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AW Tank Farm VTP Stack CAM Interlock Functional Check

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for functionally checking the Primary Exhaust Stack Continuous Air Monitor (CAM) Interlock System and associated alarms in 241-AW Farm. This procedure proves the functionality of the fan shutdown relay for all interlocks.

1.2 Scope

1.2.1 This procedure covers functionally testing 241-AW Farm Primary Exhaust Stack CAM alarming and interlock functions.

1.2.2 This procedure is universal to both A-Train and B-Train in 241-AW Farm. However, only one exhaust train can be covered by this procedure at a time.

1.2.3 With the exhaust fan (A-Train or B-Train) running, a radioactive source will be introduced to the CAM, verifying alarms activate.

1.2.4 A CAM power and detector failure will be simulated and the alarm relay checked for proper response.

2.0 INFORMATION

2.1 General Information

2.1.1 This procedure proves functionality of fan shutdown relay which is associated with all exhauster fan interlocks.

2.1.2 During performance of this test, any step, group of steps or data entry that is not applicable shall be identified by "N/A," and an explanation that is initialed and dated shall be recorded in comment section on Data Sheet.

2.1.3 Log on to HMI to perform the required Sections of this procedure.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Exhaust fans may shut down during this test, which may cause a tank pressurization to occur and alarm to sound.

3.1.2 If a lock and tag is required during the performance of this procedure, comply with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

3.2 Radiation and Contamination Control

3.2.1 Work in Radiological Areas will be performed using a Radiation Work Permit following review by Radiological Control per TFC-ESHQ-RP_RWP-C-03, ALARA Work Planning.

3.2.2 When disconnecting, breaching or opening systems or system components that are currently or previously connected to waste tanks or waste transfer systems;
- Continuous HPT coverage is required
- Pre-job and post-job surveys are required
- A damp rag will be used to contain the breach until radiological verifications have been performed.
3.3 Environmental Compliance

3.3.1 Report all planned and unplanned exhauster shutdowns, problems with abatement control equipment and required stack monitoring to the Central Shift Office to be evaluated for reporting purposes per procedure TF-REC-001, "Response to Environmental Condition".

3.3.2 Report all spills and releases to the appropriate shift office to be evaluated for reporting purposes per procedure TF-REC-001, "Response to Environmental Condition".

3.3.3 If functional testing of the CAM fails, Environmental shall be notified per Environmental On-Call List.

3.4 Limits

HNF-SD-WM-TSR-006, Tank Farms Technical Safety Requirements

- LCO 3.1, DST Primary Tank Ventilation Systems
- LCO 3.4, DST Induced Gas Release Event Flammable Gas Control
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:
- Beta-Gamma radiation source capable of generating > 10,000 counts per minute in the continuous air monitor
- Two way radio or cellular phone required for personnel inside the farm
- Password for CAM "Air Monitor System-4 (AMS-4) Beta/Gamma Particle Monitor.", from Shift Manager or FWS
- HP access level password for exhauster HMI, from Shift Manager
- CAM bypass key, from Shift Manager
- Vacuum grease, rags
- Other tools, equipment and supplies as identified by Shift Manager/OE/FWS/User.

4.2 Performance Documents

The following procedures and documents may be needed to perform this procedure:
- TO-060-107, Operate 241-AW Primary Ventilation System (VTP)
- H-14-105707, Sht 8, AW241-VTP (W-314) Exhauster Train “A” Loop Diagram
- H-14-105720, Sht 8, AW241-VTP (W-314) Exhauster Train “B” Loop Diagram
- H-14-020102, P&ID 241-AW HVAC Exhauster System
- DOE-0336, Hanford Site Lockout/Tagout Procedure.
4.3 Field Preparation

4.3.1 **CONDUCT** pre-job safety meeting prior to starting test. All personnel participating in test have read and understand test and have completed Functional Test Signature Sheet.

4.3.2 **REPORT** all discrepancies to OE immediately upon completion of this procedure AND **RECORD** in comment section of Data Sheet.

4.3.3 **IF** equipment is found out of service, **IMMEDIATELY NOTIFY** Shift Manager and OE.

