3.11 VERIFY that the Data Logger XR-244U-1 has printed RAD
MONITOR FAILURE ALARM OFF and the time (data logger chart,
located behind the window under the data logger keypad). ☐

5.3.12 Test Director SHALL VERIFY that section 5.3 is COMPLETE by
SIGNING below.

Test Director Signature

Date

5.3.13 QC Inspector SHALL VERIFY that section 5.3 is COMPLETE by
SIGNING below.

QC Inspector Signature

Date

QC Stamp

TANK FARM PLANT OPERATIONS PROCEDURE

5.4 EXHAUST MONITORING CABINET - ISOKINETIC ALARM CHECK

- 5.4.1 OPEN FT-244-U-4 cabinet door (located in the 244U EXHAUST STACK MONITOR PANEL cabinet). ☐
- 5.4.2 POSITION three way valve from NORMALLY OPEN to FULLY CLOSED (this valve is the only valve located in FT-244-U-4). ☐
- 5.4.3 ALLOW 5 minutes to pass THEN, VERIFY the Isokinetic alarm has ANNUNCIATED as determined by the COMMON FAULT ALARM, located on the 244U EXHAUST STACK MONITOR PANEL, red light being ILLUMINATED. ☐
- 5.4.4 VERIFY that the 244-U Exhaust Fan (EF-1) has SHUTDOWN by OBSERVING the following:
- 5.4.4.1 The 244-U RECEIVER TANK EXHAUST FAN (MS-4) STOP pushbutton green light, located on panel ANN-U in the 244-U Instrument Bldg, is ILLUMINATED. ☐
- 5.4.4.2 Alarm EXHAUST FAN SHUTDOWN (MSA-4A), located on panel ANN-U in the 244-U Instrument Bldg, is ILLUMINATED. ☐
- 5.4.4.3 Alarm EXHAUST FAN SHUTDOWN (MSA-4), located on panel ANN-271-U in 241-U-271, is ILLUMINATED. ☐
- 5.4.5 VERIFY that the 244U EXHAUST STACK MONITOR PANEL sample pumps (SP-244-U-2 and SP-244-U-3) have SHUTDOWN by OBSERVING the following:
- 5.4.5.1 244U EXHAUST STACK MONITOR PANEL PUMP 1 red light is NOT ILLUMINATED. ☐
- 5.4.5.2 244U EXHAUST STACK MONITOR PANEL PUMP 2 red light is NOT ILLUMINATED. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.4 EXHAUST MONITORING CABINET - ISOKINETIC ALARM CHECK (Continued)

- 5.4.5.3 Alarm STACK SAMPLE PUMPS FAILURE (SP-U-2/3A), located on panel ANN-U in the 244-U Instrument Bldg, is ILLUMINATED. ☐
- 5.4.5.4 Alarm STACK SAMPLE PUMPS FAILURE (SP-244-U-2/3), located on panel ANN-271-U in 241-U-271, is ILLUMINATED. ☐
- 5.4.6 POSITION three way valve from FULLY CLOSED to NORMALLY OPEN (this valve is the only valve located in FT-244-U-4). ☐
- 5.4.7 CLOSE FT-244-U-4 cabinet door (located in the 244U EXHAUST STACK MONITOR PANEL cabinet). ☐
- 5.4.8 PRESS the ACKNOWLEDGE button on annunciator located on panel ANN-U in the 244-U Instrument Bldg. ☐
- 5.4.9 PRESS the ACKNOWLEDGE button on annunciator located on panel ANN-271-U in 241-U-271. ☐
- 5.4.10 OPEN FT-244-U-5 cabinet door (located in the 244U EXHAUST STACK MONITOR PANEL cabinet). ☐
- 5.4.11 POSITION three way valve from NORMALLY OPEN to FULLY CLOSED (this valve is the only valve located in FT-244-U-5). ☐
- 5.4.12 ALLOW 5 minutes to pass THEN, VERIFY the Isokinetic alarm has ANNUNCIATED as determined by the COMMON FAULT ALARM, located on the 244U EXHAUST STACK MONITOR PANEL, red light being ILLUMINATED. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.4 EXHAUST MONITORING CABINET - ISOKINETIC ALARM CHECK (Continued)

