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</tr>
</tbody>
</table>
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for functionally checking the 702-AZ Primary Exhaust Stack Continuous Air Monitor Interlock System and associated alarms.

1.2 Scope

1.2.1 This procedure covers functionally checking the 241-AY/AZ (702-AZ) Primary Exhaust Stack CAM alarming and interlock functions. The equipment covered is limited to the following:

- Primary Exhaust Stack Instrument Enclosure, which includes the Primary Exhaust Stack Beta-Gamma AMS-4 CAM and electrical outputs
- Primary Exhaust fans AZ-K1-5-1A and AZ-K1-5-1B
- Recirculation fans AY101-K4-5-1, AY102-K4-5-1, AZ101-K4-5-1, AZ102-K4-5-1
- Record Sampler F-AZK1-1 and associated vacuum pumps AZ-K1-11-1 PUMP-1 and AZ-K1-11-2 PUMP-2
- Associated local and remote alarms.

1.2.2 A CAM detector failure will be simulated and alarms checked for proper response.

1.2.3 With primary exhaust fan AZ-K1-5-1A running, a radioactive source will be introduced to the CAM, verifying the following:

- Exhaust fan AZ-K1-5-1A shuts down, alarms activate, and fan cannot be restarted with CAM sensing radiation greater than preset setpoints.
- Recirculation fans AY101-K4-5-1, AY102-K4-5-1, AZ101-K4-5-1 and AZ102-K4-5-1, if running, shut down and cannot be restarted with CAM sensing radiation greater than preset setpoints. If Recirculation fans are not running, relay contact status is verified following simulated shutdown and startup.
- Exhaust fan AZ-K1-5-1B cannot be started with CAM sensing radiation greater than preset setpoints.
1.2 Scope (Cont.)

1.2.4 With primary exhaust fan AZ-K1-5-1B running, a radioactive source will be introduced to the CAM, verifying the following:

- Exhaust fan AZ-K1-5-1B shuts down, alarms activate, and fan cannot be restarted with CAM sensing radiation greater than preset setpoints
- Recirculation fans AY101-K4-5-1, AY102-K4-5-1, AZ101-K4-5-1 and AZ102-K4-5-1, if running, shut down and cannot be restarted with CAM sensing radiation greater than preset setpoints. If Recirculation fans are not running, relay contact status is verified following simulated shutdown and startup.
- Exhaust fan AZ-K1-5-1A cannot be started with CAM sensing radiation greater than preset setpoints.

1.2.5 A CAM power failure will be simulated and alarms checked for proper response.

2.0 INFORMATION

NONE

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 The exhaust fans will shut down during this test which may cause a tank pressurization to occur and alarm to sound.

3.2 Radiation and Contamination Control

Work in radiological areas will be performed using a radiological work permit following review by Radiological Control per the ALARA Work Planning procedure TFC-ESHQ-RP_RWP-C-03.
3.3 Environmental Compliance

3.3.1 Tank Farm ventilation systems and exhaust monitoring systems are regulated under Washington State Administrative Code (WAC) Chapters 173-400, 173-401, and 246-247 and sections of Air Operating Permit (AOP) and Radioactive Air Emissions License (FF01) to ensure compliance with these regulations. The potentially effected ventilation system in 241-AZ farm includes the 702 AZ primary stack #296-A-42 system.

3.3.2 To ensure reporting requirements are met, all planned and unplanned outages of Tank Farm ventilation equipment and exhaust monitoring systems, including portable exhausters, must be reported to the Shift Office and Environmental On-Call per the On-Call List, in compliance with TFC-ESHQ-ENV-FS-C-01.

3.4 Limits

3.4.1 If during the performance of this procedure any of the following conditions are found immediately stop work, place equipment in a safe condition, notify FWS and proceed as directed.

- Any equipment malfunction which could prevent fulfillment of its functional requirements
- Personnel error or procedural inadequacy which could prevent fulfillment of procedural requirements.

3.4.2 Comply with plant/facility specific lock and tag and over-tagging requirements, as applicable.

**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
- Calibrated Beta-Gamma Radiation Source that will generate greater than 10,000 counts per minute
  Source Number ________________________________
- Two way radio or cellular phone required for personnel inside the farm
- Hearing protection
- Password for CAM “Air Monitor System-4 (AMS-4) Beta/Gamma Particle Monitor.” This may be obtained from the instrument FWS
- Vacuum grease for “O” rings
- Stopwatch
- Other tools, equipment, and supplies as identified by Shift Manager/OE/FWS/User.

4.2 Performance Documents
- TO-060-350, Start, Stop and Operate AY/AZ Tank Ventilation Primary Exhaust System.

4.3 Field Preparation

The following conditions must be completed before this procedure may commence:

4.3.1 CONFIRM test radiation source to be used is within calibration.

4.3.2 A pre-job safety meeting has been conducted by the FWS prior to starting the test. All personnel participating in the test have read and understand the test.

4.3.3 The 702-AZ Primary Ventilation system is in service with Recirc fans AY101-K4-5-1, AY102-K4-5-1, AZ101-K4-5-1 and AZ102-K4-5-1 and either exhaust fan AZ-K1-5-1A or exhaust fan AZ-K1-5-1B operating (Ref. procedure TO-060-350). Recirculation fans AY101-K4-5-1, AY102-K4-5-1, AZ101-K4-5-1 and AZ102-K4-5-1 should be operating unless maintenance prevents fan operation or if fan is in BYPASS mode.
4.3 Field Preparation (Cont.)

4.3.4 Personnel in AY/AZ Farms have been notified of the expected alarms that could be initiated by this test and appropriate responses identified.

4.3.5 AY/AZ air lift circulators have been shut down.

4.3.6 Shift Manager/OE has evaluated work activities in AY/AZ farm which require primary tank ventilation to be operating, secured, or placed in a safe condition.

4.3.7 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)

4.3.8 OE has notified Environmental Compliance per Section 3.3 that exhaust stack CAM functional checking will be conducted.

4.3.9 The Shift Manager and the Tank Monitor and Control System Operator have been notified of the scope of this test and alarms identified.

