Start, Stop and Operate AY/AZ Tank Ventilation Primary Exhaust System

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TSR Compliance

USQ # GCX-2

CHANGE HISTORY (≤ LAST 5 REV-MODS )

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-9</td>
<td>09/11/2018</td>
<td>Inconsequential Change</td>
<td>Removal of reference to TO-060-367 due to inactivation of procedure. Update Record section to comply STD-01.</td>
</tr>
<tr>
<td>I-8</td>
<td>06/14/2018</td>
<td>Inconsequential change</td>
<td>Shaded columns for FI-AY1K1-2, FI-AZ1K1-2 and FI-AZ2K1-2</td>
</tr>
<tr>
<td>I-7</td>
<td>12/20/2017</td>
<td>Inconsequential change</td>
<td>Pg. 62 un-greyed the check columns for Data Sheet 2.</td>
</tr>
<tr>
<td>I-6</td>
<td>12/18/2017</td>
<td>Request by Engineering/Operations</td>
<td>Added changes for newly installed temperature controller. Other small changes. Attached file with information record sheet replacing comments sheet (page 88). Deleted step 5.8.7.4. It is an exact duplicate to step 5.8.7.3. Removed superfluous parenthesis from steps 5.8.7.1 &quot;AZ-K1-2-1B&quot; and 5.8.7.3, &quot;MK-AZK1-2B.&quot;</td>
</tr>
<tr>
<td>I-5</td>
<td>11/13/2017</td>
<td>Periodic review comment resolution</td>
<td>This PCA was result of periodic review. Review by Safety identified procedure is adequately covered by GHA (See Writer attachments) therefore deleted Warnings from procedure. Made Critical steps of modified steps 5.4.3 and 5.11.8. Corrected format errors throughout procedure.</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for starting, stopping, and operating AY/AZ Tank Farm Primary Ventilation System and associated equipment.

1.2 Scope

This procedure applies to equipment and instrumentation associated with AY/AZ Tank Farm Primary Ventilation System and associated equipment.

2.0 INFORMATION

2.1 Terms and Definitions

RCU - Remote Control Unit

RES - Refrigeration Equipment Services

MCS - Monitor and Control System

OE - Object Error

VCZ - Vapor Control Zone

VSD - Variable Speed Drive.
2.2 General Information

2.2.1 Refer to procedure TO-060-356 for 702-AZ MCS object actions.

2.2.2 Unless otherwise noted, actions in this procedure are performed assuming the 702-AZ ventilation system is being controlled via the MCS.

2.2.3 Action and references to tank recirculation module and evaporative cooling tower equipment that is out of service have been removed from this procedure.

2.2.4 During exhauster operation, the CAM Interlock Bypass Switch (HS-AZK1-3) is normally placed in the ENABLE position. With concurrence from Environmental, the Shift Manager may direct that HS-AZK1-3 be placed in BYPASS.

2.2.5 A vent line interconnects AY-102 primary tank riser-065 to annulus riser-084 to allow ventilation of the annulus space via the AY/AZ Primary tank exhaust system.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Personnel trained in the operation of breakers and disconnects will wear the following PPE as a minimum:
   • Non-melting (untreated natural fiber) long-sleeved shirt
   • Safety glasses
   • Leather or insulating gloves
   • Hearing protection.

3.1.2 A qualified electrical worker is required to operate 480 volt breakers and disconnects.
3.1 Personnel Safety (Cont.)

3.1.3 Non-electrical worker accessing electrical enclosures must ensure the following:
- The enclosure must have a white label indicating that it has been evaluated.
- The work activity within the enclosure does not involve:
  - Reaching around or moving electrical equipment
  - Contacting electrical connectors/connections
  - By-passing protective shielding/barriers.

3.1.3.1 Stop and notify management if these conditions cannot be met, or if discrepancies exist (e.g. conflicting or missing labels, missing or damaged protective barriers).

3.2 Equipment Safety

3.2.1 Placing air cooled chiller glycol pumps in operation must be performed before placing the air cooled chiller in operation to avoid damage to the chiller.

CAUTION - The air cooled chiller unit must be shut down for at least two minutes before shutting down the chiller glycol pumps. Failure of this action may result in equipment damage.

CAUTION - The Chiller must have power available to its heaters for a minimum of 8 hours prior to starting in order to warm up the oil to normal operating temperature. Failure of this action may result in damage to equipment.

CAUTION - Allowing the primary exhaust heater to increase to more than 195°F may cause equipment damage.
3.3 Radiation and Contamination Control

3.3.1 When HPT is requested to perform sweeps, the HPT will perform removable contamination surveys of the following at a minimum:

- primary tank pit covers
- inlet breather filter screens
- ENRAFs
- manual tapes
- valve pit covers.

3.3.2 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.

3.4 Environmental Compliance

3.4.1 Tank Farm ventilation systems and exhaust monitoring systems are regulated under Washington State Administrative Code (WAC) chapters 173-400, 173-401, 173-460, and 246-247; and applicable Notices of Construction (NOC) issued to ensure compliance with these regulations. To ensure reporting requirements are met, all planned and unplanned outages of Tank Farm ventilation and exhaust monitoring systems, including portable exhausters, must be reported to Environmental per the Environmental On-Call List. Environmental will determine and make the required notifications pertaining to ventilation system outages.

3.4.2 Environmental must be notified of any spills associated with operation of this equipment, including fuel, coolant, or blow-down mixtures.

3.4.3 The ventilation flow rate is limited to a maximum of 1000 cubic feet per minute. If this limit is exceeded notify Environmental per the Environmental On-call List.

3.4.4 The following equipment is considered to be Emission Control Equipment. Any change in operational status (i.e., Shutdown, bypass or startup) of this equipment must be reported to Environmental per the Environmental On-call List. Notification must be made in advance for planned activities.

- Primary cooling condenser and HEME
- Chiller glycol pumps

3.4.5 TFC-ESHQ-ENV-STD-06, As Low As Reasonably Achievable Control Technology (ALARA/ACT) Requirements Standard, must be followed if work on potentially contaminated ventilation system components is required.

- Primary exhaust train heaters, HEPA filters and fans.
3.4 Environmental Compliance

3.4.6 Fan shifts from one train to another as a normal activity directed by operating procedures or as part of a test procedure do not need to be reported to Environmental.

3.5 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.

RPP-11413, Ventilation System In-Service Requirements

4.0 PREREQUISITES

4.1 Performance Documents

The following procedures may be needed to perform specific work activities of this procedure:

- TF-OPS-005, DST Daily CAM and Record Sampler Inspections
- TFC-ESHQ-ENV-STD-06, As Low As Reasonably Achievable Control Technology (ALARACT) Requirements Standard
- TO-060-351, AY101 Recirculation Operation
- TO-060-352, AY102 Recirculation Operation
- TO-060-353, AZ101 Recirculation Operation
- TO-060-354, AZ102 Recirculation Operation
- TO-060-356, Perform 702-AZ Exhauster Monitor and Control Operations
- TO-060-357, Start, Stop and Operate 241-AZ-702 Building Ventilation System.

The following alarm response procedures should be available when performing this procedure:

- ARP-T-251-00003 through ARP-T-251-00030, alarm response procedures for the AY/AZ Tank Ventilation System.
4.2 Field Preparations

NOTE - Individual sections and activities may be performed simultaneously, or in any logical order, as field conditions, or equipment status allows and if directed by Shift Manager/OE.

- Resetting Object Errors (OE), Failed, or Priority Conditions is provided in Section 5.15.

4.2.1 IF not performing a STARTUP, SHUTDOWN or TRANSFER of a fan and/or filter train, GO TO applicable procedure section to perform task.

NOTE – Performance of Section 5.1 is generally only required after maintenance activities or restarting after an extended shutdown period.

4.2.2 IDENTIFY the AY/AZ ventilation task to perform:

Check (√)

☐ STARTUP
☐ INCLUDE Startup Section 5.1 (Full startup)

☐ TRANSFER of fan and/or filter train

☐ SHUTDOWN.

4.2.3 IF performing a STARTUP or TRANSFER of the fan and/or filter train, IDENTIFY the fan and filter train to be placed in operation:

Check (√)

☐ A FAN
☐ A FILTER TRAIN

☐ B FAN
☐ B FILTER TRAIN

4.2.4 IF performing a SHUTDOWN of the ventilation system, Shift Manager/OE VERIFY there are no ongoing transfers or activities in AY/AZ Farm that require this ventilation system to be OPERABLE and Operating. (LCO 3.4)

4.2.5 CONFIRM STARTUP, SHUTDOWN, or TRANSFER requirements are met, and ventilation system actions to be performed are approved:

_________________________________________ / ______________ / ______________
Signature Print (First & Last) Date
Shift Manager/OE
4.2 Field Preparations (Cont.)

4.2.6 CONFIRM Shift Manager/OE has approved procedure actions to be performed.

4.2.7 ENSURE Monitor Control System (MCS) and related support equipment are in operation if available per TO-060-356.

NOTE - The AY-102 vent jumper is typically configured OPEN during normal operations.

4.2.8 IF operation of the AY-102 vent jumper is required, PERFORM Section 5.18.

4.2.9 ENSURE TMACS is notified prior to performing planned primary exhauster Startups, Transfers, or Shutdowns.

4.2.10 IF performing a STARTUP of the ventilation system, GO TO Section 5.1.

4.2.11 IF performing a TRANSFER of the Primary Ventilation Fans and/or Filter Trains, GO TO Section 5.7.

4.2.12 IF performing a SHUTDOWN of the Primary Ventilation System, GO TO Section 5.8.
5.0 PROCEDURE

5.1 Perform Full Valve, Electrical, and Hand Switch Lineups

NOTE - Performance of Section 5.1 is not necessary unless directed by Shift Manager/OE. This section is generally only required after maintenance activities or restarting after an extended shutdown period.

5.1.1 IF directed by the Shift Manager/OE in Section 4.2, PERFORM the following steps:

5.1.1.1 ENSURE an operating configuration is established for each of the four tank inlet stations and recirculation modules using the applicable procedures:
- TO-060-351, AY101 Recirculation Operation
- TO-060-352, AY102 Recirculation Operation
- TO-060-353, AZ101 Recirculation Operation
- TO-060-354, AZ102 Recirculation Operation.

5.1.1.2 ENSURE system valves/dampers are aligned per Attachment 1.

5.1.1.3 IF operation of identified breakers on Attachment 2 is required, ENSURE personnel trained in the operation of breakers and disconnects dons PPE (refer to Section 3.1).

5.1.1.4 ENSURE system breakers are configured per Attachment 2.

5.1.1.5 ENSURE local hand switches are configured per Attachment 3.

5.1.2 GO TO Section 5.2.
5.2  Start Air Cooled Chiller

5.2.1 IF performing a ventilation system STARTUP AND IF the chiller is already operating, GO TO Section 5.3.

5.2.2 IF Shift Manager/OE directs local control of air cooled chiller or glycol recirculation pumps, SWITCH to local control of chiller equipment per Section 5.11.