4.3.4 Shift Manager/OE **VERIFY** that there are no ongoing transfers and no waste disturbing activities that requires this system to be OPERABLE and in operation. (LCO 3.4)

________________________/________________________/________
Signature                  Print (First and Last)              Date
Shift Manager /OE

4.3.5 **ENSURE** primary ventilation system is in service.

4.3.6 **VERIFY** OE has notified Environmental Compliance per Section 3.3 that exhaust stack CAM functional testing will be conducted.

________________________/________________________/________
Signature                  Print (First and Last)              Date
OE

4.3.7 **REQUEST** Shift Manager **DESIGNATE** exhaust fan to be operating upon completion of this procedure.

Exhaust Fan AW241-VTP-EF-009 (A-Train) _____

Exhaust Fan AW241-VTP-EF-010 (B-Train) _____

4.3.8 **IF** the CAM to be functional tested is on the train not in service **HAVE** operations swap fans.
5.0 PROCEDURE

NOTE - Exhaust fan(s) may shut down unexpectedly and may be restarted per operating procedure TO-060-107, to facilitate completion of this procedure.

- Data recording is done on data table within this procedure, and attached to Data Sheet after completion.

- If any alarm/annunciator fails, it is permissible to continue with the procedure and make a note in the comment section of data sheet.

- Alarms/annunciators at the following locations may be re-acknowledged:
  • HMI
  • Continuous air monitor.

- The use of ABB software is approved by Engineering to monitor DCS alarm logic associated with AW.

- Failed functional tests require documenting results on work record and Data Sheet per TFC-OPS-MAINT-C-01, Tank Farm Contractor Work Control procedure.

5.1 Initial Setpoints and Alarms

5.1.1 NOTIFY Shift Manager to initiate time monitoring per LCO 3.1.A. (LCO 3.1)

5.1.2 LOGIN at HMI with Technician User Name and access level password.

5.1.3 IF any alarm/annunciator fails during testing, RECORD failure in comment section of data sheet and continue with the procedure.

Verify Calibration

5.1.4 CHECK CAM calibration data.

5.1.5 IF CAM is within calibration, GO TO Step 5.1.7.

5.1.6 REPORT out-of-calibration condition to FWS.

5.1.7 RECORD serial number and calibration due date of CAM being tested on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.
5.1 Initial Setpoints and Alarms (Cont.)

Verify Alarm Setpoints

5.1.8 PRESS number [5] key on CAM.

5.1.9 RECORD As-Found "SLOW ALARM SETPOINT" on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.1.10 IF As-Found slow alarm setpoint is equal to 300 DPM/ft$^3$, PROCEED to Step 5.1.13.

5.1.11 RESET slow alarm setpoint to 300 DPM/ft$^3$ using the following menus:

"PASSWORD",

"ALARM PARAMETERS",

"SLOW ALARM INTERVAL",

"SLOW ALARM SETPOINT".

5.1.12 PRESS number [5] key on CAM.

5.1.13 RECORD As-Left slow alarm setpoint on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.1.14 PRESS number [6] key on CAM.

5.1.15 RECORD "FAST ALARM SETPOINT" on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.1.16 IF As-Found fast alarm setpoint is equal to 7,000 DPM/ft$^3$, PROCEED to Step 5.1.19.

5.1.17 RESET fast alarm setpoint to 7,000 DPM/ft$^3$ using the following menus:

"PASSWORD",

"ALARM PARAMETERS",

"FAST ALARM INTERVAL",

"FAST ALARM SETPOINT".

5.1.18 PRESS number [6] key on CAM.
5.1 Initial Setpoints and Alarms (Cont.)

5.1.19 **RECORD** As-Left fast alarm setpoint on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.1.20 **PRESS** number [7] key on CAM.

5.1.21 **RECORD** As-Found "BETA ALARM SETPOINT" (Beta Net Count Rate) on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.1.22 **IF** Beta Net Count Rate setpoint value (As-Found) is equal to 3,000 counts per minute, **PROCEED** to Step 5.1.27.

5.1.23 **IF** Beta Net Count Rate setpoint value (As-Found) is less than 10,000 counts per minute, **PROCEED** to Step 5.1.25.

5.1.24 **IF** Beta Net Count Rate setpoint value (As-Found) is greater than 10,000 counts per minute, **NOTIFY** Shift Manager **AND** PERFORM actions as directed.