4.3.10 The Shift Manager has been notified that all prerequisites in Section 4.0 of this procedure have been met.
5.0 PROCEDURE

Special Instructions

Failed functional checks require documenting results on work record and data sheet and following the requirements in the Tank Farm Contractor Work Control procedure (reference TFC-OPS-MAINT-C-01).

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 CHECK that CAM is within current calibration.

5.1.3 IF CAM is not within calibration requirements, REPORT condition to Shift Manager AND REQUEST Planning to provide a work package for replacement of the CAM.

5.1.4 RECORD the following data:

<table>
<thead>
<tr>
<th>Calibration Date</th>
<th>Serial #</th>
</tr>
</thead>
</table>

5.1.5 PERFORM the following Steps to verify CAM alarm setpoints:

5.1.5.1 PRESS number [5] key on the CAM’s keypad.

5.1.5.2 RECORD the “SLOW ALARM SETPOINT”, as displayed on the top line of the CAM.

As-Found slow alarm setpoint ______________ DPM/ft$^3$.

5.1.5.3 IF As-Found slow alarm setpoint is equal to 300 (299-301) DPM/ft$^3$, GO TO Step 5.1.5.6.

5.1.5.4 IF the As-Found slow alarm setpoint is not equal to 300 (299-301) DPM/ft$^3$/60 minutes, RESET slow alarm setpoint to 300 (299-301) DPM/ft$^3$/60 minutes using the following menus:

- “PASSWORD”
- “ALARM PARAMETERS”
- “SLOW ALARM INTERVAL”
- “SLOW ALARM SETPOINT.”

5.1.5.5 PRESS number [5] key on the CAM’s keypad.
5.1 Initial Setpoints and Alarms (Cont.)

5.1.5.6 RECORD As-Left slow alarm setpoint.

As-Left slow alarm setpoint ___________ DPM/ft³.

Signature / Print (First & Last) / Date

5.1.5.7 PRESS number [6] key on the CAM’s keypad.

5.1.5.8 RECORD the “FAST ALARM SETPOINT”, as displayed on the top line of the CAM.

As-Found fast alarm setpoint ___________ DPM/ft³.

5.1.5.9 IF As-Found fast alarm setpoint is equal to 7,000 (6,999 - 7,001) DPM/ft³, GO TO Step 5.1.5.12.

5.1.5.10 IF the As-Found fast alarm setpoint is not equal to 7,000 (6,999 - 7,001) DPM/ft³/60 seconds, RESET fast alarm setpoint to 7,000 (6,999 - 7,001) DPM/ft³/60 seconds using the following menus:

- “PASSWORD”
- “ALARM PARAMETERS”
- “FAST ALARM INTERVAL”
- “FAST ALARM SETPOINT.”

5.1.5.11 PRESS number [6] key on the CAM’s keypad.

5.1.5.12 RECORD As-Left fast alarm setpoint.

As-Left fast alarm setpoint ___________ DPM/ft³.

Signature / Print (First & Last) / Date

5.1.5.13 PRESS number [7] key on the CAM’s keypad.

5.1.5.14 RECORD the “NET ALARM SETPOINT” (Beta Net Count Rate), as displayed on the top line of the CAM.

As-Found net alarm setpoint ___________ cpm
5.1 Initial Setpoints and Alarms (Cont.)

5.1.5.15 IF Beta Net Count Rate setpoint value (As-Found) is equal to 3,000 (2,999 - 3,001) cpm, GO TO Step 5.1.5.20.

5.1.5.16 IF Beta Net Count Rate setpoint value (As-Found) is not 3,000 (2,999 - 3,001) cpm but less than 10,000, GO TO Step 5.1.5.18.

5.1.5.17 IF Beta Net Count Rate setpoint value (As-Found) is greater than 10,000 cpm, NOTIFY Shift Manager AND PERFORM actions as directed.

5.1.5.18 IF Beta Net Count Rate setpoint value (As-Found) is not equal to 3,000 (2,999 - 3,001) cpm OR directed by the Shift Manager, RESET setpoint to 3,000 (2,999 - 3,001) cpm using the following menus:

- “PASSWORD”
- “ALARM PARAMETERS”
- “NET ALARM INTERVAL”
- “NET ALARM SETPOINT.”

5.1.5.19 PRESS number [7] key on the CAM’s keypad.

5.1.5.20 RECORD As-Left net alarm setpoint.

As-Left net alarm setpoint _____________ cpm

_________________________________/_________________________________/_________________________________
Signature Print (First & Last) Date

5.1.6 ESTABLISH communications between personnel in the CAM location, building 241-AZ-271 and Tank Monitor and Control system operator.
5.1 Initial Setpoints and Alarms

5.1.7 **CHECK** the alarm and status indicators are in the status listed in the following table:

5.1.7.1 **RECORD** any test exceptions on Table below.

5.1.7.2 **REPORT** discrepancies to the Shift Manager.

5.1.7.3 **IF** any of the status indicators or panel alarm lights are not in the status listed, **RESET** the indicator/alarm.

5.1.7.4 **IF** the status indicators or panel alarm lights are still not in the status listed, **CONTACT** FWS for direction.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>“READY” Green Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>Lit</td>
<td></td>
</tr>
<tr>
<td>“Malfunction” Amber Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>NOT Lit</td>
<td></td>
</tr>
<tr>
<td>“MIN FLOW FAIL OUT OF SERVICE” Screen</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>NOT Displayed</td>
<td></td>
</tr>
<tr>
<td>Alarm Horn</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>Silenced</td>
<td></td>
</tr>
<tr>
<td>Red Strobe Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>NOT Strobing</td>
<td></td>
</tr>
<tr>
<td>XA-AZK1-1</td>
<td>Amber Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>NOT Strobing</td>
</tr>
<tr>
<td>RA-AZK1-1</td>
<td>Red Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>NOT Strobing</td>
</tr>
<tr>
<td>RA-AZK1-1A</td>
<td>High Rad Alarm Bell</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>Silenced</td>
</tr>
</tbody>
</table>