5.2.3 IF Diagnostic alarms are active at the chiller unit control keypad, RESET alarms per Section 5.16.

5.2.4 CONFIRM glycol is visible in expansion tank sight glass LI-AZCWTK-1.

5.2.5 INSPECT for glycol leaks around pumps, piping flanges, gauges, and other system components AND IF leaks are found, NOTIFY Shift Manager/OE.

NOTE - The glycol recirculation pump with the lowest run time should be used when possible.

5.2.6 START Chiller glycol recirc pump AZ-CW-P-1A OR AZ-CW-P-1B (MCS Graphic Screen 14).

5.2.7 ENSURE glycol flow is in normal operating range of ≥ 100 gpm on FI-AZCWR-1 (MCS Graphic Screen 14) AND IF outside normal operating range, ADJUST valve HV-AZCWS-1A2 at the chiller pad to maintain glycol flow within the normal operating range of ≥ 100 gpm.

CAUTION
The Chiller must have power available to its heaters for a minimum of 8 hours prior to starting in order to warm up the oil to normal operating temperature. Failure of this action may result in damage to equipment.

NOTE - Breaker #1 “Chiller AZ-CW-R-1” supplies power to the chiller crankcase heaters to maintain the oil temperature high enough to prevent equipment damage during startup.

5.2.8 CONFIRM Breaker #1 “Chiller AZ-CW-R-1” has been energized for a minimum of 8 hours.
5.2 Start Air Cooled Chiller (Cont.)

NOTE - The chiller may take up to 5 minutes to start after receiving a start signal and will cycle thru various messages. When started, “Process Cooling” will be displayed on the lower left portion of the keypad LCD display.

5.2.9 START Chiller Compressor AZ-CW-R-1 (MCS Graphic Screen 14) AND

CONFIRM Chiller unit displays “Process Cooling” on keypad LCD display.

5.2.10 GO TO Section 5.3.
5.3 Configure Primary Stack Monitoring System for Operation

5.3.1 IF performing a ventilation system STARTUP AND IF the Primary Stack Monitoring system is already configured for operation, GO TO Section 5.4.

NOTE - HS-AZK1-1A1 Silences High Rad Alarm Bell (CAB-AZK1-1).
- HS-AZK1-1B1 Silences CAM Fail Alarm Horn (CAB-AZK1-1).
- CAM will indicate fail and the alarm horn will sound when the CAM is off or if no flow is sensed.

5.3.2 ENSURE primary stack CAM sampler hand switch HS-AZK111-1A on primary stack CAM cabinet (ENCL-AZK1-1) is in AUTO.

5.3.3 ENSURE Sample Pump Motor Switch SW-P1 located inside primary stack CAM cabinet (ENCL-AZK1-1) is ON.

5.3.4 ENSURE Sample Pump Motor Switch SW-P2 located inside primary stack CAM cabinet (ENCL-AZK1-1) is ON.

NOTE - Sample Pump 1 is the preferred pump for operation when available.
- There is a 90-second time delay after pushing PUMP SWAP pushbutton HS-AZK111-1B before the selected pump will be available for operation.

5.3.5 CONFIRM the following:
- PUMP 1 IN LEAD yellow light is ON at Cabinet CAB-AZK1-1
- Pump 1 “Selected” or “Running” light is lit green on MCS Graphic Screen 18.

5.3.6 IF Pump 1 lights are not lit AND IF Sample Pump 1 is available, PERFORM the following:

5.3.6.1 PRESS PUMP SWAP pushbutton HS-AZK111-1B to select Pump 1 as lead pump at Cabinet CAB-AZK1-1,

OR

PRESS Pump Swap button on MCS Graphic Screen 18.
5.3 Configure Primary Stack Monitoring System for Operation (Cont.)

5.3.6.2 CONFIRM the following:
- PUMP 1 IN LEAD yellow light is lit at Cabinet CAB-AZK1-1.
- Pump 1 “Selected” or “Running” light is lit green on MCS Graphic Screen 18.

5.3.7 IF sample pump 1 is not available, PERFORM the following:

5.3.7.1 PRESS PUMP SWAP pushbutton HS-AZK111-1B to select Pump 2 as lead pump at Cabinet CAB-AZK1-1,

OR

PRESS Pump Swap on MCS Graphic Screen 18.

5.3.7.2 CONFIRM the following:
- PUMP 2 ON light is lit at Cabinet CAB-AZK1-1
- Pump 2 Selected light is lit green on MCS Graphic Screen 18.

NOTE - ON/OFF Toggle switch is located on back of CAM.

5.3.8 ENSURE Primary Exhaust CAM, RIAS-AZK1-1 is ON.

5.3.9 ENSURE the following valves are in AUTO on MCS Graphic Screen 18:
- MV-AZK1-1
- MV-AZK1-2
- MV-AZK1-3.

NOTE - The primary stack monitoring system is interlocked to start after a primary exhaust fan is operating.

5.3.10 GO TO Section 5.4.
5.4 Configure Inlet Station (K1-1) and Recirc Module (K1-2) Valves for Operation

5.4.1 IF performing a ventilation system STARTUP AND

IF the K1-1 and K1-2 valves are already configured for operation, GO TO Section 5.5.

NOTE – K1-1 and K1-2 valve are set to maintain a consistent exhaust flow/vacuum, and adjustment is not typically performed unless directed by Shift manager/OE.

Configure K1-1 Valves

5.4.2 IF controlling Inlet Station (K1-1) valves locally (without MCS control), GO TO Section 5.11. (Critical Step)

5.4.3 PRIOR to operating any primary tank inlet station valves, ENSURE Shift Manager has evaluated applicability to LCO 3.1 and LCO 3.4. (LCO 3.1, LCO 3.4)

________________________________________ / ___________________________ / __________________________
Signature Print (First & Last) Date
Procedure User

5.4.4 CONFIGURE the following valves for AUTO or MANUAL mode of operation on MCS Graphic Screen 15 AND

ENSURE a correct setpoint (AUTO mode) or output value (MANUAL mode) is entered for each valve:

- MK-AY101K1-1 (Tank AY-101)
- MK-AY102K1-1 (Tank AY-102)
- MK-AZ101K1-1 (Tank AZ-101)
- MK-AZ102K1-1 (Tank AZ-102).
5.4 Configure Inlet Station (K1-1) and Recirc Module (K1-2) Valves for Operation (Cont.)

Configure K1-2 Valves

NOTE - At least one of the K1-2 valves must be opened greater than or equal to 10% to maintain green “path clear” lights on MCS Graphic Screen 17.

- All primary tank K1-2 flow control valves are admin locked at the recirculation modules, and locked in manual mode on the MCS.

5.4.5 IF controlling Inlet Station (K1-2) valves locally (without MCS control), GO TO Section 5.11.

(Critical Step)

5.4.6 PRIOR to operating any primary tank flow control valves, ENSURE Shift Manager has evaluated applicability to LCO 3.1 and LCO 3.4.

5.4.7 OBTAIN supervisory password access at MCS and approval from Shift Manager.

5.4.8 CONFIGURE the following valves for AUTO or MANUAL mode of operation on MCS Graphic Screen 15 AND ENSURE a correct setpoint (AUTO mode) or output value (MANUAL mode) is entered for each valve:

- MK-AY101K1-2 (Tank AY-101)
- MK-AY102K1-2 (Tank AY-102)
- MK-AZ101K1-2 (Tank AZ-101)
- MK-AZ102K1-2 (Tank AZ-102).

5.4.9 GO TO Section 5.5.
5.5 Configure Primary Exhaust Fans, Filter Trains, and Heaters for Operation

5.5.1 IF performing a ventilation system STARTUP AND

IF the primary exhaust fans, filter trains, and heaters are already configured for operation, GO TO Section 5.6.

Configure Filter Train Inlet and Outlet Valves

5.5.2 ENSURE the following filter train inlet valves are OPEN on MCS Graphic Screen 17.
- MK-AZK1-1A
- MK-AZK1-1B.

5.5.3 ENSURE the outlet valve for the filter train to be placed in operation is OPEN on MCS graphic 17 (MK-AZK1-2A OR MK-AZK1-2B).

5.5.4 ENSURE the outlet valve for the filter train that will remain off is CLOSED on MCS graphic 17 (MK-AZK1-2A OR MK-AZK1-2B).

Configure Filter Train A Heater for Operation

5.5.5 IF Shift Manager/OE directs LOCAL control of filter train A heater, GO TO Section 5.13.

CAUTION
Allowing the primary exhaust heater to increase to more than 195° F may cause equipment damage.

5.5.6 IF the A filter train heater controller is in LOCAL mode, PERFORM the following in filter room A to configure the heater controller for remote operation from the MCS:

5.5.6.1 ENSURE the HAND-OFF-AUTO switch is in AUTO.
5.5 Configure Primary Exhaust Fans, Filter Trains, and Heaters for Operation (Cont.)

5.5.6.2 PERFORM the following on temperature controller TIC-AZK102-1A

NOTE - The controller is normally operated from the home page. Pressing the Infinity button (∞) for two seconds returns the controller to the home page.

a. PRESS Infinity button (∞) for two seconds.

b. PRESS the green advance key until “C.M 1” appears in the lower display.

c. PRESS the UP (▲) and/or DOWN (▼) arrow keys until “AUTO” is displayed on the upper line of the display.

5.5.6.3 PERFORM the following on MCS Graphic Screen 17:

a. CLICK on heater AZ-K1-2-1A.

b. CLICK on Setpoint Control button.

c. ENSURE heater AZ-K1-2-1A is in AUTO or MANUAL mode AND a correct setpoint (AUTO mode) OR output value (MANUAL mode) is entered.

d. ACCESS Extended faceplate (three dot button) AND CLICK on LINKS tab.

e. CLICK on AZK1-2-1A_PID button AND ENSURE AUTO mode is active.

f. CLICK on AZK1-2-1A_PCV button AND ENSURE AUTO mode is active.
5.5 Configure Primary Exhaust Fans, Filter Trains, and Heaters for Operation (Cont.)

Configure Filter Train B Heater for Operation

5.5.7 IF Shift Manager/OE directs LOCAL control of filter train B heater, GO TO Section 5.13.

**CAUTION**

Allowing the primary exhaust heater to increase to more than 195° F may cause equipment damage.

5.5.8 IF the B filter train heater controller is in LOCAL mode, **PERFORM** the following in filter room B to configure the heater controller for remote operation from the MCS:

5.5.8.1 **ENSURE** the HAND-OFF-AUTO switch is in AUTO.

5.5.8.2 **PERFORM** the following on temperature controller TIC-AZK102-1B:

**NOTE** - The controller is normally operated from the home page. Pressing the Infinity button (∞) for two seconds returns the controller to the home page.

   a. **PRESS** Infinity button (∞) for two seconds.

   b. **PRESS** the green advance key until “C.M 1” appears in the lower display.

   c. **PRESS** the UP (▲) and/ or DOWN (▼) arrow keys until “AUTO” is displayed on the upper line of the display.