5.1.25 **RESET** setpoint to 3,000 counts per minute using the following menus:

"PASSWORD",

"ALARM PARAMETERS",

"NET ALARM INTERVAL",

"NET ALARM SETPOINT".

5.1.26 **PRESS** number [7] key on the continuous air monitor's keypad.

5.1.27 **RECORD** As-Left "BETA ALARM SETPOINT" (Beta Net Count Rate) on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.1.28 **CHECK** alarm/status indicators status as listed in "Initial Conditions" line of either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.1.29 **IF** any alarm/status indicators are NOT in the status as listed:

5.1.29.1 **RESET** indicator/alarm.

5.1.29.2 **IF** alarm/status indicators or panel alarm lights still do not status as listed, **NOTIFY** FWS.
5.2 CAM Detector Failure

5.2.1 **INITIATE** failure of CAM detectors by adjusting Beta high voltage of beta detector to zero using the following menus:

"PASSWORD",

"DETECTOR PARAMETERS",

"BETA HIGH VOLTAGE".

**NOTE** - This value will be used in later steps to reset the voltage to its As-Found value.

5.2.1.1 **RECORD** As-Found Beta high voltage on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.2.1.2 **IF** As-Found Beta High Voltage is NOT within the range of 750V to 1050V, **NOTIFY** FWS.

5.2.1.3 **PRESS** EDIT AND **TYPE** "0" to change voltage to zero.

5.2.1.4 **PRESS** ENTER on keypad to accept changed voltage.

5.2.1.5 **PRESS** MENU twice to return CAM to operation.

**NOTE** - For reference on CAM relays, Exhauster Loop diagrams are listed in Section 4.2.

5.2.2 **CHECK** status of alarms and status indicators as listed in "Fail Test" line of either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.2.3 **AFTER** CAM MALFUNCTION light is lit, **PRESS** red "Alarm Ack" button on CAM to clear audible alarm.
5.2 CAM Detector Failure (Cont.)

5.2.4 RETURN CAM Beta high voltage to recorded As-Found value using the following menus:

"PASSWORD",
"DETECTOR PARAMETERS",
"BETA HIGH VOLTAGE".

5.2.4.1 PRESS EDIT AND TYPE in recorded As-Found value from Step 5.2.1.1.

5.2.4.2 RECORD As-Left Beta high voltage on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.2.4.3 PRESS ENTER to accept changed voltage.

5.2.4.4 PRESS MENU twice to return CAM to operation.

5.2.5 AFTER green “READY” light on CAM is lit, ACKNOWLEDGE all alarms.

NOTE - Operator access level is needed for fan restart.

5.2.6 IF fan shuts down, RESTART fan per procedure TO-060-107 AND CONTINUE test.

5.2.7 CHECK alarm/status indicators status as listed in "Reset 1" line of either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.2.8 IF any alarm/status indicators do not status as listed RESET indicator/alarm.

5.2.9 IF alarm/status indicators or panel alarm lights still do not status as listed, NOTIFY FWS.

5.2.10 INITIAL / DATE in last column of either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train to satisfy verification steps for CAM test.
5.3 High Radiation Alarms and Interlock for Exhaust Fan

5.3.1 Prepare for HIGH alarm status on CAM using the following menus:

"PASSWORD",

"INSTRUMENT PARAMETERS",

"GAMMA SUBTRACT FACTOR".

NOTE - This value will be used in later Steps to reset "GAMMA SUBTRACT FACTOR" to its As-Found value.

5.3.1.1 RECORD As-Found Gamma Subtract Factor value on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.3.1.2 PRESS EDIT AND TYPE "0" to change value to zero.

5.3.1.3 PRESS ENTER to accept changed value.

5.3.1.4 PRESS MENU twice to return CAM to operation.

5.3.2 ENSURE exhaust fan is running.

NOTE - Exhauster should be operated in CAM BY-PASS mode only when performing maintenance and/or RadCon routines.

- Running system in CAM bypass requires notification of Environmental.