Exception:______________________________________________________________

______________________________________________________________
## 5.1 Initial Setpoints and Alarms (Cont.)

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA-AZK1-1B</td>
<td>Horn</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>SILENCED</td>
</tr>
<tr>
<td></td>
<td>“POWER ON” Light</td>
<td>On “PRIMARY STACK MONITOR ENCL-AZK1-1”</td>
<td>LIT</td>
</tr>
<tr>
<td></td>
<td>Red Beacon, CAM Outdoor Alarm, CAB-AZK1-1</td>
<td>On Building 241-AZ-702, Outside West Wall</td>
<td>NOT LIT</td>
</tr>
<tr>
<td></td>
<td>Horn, CAM Outdoor Alarm, CAB-AZK1-1</td>
<td>On Building 241-AZ-702, Outside West Wall</td>
<td>SILENCED</td>
</tr>
<tr>
<td>RAX-AZK1-1</td>
<td>Primary Vent Stack CAM Radiation Monitor Failure (Graphic 18) “PVStk RADFAIL”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>RAH-AZK1-1</td>
<td>Primary Vent Stack CAM Radiation Monitor High Radiation (Graphic 18) “PVSk RAD HI”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>YA-AZK15-1A</td>
<td>Primary Ventilation Stack Exhaust Fan Failure “PV FAN 1A STATUS”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>YA-AZK15-1B</td>
<td>Primary Ventilation Stack Exhaust Fan Failure “PV FAN 1B STATUS”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>HS-AZK1-1A1</td>
<td>“BELL ALARM ACKNOWLEDGE” pushbutton</td>
<td>“PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>CLEAR (out position), NOT LIT</td>
</tr>
<tr>
<td>HS-AZK1-1B1</td>
<td>“HORN ALARM ACKNOWLEDGE” pushbutton</td>
<td>“PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>CLEAR (out position), NOT LIT</td>
</tr>
<tr>
<td></td>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>CLEAR (green)</td>
</tr>
<tr>
<td></td>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT SMPL SYS FAH/FAL”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>CLEAR (green)</td>
</tr>
</tbody>
</table>

**Exception:**

______________________________________________________________

______________________________________________________________

___________________________ / ____________________________/ ____________
Signature                  Print (First & Last)                Date
5.2 Exhaust Stack Continuous Air Monitor Detector Failure

5.2.1 INITIATE failure of the radiation monitor detectors by ADJUSTING the high voltage of the beta detector to zero using the following menus:
- "PASSWORD"
- "DETECTOR PARAMETERS"
- "BETA HIGH VOLTAGE."

5.2.1.1 RECORD the As-Found high voltage.

As-Found Voltage _____________

5.2.1.2 PRESS EDIT AND

TYPE “0” to change voltage to zero.

5.2.1.3 PRESS ENTER on keypad to accept changed voltage.

5.2.1.4 PRESS MENU twice to return CAM to operation.

5.2.2 AFTER CAM “MALFUNCTION” light is LIT (1 to 5 minutes), PRESS “HORN ALARM ACKNOWLEDGE” button HS-AZK1-1B1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to acknowledge and silence horn.

5.2.3 CHECK that “HORN ALARM ACKNOWLEDGE” button HS-AZK1-1B1 yellow light is LIT.

5.2.4 PRESS red “Alarm Ack” button on CAM to clear horn.
5.2 Exhaust Stack Continuous Air Monitor Detector Failure (Cont.)

5.2.5 **VERIFY** the alarm and status indicators are in the status listed in the following table:

5.2.5.1 **RECORD** any test exceptions on Table below.

5.2.5.2 **REPORT** discrepancies to the Shift Manager.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“READY” Green Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>NOT LIT</td>
</tr>
<tr>
<td></td>
<td>“Malfunction” Amber Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>LIT</td>
</tr>
<tr>
<td></td>
<td>Alarm Horn</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>SOUNDED/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SOUNDED</td>
</tr>
<tr>
<td>XA-AZK1-1</td>
<td>Amber Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>STROBING</td>
</tr>
<tr>
<td>RA-AZK1-1B</td>
<td>Horn</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>SOUNDED/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SOUNDED</td>
</tr>
<tr>
<td>RAX-AZK1-1</td>
<td>Primary Vent Stack CAM Radiation</td>
<td>IN Building 241-AZ-271 (MCS screen)</td>
<td>ACTIVATED</td>
</tr>
<tr>
<td></td>
<td>Monitor Failure (Graphic 18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>“PVSTK RAD FAIL”</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TMACS 702-AZ Ventilation System</td>
<td>On TMACS Computer At Building 2750E</td>
<td>ACTIVATED</td>
</tr>
<tr>
<td></td>
<td>Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Exception:**

__________________________________________________________________________________________

__________________________________________________________________________________________

__________________________________________________________________________________________

_________________________ / ___________________________ / ____________________________
Signature               Print (First & Last)                   Date
5.2 Exhaust Stack Continuous Air Monitor Detector Failure (Cont.)

5.2.6 **RETURN** CAM’s high voltage to the recorded As-Found value using the following menus:

- “PASSWORD”
- “DETECTOR PARAMETERS”
- “BETA HIGH VOLTAGE.”

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

5.2.6.2 **RECORD** the As-Left high voltage.

As-Left Voltage ____________

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

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

5.2.7 **AFTER** CAM “READY” light is LIT (1 to 5 minutes), **PRESS AND RELEASE** “HORN ALARM ACKNOWLEDGE” button HS-AZK1-1B1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to clear yellow light.

5.2.8 **CHECK** that “HORN ALARM ACKNOWLEDGE” button HS-AZK1-1B1 yellow light is not LIT.

5.2.9 **IF** fans shut down, **RESTART** fans (Ref. TO-060-350) AND **CONTINUE** test.
## 5.2 Exhaust Stack Continuous Air Monitor Detector Failure (Cont.)

5.2.10 **VERIFY** the alarm and status indicators are in the status listed in the following table:

5.2.10.1 **RECORD** any test exceptions on Table below.