5.5.8.3 **PERFORM** the following on MCS Graphic Screen 17:

   a. **CLICK** on heater AZ-K1-2-1B.

   b. **CLICK** on Setpoint Control button.

   c. **ENSURE** heater AZ-K1-2-1B is in AUTO or MANUAL mode and a correct setpoint (AUTO mode) OR output value (MANUAL mode) is entered.
5.5 Configure Primary Exhaust Fans, Filter Trains, and Heaters for Operation (Cont.)

d. ACCESS Extended faceplate (three dot button) AND CLICK on LINKS tab.

e. CLICK on AZK1-2-1B_PID button AND ENSURE AUTO mode is active.

f. CLICK on AZK1-2-1B_PCV button AND ENSURE AUTO mode is active.
5.5 Configure Primary Exhaust Fans, Filter Trains, and Heaters for Operation (Cont.)

Configure Primary A Fan for Operation

5.5.9 IF Shift Manager/OE directs LOCAL VSD control of A fan, GO TO Attachment 5.

5.5.10 ENSURE VSD-1 (for fan AZ-K1-5-1A) is configured as follows:

5.5.10.1 PRESS SELECT button on the START/STOP CONTROL section of the keypad UNTIL REMOTE indicator light is lit.

5.5.10.2 PRESS SELECT button on the SPEED CONTROL section of the keypad until REMOTE indicator light is lit.

5.5.10.3 IF INVERTER OFF/BYPASS switch is not in INV, PLACE INVERTER OFF/BYPASS switch to INV.

5.5.11 PERFORM the following on MCS Graphic 17:

5.5.11.1 CLICK on Fan AZ-K1-5-1A.

5.5.11.2 CLICK on Setpoint Control button.

5.5.11.3 ENSURE fan AZ-K1-5-1A is in AUTO or MANUAL mode AND a correct setpoint (AUTO mode) OR output value (MANUAL mode) is entered.

5.5.11.4 ACCESS Extended faceplate (three dot button) AND CLICK on LINKS tab.

5.5.11.5 CLICK on AZK1-5-1A_PID button AND ENSURE AUTO mode is active.

5.5.11.6 CLICK on AZK1-5-1A_PCV button AND ENSURE AUTO mode is active.
5.5 Configure Primary Exhaust Fans, Filter Trains, and Heaters for Operation (Cont.)

Configure Primary B Fan for Operation

5.5.12 IF Shift Manager/OE directs LOCAL VSD control of B fan, GO TO Attachment 5.

5.5.13 ENSURE VSD-2 (for fan AZ-K1-5-1B) is configured as follows:

5.5.13.1 PRESS SELECT button on the START/STOP CONTROL section of the keypad UNTIL REMOTE indicator light is lit.

5.5.13.2 PRESS SELECT button on the SPEED CONTROL section of the keypad until REMOTE indicator light is lit.

5.5.13.3 IF INVERTER OFF/BYPASS switch is not in INV, PLACE INVERTER OFF/BYPASS switch to INV.

5.5.14 PERFORM the following on MCS Graphic 17:

5.5.14.1 CLICK on Fan AZ-K1-5-1B.

5.5.14.2 CLICK on Setpoint Control button.

5.5.14.3 ENSURE fan AZ-K1-5-1B is in AUTO or MANUAL mode AND a correct setpoint (AUTO mode) OR output value (MANUAL mode) is entered.

5.5.14.4 ACCESS Extended faceplate (three dot button) AND CLICK on LINKS tab.

5.5.14.5 CLICK on AZK1-5-1B_PID button AND ENSURE AUTO mode is active.

5.5.14.6 CLICK on AZK1-5-1B_PCV button AND ENSURE AUTO mode is active.

5.5.15 GO TO Section 5.6.
5.6 Start Primary Exhaust System from the MCS

5.6.1 CONFIRM Shift Manager/OE has approved Startup of 702-AZ primary exhaust system AND Section 4.2 has been completed.

5.6.2 ENSURE all tank recirculation modules are configured in a correct mode (Recirc, High Heat, Bypass) with a clear flow path.

5.6.3 ENSURE outlet valve for filter train to be placed in operation is OPEN (MK-AZK1-2A or MK-AZK1-2B).

NOTE – At least one of the tank K1-2 valves (flow control valves) must be open 10% or more to receive Path Clear lights on graphic 17.

5.6.4 ENSURE Path Clear light for fan to operate is green on MCS Graphic Screen 17.

5.6.5 ENSURE primary stack cam high rad alarm (RAH-AZK1-1) is clear (green) on MCS graphic 18.

5.6.5.1 IF high rad alarm needs to be reset, PRESS pushbutton PB-AZK1-1, at primary stack cabinet (CAB-AZK1-1) to reset high rad alarm.

5.6.6 ENSURE all personnel have cleared immediate stack area.

5.6.7 ENSURE CAM Interlock Bypass Switch (HS-AZK1-3) on the Primary Stack Cabinet (CAB-AZK1-1) is in BYPASS for the fan to be started.

5.6.8 START A Fan (AZ-K1-5-1A) OR B Fan (AZ-K1-5-1B) on MCS Graphic 17.
5.6 Start Primary Exhaust System from the MCS (Cont.)

5.6.9 **START** A Heater (AZ-K1-2-1A) **OR** B Heater (AZ-K1-2-1B) on MCS Graphic Screen 17.

**NOTE** - The primary sampling system is interlocked to the operation of a primary fan, and may take up to 3 minutes to automatically start after a primary exhaust fan is started.

5.6.10 **ENSURE** the Primary Sampling system starts and is operating correctly on MCS Graphic Screen 18.

**NOTE** - System alarms may cycle until the system stabilizes (i.e., Heater temperature differential alarms and primary stack non-iso alarms).

5.6.11 **MONITOR** system parameters until system stabilizes (typically a few minutes).

5.6.12 **RESPOND** to active NCO alarms per applicable Alarm Response Procedure **AND** **RESET** alarms.

5.6.13 **ENSURE** primary exhaust system and associated equipment is functioning correctly using MCS and checking components locally as necessary.

5.6.14 **ADJUST** system setpoints to allow for proper operation of primary exhaust system within normal operating ranges.

5.6.15 **ENSURE** primary stack cam high rad alarm (RAH-AZK1-1) is clear (green) on MCS graphic 18.

5.6.15.1 **IF** high rad alarm needs to be reset, **PRESS** pushbutton PB-AZK1-1, at primary stack cabinet (CAB-AZK1-1) to reset high rad alarm.

5.6.16 **ENSURE** CAM Fail Horn Alarm Acknowledge button (HS-AZK1-1A1) and High Rad Bell Alarm Acknowledge button (HS-AZK1-1B1) on the Primary Stack Monitoring Cabinet (CAB-AZK1-1) are not depressed.

5.6.17 **ENSURE** CAM Interlock Bypass Switch (HS-AZK1-3) is in the ENABLE position on the Primary Stack Cabinet (CAB-AZK1-1) **AND** **CONFIRM** Cam Interlock Bypass switch HS-AZK1-3 indicator is green and reads normal on MCS Graphic Screen 18.
5.6 Start Primary Exhaust System from the MCS (Cont.)

5.6.18 **ENSURE** the Low Vacuum and Flow Alarm is set in AUTO and NORMAL on MCS Graphic Screen 15. (Refer to Attachment 4 - Evacuation Horn Configuration Mode)

5.6.19 **NOTIFY** Shift Manager/OE, TMACS, and HPT of primary exhaust fan and train startup.

5.6.20 **IF** primary exhaust outage time is being monitored, **NOTIFY** Shift Manager to stop time monitoring per LCO 3.1.A. (LCO 3.1)

5.6.21 **UPDATE** 702-AZ status board with current equipment configuration.

5.6.22 **WAIT** for system to stabilize, **THEN COMPLETE** Data Sheet 1.

5.6.23 **IF** performing a STARTUP of the primary ventilation, **EXIT** this procedure.
5.7 **Transfer Primary Exhaust Fans and/or Filter Trains from the MCS**

**NOTE** - During transfer operations, it may be necessary to allow for fans or valves to change states before proceeding to next step.

- A controlled but expedient transfer operation is desired to reduce the effect on tank pressures.

5.7.1 **CONFIRM** Shift Manager/OE has approved transfer of primary exhaust fans AND

**CONFIRM** Section 4.2 has been completed.

5.7.2 **ENSURE** all personnel have cleared immediate stack area.

5.7.3 **ENSURE** the Low Vacuum and Flow Alarm on MCS Graphic Screen 15 is “Silenced”. (Refer to Attachment 4 - Evacuation Horn Configuration Mode)

5.7.4 **PERFORM** the following steps on MCS Graphic 17.

5.7.4.1 **ENSURE** fan and heater to be placed in service are configured for operation with a proper mode (Auto or Manual) and a correct set point (AUTO mode) or output value (MANUAL mode) is entered per Section 5.5.

5.7.4.2 **ENSURE** Path Clear lights for the following Fans are green:
- Fan AZ-K1-5-1A
- Fan AZ-K1-5-1B.

5.7.4.3 **SHUT DOWN** the following OPERATING heater:
- AZ-K1-2-1A
  **OR**
- AZ-K1-2-1B.

5.7.4.4 **SHUT DOWN** the following OPERATING exhaust fan
- AZ-K1-5-1A
  **OR**
- AZ-K1-5-1B.
5.7 Transfer Primary Exhaust Fans and/or Filter Trains from the MCS (Cont.)

5.7.4.5 OPEN the following Filter Train Outlet Valve for filter train to be placed in operation:
- MK-AZK1-2A
  OR
- MK-AZK1-2B.

5.7.4.6 START the following Fan to be placed in operation:
- AZ-K1-5-1A
  OR
  • AZ-K1-5-1B.

5.7.4.7 START the following Heater to be placed in operation:
- AZ-K1-2-1A
  OR
  • AZ-K1-2-1B.

NOTE - The primary sampling system is interlocked to the operation of a primary fan, and may take up to 3 minutes to automatically start after a primary exhaust fan is started.

5.7.5 ENSURE the primary sampling system restarts and operates correctly on MCS Graphic Screen 18.

NOTE - System alarms may cycle until the system stabilizes (i.e., Heater temperature differential alarms and primary stack non-iso alarms).

5.7.6 MONITOR system parameters until system stabilizes (typically a few minutes).

5.7.7 RESPOND to active NCO alarms per applicable Alarm Response Procedure AND
  RESET.

5.7.8 ENSURE primary exhaust system and associated equipment is functioning correctly using MCS Graphic Screens and checking components locally.
5.7 Transfer Primary Exhaust Fans and/or Filter Trains from the MCS (Cont.)