5.3.3 OBTAIN permission from Shift Manager to place exhauster in CAM Bypass Mode.

5.3.4 LOG ON to HMI that is being placed in CAM Bypass.

5.3.5 INSERT AND TURN CAM interlock key AND PUSH appropriate CAM Bypass button as listed below:

<table>
<thead>
<tr>
<th>Train</th>
<th>Bypass button</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>AW241-VTP-PB-554</td>
</tr>
<tr>
<td>B</td>
<td>AW241-VTP-PB-654</td>
</tr>
</tbody>
</table>

5.3.6 REMOVE CAM interlock key.
5.3 High Radiation Alarms and Interlock for Exhaust Fan (Cont.)

5.3.7 NAVIGATE to the Exhauster AMS-4 screen.

5.3.8 CONFIRM the “CAM Bypass Active” text is displayed.

5.3.9 NAVIGATE to Exhauster Stack Sampler screen.

5.3.10 USING an extension handle and/or rod PLACE AND HOLD gamma source at in-line sample head in sample cabinet until the CAM alarms:

- RE-554A in ENCL-550  A-Train
- RE-654A in ENCL-650  B-Train.

NOTE - CAM green "READY" light, "MALFUNCTION" light, alarm horn and red strobe light on CAM and red flashing beacon light and bell may change states due to loss of flow and fast alarm monitoring conditions, but have no bearing on outcome of high radiation test.

5.3.11 AFTER CAM alarms, CHECK status of alarms and status indicators as listed in "High Radiation" line of either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.3.12 CHECK the following are flashing RED:
- RAH-554 (for A-Train) or RAH-654 (for B-Train) alarm indicator
- “Clr Cond” below RAH-554 (for A-Train) or RAH-654 (for B-Train)

5.3.13 REMOVE gamma source from in-line sample head.

5.3.14 PRESS red "Alarm Ack" pushbutton on CAM.

NOTE - The RESET button has dynamic text. If the HiHi radiation field condition still exists the text on the button will read “ClrCond” and be displayed as solid or flashing red depending on the state of the alarm. If the HiHi radiation field condition is cleared and the alarm has not been acknowledged, the text will read “AckAlm” flashing green.

5.3.15 IF “RESET” button is present below RAH-554 (for A-Train) or RAH-654 (for B-Train) PERFORM the following.

5.3.15.1 As necessary ACKNOWLEDGE alarm.

5.3.15.2 CLICK “RESET” button.

5.3.15.3 CLICK on ENTER.

5.3.15.4 CONFIRM “RESET” button is no longer present.
5.3 High Radiation Alarms and Interlock for Exhaust Fan (Cont.)

5.3.16 IF “RESET” button is still present CONTACT Engineering for directions AND DOCUMENT all directions received on Comment Page.

5.3.17 RESET "GAMMA SUBTRACT FACTOR" to its previous value using the following menus:

"PASSWORD",

"INSTRUMENT PARAMETERS",

"GAMMA SUBTRACT FACTOR".

5.3.17.1 PRESS EDIT AND TYPE previously recorded As-Found value from either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.3.17.2 RECORD As-Left Gamma Subtract Factor value on either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.3.17.3 PRESS ENTER to accept changed value.

5.3.17.4 PRESS MENU twice to return CAM to operation.

5.3.18 IF shutdown, RESTART fan under test per operating procedure TO-060-107.

5.3.19 IF shutdown, CONFIRM vacuum pump has restarted.

5.3.20 CHECK status of alarms and status indicators as listed in "Reset 2" line of either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.3.21 IF any alarm/status indicators do not status as listed RESET indicator/alarm.

5.3.22 IF alarm/status indicators or panel alarm lights still do not status as listed, NOTIFY FWS.
5.4 Exhaust Stack CAM Power Failure

NOTE - Power must remain off for approximately one (1) minute before power restoration.

5.4.1 ENSURE CAM is still in “CAM Bypass Active” mode.

5.4.2 TURN CAM power switch to OFF.

NOTE - For reference on CAM relays, Exhauster Loop diagrams are listed in Section 4.2.

5.4.3 CHECK alarm and status indicators status as listed in "Power Off" line of either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.4.4 TURN CAM Power switch to ON.

5.4.5 NAVIGATE to Exhauster Stack Sampler screen.

5.4.6 IF a CAM High Radiation alarm is indicated, PERFORM the following:

5.4.6.1 PRESS red "Alarm Ack" pushbutton on CAM.

NOTE - The RESET button has dynamic text. If the HiHi radiation field condition still exists the text on the button will read “ClrCond” and be displayed as solid or flashing red depending on the state of the alarm. If the HiHi radiation field condition is cleared and the alarm has not been acknowledged, the text will read “AckAlm” flashing green.