5.2.10.2 **REPORT** discrepancies to the Shift Manager.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“READY” Green Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>LIT</td>
</tr>
<tr>
<td></td>
<td>“Malfunction” Amber Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>NOT LIT</td>
</tr>
<tr>
<td></td>
<td>Alarm Horn</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>SILENCED</td>
</tr>
<tr>
<td>XA-AZK1-1</td>
<td>Amber Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>NOT STROBING</td>
</tr>
<tr>
<td>RA-AZK1-1B</td>
<td>Horn</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>SILENCED</td>
</tr>
<tr>
<td>RAX-AZK1-1</td>
<td>Primary Vent Stack CAM Radiation Monitor Failure (Graphic 18) “PVStK RAD FAIL”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td></td>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>CLEAR (green)</td>
</tr>
</tbody>
</table>

**Exception:**

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

_________________________ / ___________________________ / ________________
Signature                  Print (First & Last)                  Date
5.3 Low Sample Flow Rate Alarm Test

5.3.1 POSITION HS-AY101/AY102-K451-1 241-AY RECIRCULATION FANS CAM INTERLOCK BYPASS SWITCH in the “241-AY CAM DISABLED” position.

5.3.2 POSITION HS-AZ101/AZ102-K451-1 241-AZ RECIRCULATION FANS CAM INTERLOCK BYPASS SWITCH in the “241-AZ CAM DISABLED” position.

5.3.3 IF fan AZ-K1-5-1A is operating, POSITION HS-AZK1-3 CAM INTERLOCK BYPASS SWITCH in the “AZ-K1-5-1A Fan Bypass” position.

OR

IF fan AZ-K1-5-1B is operating, POSITION HS-AZK1-3 CAM INTERLOCK BYPASS SWITCH in the “AZ-K1-5-1B Fan Bypass” position.

5.3.4 POSITION switch HS-AZK111-1A to “OFF” position.

5.3.5 AFTER CAM “MALFUNCTION” light is LIT (1 to 5 minutes), PRESS “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to acknowledge and silence horn.

5.3.6 CHECK that “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 yellow light is LIT.
5.3  Low Sample Flow Rate Alarm Test (Cont.)

5.3.7  VERIFY the alarm and status indicators are in the status listed in the following table:

5.3.7.1  RECORD any test exceptions on Table below.

5.3.7.2  REPORT discrepancies to the Shift Manager.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“READY” Green Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>NOT LIT</td>
</tr>
<tr>
<td></td>
<td>“MALFUNCTION” Amber Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>LIT</td>
</tr>
<tr>
<td></td>
<td>“MIN FLOW FAIL OUT OF SERVICE” Screen</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>DISPLAYED</td>
</tr>
<tr>
<td></td>
<td>Alarm Horn</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>SOUNDING / SOUNDED</td>
</tr>
<tr>
<td>XA-AZK1-1</td>
<td>Amber Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>STROBING</td>
</tr>
<tr>
<td>RA-AZK1-1B</td>
<td>Horn</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>SOUNDING / SOUNDED</td>
</tr>
<tr>
<td>RAX-AZK1-1</td>
<td>“POWER ON” Light</td>
<td>On “PRIMARY STACK MONITOR ENCL-AZK1-1”</td>
<td>LIT</td>
</tr>
<tr>
<td></td>
<td>Primary Vent Stack CAM Radiation Monitor Failure (Graphic 18) “PVStK RAD FAIL”</td>
<td>In Building 241-AZ-271(MCS Screen)</td>
<td>ACTIVATED</td>
</tr>
<tr>
<td></td>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT SMPL SYS FAH/FAL”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>ACTIVATED (red)</td>
</tr>
<tr>
<td></td>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td>On TMACS System Computer At Building 2750E</td>
<td>ACTIVATED (red)</td>
</tr>
</tbody>
</table>

Exception:

_________________________ / ____________________________ / ____________________________
Signature               Print (First & Last)              Date

5.3.8  PRESS red “Alarm Ack” pushbutton located on CAM.

5.3.9  POSITION switch HS-AZK111-1A to “AUTO” position.
5.3 Low Sample Flow Rate Alarm Test (Cont.)

5.3.10 AFTER CAM “READY” light is LIT (1 to 5 minutes), PRESS AND RELEASE “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to clear yellow light.

5.3.11 CHECK that “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 yellow light is NOT LIT.

5.3.12 VERIFY the alarm and status indicators are in the status listed in the following table:

5.3.12.1 RECORD any test exceptions on Table below.

5.3.12.2 POSITION HS-AY101/AY102-K451-1 241-AY RECIRCULATION FANS CAM INTERLOCK BYPASS SWITCH in the “241-AY CAM ENABLED” position.

5.3.12.3 POSITION HS-AZ101/AZ102-K451-1 241-AZ RECIRCULATION FANS CAM INTERLOCK BYPASS SWITCH in the “241-AZ CAM ENABLED” position.

5.3.12.4 POSITION HS-AZK1-3 CAM INTERLOCK BYPASS SWITCH in the “CAM ENABLE” position.
### 5.3 Low Sample Flow Rate Alarm Test (Cont.)

5.3.12.5 **REPORT** discrepancies to the Shift Manager.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>“READY” Green Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>LIT</td>
<td></td>
</tr>
<tr>
<td>“MALFUNCTION” Amber Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>NOT LIT</td>
<td></td>
</tr>
<tr>
<td>“LOW FLOW FAIL BELOW MIN FLOW” Screen</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>NOT DISPLAYED</td>
<td></td>
</tr>
<tr>
<td>Alarm Horn</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>SILENCED</td>
<td></td>
</tr>
<tr>
<td>XA-AZK1-1</td>
<td>Amber Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>NOT STROBING</td>
</tr>
<tr>
<td>RA-AZK1-1B</td>
<td>Horn</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>SILENCED</td>
</tr>
<tr>
<td>“POWER ON” Light</td>
<td>On “PRIMARY STACK MONITOR ENCL-AZK1-1”</td>
<td>LIT</td>
<td></td>
</tr>
<tr>
<td>RAX-AZK1-1</td>
<td>Primary Vent Stack CAM Radiation Monitor Failure (Graphic 18) “PVStK RAD FAIL”</td>
<td>In Building 241-AZ-271(MCS Screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td></td>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT SMPL SYS FAH/FAL”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>CLEAR (green)</td>
</tr>
<tr>
<td></td>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td>On TMACS System Computer At Building 2750E</td>
<td>CLEAR (green)</td>
</tr>
</tbody>
</table>