5.7.9 IF primary exhaust system is not functioning correctly, PERFORM the following:

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

5.7.9.2 PROCEED as directed.

5.7.9.3 RECORD verbal directions given on Data Sheet 2.

5.7.10 ADJUST system setpoints to allow for proper operation of primary exhaust system within normal operating ranges.

5.7.11 ENSURE the Low Vacuum and Flow Alarm is set in AUTO and NORMAL on MCS Graphic Screen 15. (Refer to Attachment 4 - Evacuation Horn Configuration Mode)

5.7.12 NOTIFY Shift Manager/OE, TMACS, and HPT of primary exhaust fan and/or train transfer.

5.7.13 UPDATE 702-AZ status board with current equipment configuration.

5.7.14 WAIT for system to stabilize THEN COMPLETE Data Sheet 1.

5.7.15 IF performing a TRANSFER of the primary fan and/or filter trains, EXIT this procedure.
5.8 Shutdown Primary Exhaust System from the MCS

NOTE - The actions in this section will cause numerous expected alarms due to shutting down the primary vent system. The alarms should be acknowledged and silenced as necessary.

5.8.1 CONFIRM Shift Manager/OE has approved shutdown of 702-AZ primary exhaust system AND

CONFIRM Section 4.2 has been completed.

5.8.2 POST AY/AZ farms as a VCZ AND

ENSURE Shift Manager has announced AY/AZ farms VCZ.

5.8.3 MONITOR system using MCS Graphic Screens during shut down operations.

5.8.4 PLACE Low Vacuum and Flow Alarm on MCS Graphic Screen 15 in Auto and Silenced mode. (Refer to Attachment 4 - Evacuation Horn Configuration Mode)

5.8.5 PRESS HS-AZK1-1A1 (Bell Alarm Acknowledge) AND HS-AZK1-1B1 (Horn Alarm Acknowledge) on primary stack cabinet (CAB-AZK1-1) to pre-silence both alarms.

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

5.8.7 PERFORM the following steps on MCS Graphic 17:

5.8.7.1 SHUT DOWN the following operating heater:
  • AZ-K1-2-1A
  OR
  • AZ-K1-2-1B.

5.8.7.2 SHUT DOWN the following operating fan:
  • AZ-K1-5-1A
  OR
  • AZ-K1-5-1B

5.8.7.3 ENSURE the following filter train outlet valves are CLOSED:
  • MK-AZK1-2A
  • MK-AZK1-2B.
5.8 Shutdown Primary Exhaust System from the MCS (Cont.)

5.8.8 IF directed by Shift Manager/OE, **SHUT DOWN** the Air Cooled Chiller per Section 5.14.

NOTE - If shutdown of Building Vent System is expected to be more than 48 hours, refer to the IH Monitoring plan.

5.8.9 **IF** directed by Shift Manager/OE, **REQUEST** SOE shut down building ventilation system.

NOTE - Damper AY102-VTP-V-201 is located on AY102 Vent Jumper at AY102 Tank riser 065.

5.8.10 **IF** directed by Shift Manager/OE, **CLOSE** damper AY102-VTP-V-201.

5.8.11 **NOTIFY** Shift Manager/OE of equipment that was shut down.
5.9 Macro Startup of Primary Exhaust System from the MCS

5.9.1 IF resetting Object Errors (OE) and FAILED Conditions, **GO TO** Section 5.15.

5.9.2 **ENSURE** Sections 4.2 through 5.5 have been completed prior to performing this section.

5.9.3 **MONITOR** system using MCS during startup.

5.9.4 **BEFORE** starting, **ENSURE** Path Clear lights for Fan 1A and Fan 1B are green.

5.9.5 **ENSURE** all personnel have cleared immediate stack area.

5.9.6 **NOTIFY** TMACS operator fan will be starting up.

5.9.7 **ENSURE** primary stack cam high rad alarm (RAH-AZK1-1) is clear (green) on MCS graphic 18 **AND**

**IF** high rad alarm needs reset, **PRESS** pushbutton PB-AZK1-1, at primary stack cabinet (CAB-AZK1-1), to reset high rad alarm.

5.9.8 **ENSURE** the Low Vacuum and Flow Alarm is set in AUTO and SILENCED on MCS Graphic Screen 15.
5.9 Macro Startup of Primary Exhaust System from the MCS (Cont.)

NOTE – After each component or macro button is depressed, the apply button must be pressed to complete the action.

5.9.9 CONFIRM Macro Status reads READY in center of MCS Graphic Screen 25.

5.9.10 IF Macro Status does not indicate READY, PERFORM the following:

5.9.10.1 CLICK on Reset Macro button in the MACRO box.

5.9.10.2 CLICK on Apply button.

5.9.10.3 CONFIRM Macro Status indicates READY.

5.9.11 SELECT the desired equipment to start on the Exhaust Macro Control (MCS Graphic Screen 25):

5.9.11.1 ENSURE chiller “Online” button is depressed.

5.9.11.2 ENSURE duty button for desired Chiller pump to run is depressed (“A” for AZ-CW-P-1A OR “B” for AZ-CW-P-1B).

5.9.11.3 ENSURE “Select Train A” OR “Select Train B” button is depressed.

5.9.11.4 ENSURE “Select Fan A” OR “Select Fan B” button is depressed.

5.9.11.5 CONFIRM desired buttons are depressed.

5.9.11.6 CLICK on “Startup” button in the MACRO box.

5.9.12 CONFIRM the macro establishes the following equipment configurations (MCS Graphic Screen 25):

- Desired Chiller glycol Pump 1A or 1B is ON and other Chiller glycol Pump is in standby
- Chiller unit indicates ON
- Desired Primary Exhaust Fan is ON (A or B)
- Desired Primary Exhaust Train Heater is ON (A or B).
5.9 Macro Startup of Primary Exhaust System from the MCS (Cont.)

NOTE - The primary sampling system is interlocked to the operation of a primary fan, and may take up to 3 minutes to automatically start after a primary exhaust fan is started.

5.9.13 ENSURE Primary Sampling starts and operates correctly on MCS Graphic Screen 18.

NOTE - System alarms may cycle until the system stabilizes (i.e., Heater temperature differential alarms and primary stack non-iso alarms).

5.9.14 MONITOR system parameters until system stabilizes (typically a few minutes).

5.9.15 RESPOND to active NCO alarms per applicable Alarm Response Procedure AND

RESET.

5.9.16 ENSURE Horn Alarm Acknowledge (HS-AZK1-1A1) and Bell Alarm Acknowledge (HS-AZK1-1B1) pushbuttons on the Primary Stack Monitoring Cabinet (CAB-AZK1-1) are in the OUT position.

5.9.17 ENSURE primary exhaust system and associated equipment is functioning correctly using MCS Graphic Screens.

5.9.18 IF primary exhaust outage time is being monitored, NOTIFY Shift Manager to stop time monitoring per LCO 3.1.A. (LCO 3.1)

5.9.19 ADJUST system setpoints to allow for proper operation of primary exhaust system within normal operating ranges.

5.9.20 ENSURE the Low Vacuum and Flow Alarm is set in AUTO and NORMAL on MCS Graphic Screen 15.

5.9.21 NOTIFY Shift Manager/OE, TMACS, and HPT of primary exhaust fan and train startup.
5.10 Macro Shutdown of Primary Exhaust System from the MCS

NOTE - The actions in this section will cause numerous expected alarms due to shutting down the primary vent system. The alarms should be acknowledged and silenced.

5.10.1 ENSURE Section 4.2 has been completed AND

ENSURE Shift Manager/OE has approved shutdown of 702-AZ primary exhaust system.

5.10.2 REQUEST Shift Manager/OE verify there are no ongoing transfers or activities in AY/AZ Farm that require this ventilation system to be OPERABLE and Operating. (LCO 3.4)

5.10.3 POST AY/AZ farms as a VCZ AND

ENSURE Shift Manager has announced AY/AZ farms VCZ.

5.10.4 NOTIFY TMACS operator and HPT of planned shutdown.

5.10.5 MONITOR system using MCS Graphic Screens during shut down operations.

5.10.6 PLACE Low Vacuum and Flow Alarm on MCS Graphic Screen 15 in SILENCED mode.

5.10.7 PRESS HS-AZK1-1A1 (Bell Alarm Acknowledge) and HS-AZK1-1B1 (Horn Alarm Acknowledge) on primary stack cabinet (CAB-AZK1-1) to pre-silence both alarms.

5.10.8 CONFIRM Macro Status reads READY in center of MCS Graphic Screen 25.

5.10.9 IF Macro Status does not indicate READY, PERFORM the following:

5.10.9.1 CLICK on Reset Macro button in the MACRO box.

5.10.9.2 CLICK on Apply button.

5.10.9.3 CONFIRM Macro Status indicates READY.
5.10 Macro Shutdown of Primary Exhaust System from the MCS (Cont.)

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

5.10.11 CLICK Shutdown button in the MACRO box.

5.10.12 CLICK on Apply button AND

CONFIRM Macro Status in center of screen begins macro sequence readout.

5.10.13 CONFIRM Exhaust Macro Controller has shut down the following equipment (MCS Graphic Screen 25):
- Primary Heater (1A or 1B)
- Primary Exhaust Fan (1A or 1B)
- Exhaust Train Outlet Valve (1A or 1B)
- Chiller
- Chiller Glycol Pump (1A or 1B).

NOTE - If shutdown of Building Vent System is expected to be greater than 48 hours, the IH Monitoring plan should be referenced.

5.10.14 IF directed by Shift Manager/OE, REQUEST Stationary Operating Engineer (SOE) shutdown Building Vent System per TO-060-357.

5.10.15 NOTIFY Shift Manager of equipment that was shut down.
5.11 Switch to Local Control of Primary Exhaust System Equipment

NOTE – Individual ventilation equipment may be placed and operated in local control (independent of the MCS). To operate the entire ventilation system in LOCAL control, complete this entire section.

5.11.1 CONFIRM Shift Manager/OE has approved controlling and/or running system components in LOCAL mode.

AY/AZ Evacuation Horn

5.11.2 SWITCH to Local control of the AY/AZ evacuation horn by turning Low Flow Alarm Horn (HS-AZK1-2) key switch clockwise to the Micon bypass (ON) position in E/I room A-104 (refer to Attachment 4).

5.11.2.1 IF activation of AY/AZ evacuation horn is desired while in LOCAL control, PUSH IN red activation button.

5.11.2.2 IF silencing of AY/AZ evacuation horn is desired while in LOCAL control, TURN red activation button until it pops out.

Chiller Unit

5.11.3 SWITCH to Local control of the Air Cooled Chiller AND START chiller unit by performing the following:

5.11.3.1 IF chiller is currently running, PRESS “STOP” button on Air Cooled Chiller Control Panel keypad to stop chiller unit.

5.11.3.2 POSITION hand switch HS-AZCWR-1B to LOCAL on cabinet TB-LCU3-3C (E/I Room A 106).

5.11.3.3 POSITION non-operating glycol pump Start/Stop/Remote switch (HS-AZCWP-1A1 or HS-AZCWP-1B1) to STOP position.

5.11.3.4 POSITION operating glycol pump Start/Stop/Remote switch (HS-AZCWP-1A1 or HS-AZCWP-1B1) to START position.

5.11.3.5 IF Diagnostic alarms are active at chiller control panel, RESET alarms per Section 5.16.

5.11.3.6 PRESS “AUTO” button on Air Cooled Chiller Control Panel keypad to start chiller unit.
5.11 Switch to Local Control of Primary Exhaust System Equipment (Cont.)