5.4.6.2 IF “RESET’ button is present below RAH-554 (for A-Train) or RAH-654 (for B-Train) PERFORM the following.

a. As necessary ACKNOWLEDGE alarm

b. CLICK ‘RESET’ button

c. CLICK on ENTER

d. CONFIRM “RESET” button is no longer present.

5.4.6.3 IF “RESET” button is still present CONTACT Engineering for directions AND DOCUMENT all directions received on Comment Page.

5.4.7 IF not logged in, LOG onto any HMI that interfaces with exhauster to be taken out of CAM Bypass mode.
5.4 Exhaust Stack CAM Power Failure (Cont.)

5.4.8 GO TO appropriate stack monitor screen.

5.4.9 CLICK on AMS-4 button.

NOTE - The “CAM Bypass Active” message will flash on the HMI screen when in the Bypass mode.

5.4.10 CLICK on AWA-HS-554 or AWB-HS-654 to open the object faceplate.

5.4.11 EXPAND the fan faceplate by selecting the three button bar.

5.4.12 SELECT Alarm/Event tab.

5.4.13 SELECT Reset button in “Diff” group box.

5.4.13.1 CLICK on ENTER.

5.4.14 CONFIRM the “CAM Bypass Inactive” text is displayed.

5.4.15 NOTIFY Shift Manager exhauster has been removed from CAM Bypass mode.

NOTE - Operator access level is needed for fan restart.

5.4.16 IF fan shuts down, RESTART fan per procedure TO-060-107 AND CONTINUE test.

5.4.17 AFTER “READY” green lit on CAM is lit, GO TO HMI alarms page (F5).

5.4.18 ACKNOWLEDGE all alarms.

5.4.19 CHECK alarm and status indicators status as listed in "Reset 3" line of either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train.

5.4.20 INITIAL / DATE in last column of either Data Sheet 1 for A-Train or Data Sheet 2 for B-Train to satisfy verification steps.

5.4.21 IF any alarm/status indicators DO NOT status as listed RESET indicator/alarm.

5.4.22 IF alarm/status indicators or panel alarm lights still do not status as listed, NOTIFY FWS.

5.4.23 LOGOUT at HMI.
### 5.5 Restoration

5.5.1 **ENSURE** exhaust fan specified by Shift Manager in Step 4.3.7 is operating per applicable Operating Procedure.

5.5.2 **VERIFY** Exhaust Stack Radiation Monitor components have been restored to pre-test configuration or as directed by Shift Manager and ALL exceptions recorded on Comment Page.

<table>
<thead>
<tr>
<th>Signature</th>
<th>Print (First and Last)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift Manager /OE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.5.3 **FWS INFORM** responsible Shift Manager status of test.

5.5.4 **IF** the CAM passed the test, **NOTIFY** Shift Manager to stop time monitoring. *(LCO 3.1)*

### 5.6 Acceptance Criteria

5.6.1 **RETURN** this procedure to OE for completion of the review Section 5.7.

### 5.7 Review

5.7.1 Engineer shall **REVIEW AND EVALUATE** test data for acceptability. Any deficiencies and actions taken shall be recorded on Comment Page.

### 5.8 Records

This procedure is performed within a work package, as such, the procedure in its entirety will be maintained as a record per the Work Control process.

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
# AW Tank Farm VTP Stack CAM Interlock Functional Check