**Exception:**

________________________________________
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________________________________________

Signature    Print (First & Last)    Date
5.4 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1A

5.4.1 IF exhaust fan AZ-K1-5-1B is out of service, PERFORM Section 5.4 only.

5.4.2 IF exhaust fan AZ-K1-5-1A is out of service, PERFORM Section 5.5 only.

5.4.3 IF exhaust fan AZ-K1-5-1B is initially in use, GO TO Step 5.5.1.

5.4.4 IF exhaust fan AZ-K1-5-1A is initially in use, GO TO Step 5.4.5.

5.4.5 CHECK that exhaust fan AZ-K1-5-1A is running.

5.4.6 PRODUCE a HIGH alarm status on the CAM using the following menus:
- “PASSWORD”
- “INSTRUMENT PARAMETERS”
- “GAMMA SUBTRACT FACTOR.”

5.4.6.1 RECORD the As-Found value: __________

5.4.6.2 PRESS EDIT AND

TYPE “0” to change value to zero.

5.4.6.3 PRESS ENTER on keypad to accept changed value.

5.4.6.4 PRESS MENU twice to return CAM to operation.

5.4.7 Using the extension handle/rod, PLACE AND HOLD gamma source (V-block) at Beta/Gamma Detector Head RE-AZK1-1, pointing towards the beta detector located at the stack in the “Beta/Gamma Enclosure”.

5.4.8 AFTER alarm locks in, REMOVE source.

5.4.9 START stopwatch after continuous air monitor alarms.
5.4 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1A (Cont.)

5.4.10 **STOP** stopwatch after stack flow transmitter (FIT-AZK1-3) indicates no flow.

Time required for stack flow transmitter to indicate no flow:__________ (If time is greater than 10 minutes, notify CCC.)

**NOTE** - CAM green “READY” light, “MALFUNCTION” light, alarm horn and red strobe light on CAM and amber strobe light XA-AZK1-1 and horn RA-AZK1-1B may change states due to loss of flow and fast alarm monitoring conditions, but have no bearing on the outcome of the high radiation test.

5.4.11 **CHECK** conditions in step 5.4.29 still exist.

5.4.12 **PRESS** “BELL ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1A1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to acknowledge and silence bell.

5.4.13 **CHECK** that “BELL ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1A1 yellow light is LIT.

5.4.14 **PRESS** “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to acknowledge and silence horn if sounding.

5.4.15 **CHECK** that “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 yellow light is LIT if pressed.
5.4 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1A (Cont.)

5.4.16 **VERIFY** the alarm and status indicators are in the status listed in the following table:

5.4.16.1 **RECORD** any test exceptions on Table below.

5.4.16.2 **REPORT** discrepancies to the Shift Manager.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“READY” Green Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>LIT</td>
</tr>
<tr>
<td>RA-AZK1-1</td>
<td>Alarm Horn</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>SOUNDED/SOUNDED</td>
</tr>
<tr>
<td></td>
<td>Red Strobe Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>STROBING</td>
</tr>
<tr>
<td>RA-AZK1-1A</td>
<td>High Rad Alarm Bell</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>SOUNDED/SOUNDED</td>
</tr>
<tr>
<td></td>
<td>Red Beacon, CAM Outdoor Alarm, CAB-AZK1-1</td>
<td>On Building 241-AZ-702, Outside West Wall</td>
<td>LIT</td>
</tr>
<tr>
<td></td>
<td>Horn, CAM Outdoor Alarm, CAB-AZK1-1</td>
<td>On Building 241-AZ-702, Outside West Wall</td>
<td>SOUNDED/SOUNDED</td>
</tr>
<tr>
<td>RAH-AZK1-1</td>
<td>Primary Vent Stack CAM Radiation Monitor High Radiation (Graphic 18)</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>ACTIVATED</td>
</tr>
<tr>
<td>YA-AZK15-1A</td>
<td>Primary Ventilation Stack Exhaust Fan Failure “PV FAN 1A STATUS”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>ACTIVATED</td>
</tr>
<tr>
<td>YA-AZK15-1B</td>
<td>Primary Ventilation Stack Exhaust Fan Failure “PV FAN 1B STATUS”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>ACTIVATED</td>
</tr>
<tr>
<td></td>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>ACTIVATED (red)</td>
</tr>
</tbody>
</table>

**Exception:**

_________________________ / ______________________ / ______________________
Signature              Print (First & Last)      Date
5.4 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1A (Cont.)

5.4.17 PRESS red “Alarm Ack” pushbutton on CAM to silence horn.

5.4.18 VERIFY that exhaust fan AZ-K1-5-1A has SHUT DOWN.

5.4.19 VERIFY that record sampler F-AZK1-1 has shut down by checking that both vacuum pumps “AZ-K1-11-1 PUMP-1” and “AZ-K1-11-2 PUMP-2” are not operating or if a vacuum pump continues to run, CONTINUE with test AND NOTIFY Environmental of results at end of test.

5.4.20 START exhaust fan AZ-K1-5-1A per TO-060-350.

5.4.21 VERIFY exhaust fan AZ-K1-5-1A does not start.

5.4.22 START exhaust fan AZ-K1-5-1B per TO-060-350.
5.4 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1A (Cont.)

5.4.23 VERIFY exhaust fan AZ-K1-5-1B does not start.

____________________ / ______________________ / ______________________
Signature Print (First & Last) Date

5.4.24 PRESS “HI-RAD RESET” pushbutton PB-AZK1-1 to clear latching High-Radiation alarm relay.

5.4.25 START Exhaust Fan AZ-K1-5-1B, if applicable, per procedure TO-060-350.

5.4.26 AFTER CAM “READY” light is LIT (1 to 5 minutes), PRESS AND RELEASE “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 on “PRIMARY STACK MONITOR CAB- AZK1-1” to clear yellow light, if required.

5.4.27 CHECK that “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 yellow light is not LIT.

5.4.28 PRESS AND RELEASE “BELL ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1A1 on “PRIMARY STACK MONITOR CAB- AZK1-1” to clear yellow light.