Primary Filter Train A

5.11.4 IF Primary filter Train A is on line or is to be placed on line, SWITCH to local control of Primary Filter Train A by performing the following:

5.11.4.1 ENSURE the following valves are OPEN:
- MK-AZK1-1A
- MK-AZK1-2A.

5.11.4.2 ENSURE valve MK-AZK1-2B is CLOSED

5.11.4.3 TURN the following hand switches to the LOCAL position (located on cabinet TB-LCU1-2C in E/I Room A 106):
- HS-AZK1-1AC
- HS-AZK1-2AC.

Primary Filter Train B

5.11.5 IF primary filter Train B is on line or is to be placed on line, SWITCH to local control of Primary Filter Train B by performing the following:

5.11.5.1 ENSURE the following valves are OPEN:
- MK-AZK1-1B
- MK-AZK1-2B.

5.11.5.2 ENSURE valve MK-AZK1-2A is CLOSED.

5.11.5.3 TURN the following hand switches to the LOCAL position (located on cabinet TB-LCU2-2C in E/I Room A 104):
- HS-AZK1-1BC
- HS-AZK1-2BC.
5.11 Switch to Local Control of Primary Exhaust System Equipment (Cont.)

Primary Filter Train A Heater

5.11.6 IF controlling TIC-AZK102-1A (A train heater controller) in LOCAL mode, PERFORM the following:

CAUTION
Allowing the primary exhaust heater to increase to more than 195°F may cause equipment damage.

5.11.6.1 ENSURE the HAND-OFF-AUTO switch is in the HAND position.

5.11.6.2 PERFORM the following on temperature controller TIC-AZK102-1A:

NOTE – The controller is normally operated from the home page. Pressing the Infinity button (∞) for two seconds returns the controller to the home page:

a. PRESS Infinity button (∞) for two seconds.

b. PRESS the green advance key until “C.M 1” appears in the lower display.

c. PRESS the UP (▲) and/or DOWN (▼) arrow keys until “MAN” is displayed on the upper line of the display.

d. PRESS the green advance key until “1CHAN” appears on the bottom of the display (below the green output value).

e. PRESS the UP (▲) and/or DOWN (▼) arrow keys until the desired output value (in green) is selected. (RPP-11413)
5.11 Switch to Local Control of Primary Exhaust System Equipment (Cont.)

**Primary Filter Train B Heater**

5.11.7 IF controlling TIC-AZK102-1B (B train heater controller) in LOCAL mode, PERFORM the following:

**CAUTION**

Allowing the primary exhaust heater to increase to more than 195°F may cause equipment damage.

5.11.7.1 ENSURE the HAND-OFF-AUTO switch is in the HAND position.

5.11.7.2 PERFORM the following on temperature controller TIC-AZK102-1B:

NOTE – The controller is normally operated from the home page. Pressing the Infinity button (∞) for two seconds returns the controller to the home page.

a. PRESS Infinity button (∞) for two seconds.

b. PRESS the green advance key until “C.M 1” appears in the lower display.

c. PRESS the UP (▲) and/or DOWN (▼) arrow keys until “MAN” is displayed on the upper line of the display.

d. PRESS the green advance key until “1CHAN” appears on the bottom of the display (below the green output value).

e. PRESS the UP (▲) and/or DOWN (▼) arrow keys until the desired output value (in green) is selected. (RPP-11413)
5.11 Switch to Local Control of Primary Exhaust System Equipment (Cont.)

**K1-1 Inlet Station (Pressure Control) Valves**

(Critical Step)

5.11.8 **PRIOR** to operating any primary tank inlet station valves, **ENSURE** Shift Manager has evaluated applicability to LCO 3.1 and LCO 3.4.  \((LCO 3.1, LCO 3.4)\)

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Signature                  Print (First & Last)          Date
Procedure User

5.11.9 **SWITCH** to Local control of primary inlet station K1-1 valves by performing the following:

5.11.9.1 **PUSH DOWN** on hand wheel for each of the following valves to place the valves in LOCAL mode **AND**

**USE** hand wheel to position valves to maintain desired tank vacuum:

- MK-AY101K1-1 (Tank AY-101)
- MK-AY102K1-1 (Tank AY-102)
- MK-AZ101K1-1 (Tank AZ-101)
- MK-AZ102K1-1 (Tank AZ-102).

**K1-2 Recirculation Module (Flow Control) Valves**

**NOTE** - At least one of the K1-2 valves must be opened greater than or equal to 10% to maintain green “path clear” lights on MCS Graphic Screen17.

- All primary tank K1-2 flow control valves are admin locked at the recirculation modules, and locked in manual mode on the MCS.

(Critical Step)

5.11.10 **PRIOR** to operating any primary tank flow control valves, **ENSURE** Shift Manager has evaluated applicability to LCO 3.1 and LCO 3.4.  \((LCO 3.1, LCO 3.4)\)

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Signature                  Print (First & Last)          Date
Procedure User
5.11 Switch to Local Control of Primary Exhaust System Equipment (Cont.)

5.11.11 SWITCH to Local control of recirculation module K1-2 valves by performing the following:

5.11.11.1 POSITION the following hand switches located on the side of the recirculation modules to the LOCAL position:

- HS-AY101K1-2
- HS-AY102K1-2
- HS-AZ101K1-2
- HS-AZ102K1-2.

Variable Speed Drives (VSD)

5.11.12 IF switching to LOCAL control of primary exhaust fans (variable speed drive control), PERFORM the following:

NOTE - If the running fan is currently being controlled from MCS, the performance of the following steps will place two primary exhaust fans ON LINE for a short period of time.

5.11.12.1 PERFORM the following for a non-running fan, to operate the fan in LOCAL control from the VSD keypad:

a. PRESS AND HOLD SELECT button on START/STOP/CONTROL section of the VSD keypad until keypad indicator light comes ON.

b. PRESS AND HOLD SELECT button on SPEED CONTROL section of the VSD keypad until keypad indicator light comes ON.

c. ENSURE INVERTER/OFF/BYPASS switch is in the INV. position (see Figure 4).

d. ENSURE all personnel have cleared immediate stack area.

e. PRESS the START button on START/STOP/CONTROL section of VSD keypad.

f. ADJUST the FASTER or SLOWER button on the Speed Control section of the VSD keypad to bring fan to desired speed or approximately match the stack flow of the other primary exhaust fan (if running).
5.11 Switch to Local Control of Primary Exhaust System Equipment (Cont.)

5.11.13 **PERFORM** the following for the VSD Fan that was controlled by MCS, to operate the fan in Local Control by VSD keypad:

- **5.11.13.1 PRESS AND HOLD** SELECT button on START/STOP/CONTROL section of the VSD keypad until keypad indicator light comes ON.

- **5.11.13.2 PRESS AND HOLD** SELECT button on SPEED CONTROL section of the VSD keypad until keypad indicator light comes ON.

- **5.11.13.3 ENSURE** INVERTER/OFF/BYPASS switch is in the INV. position (see Figure 4).

- **5.11.13.4 IF** the fan is not running, **PRESS** the START button on START/STOP/CONTROL section of VSD keypad.

- **5.11.13.5 ADJUST** the FASTER or SLOWER button on the Speed Control section of the VSD keypad to bring fan to desired speed.

5.11.14 **IF** running all primary ventilation systems in LOCAL control, **PERFORM** the following:

- **5.11.14.1 ENSURE** Primary Stack Sampling system is running normally.

- **5.11.14.2 ENSURE** key is in the ON position at cabinet HEME AZ-K1-9-1 Radiation Mon System POS 1-2 RIAS-AZK109-1 **AND** CONFIRM normal light is ON.

- **5.11.14.3 ENSURE** HS-AZK1-3 (CAM Interlock Bypass) is ENABLED on primary stack cabinet (CAB-AZK1-1).
5.11 Switch to Local Control of Primary Exhaust System Equipment (Cont.)

Adjust / Maintain Vacuums and Flow Rates

(Critical Step)

5.11.15 PRIOR to adjusting components in this section, ENSURE Shift Manager has evaluated applicability to LCO 3.1 and LCO 3.4. (LCO 3.1, LCO 3.4)

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Signature                                             Print (First & Last)                                        Date
Procedure User

5.11.16 IF directed by Shift Manager/OE, ADJUST primary exhaust fan speed as follows:

5.11.16.1 PRESS the FASTER or SLOWER button for Fan A on VSD-1, OR

PRESS the FASTER or SLOWER button for Fan B on VSD-2.

5.11.17 IF directed by Shift Manager/OE, ENSURE the following valves are CLOSED at the AY/AZ Inlet Stations:
• MK-AY101K1-1
• MK-AY102K1-1
• MK-AZ101K1-1
• MK-AZ102K1-1.

5.11.18 IF directed by Shift Manager/OE, POSITION the following valves at AY/AZ Recirc Modules, as necessary, to maintain tank vacuums and flows at desired set points:
• MK-AY101K1-2
• MK-AY102K1-2
• MK-AZ101K1-2
• MK-AZ102K1-2.

5.11.19 REPORT all problems or abnormalities to Shift Manager/OE.

5.11.20 IF directed by Shift Manager/OE, RECORD available field readings on round sheets and farm tours.
5.12 Switch to MCS Control of Primary Exhaust System Equipment

NOTE - Following is a list of the activities in this section:
- Take MCS Control of Chiller System
- Place HEPA Filter Train (A or B) On Line
- Restore MCS Control of Primary K1-1/K1-2 Valves
- Switch Primary Exhaust Fans (1A and 1B) from Local [Manual] to MCS Control.

- To reset Object Errors (OE) and FAILED Conditions, see Section 5.15.
- This section is written with the assumption the exhaust system may be in operation along with various support systems.

5.12.1 OBTAIN Shift Manager/OE permission to begin this section of the procedure.

5.12.2 POST AY/AZ farms as a VCZ.

5.12.3 ENSURE Shift Manager has announced AY/AZ farms are a VCZ.

5.12.4 ENSURE the Low Vacuum and Flow Alarm is set in SILENCED mode on MCS Graphic Screen 15.

5.12.5 PLACE all four tank ENABLED/DISABLED control buttons in the ENABLED position.

5.12.6 IF directed by Shift Manager/OE, TAKE Local [Manual] control of AY/AZ evacuation horns (in E/I Room B) by performing the following:

5.12.6.1 PRESS red Evacuation Horn button (HS-AZK 1-2 Low Flow Alarm Horn).

5.12.6.2 TURN Evacuation Horn switch CLOCKWISE to the BYPASS ON position.
5.12 Switch to MCS Control of Primary Exhaust System Equipment (Cont.)

NOTE - CAM Interlock Keyed Bypass Switches are located on CAM cabinet door CAB-AZK1-1.