## Data Sheet 1 - A-Train

<table>
<thead>
<tr>
<th>Serial Number: __________________</th>
<th>Calibration Due Date: __________________</th>
<th>(AC) Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Setpoints:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slow alarm setpoint (DPM/ft³)</td>
<td><strong>As-Found</strong> 300 (299-301) DPM/ft³</td>
<td></td>
</tr>
<tr>
<td>Fast alarm setpoint (DPM/ft³)</td>
<td><strong>As-Found</strong> 7000 (6999-7001) DPM/ft³</td>
<td></td>
</tr>
<tr>
<td>Beta alarm setpoint (DPM/ft³)</td>
<td><strong>As-Found</strong> 3000 (2999-3001) DPM/ft³</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Steps</th>
<th>Continuous Air Monitor (CAM)</th>
<th>A-Train HMI</th>
<th>Initial and Date (AC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“READY” Green Light (✓)</strong></td>
<td></td>
<td>RAH554 (✓)</td>
<td>Green/Not Alarming</td>
</tr>
<tr>
<td><strong>“MAL-FUNCTION” Amber Light (✓)</strong></td>
<td></td>
<td>RAX554 (✓)</td>
<td>Green/Not Alarming</td>
</tr>
<tr>
<td><strong>“Audible Alarm” (✓)</strong></td>
<td></td>
<td></td>
<td>Green/Not Alarming</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initial Condition</th>
<th>Lit</th>
<th>Not Lit</th>
<th>Silent</th>
<th>Green/Not Alarming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fail Test</td>
<td>Not Lit</td>
<td>Lit</td>
<td>Sounding/Not Alarming</td>
<td>Red/Alarming</td>
</tr>
<tr>
<td>Reset 1</td>
<td>Lit</td>
<td>Not Lit</td>
<td>Silent</td>
<td>Green/Not Alarming</td>
</tr>
<tr>
<td>High Radiation</td>
<td>Lit</td>
<td>Not Lit</td>
<td>Sounding/Not Alarming</td>
<td>Green/Not Alarming</td>
</tr>
<tr>
<td>Reset 2</td>
<td>Lit</td>
<td>Not Lit</td>
<td>Silent</td>
<td>Green/Not Alarming</td>
</tr>
<tr>
<td>Power Off</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Green/Not Alarming</td>
</tr>
<tr>
<td>Reset 3</td>
<td>Lit</td>
<td>Not Lit</td>
<td>Silent</td>
<td>Green/Not Alarming</td>
</tr>
</tbody>
</table>

**CAM Detector Failure:**

- Beta High Voltage: ______
- High Radiation: ______
- Gamma Subtract Factor: ______

---

User Sign/Print (First and Last)/Date
## Data Sheet 2 - B-Train

<table>
<thead>
<tr>
<th>Test Steps</th>
<th>Continuous Air Monitor</th>
<th>B-Train HMI</th>
<th>Initial and Date (AC)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CAM</td>
<td>RAH654</td>
<td>RAX654</td>
</tr>
<tr>
<td></td>
<td>“READY” Green Light (√)</td>
<td>“MAL-FUNCTION” Amber Light (✓)</td>
<td>“Audible Alarm” (✓)</td>
</tr>
<tr>
<td>Initial Condition</td>
<td>Lit</td>
<td>Not Lit</td>
<td>Silent</td>
</tr>
<tr>
<td>Fail Test</td>
<td>Not Lit</td>
<td>Lit</td>
<td>Sounding/ Sounded</td>
</tr>
<tr>
<td>Reset 1</td>
<td>Lit</td>
<td>Not Lit</td>
<td>Silent</td>
</tr>
<tr>
<td>High Radiation</td>
<td>Lit</td>
<td>Not Lit</td>
<td>Sounding/ Sounded</td>
</tr>
<tr>
<td>Reset 2</td>
<td>Lit</td>
<td>Not Lit</td>
<td>Silent</td>
</tr>
<tr>
<td>Power Off</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Reset 3</td>
<td>Lit</td>
<td>Not Lit</td>
<td>Silent</td>
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**As-Found**

**As-Left**

**Source Number**

### CAM Detector Failure:
- Beta High Voltage

### High Radiation:
- Gamma Subtract Factor:

User Sign/Print (First and Last)/Date

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**Initial Setpoints:**
- Slow alarm setpoint (DPM/ft³): 300 (299-301) DPM/ft³
- Fast alarm setpoint (DPM/ft³): 7000 (6999-7001) DPM/ft³
- Beta alarm setpoint (DPM/ft³): 3000 (2999-3001) DPM/ft³

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**Type** | **Document No.** | **Rev/Mod** | **Release Date** | **Page**
---|---|---|---|---
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**Comment Page**

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Functional Test Signature Sheet

All persons participating in the performance of this test shall enter their printed name, signature and initials below.

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<th>Signature</th>
<th>Initials</th>
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