5.4.29 CHECK that “BELL ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1A1 yellow light is NOT LIT.
5.4 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1A (Cont.)

5.4.30 **VERIFY** the alarm and status indicators are in the status listed in the following table:

5.4.30.1 **RECORD** any test exceptions on Table below.

5.4.30.2 **REPORT** discrepancies to the Shift Manager.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>“READY”</td>
<td>Green Light</td>
<td>In “PRIMARY STACK MONITOR CAB- AZK1-1” On CAM</td>
<td>LIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“RIAS-AZK1-1”</td>
<td></td>
</tr>
<tr>
<td>Alarm Horn</td>
<td></td>
<td>In “PRIMARY STACK MONITOR CAB- AZK1-1” On CAM</td>
<td>SILENCED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“RIAS-AZK1-1”</td>
<td></td>
</tr>
<tr>
<td>Red Strobe Light</td>
<td></td>
<td>In “PRIMARY STACK MONITOR CAB- AZK1-1” On CAM</td>
<td>NOT STROBING</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“RIAS-AZK1-1”</td>
<td></td>
</tr>
<tr>
<td>RA-AZK1-1</td>
<td>Red Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB- AZK1-1”</td>
<td>NOT STROBING</td>
</tr>
<tr>
<td>RA-AZK1-1A</td>
<td>High Rad Alarm Bell</td>
<td>On “PRIMARY STACK MONITOR CAB- AZK1-1”</td>
<td>SILENCED</td>
</tr>
<tr>
<td>Red Beacon, CAM Outdoor Alarm, CAB-AZK1-1</td>
<td></td>
<td>On Building 241-AZ-702, Outside West Wall</td>
<td>NOT LIT</td>
</tr>
<tr>
<td>Horn, CAM Outdoor Alarm, CAB-AZK1-1</td>
<td></td>
<td>On Building 241-AZ-702, Outside West Wall</td>
<td>SILENCED</td>
</tr>
<tr>
<td>RAH-AZK1-1</td>
<td>Primary Vent Stack CAM Radiation Monitor High Radiation (Graphic 18) “PVSik RAD HI”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>YA-AZK15-1A</td>
<td>Primary Ventilation Stack Exhaust Fan Failure “PV FAN 1A STATUS”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>YA-AZK15-1B</td>
<td>Primary Ventilation Stack Exhaust Fan Failure “PV FAN 1B STATUS”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>CLEAR</td>
<td></td>
</tr>
<tr>
<td>(green)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exception: __________________________________________________________

______________________________________________________________
Signature        Print (First & Last)        Date
5.4 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1A
(Cont.)

5.4.31 IF exhaust fan AZ-K1-5-1A was the only fan in service at the beginning of this procedure, GO TO Section 5.6.

5.4.32 IF Section 5.4 is performed before Section 5.5, GO TO Step 5.5.3.

5.4.33 IF Section 5.4 is completed after Section 5.5, GO TO Section 5.6.
5.5 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1B

5.5.1 CHECK that exhaust fan AZ-K1-5-1B is running.

5.5.2 INITIATE a HIGH alarm status on the CAM using the following menus:
- “PASSWORD”
- “INSTRUMENT PARAMETERS”
- “GAMMA SUBTRACT FACTOR.”

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

5.5.2.1 RECORD the As-Found value: ____________

5.5.2.2 PRESS EDIT AND
    TYPE “0” to change value to zero.

5.5.2.3 PRESS ENTER on keypad to accept changed value.

5.5.2.4 PRESS MENU twice to return CAM to operation.

5.5.3 Using the extension handle/rod, PLACE AND HOLD gamma source (V-block) at Beta/Gamma Detector Head RE-AZK1-1, pointing towards the beta detector located at the stack in the “Beta/Gamma Enclosure”.

5.5.4 AFTER alarm locks in, REMOVE source.
5.5 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1B (Cont.)

5.5.5 **START** stopwatch after continuous air monitor alarms.

5.5.6 **STOP** stopwatch after stack flow transmitter (FIT-AZK1-3) indicates no flow.

Time required for stack flow transmitter to indicate no flow: __________ (If time is greater than 10 minutes, notify CCC.)

**NOTE** - CAM green “READY” light, “MALFUNCTION” light, alarm horn and red strobe light on CAM and amber strobe light XA-AZK1-1 and horn RA-AZK1-1B may change states due to loss of flow and fast alarm monitoring conditions, but have no bearing on outcome of high radiation test.

5.5.7 **CHECK** conditions in step 5.4.29 still exist.

5.5.8 **PRESS** “BELL ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1A1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to acknowledge and silence bell.

5.5.9 **CHECK** that “BELL ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1A1 yellow light is LIT.

5.5.10 **PRESS** “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to acknowledge and silence horn, if sounding.

5.5.11 **CHECK** that “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 yellow light is LIT, if pressed.
5.5 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1B (Cont.)

5.5.12 **VERIFY** the alarm and status indicators are in the status listed in the following table:

5.5.12.1 **RECORD** any test exceptions on Table below.