5.12.7 POSITION the following switches to DISABLED:
- HS-AY101-K451-1

5.12.8 POSITION the CAM Interlock Bypass switch HS-AZK1-3 for the non-running fan to BYPASS.

5.12.9 CONFIRM Cam Interlock Bypass switch HS-AZK1-3 indicator is yellow and reads Bypass on MCS Graphic Screen 18.

Take MCS Control of Chiller System

5.12.10 IF directed by Shift Manager/OE, RESTORE MCS control of the Chiller Compressor and Glycol Pumps as follows:

NOTE - The Chiller Compressor Motor is interlocked with a low glycol flow alarm, and the compressor will shut down on fault. The compressor must be restarted per Section 5.2.
- Placing chiller compressor hand switch HS-AZCWR-1B in REMOTE position will shut down the chiller.

5.12.10.1 TURN hand switch HS-AZCWR-1B to the REMOTE position (located on front of cabinet TB-LCU3-3C in E/I Room A106 of 702-AZ).

NOTE - Personnel trained in the operation of breakers and disconnects wearing proper PPE is required to perform both Steps 5.12.10.3 and 5.12.10.4

5.12.10.2 ENSURE personnel trained in the operation of breakers and disconnects dons PPE (refer to Section 3.1)

5.12.10.3 TURN recirculation pump START/STOP/REMOTE switch for the non-operating chiller glycol pump (HS-AZCWP-1A1 or HS-AZCWP-1B1) to the REMOTE position.

5.12.10.4 TURN recirculation pump START/STOP/REMOTE switch for the operating chiller glycol pump (HS-AZCWP-1A1 or HS-AZCWP-1B1) to the REMOTE position.
5.12 Switch to MCS Control of Primary Exhaust System Equipment (Cont.)

5.12.10.5 IF chiller compressor has shut down on fault, RESET chiller per Section 5.2.

5.12.10.6 CLEAR all chiller alarms on MCS Graphic Screen 14.

5.12.10.7 START UP Air cooled Chiller per Section 5.2.

Place HEPA Filter Train (A or B) On Line

5.12.11 IF HEPA filter Train A is on line or is to be placed on line, PERFORM the following:

5.12.11.1 ENSURE the following valves are OPEN using MCS (Graphic Screen 17):
- MK-AZK1-1A
- MK-AZK1-2A.

5.12.11.2 OPEN valve MK-AZK1-1B using MCS (Graphic Screen 17).

5.12.11.3 CLOSE valve MK-AZK1-2B using MCS (Graphic Screen 17).

5.12.11.4 TURN the following hand switches to the REMOTE position (located on cabinet TB-LCU1-2C in E/I Room A 106):
- HS-AZK1-1AC
- HS-AZK1-2AC.

5.12.11.5 TAKE MCS control of Primary Vent Train Heater per Section 5.13.

5.12.12 IF HEPA filter Train B is on line or is to be placed on line, PERFORM the following:

5.12.12.1 ENSURE the following valves are OPEN using MCS (Graphic Screen 17):
- MK-AZK1-1B
- MK-AZK1-2B.

5.12.12.2 OPEN valve MK-AZK1-1A using MCS (Graphic Screen 17).

5.12.12.3 CLOSE valve MK-AZK1-2A using MCS (Graphic Screen 17).
5.12 Switch to MCS Control of Primary Exhaust System Equipment (Cont.)

5.12.12.4 TURN the following hand switches to the REMOTE position (located on cabinet TB-LCU1-2C in E/I Room A 106):
- HS-AZK1-1BC
- HS-AZK1-2BC.

5.12.12.5 SWITCH control of Primary Train Heater Controller(s) from Local to Auto per Section 5.13.

5.12.13 CONFIGURE Heaters for Startup per Section 5.5.

5.12.14 PRIOR to operating any primary tank inlet station or flow control valves, ENSURE Shift Manager has evaluated applicability to LCO 3.1 and LCO 3.4. (LCO 3.1, LCO 3.4)

5.12.15 IF directed by Shift Manager/OE, PLACE K1-1/K1-2 Valves and Recirc Fans in MCS control by performing the following:

5.12.15.1 ENSURE K1-1 (pressure) Valves and K1-2 (flow) Valves have been configured for Startup per Section 5.4.

NOTE - Steps 5.12.15.2 through 5.12.15.3 should be completed for an individual tank before proceeding to the next tank.

5.12.15.2 TAKE MCS control of the following valves locally by PULLING up on hand wheel to engage electric drive motor:
- MK-AY101-K1-1
- MK-AY102-K1-1
- MK-AZ101-K1-1
- MK-AZ102-K1-1.
5.12 Switch to MCS Control of Primary Exhaust System Equipment (Cont.)

5.12.15.3 TAKE MCS control of the K1-2 valve(s) locally by positioning following hand switch(es) located on the outside of the recirculation modules in REMOTE position:

- HS-AY101-K1-2
- HS-AY102-K1-2
- HS-AZ101-K1-2

Switch Primary Exhaust Fans (1A and 1B) from Local to MCS Control

NOTE - The Keypad for the Variable Frequency Drives (VSD-1 and VSD-2) is illustrated in Figure 3.

5.12.16 CONFIGURE the non-running fan’s VSD for Remote Operation at the Keypad, as follows:

5.12.16.1 On the START/STOP CONTROL section of the VSD keypad, PRESS SELECT button until REMOTE indicator light comes on.

5.12.16.2 USING the SPEED CONTROL section of the VSD keypad, PRESS SELECT button until REMOTE indicator light comes on.

5.12.16.3 ENSURE INVERTER/OFF/BYPASS switch is in INV. position (See Figure 4).

NOTE - NORM/TEST/RUN switch is located inside the cabinet and requires an electrician for verification of switch position if verification of switch is required.

5.12.16.4 IF maintenance has been performed and the NORM/TEST/RUN switch has been repositioned, PERFORM the following:

a. REQUEST electrician to assist in verification of NORM/TEST/RUN switch inside the cabinet.

b. ENSURE NORM/TEST/RUN switch is in NORM position.
5.12 Switch to MCS Control of Primary Exhaust System Equipment (Cont.)

NOTE - One fan must be started at the MCS before the other fan is stopped at the VSD to maintain a consistent flow.

5.12.17 POSITION an operator locally at the running fan’s VSD.

5.12.18 CONFIGURE the non-running fan (AZ-K1-5-1A or AZ-K1-5-1B) for AUTO or MANUAL mode of operation on MCS Graphic Screen 17 AND ENSURE a correct setpoint (AUTO mode) or output value (MANUAL mode) is entered.

5.12.19 MONITOR system using MCS Graphic Screens.

5.12.20 BEFORE starting, ENSURE Path Clear light is green on MCS Graphic Screen 17.

5.12.21 ENSURE all personnel have cleared immediate stack area.

NOTE - Performance of the following steps will place two primary exhaust fans on line for a short period of time. The high stack flow rate may be exceeded during this step. If the high stack flow alarm is received, no action is required other than to acknowledge the alarm and restore the flow to a normal range after the second fan has been shut down.

5.12.22 START the non-running fan (AZ-K1-5-1A or AZ-K1-5-1B).

5.12.22.1 IF fan does not start, NOTIFY Shift Manager.
5.12 Switch to MCS Control of Primary Exhaust System Equipment (Cont.)

5.12.23 **STOP** the fan that is in Local (manual) Control by using the VSD’s keypad (VSD-1 or VSD-2), as follows:

5.12.23.1 **IF** INVERTER/OFF/BYPASS switch is in the INV. position, **PRESS** the STOP button to stop the fan (see Figure 4).

5.12.23.2 **OBSERVE** Run indicator flashes as the drive is stopping.

5.12.23.3 **CONFIRM** the Run light goes out when the drive reaches zero speed.

5.12.23.4 **IF** the INVERTER/OFF/BYPASS switch is in the BYPASS position, **POSITION** the INVERTER/OFF/BYPASS switch to OFF to stop the fan (see Figure 4).

5.12.24 **CONFIGURE** the non-running fan (AZ-K1-5-1A or AZ-K1-5-1B) for AUTO or MANUAL mode of operation on MCS Graphic Screen 17 AND **ENSURE** a correct setpoint (AUTO mode) or output value (MANUAL mode) is entered.

5.12.25 **START** desired heater for use (1A or 1B).

5.12.26 **IF** directed by Shift Manager/OE, **TAKE** Remote Control of AY/AZ evacuation horns (in E/I Room B) by performing the following:

5.12.26.1 **PULL OUT** red Evacuation Horn button (HS-AZK 1-2 Low Flow Alarm Horn).

5.12.26.2 **TURN** Evacuation Horn switch COUNTER-CLOCKWISE to the BYPASS OFF position.
5.12 Switch to MCS Control of Primary Exhaust System Equipment (Cont.)

NOTE - CAM Interlock Keyed Bypass Switches are located on CAM cabinet door CAB-AZK1-1.

5.12.27 POSITION the CAM Interlock Bypass switch HS-AZK1-3 for the running fan to CAM ENABLE.

5.12.28 CONFIRM Cam Interlock Bypass switch HS-AZK1-3 indicator is green and reads Enable on MCS Graphic Screen 18.

5.12.29 ENSURE the Low Vacuum and Flow Alarm is set in AUTO and NORMAL mode on MCS Graphic Screen 15.

5.12.30 CONTACT Shift Manager AND REQUEST HPT and IHT support to perform sweeps.

5.12.30.1 CONFIRM conditions are within acceptable levels.

5.12.30.2 IF Shift Manager/OE directs, UPDATE VCZ postings.

5.12.31 MONITOR system parameters until system stabilizes.

5.12.32 ENSURE (Horn Alarm Acknowledge) HS-AZK1-1A1 and HS-AZK1-1B1 on the Primary Stack Monitoring Cabinet are in the OUT position.

5.12.33 ENSURE the Primary Sampling system is running on MCS Graphic Screen 18.

5.12.34 ENSURE inspections are completed per TF-OPS-005.

5.12.35 IF main stack CAM fails, PERFORM the following:

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

5.12.35.2 PROCEED as directed by Shift Manager.

5.12.35.3 RECORD verbal direction given on Data Sheet 2.

5.12.36 NOTIFY Shift Manager/OE and TMACS operator system is in normal operation.
5.13 Operate Primary Exhaust Train Heater Controllers (A and B Trains)

CAUTION

Allowing the primary exhaust heater to increase to more than 195°F may cause equipment damage.

Configure TIC-AZK102-1A (A Train Heater Controller)

5.13.1 IF controlling TIC-AZK102-1A (A train heater controller) in LOCAL mode, PERFORM the following:

5.13.1.1 ENSURE the HAND-OFF-AUTO switch is in the HAND position.

5.13.1.2 PERFORM the following on temperature controller TIC-AZK102-1A.

NOTE – The controller is normally operated from the home page. Pressing the Infinity button (∞) for two seconds returns the controller to the home page.

a. PRESS Infinity button (∞) for two seconds.

b. PRESS the green advance key until “C.M 1” appears in the lower display.

c. PRESS the UP (▲) and/or DOWN (▼) arrow keys until “MAN” is displayed on the upper line of the display

d. PRESS the green advance key until “1CHAN” appears on the bottom of the display (below the green output value).

e. PRESS the UP (▲) and/or DOWN (▼) arrow keys until the desired output value (in green) is selected. (RPP-11413)
5.13 Operate Primary Exhaust Train Heater Controllers (A and B Trains) (Cont.)