- 5.4.13 VERIFY that the 244-U Exhaust Fan (EF-1) has SHUTDOWN by OBSERVING the following:
- 5.4.13.1 The 244-U RECEIVER TANK EXHAUST FAN (MS-4) STOP pushbutton green light, located on panel ANN-U in the 244-U Instrument Bldg, is ILLUMINATED. ☐
- 5.4.13.2 Alarm EXHAUST FAN SHUTDOWN (MSA-4A), located on panel ANN-U in the 244-U Instrument Bldg, is ILLUMINATED. ☐
- 5.4.13.3 Alarm EXHAUST FAN SHUTDOWN (MSA-4), located on panel ANN-271-U in 241-U-271, is ILLUMINATED. ☐
- 5.4.14 VERIFY that the 244U EXHAUST STACK MONITOR PANEL sample pumps (SP-244-U-2 and SP-244-U-3) have SHUTDOWN by OBSERVING the following:
- 5.4.14.1 244U EXHAUST STACK MONITOR PANEL PUMP 1 red light is NOT ILLUMINATED. ☐
- 5.4.14.2 244U EXHAUST STACK MONITOR PANEL PUMP 2 red light is NOT ILLUMINATED. ☐
- 5.4.14.3 Alarm STACK SAMPLE PUMPS FAILURE (SP-U-2/3A), located on panel ANN-U in the 244-U Instrument Bldg, is ILLUMINATED. ☐
- 5.4.14.4 Alarm STACK SAMPLE PUMPS FAILURE (SP-244-U-2/3), located on panel ANN-271-U in 241-U-271, is ILLUMINATED. ☐
- 5.4.15 POSITION three way valve from FULLY CLOSED to NORMALLY OPEN (this valve is the only valve located in FT-244-U-5). ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.4 EXHAUST MONITORING CABINET - ISOKINETIC ALARM CHECK (Continued)

- 5.4.16 CLOSE FT-244-U-5 cabinet door (located in the 244U EXHAUST STACK MONITOR PANEL cabinet). ☐
- 5.4.17 PRESS the ACKNOWLEDGE button on annunciator located on panel ANN-U in the 244-U Instrument Bldg. ☐
- 5.4.18 PRESS the ACKNOWLEDGE button on annunciator located on panel ANN-271-U in 241-U-271. ☐
- 5.4.19 Test Director SHALL VERIFY that section 5.4 is COMPLETE by SIGNING below.

Test Director Signature

Date

- 5.4.20 QC Inspector SHALL VERIFY that section 5.4 is COMPLETE by SIGNING below.

QC Inspector Signature

Date

QC Stamp

TANK FARM PLANT OPERATIONS PROCEDURE

5.5 ANNULUS MONITORING CABINET - HIGH RADIATION ALARM CHECK

5.5.1 VERIFY that the following are NOT INDICATING an alarm condition:

- Red beacon (top of 244U ANNULUS MONITOR PANEL) ☐
- Yellow beacon (top of 244U ANNULUS MONITOR PANEL) ☐
- HIGH RADIATION ANNULUS (RA-244-U-1A), annunciator window #17A, on panel ANN-U in 244-U Instrument Bldg. ☐
- ANNULUS RADIATION MONITOR FAILURE (RA-U-3A), annunciator window #18A panel ANN-U in 244-U Instrument Bldg. ☐
- HIGH RADIATION ANNULUS (RA-244-U-1) annunciator window #17, on panel ANN-271-U in 241-U-271. ☐
- ANNULUS RADIATION MONITOR FAILURE (RA-244-U-3), annunciator window #18 panel ANN-271-U in 241-U-271. ☐

5.5.2 TEST the indicator bulbs for the following annunciator windows, by PRESSING the green TEST button on panel ANN-U in 244-U Instrument Bldg, and observing that the 2 windows ILLUMINATE (all functioning annunciators on the panel will illuminate):

- HIGH RADIATION ANNULUS (RA-244-U-1A), window #17A ☐
- ANNULUS RADIATION MONITOR FAILURE (RA-U-3A), window #18A ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.5 ANNULUS MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.5.3 TEST the indicator bulb for the following annunciator windows, by PRESSING the green TEST button on panel ANN-271-U in 241-U-271, and observing that the 2 windows ILLUMINATE (all functioning annunciators on the panel will illuminate):

- HIGH RADIATION ANNULUS (RA-244-U-1), window #17 ☐

- ANNULUS RADIATION MONITOR FAILURE (RA-244-U-3), window #18 ☐

WARNING

Energized circuits and leads are contained inside the panel cabinet. Comply with WHC-CM-4-3, Standard E-2, ELECTRICAL SAFETY PRACTICES.