5.5.12.2 **REPORT** discrepancies to the Shift Manager.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>“READY” Green Light</td>
<td>In “PRIMARY STACK MONITOR CAB-АЗK1-1” On CAM “RIAS-АЗK1-1”</td>
<td>LIT</td>
<td></td>
</tr>
<tr>
<td>Alarm Horn</td>
<td>In “PRIMARY STACK MONITOR CAB-АЗK1-1” On CAM “RIAS-АЗK1-1”</td>
<td>SOUNDED</td>
<td></td>
</tr>
<tr>
<td>Red Strobe Light</td>
<td>In “PRIMARY STACK MONITOR CAB-АЗK1-1” On CAM “RIAS-АЗK1-1”</td>
<td>STROBING</td>
<td></td>
</tr>
<tr>
<td>RA-АЗK1-1</td>
<td>Red Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB-АЗK1-1”</td>
<td>STROBING</td>
</tr>
<tr>
<td>RA-АЗK1-1A</td>
<td>High Rad Alarm Bell</td>
<td>On “PRIMARY STACK MONITOR CAB-АЗK1-1”</td>
<td>SOUNDED</td>
</tr>
<tr>
<td>Red Beacon, CAM Outdoor Alarm, CAB-АЗK1-1</td>
<td>On Building 241-AZ-702, Outside West Wall</td>
<td>LIT</td>
<td></td>
</tr>
<tr>
<td>Horn, CAM Outdoor Alarm, CAB-АЗK1-1</td>
<td>On Building 241-AZ-702, Outside West Wall</td>
<td>SOUNDED</td>
<td></td>
</tr>
<tr>
<td>RAH-АЗK1-1</td>
<td>Primary Vent Stack CAM Radiation Monitor High Radiation (Graphic 18) “PVS/К RAD H”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>ACTIVATED</td>
</tr>
<tr>
<td>YA-АЗK15-1A</td>
<td>Primary Ventilation Stack Exhaust Fan Failure “PV FAN 1A STATUS”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>ACTIVATED</td>
</tr>
<tr>
<td>YA-АЗK15-1B</td>
<td>Primary Ventilation Stack Exhaust Fan Failure “PV FAN 1B STATUS”</td>
<td>IN Building 241-AZ-271(MCS screen)</td>
<td>ACTIVATED</td>
</tr>
<tr>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>ACTIVATED (red)</td>
<td></td>
</tr>
</tbody>
</table>

Exception:

________________________________________________________
________________________________________________________
________________________________________________________

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Signature Print (First & Last) Date
5.5 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1B (Cont.)

5.5.13 PRESS red “Alarm Ack” pushbutton on CAM to silence horn.

5.5.14 VERIFY that exhaust fan AZ-K1-5-1B has SHUT DOWN.

________________________ / __________________________ / __________________________
Signature Print (First & Last) Date

5.5.15 VERIFY that record sampler F-AZK1-1 has shut down by checking that both vacuum pumps “AZ-K1-11-1 PUMP-1” and “AZ-K1-11-2 PUMP-2” are not operating,

5.5.15.1 IF a vacuum pump continues to run, CONTINUE with test AND NOTIFY Environmental of results at end of test.

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Signature Print (First & Last) Date

5.5.16 START exhaust fan AZ-K1-5-1B, if applicable, per TO-060-350.

5.5.17 VERIFY exhaust fan AZ-K1-5-1B does not start.

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Signature Print (First & Last) Date

5.5.18 START exhaust fan AZ-K1-5-1A per TO-060-350.
5.5 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1B (Cont.)

5.5.19 VERIFY exhaust fan AZ-K1-5-1A does not start.

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Signature             Print (First & Last)             Date

5.5.20 PRESS HI-RAD RESET pushbutton PB-AZK1-1 to clear latching High-Radiation alarm relay.

5.5.21 START Exhaust Fan AZ-K1-5-1A, if applicable, per procedure TO-060-350.

5.5.22 AFTER CAM “READY” light is LIT (1 to 5 minutes), PRESS AND RELEASE “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to clear yellow light, if required.

5.5.23 CHECK that “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 yellow light is NOT LIT.

5.5.24 PRESS AND RELEASE “BELL ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1A1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to clear yellow light.

5.5.25 CHECK that “BELL ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1A1 yellow light is NOT LIT.
5.5 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1B (Cont.)

5.5.26 **VERIFY** the alarm and status indicators are in the status listed in the following table:

5.5.26.1 **RECORD** any test exceptions on Table below.

5.5.26.2 **REPORT** discrepancies to the Shift Manager.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>“READY” Green Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>LIT</td>
<td></td>
</tr>
<tr>
<td>Alarm Horn</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>SILENCED</td>
<td></td>
</tr>
<tr>
<td>Red Strobe Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>NOT STROBING</td>
<td></td>
</tr>
<tr>
<td>RA-AZK1-1</td>
<td>Red Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>NOT STROBING</td>
</tr>
<tr>
<td>RA-AZK1-1A</td>
<td>High Rad Alarm Bell</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>SILENCED</td>
</tr>
<tr>
<td>Red Beacon, CAM Outdoor Alarm, CAB-AZK1-1</td>
<td>On Building 241-AZ-702, Outside West Wall</td>
<td>NOT LIT</td>
<td></td>
</tr>
<tr>
<td>Horn, CAM Outdoor Alarm, CAB-AZK1-1</td>
<td>On Building 241-AZ-702, Outside West Wall</td>
<td>SILENCED</td>
<td></td>
</tr>
<tr>
<td>RAH-AZK1-1</td>
<td>Primary Vent Stack CAM Radiation Monitor High Radiation (Graphic 18) “PVStK RAD HI”</td>
<td>IN Building 241-AZ-271 (MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>YA-AZK15-1A</td>
<td>Primary Ventilation Stack Exhaust Fan Failure “PV FAN 1A STATUS”</td>
<td>IN Building 241-AZ-271 (MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>YA-AZK15-1B</td>
<td>Primary Ventilation Stack Exhaust Fan Failure “PV FAN 1B STATUS”</td>
<td>IN Building 241-AZ-271 (MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>CLEAR (green)</td>
<td></td>
</tr>
</tbody>
</table>

**Exception:**

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Signature Print (First & Last) Date

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5.5 High Radiation Alarms and Interlock for Exhaust Fan AZ-K1-5-1B (Cont.)

5.5.27 IF exhaust fan AZ-K1-5-1B was the only fan in service at the beginning of this procedure, GO TO Section 5.6.

5.5.28 IF Section 5.5 was performed first, GO TO Step 5.4.7.
5.6 Exhaust Fan Restoration

5.6.1 **RESET** the “GAMMA SUBTRACT FACTOR” to its previous value using the following menus:
- “PASSWORD”
- “INSTRUMENT PARAMETERS”
- “GAMMA SUBTRACT FACTOR”

5.6.1.1 **PRESS EDIT AND**

**TYPE** the previously recorded As-Found value from either Steps 5.4.6.1 or 5.5.2.1 (whichever section was performed first).

5.6.1.2 **RECORD** the as-left gamma subtract factor.

As-Left Gamma Subtract Factor: ____________

5.6.1.3 **PRESS ENTER** on keypad to accept changed value.

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

5.6.1.5 **VERIFY** alarms clear on HMI.