5.13.2 IF controlling TIC-AZK102-1A (A-Train heater controller) remotely by the MCS, PERFORM the following:

5.13.2.1 ENSURE the HAND-OFF-AUTO switch is in AUTO.

5.13.2.2 PERFORM the following on temperature controller TIC-AZK102-1A:

NOTE – The controller is normally operated from the home page. Pressing the Infinity button (∞) for two seconds returns the controller to the home page.

   a. PRESS Infinity button (∞) for two seconds.

   b. PRESS the green advance key until “C.M 1” appears in the lower display.

   c. PRESS the UP (▲) and/or DOWN (▼) arrow keys until “AUTO” is displayed on the upper line of the display.

5.13.2.3 PERFORM the following on MCS Graphic Screen 17:

   a. CLICK on heater AZ-K1-2-1A.

   b. CLICK on Setpoint Control button.

   c. ENSURE heater AZ-K1-2-1A is in AUTO or MANUAL mode AND a correct setpoint (AUTO mode) OR output value (MANUAL mode) is entered.

   d. ACCESS Extended faceplate (three dot button) AND CLICK on LINKS tab.

   e. CLICK on AZK1-2-1A_PID button AND ENSURE AUTO mode is active.

   f. CLICK on AZK1-2-1A_PCV button AND ENSURE AUTO mode is active.
5.13 Operate Primary Exhaust Train Heater Controllers (A and B Trains) (Cont.)

Configure TIC-AZK102-1B (B Train Heater Controller)

5.13.3 IF controlling TIC-AZK102-1B (B train heater controller) in LOCAL mode, PERFORM the following:

5.13.3.1 ENSURE the HAND-OFF-AUTO switch is in the HAND position.

5.13.3.2 PERFORM the following on temperature controller TIC-AZK102-1B:

NOTE – The controller is normally operated from the home page. Pressing the Infinity button (∞) for two seconds returns the controller to the home page.

a. PRESS Infinity button (∞) for two seconds.

b. PRESS the green advance key until “C.M 1” appears in the lower display.

c. PRESS the UP (▲) and/or DOWN (▼) arrow keys until “MAN” is displayed on the upper line of the display.

d. PRESS the green advance key until “1CHAN” appears on the bottom of the display (below the green output value).

e. PRESS the UP (▲) and/or DOWN (▼) arrow keys until the desired output value (in green) is selected. (RPP-11413)
5.13 Operate Primary Exhaust Train Heater Controllers (A and B Trains) (Cont.)

5.13.4 IF controlling TIC-AZK102-1B (B train heater controller) remotely by the MCS, PERFORM the following:

5.13.4.1 ENSURE the HAND-OFF-AUTO switch is in AUTO.

5.13.4.2 PERFORM the following on temperature controller TIC-AZK102-1B:

NOTE - The controller is normally operated from the home page. Pressing the Infinity button (∞) for two seconds returns the controller to the home page.

a. PRESS Infinity button (∞) for two seconds.

b. PRESS the green advance key until “C.M 1” appears in the lower display.

c. PRESS the UP (▼) and/or DOWN (▼) arrow keys until “AUTO” is displayed on the upper line of the display.

5.13.4.3 PERFORM the following on MCS Graphic Screen 17:

a. CLICK on heater AZ-K1-2-1B.

b. CLICK on Setpoint Control button.

c. ENSURE heater AZ-K1-2-1B is in AUTO or MANUAL mode AND

ENSURE a correct setpoint (AUTO mode) or output value (MANUAL mode) is entered.

d. ACCESS Extended faceplate (three dot button) AND CLICK on LINKS tab.

e. CLICK on AZK1-2-1B_PID button AND ENSURE AUTO mode is active.

f. CLICK on AZK1-2-1B_PCV button AND ENSURE AUTO mode is active.
5.14  Shut Down Air Cooled Chiller

5.14.1  **STOP** Chiller compressor AZ-CW-R-1 (MCS Graphic Screen 14).

**CAUTION**

The air cooled chiller unit must be shut down for at least two minutes before shutting down the chiller glycol pumps. Failure of this action may result in equipment damage.

5.14.2  **AFTER** 2 minutes, **STOP** operating pump AZ-CW-P-1A or AZ-CW-P-1B.
5.15 Reset Object Errors, and FAILED Conditions, and Priority Command Conditions

Reset Object Error Alarm

5.15.1 CLICK on object (fan, pump, or heater icon).

5.15.2 IF resetting a primary fan or heater, CLICK on Fan On Off Control button.

5.15.3 CLICK on Alarm/Event tab.

5.15.4 CLICK on Alarm button to acknowledge the alarm AND CHECK Reset button can be reset.

5.15.5 CLICK on Reset button.

5.15.6 CLICK on Apply button AND CONFIRM the Object Error (OE) next to object resets and disappears.

5.15.7 CLOSE faceplate.

Reset FAILED Condition

5.15.8 CLICK on Duty/Standby faceplate of equipment with failed condition.

5.15.9 CLICK on Reset button.

5.15.10 CLICK on Apply button AND CONFIRM Latch Reset appears on faceplate and FAILED condition resets on object.

5.15.11 CLOSE faceplate.

Reset PRIORITY COMMAND Condition

5.15.12 CLICK on object with active condition (fan, pump, or heater icon).

5.15.13 CLICK on Priority/Cmd/Ilock Tab.

5.15.14 CLICK on “RESET Priority Command” button.

5.15.15 CLICK on Apply button AND CONFIRM condition clears on the object.

5.15.16 CLOSE faceplate.
5.16 Reset Diagnostic Alarms at Air Cooled Chiller

5.16.1 OPEN control panel access door at Air Cooled Chiller (AZ-CW-R-1).

NOTE - Diagnostic alarms in the Active List or Event Log will be indicated by a blinking alarm light at the upper right corner of the control panel will be lit, and “Diagnostics” will be indicated on the lower right of the LCD display.

- The chiller may take up to 5 minutes to re-start after an alarm reset is performed. Chiller will re-start automatically if in MCS control.

5.16.2 REVIEW Diagnostic alarms by performing the following:

5.16.2.1 PRESS DIAGNOSTICS button on keypad.

5.16.2.2 PRESS NEXT or PREVIOUS buttons to review Active List and Diagnostic Event Log.

5.16.2.3 PRESS STATUS button on keypad to exit diagnostic menu.

5.16.3 NOTIFY Shift Manager/OE of alarms AND OBTAIN permission to reset alarms.

5.16.4 RESET Diagnostic Alarms on the Active List by performing the following:

5.16.4.1 PRESS DIAGNOSTICS button on keypad.

5.16.4.2 PRESS CANCEL button on keypad.

5.16.4.3 PRESS (-)(+)(+) buttons on keypad.

5.16.4.4 PRESS ENTER button on keypad.

5.16.4.5 PRESS STATUS button on keypad to exit.
5.16 Reset Diagnostic Alarms at Air Cooled Chiller (Cont.)

5.16.5 **RESET** Diagnostic Event Log alarms by performing the following:

5.16.5.1 **PRESS** DIAGNOSTICS button on keypad.
5.16.5.2 **PRESS** NEXT button on keypad to advance to logged alarm.
5.16.5.3 **PRESS** CANCEL button on keypad.
5.16.5.4 **PRESS** (-)(+)(+)(-) buttons on keypad.
5.16.5.5 **PRESS** ENTER button on keypad.
5.16.5.6 **REPEAT** Steps 5.16.5.1 through 5.16.5.5 for additional logged alarms.
5.16.5.7 **PRESS** STATUS button on keypad to exit.

5.16.6 **IF** alarm does not reset, **NOTIFY** Shift Manager/OE of alarm **AND**
**REQUEST** support from Refrigeration Equipment Services (RES).

5.16.7 **IF** alarms reset **AND**
**IF** directed by Shift Manager/OE, **START** chiller per this procedure.

5.16.8 **CLOSE** keypad access door.
5.17 Transfer Exhaust System Glycol Pumps from the MCS

NOTE – This section applies to any pair of glycol pumps associated with the chiller or any evaporative cooling tower utilizing Graphic Screens 6 thru 9 and 14.

Perform MCS Transfer of Glycol Pumps

5.17.1 IF transferring chiller glycol pumps, ENSURE the chiller is shut down prior to pump transfer.

5.17.2 TRANSFER between glycol pumps A and B by performing the following:

5.17.2.1 STOP running glycol pump A or B.

5.17.2.2 START glycol pump to run A or B.

5.17.3 IF glycol pump does not start, NOTIFY Shift Manager.

5.17.4 ALLOW system to stabilize.

5.17.5 ENSURE glycol flow is within normal range on associated MCS Graphic Screen.

5.17.6 ENSURE suction and discharge pressures for running pump are within normal ranges (locally at associated equipment pad).

Perform Duty Standby Transfer of Glycol Pumps

5.17.7 CLICK on DUTY STANDBY faceplate AND ENSURE faceplate is in manual mode.

5.17.8 CLICK on Duty button for the non-running pump.

5.17.9 CLICK on Apply button.

5.17.10 CONFIRM the following:
- Selected pump is running in Duty mode
- Other pump is in Standby mode.

5.17.11 CLOSE faceplate.

5.17.12 ALLOW system to stabilize.

5.17.13 ENSURE glycol flow is within normal range on associated MCS Graphic Screen.

5.17.14 ENSURE suction and discharge pressures for running pump are within normal ranges (locally at associated equipment pad).
5.18 Configure AY-102 Vent Jumper for Ventilation of Annulus Space

NOTE - Damper AY102-VTP-V-201 is located on AY102 Vent Jumper at AY102 Tank riser 065.

5.18.1 IF isolating AY-102 Annulus space from AZ702 VTP system, ENSURE damper AY102-VTP-V-201 is CLOSED.

5.18.2 IF ventilating AY-102 annulus space using AZ702 VTP system, PERFORM the following:

5.18.2.1 ENSURE AY102 Annulus Ventilation system is OFF.

5.18.2.2 OPEN damper AY102-VTP-V-201.
Start, Stop and Operate AY/AZ Tank Ventilation Primary Exhaust System

5.19 Records

5.19.1 PERFORM the following for records identified within this procedure.

5.19.1.1 RECORD the number of times the record was generated in applicable column

OR

PLACE a check mark (✓) in the N/A column.