5.5.4 OPEN the front door of 244U ANNULUS MONITOR PANEL and locate the Eberline AMS-4 Beta/Gamma Particulate Monitor. ☐

5.5.5 OPEN the AMS-4 detector housing (hinged cover on top, right of unit). ☐

5.5.6 POSITION AND EXPOSE the check source near the AMS-4 detector head to simulate a high radiation condition. ☐

5.5.7 VERIFY the following alarm responses to the SIMULATED High radiation alarm condition:

5.5.7.1 Red Beacon light on top of the 244U ANNULUS MONITOR PANEL is ILLUMINATED. ☐

5.5.7.2 244U ANNULUS MONITOR PANEL cabinet bell is RINGING AUDIBLY. ☐

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TANK FARM PLANT OPERATIONS PROCEDURE

5.5 ANNULUS MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

- 5.5.7.3 COMMON FAULT ALARM red light, located on the 244U EXHAUST STACK MONITOR PANEL, is ILLUMINATED. ☐
- 5.5.7.4 HIGH RADIATION ANNULUS (RA-244-U-1A) window #17A, located on panel ANN-U in the 244-U Instrument Bldg, is ILLUMINATED. ☐
- 5.5.7.5 HIGH RADIATION ANNULUS (RA-244-U-1) window #17, located on panel ANN-271-U in 241-U-271, is ILLUMINATED. ☐
- 5.5.8 PRESS the ACKNOWLEDGE pushbutton on panel ANN-U in 244-U Instrument Bldg. ☐
- 5.5.9 PRESS the ACKNOWLEDGE pushbutton on panel ANN-271-U in 241-U-271. ☐
- 5.5.10 PRESS the BETA/GAMMA HIGH-RADIATION ALARM ACKNOWLEDGE red pushbutton (on front of 244U ANNULUS MONITOR PANEL) and verify the following:
- 5.5.10.1 Amber Beacon light on top of the 244U ANNULUS MONITOR PANEL is STILL ILLUMINATED. ☐
- 5.5.10.2 244U ANNULUS MONITOR PANEL cabinet bell is SILENT. ☐
- 5.5.10.3 BETA/GAMMA ALARM HIGH-RADIATION ALARM ACKNOWLEDGE pushbutton red light, located on the 244U ANNULUS MONITOR PANEL, is ILLUMINATED. ☐
- 5.5.11 REMOVE the check source from the AMS-4 detector. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.5 ANNULUS MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.5.12 VERIFY that HIGH RADIATION ANNULUS (RA-244-U-1A) annunciator window #17A (on panel ANN-U in 244-U Instrument Bldg) is NOT ILLUMINATED.

☐

5.5.13 VERIFY that Annulus HIGH RADIATION ANNULUS (RA-244-U-A) annunciator window #17 (on panel ANN-271-U in 241-U-271) is NOT ILLUMINATED.

☐

5.5.14 VERIFY COMMON FAULT ALARM indicator (located on 244U EXHAUST STACK MONITORING PANEL) is NOT ILLUMINATED.

☐

5.5.15 VERIFY red beacon (top of 244U ANNULUS MONITOR PANEL) is OFF.

☐

5.5.16 PRESS the BETA/GAMMA MONITOR CALIBRATION TEST IN PROGRESS red pushbutton (on front of 244U ANNULUS MONITOR PANEL) and record the time.

Time: _____

5.5.17 POSITION AND EXPOSE the check source near the Annulus monitor AMS-4 detector head to SIMULATE a high radiation condition.