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Signature Print (First & Last) Date

FWS
5.7 Exhaust Stack Cam Power Failure

5.7.1 **POSITION** HS-AY101/AY102-K451-1 241-AY RECIRCULATION FANS CAM INTERLOCK BYPASS SWITCH in the “241-AY CAM DISABLED” position.

5.7.2 **POSITION** HS-AZ101/AZ102-K451-1 241-AZ RECIRCULATION FANS CAM INTERLOCK BYPASS SWITCH in the “241-AZ CAM DISABLED” position.

5.7.3 **IF** fan AZ-K1-5-1A is operating, **POSITION** HS-AZK1-3 CAM INTERLOCK BYPASS SWITCH in the “AZ-K1-5-1A Fan Bypass” position.

**OR**

**IF** fan AZ-K1-5-1B is operating, **POSITION** HS-AZK1-3 CAM INTERLOCK BYPASS SWITCH in the “AZ-K1-5-1B Fan Bypass” position.

5.7.4 **CHECK** Chamber and Detectors clear: Y / N

5.7.5 **CHECK AND LUBE** O-rings (as required): Y / N

5.7.6 **TURN CAM** power switch to OFF.

5.7.7 **CHECK** that “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 yellow light is LIT.
5.7 Exhaust Stack Cam Power Failure (Cont.)

5.7.8 VERIFY the alarm and status indicators are in the status listed in the following table:

5.7.8.1 RECORD any test exceptions on Table below.

5.7.8.2 REPORT discrepancies to the Shift Manager.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>XA-AZK1-1</td>
<td>Amber Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>STROBING</td>
</tr>
<tr>
<td>RA-AZK1-1B</td>
<td>Horn</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>SOUNDED/ SOUNDED</td>
</tr>
<tr>
<td>RAX-AZK1-1</td>
<td>Primary Vent Stack CAM Radiation Monitor Failure (Graphic 18) “PVStK RAD FAIL”</td>
<td>IN Building 241-AZ-271 (MCS screen)</td>
<td>ACTIVATED</td>
</tr>
<tr>
<td></td>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>ACTIVATED (red)</td>
</tr>
</tbody>
</table>

Exception:

______________________________ / __________________________ / ______________________
Signature                  Print (First & Last)                  Date

5.7.9 WAIT at least 5 minutes, TURN CAM Power switch to ON.

5.7.10 IF fans shut down, RESTART fans (Ref. TO-060-350) AND CONTINUE test.

5.7.11 AFTER CAM “READY” light is LIT (1 to 5 minutes), PRESS AND RELEASE “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 on “PRIMARY STACK MONITOR CAB-AZK1-1” to clear yellow light.

5.7.12 CHECK that “HORN ALARM ACKNOWLEDGE” pushbutton HS-AZK1-1B1 yellow light is not LIT.
5.7 Exhaust Stack Cam Power Failure (Cont.)

5.7.13 **VERIFY** the alarm and status indicators are in the status listed in the following table:

5.7.13.1 **RECORD** any test exceptions on Table below.

5.7.13.2 **POSITION** HS-AY101/AY102-K451-1 241-AY RECIRCULATION FANS CAM INTERLOCK BYPASS SWITCH in the “241-AY CAM ENABLED” position.

5.7.13.3 **POSITION** HS-AZ101/AZ102-K451-1 241-AZ RECIRCULATION FANS CAM INTERLOCK BYPASS SWITCH in the “241-AZ CAM ENABLED” position.

5.7.13.4 **POSITION** HS-AZK1-3 CAM INTERLOCK BYPASS SWITCH in the “CAM ENABLE” position.

5.7.13.5 **REPORT** discrepancies to the Shift Manager.

<table>
<thead>
<tr>
<th>TAG NO.</th>
<th>ITEM</th>
<th>LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>“READY” Green Light</td>
<td>In “PRIMARY STACK MONITOR CAB-AZK1-1” On CAM “RIAS-AZK1-1”</td>
<td>LIT</td>
<td></td>
</tr>
<tr>
<td>XA-AZK1-1</td>
<td>Amber Strobe Light</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>NOT STROBING</td>
</tr>
<tr>
<td>RA-AZK1-1B</td>
<td>Horn</td>
<td>On “PRIMARY STACK MONITOR CAB-AZK1-1”</td>
<td>SILENCED</td>
</tr>
<tr>
<td>RAX-AZK1-1</td>
<td>Primary Vent Stack CAM Radiation Monitor Failure (Graphic 18) “PVStK RAD FAIL”</td>
<td>IN Building 241-AZ-271 (MCS screen)</td>
<td>CLEAR</td>
</tr>
<tr>
<td>TMACS 702-AZ Ventilation System Alarm “PRIMARY TANK VENT STACK RAH/RAX”</td>
<td>On TMACS Computer At Building 2750E</td>
<td>CLEAR (green)</td>
<td></td>
</tr>
</tbody>
</table>

Verification: ________________________________ / ________________________________ / ________________________________

Signature                  Print (First & Last)                  Date
5.8 Restoration

5.8.1 **ENSURE** 702-AZ Exhaust Stack Radiation Monitor components have been restored to the pre-test configuration or as directed by the Shift Manager.

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5.8.2 **ENSURE** Shift Manager, WFO Health Physics management and Tank Monitoring And Control System operator have been notified the status of 702-AZ exhaust stack CAM interlocks and radiation alarms testing.

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Signature Print (First & Last) Date

5.8.3 **ENSURE** AY/AZ Tank Farm personnel have been notified the testing conducted by this procedure is completed.

____________________ / ______________________ / ______________________
Signature Print (First & Last) Date

5.8.4 OE must **INITIATE** a corrective maintenance work package IMMEDIATELY to repair any equipment discrepancies. As long as the discrepancies do not affect the Acceptance Criteria, this functional check procedure does not have to be performed again until the next due date.

5.8.5 **IF** test completed successfully, **NOTIFY** Shift Manager to stop time monitoring per LCO 3.1.A. (LCO 3.1)

5.9 Review

5.9.1 The Engineer shall **REVIEW AND EVALUATE** the test data for acceptability.
5.10 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.