☐

5.5.18 VERIFY the following alarm responses to the SIMULATED High radiation alarm condition:

5.5.18.1 Red Beacon light on top of the 244U ANNULUS MONITOR PANEL is ILLUMINATED.

☐

5.5.18.2 244U ANNULUS MONITOR PANEL cabinet bell is RINGING AUDIBLY.

☐

5.5.18.3 COMMON FAULT ALARM red light, located on the 244U EXHAUST STACK MONITOR PANEL, is ILLUMINATED.

☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.5 ANNULUS MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.5.18.4 BETA/GAMMA MONITOR CALIBRATION TEST IN PROGRESS pushbutton red light, located on the 244U ANNULUS MONITOR PANEL, is **ILLUMINATED**. ☐

5.5.18.5 HIGH RADIATION ANNULUS (RA-244-U-1A) annunciator window #17A, located on panel ANN-U in the 244-U Instrument Bldg, is **NOT ILLUMINATED**. ☐

5.5.18.6 HIGH RADIATION ANNULUS (RA-244-U-1) annunciator window #17, located on panel ANN-271-U in 241-U-271, is **NOT ILLUMINATED**. ☐

5.5.19 **PRESS** the BETA/GAMMA HIGH-RADIATION ALARM ACKNOWLEDGE red pushbutton (on front of 244U ANNULUS MONITOR PANEL) **AND VERIFY** the following:

5.5.19.1 Red Beacon light on top of the 244U ANNULUS MONITOR PANEL is **STILL ILLUMINATED**. ☐

5.5.19.2 244U ANNULUS MONITOR PANEL cabinet bell is **SILENT**. ☐

5.5.19.3 BETA/GAMMA ALARM HIGH-RADIATION ALARM ACKNOWLEDGE pushbutton red light, located on the 244U ANNULUS MONITOR PANEL, is **ILLUMINATED**. ☐

NOTE - The BETA/GAMMA MONITOR CALIBRATION TEST IN PROGRESS pushbutton initiates a timer that bypasses the remote alarm signals for 1 hour. The remote signals affected are the alarm annunciators found on panels ANN-U and ANN-271-U in 244-U Instrument Bldg and 241-U-271 respectively.

5.5.20 **RECORD** the time when HIGH RADIATION ANNULUS (RA-244-U-1A) annunciator window #17A alarms on panel ANN-U in 244-U Instrument Bldg.

Time: _____

TANK FARM PLANT OPERATIONS PROCEDURE

5.5 ANNULUS MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.5.21 VERIFY that HIGH RADIATION ANNULUS (RA-244-U-1) annunciator window #17 alarms on panel ANN-271-U in 241-U-271. ☐

5.5.22 ACKNOWLEDGE the alarms on the ANN-U and ANN-271-U annunciators found in 244-U Instrument Bldg and 241-U-271 respectively. ☐

5.5.23 CALCULATE the elapsed time between steps 5.5.16 and 5.5.20 AND RECORD below:

Elapsed Time: _____

5.5.24 REMOVE the check source from the AMS-4 detector AND replace the hinged cover over the detector head. ☐

5.5.25 VERIFY the following alarm responses to the REMOVAL of the SIMULATED High radiation alarm condition:

5.5.25.1 Red Beacon light on top of the 244U ANNULUS MONITOR PANEL is NOT ILLUMINATED. ☐

5.5.25.2 244U ANNULUS MONITOR PANEL cabinet bell is SILENT. ☐

5.5.25.3 COMMON FAULT ALARM red light, located on the 244U EXHAUST STACK MONITOR PANEL, is NOT ILLUMINATED. ☐

5.5.25.4 BETA/GAMMA MONITOR CALIBRATION TEST IN PROGRESS pushbutton red light, located on the 244U ANNULUS MONITOR PANEL, is NOT ILLUMINATED. ☐

5.5.25.5 HIGH RADIATION ANNULUS (RA-244-U-1A) window #17A, located on panel ANN-U in the 244-U Instrument Bldg, is NOT ILLUMINATED. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.5 ANNULUS MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.5.25.6 HIGH RADIATION ANNULUS (RA-244-U-1) window #17, located on panel ANN-271-U in 241-U-271, is NOT ILLUMINATED.

☐

5.5.26 ACKNOWLEDGE the alarm at the Data Logger:

5.5.26.1 PRESS the HOME (△) key on the Data Logger keypad several times until the bottom of the 2-line display presents the top level menu, as shown:

[Operator: Select a category]				
DISPLAY	CHART	ALARM	CHANNEL	MORE

☐

5.5.26.2 PRESS the softkey under the displayed word "ALARM" (this will change the display).

☐

5.5.26.3 VERIFY that the top line of the 2-line display indicates a 19 (underlined) as shown below.

I/P CHANS <u>19</u> ,				
OLDEST	NEWEST	ACK	CHANNEL	MORE

☐

5.5.26.4 PRESS the softkey under the displayed word "ACK" to acknowledge the alarm.

☐

5.5.27 VERIFY that the Data Logger XR-244U-1 has printed HIGH RAD ALARM OFF and the time (data logger chart, located behind the window under the data logger keypad).

☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.5 ANNULUS MONITORING CABINET - HIGH RADIATION ALARM CHECK (Continued)

5.5.28 Test Director SHALL VERIFY that section 5.5 is COMPLETE by SIGNING below.

Test Director Signature

Date

5.5.29 QC Inspector SHALL VERIFY that section 5.5 is COMPLETE by SIGNING below.

QC Inspector Signature

Date

QC Stamp

TANK FARM PLANT OPERATIONS PROCEDURE

5.6 ANNULUS MONITORING CABINET - RADIATION MONITOR FAILURE CHECK

WARNING

The AMS-4 radiation detector is energized. Comply with WHC-CM-4-3, Standard E-2, ELECTRICAL SAFETY PRACTICES.

- 5.6.1 **INSTALL** a temporary jumper from terminal 4 to terminal 5 on terminal board #1 (TB-1) the back of the AMS-4 unit (inside 244U ANNULUS MONITOR PANEL) to **SIMULATE** a radiation monitor failure condition. (Refer to Eberline drawing 11562-D46A) ☐
- 5.6.2 **VERIFY** the following alarm responses to the **FAILURE** condition:
- 5.6.2.1 Amber Beacon light on top of the 244U ANNULUS MONITOR PANEL is **ILLUMINATED**. ☐
- 5.6.2.2 244U ANNULUS MONITOR PANEL cabinet bell is **RINGING AUDIBLY**. ☐
- 5.6.2.3 **COMMON FAULT ALARM** red light, located on the 244U EXHAUST STACK MONITOR PANEL, is **ILLUMINATED**. ☐
- 5.6.2.4 **HIGH RADIATION ANNULUS (RA-244-U-1A)** window #17A, located on panel ANN-U in the 244-U Instrument Bldg, is **ILLUMINATED**. ☐
- 5.6.2.5 **HIGH RADIATION ANNULUS (RA-244-U-1)** window #17, located on panel ANN-271-U in 241-U-271, is **ILLUMINATED**. ☐
- 5.6.3 **PRESS** the **ACKNOWLEDGE** pushbutton, located below the alarm annunciator on panel ANN-U in 244-U Instrument Bldg. ☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.6 ANNULUS MONITORING CABINET - RADIATION MONITOR FAILURE CHECK (Continued)

5.6.4 PRESS the ACKNOWLEDGE pushbutton, located below the alarm annunciator panel ANN-271-U in 241-U-271.

☐

5.6.5 PRESS the BETA/GAMMA MONITOR FAILURE ALARM ACKNOWLEDGE pushbutton (on front of 244U ANNULUS MONITOR PANEL) AND VERIFY the following:

5.6.5.1 Amber Beacon light on top of the 244U ANNULUS MONITOR PANEL is STILL ILLUMINATED.

☐

5.6.5.2 244U ANNULUS MONITOR PANEL cabinet bell is SILENT.

☐

5.6.5.3 BETA/GAMMA ALARM HIGH-RADIATION ALARM ACKNOWLEDGE pushbutton red light, located on the 244U ANNULUS MONITOR PANEL, is ILLUMINATED.

☐

5.6.6 VERIFY that the Data Logger XR-244U-1 (inside 244U Annulus STACK MONITOR PANEL) has recorded the failure condition as follows:

5.6.6.1 PRESS the HOME (△) key on the Data Logger keypad several times until the bottom of the 2-line display presents the top level menu, as shown:

[Operator: Select a category]				
DISPLAY	CHART	ALARM	CHANNEL	MORE

☐

5.6.6.2 PRESS the softkey under the displayed word "ALARM" (this will change the display).

☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.6 ANNULUS MONITORING CABINET - RADIATION MONITOR FAILURE CHECK (Continued)

- 5.6.6.3 VERIFY that the top line of the 2-line display indicates a 20 (underlined) as shown below.

I/P CHANS <u>20</u> ,				
OLDEST	NEWEST	ACK	CHANNEL	MORE

☐

- 5.6.6.4 PRESS the softkey under the displayed word "ACK" to acknowledge the alarm.

☐

WARNING

The AMS-4 radiation detector is energized. Comply with WHC-CM-4-3, Standard E-2, ELECTRICAL SAFETY PRACTICES.

- 5.6.7 REMOVE the temporary jumper from the back of the AMS-4 unit.

☐

- 5.6.8 VERIFY the following alarm responses to the REMOVAL of the FAILURE condition:

- 5.6.8.1 Amber Beacon light on top of the 244U ANNULUS MONITOR PANEL is NOT ILLUMINATED.

☐

- 5.6.8.2 244U ANNULUS MONITOR PANEL cabinet bell is SILENT.

☐

- 5.6.8.3 COMMON FAULT ALARM red light, located on the 244U EXHAUST STACK MONITOR PANEL, is NOT ILLUMINATED.

☐

TANK FARM PLANT OPERATIONS PROCEDURE

5.6 ANNULUS MONITORING CABINET - RADIATION MONITOR FAILURE CHECK (Continued)

5.6.8.4 HIGH RADIATION ANNULUS (RA-244-U-1A) window #17A, located on panel ANN-U in the 244-U Instrument Bldg, is NOT ILLUMINATED.

☐

5.6.8.5 HIGH RADIATION ANNULUS (RA-244-U-1) window #17, located on panel ANN-271-U in 241-U-271, is NOT ILLUMINATED.

☐

5.6.9 VERIFY that the Data Logger XR-244U-1 has printed RAD MONITOR FAILURE ALARM OFF and the time (data logger chart, located behind the window under the data logger keypad).

☐

5.6.10 Test Director SHALL VERIFY that section 5.6 is COMPLETE by SIGNING below.

Test Director Signature

Date

5.6.11 QC Inspector SHALL VERIFY that section 5.6 is COMPLETE by SIGNING below.

QC Inspector Signature

Date

QC Stamp

TANK FARM PLANT OPERATIONS PROCEDURE

OTP EXCEPTION LOG

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PAGE _____ of _____

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TANK FARM PLANT OPERATIONS PROCEDURE

OTP EXCEPTION RECORD

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OTP step number:	OTP Exception Log Number
Description of Exception:	
Resolution of Exception:	
Date of Resolution:	
Test Director signature:	
Cognizant Engineer signature:	
Quality Assurance signature:	
Tank Farm Operations signature:	

TANK FARM PLANT OPERATIONS PROCEDURE

OTP ACCEPTANCE RECORD

This OTP has been completed and the results, including red-line changes, exceptions, and exception resolutions, have been reviewed for compliance with the intent of the Purpose (Section 1.0). The OTP results are accepted by the undersigned:

Cognizant Engineer

Date

Test Director

Date

West Tank Farm Operations

Date

Safety

Date

Quality Assurance

Date

TANK FARM PLANT OPERATIONS PROCEDURE

PROCEDURE HISTORY SIGNATURE DATA

Procedure Signatures for			TYPE OF CHANGE IMPACT LEVEL	
POSITION/ORG	DELEGATE	DATE	NEW	SQE
Cog Engineer				
Engineer				
Manager Stab/WTPO				
Manager FS/WTPO				
Engineer/TWRSQA				
Engineer/WTSS				
Engineer/WTSA				
Engineer/ALARA				
NPO/CSSO I&S				
Engineering Writer				
Acceptance Review				
Approval Authority				

Document No.

WHC-SD-ER3641-OTP-004

Rev/Mod

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