5.19.1.2 SUBMIT the package for verification of completed records.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4.2 Field Preparations</strong></td>
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<td></td>
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<tr>
<td>Step 4.2.2</td>
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<tr>
<td>Step 4.2.3</td>
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<tr>
<td>Step 4.2.5</td>
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<tr>
<td><strong>5.4 Configure Inlet Station (K1-1) and Recirc Module (K1-2) Valves for Operation</strong></td>
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<tr>
<td>Step 5.4.3</td>
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<td>Step 5.4.6</td>
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<tr>
<td><strong>5.11 Switch to Local Control of Primary Exhaust System Equipment</strong></td>
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<td>Step 5.11.8</td>
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<td>Step 5.11.15</td>
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<td><strong>5.12 Switch to MCS Control of Primary Exhaust System Equipment</strong></td>
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<td>Step 5.12.14</td>
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<td><strong>Data Sheets</strong></td>
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<td>Data Sheet 1 - Primary Ventilation Data Sheet</td>
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<td>Data Sheet 2 - Information Record Sheet</td>
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<tr>
<td><strong>Attachments</strong></td>
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<tr>
<td>Attachment 1 - Primary Ventilation System Valve/Damper Lineup</td>
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<tr>
<td>Attachment 2 - Primary Ventilation System Electrical Power Lineup</td>
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<tr>
<td>Attachment 3 - Primary Ventilation System Hand Switch Lineup</td>
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<tr>
<td>FWS/OE/Shift Manager SEND the completed records to the Central Shift Office for records retention.</td>
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__________________________/__________________________/________
Signature Print (First & Last) Date

FWS/OE/Shift Manager

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.
## Primary Ventilation Data Sheet

### MCS Graphic: 15 (Tank Vacuums and Flows)

<table>
<thead>
<tr>
<th>Component</th>
<th>Normal Range</th>
<th>Component</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI-AY1K1-1</td>
<td>-1.0” to -3.0” WC</td>
<td>FI-AY1K1-2</td>
<td>80 to 650 SCFM</td>
</tr>
<tr>
<td>PI-AZ1K1-1</td>
<td>-1.0” to -3.0” WC</td>
<td>FI-AZ1K1-2</td>
<td>80 to 650 SCFM</td>
</tr>
<tr>
<td>PI-AZ2K1-1</td>
<td>-1.0” to -3.0” WC</td>
<td>FI-AZ2K1-2</td>
<td>80 to 650 SCFM</td>
</tr>
</tbody>
</table>

### MCS Graphic: 16 (Primary Cooling)

<table>
<thead>
<tr>
<th>Component</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDI-AZK18-1</td>
<td>≤ 13.0” WC</td>
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<tr>
<td>PDI-AZK19-1</td>
<td>≤ 10.0” WC</td>
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</table>

### MCS Graphic: 17 (Primary Exhaust Trains)

<table>
<thead>
<tr>
<th>Component</th>
<th>Normal Range</th>
<th>Component</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Exhaust Train A (ON/OFF) **</td>
<td>-10.0” to -24.0” WC</td>
<td>Primary Exhaust Train B (ON/OFF) **</td>
<td>-10.0” to -24.0” WC</td>
</tr>
<tr>
<td>TI-AZK12-1A</td>
<td>40°F to 150°F</td>
<td>TI-AZK12-1B</td>
<td>40°F to 150°F</td>
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<tr>
<td>TDI-AZK12-1A</td>
<td>≥ 17°F</td>
<td>TDI-AZK12-1B</td>
<td>≥ 17°F</td>
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<tr>
<td>TI-AZK12-3A</td>
<td>60°F to 170°F</td>
<td>TI-AZK12-3B</td>
<td>60°F to 170°F</td>
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<tr>
<td>PDI-AZK14-1A</td>
<td>0.3” to 5.7” WC</td>
<td>PDI-AZK14-1B</td>
<td>0.3” to 5.7” WC</td>
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<tr>
<td>PDI-AZK14-2A</td>
<td>0.3” to 3.5” WC</td>
<td>PDI-AZK14-2B</td>
<td>0.3” to 3.5” WC</td>
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<tr>
<td>PDI-AZK14-3A</td>
<td>1.0” to 3.5” WC</td>
<td>PDI-AZK14-3B</td>
<td>1.0” to 3.5” WC</td>
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<tr>
<td>Primary Exhaust Fan A (ON/OFF) **</td>
<td>% Load</td>
<td>Primary Exhaust Fan B (ON/OFF) **</td>
<td>% Load</td>
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<tr>
<td>Il-AZK15-1A</td>
<td>&lt; 3400 rpm</td>
<td>Il-AZK15-1B</td>
<td>&lt; 3400 rpm</td>
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### MCS Graphic: 18 (Primary Stack Monitoring)

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<thead>
<tr>
<th>Component</th>
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<th>Normal Range</th>
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<tr>
<td>RI-AZK1-1</td>
<td>DPM/FT&quot;^3&quot;</td>
<td>TI-AZK1-3</td>
<td>70°F to 100°F</td>
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<tr>
<td>RAX-AZK1-1</td>
<td>Not in alarm (√)</td>
<td>FI-AZK1-1</td>
<td>0.3” to 2.0” SCFM</td>
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<tr>
<td>RAH-AZK1-1</td>
<td>Not in alarm (√)</td>
<td>FI-AZK1-2</td>
<td>0.3” to 2.0” SCFM</td>
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<tr>
<td>FI-AZK1-3</td>
<td>250 to 900 SCFM</td>
<td>PI-AZK1</td>
<td>0.0” to 30.0” Hg</td>
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</table>

**Special Instructions:**

** Only running exhaust train and fan data is required. If not running, enter OFF.

**Comments:**

---

**Performed By (Nuclear Chemical Operator):**

**Reviewed By (Shift Manager/OE):**

**Print (First and Last):**

**Sign:**

**Time / Date:**
## Data Sheet 2 - Information Record Sheet

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Directions and actions</th>
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**Operator:**

Signature / Print (First & Last) / Date

**Shift Manager/OE:**

Signature / Print (First & Last) / Date
### CHILLER PAD

<table>
<thead>
<tr>
<th>VALVE/DAMPER NUMBER</th>
<th>NAME AND LOCATION</th>
<th>REQUIRED POSITION</th>
<th>VERIFIED (✓)</th>
<th>IND VER (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HV-AZCWP-1A1</td>
<td>Glycol Pump A Suction Isolation Valve</td>
<td>OPEN</td>
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<td></td>
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<tr>
<td>HV-AZCWP-1A3</td>
<td>Glycol Pump A Suction Pressure Gauge Isolation</td>
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<tr>
<td>HV-AZCWP-1A4</td>
<td>Glycol Pump A Discharge Pressure Gauge Isolation</td>
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<td>HV-AZCWP-1A5</td>
<td>Glycol Pump A Discharge Isolation</td>
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<tr>
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<tr>
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<tr>
<td>HV-AZCWP-1B1</td>
<td>Glycol PumpB Suction Isolation</td>
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<tr>
<td>HV-AZCWP-1B3</td>
<td>Glycol Pump B Suction Pressure Gauge Isolation</td>
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<tr>
<td>HV-AZCWP-1B4</td>
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<td>HV-AZCWP-1B5</td>
<td>Glycol PumpB Discharge Isolation</td>
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<td>HV-AZCWP-1B2</td>
<td>Glycol Pump B Strainer Drain Isolation</td>
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<td>HV-AZCWTK-1A1</td>
<td>Expansion Tank Level Switch Low Side Isolation</td>
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<td>HV-AZCWTK-1A2</td>
<td>Expansion Tank Level Switch High Side Isolation</td>
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<td>HV-AZCWTK-1A3</td>
<td>Expansion Tank Sight Glass Level Indicator Isolation</td>
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<td>HV-AZCWTK-1A4</td>
<td>Expansion Tank Sight Glass Level Indicator Isolation</td>
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<td>HV-AZCWTK-2</td>
<td>Thermal Storage Tank Drain</td>
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<td>HV-AZCWR-1</td>
<td>Chiller Inlet Isolation</td>
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<tr>
<td>HV-AZCWS-1</td>
<td>Chiller Outlet Isolation</td>
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Comments:

Operator Verified Initial/Date: __________ / __________
Operator Independently Verified Initial/Date: __________ / __________
## Primary Ventilation Filter Room A

<table>
<thead>
<tr>
<th>VALVE/DAMPER NUMBER</th>
<th>NAME AND LOCATION</th>
<th>REQUIRED POSITION</th>
<th>VERIFIED (✓)</th>
<th>IND VER (✓)</th>
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<tbody>
<tr>
<td>HV-AZK1-1A</td>
<td>PT-AZK1-1A Isolation Valve</td>
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<tr>
<td>HV-AZK1-4</td>
<td>Primary Vent Tank Gas Sample Return isolation valve</td>
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<tr>
<td>HV-AZK104-1A1</td>
<td>LG-AZK104-1A inlet valve</td>
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<tr>
<td>HV-AZK104-1A2</td>
<td>LG-AZK104-1A outlet valve</td>
<td>CLOSED</td>
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<tr>
<td>HV-AZK104-2A1</td>
<td>LG-AZK104-2A Inlet Valve</td>
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<tr>
<td>HV-AZK104-2A2</td>
<td>LG-AZK104-2A Outlet Valve</td>
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<td></td>
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<tr>
<td>HV-AZK1-1A1</td>
<td>PDT-AZK104-1A Isolation Valve (high side)</td>
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<tr>
<td>HV-AZK1-1A2</td>
<td>PDT-AZK104-1A Isolation Valve (low side)</td>
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<tr>
<td>HV-AZK1-1A3</td>
<td>PDT-AZK110-1A Isolation Valve (high side)</td>
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<td>HV-AZK1-1A4</td>
<td>PDT-AZK104-2A Isolation Valve (low side)</td>
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<tr>
<td>MK-AZK1-3A</td>
<td>Primary Ventilation Cross-Tie Block Valve</td>
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<tr>
<td>MK-AZK105-1A1</td>
<td>Fan AZ-K1-5-1A Inlet Valve</td>
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<td>MK-AZK105-1A2</td>
<td>Fan AZ-K1-5-1A Outlet Valve</td>
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<td>HV-AZPC-1</td>
<td>Condensate Sample Suction Line Block Valve</td>
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<td>HV-AZPC-2</td>
<td>Condensate Sample Discharge Line Block Valve</td>
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<td>HV-AZPC-3</td>
<td>Sampler AZ-PC-S-1 Vent Line Block Valve</td>
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<td>HV-AZPC-4</td>
<td>Condensate Sample Line Back Pressure Throttle Valve</td>
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<td>HV-AZPC-5</td>
<td>Condensate Sample Line Block Valve to Sample Bottle</td>
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<tr>
<td>HV-AZK1-3</td>
<td>Primary Vent Line Sample Valve (in Filter Room A)</td>
<td>CLOSED</td>
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Comments:

Operator Verified Initial/Date: ______________ / ____________  Operator Independently Verified Initial/Date: ______________ / ____________
## Primary Vent Filter Room B

<table>
<thead>
<tr>
<th>VALVE/DAMPER NUMBER</th>
<th>NAME AND LOCATION</th>
<th>REQUIRED POSITION</th>
<th>VERIFIED (✓)</th>
<th>IND VER (✓)</th>
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<tbody>
<tr>
<td>HV-AZK1-1B</td>
<td>PT-AZK1-1B isolation valve</td>
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<tr>
<td>HV-AZK104-1B1</td>
<td>LG-AZK104-1B inlet valve</td>
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<tr>
<td>HV-AZK104-1B2</td>
<td>LG-AZK104-1B outlet valve</td>
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<tr>
<td>HV-AZK104-2B1</td>
<td>LG-AZK104-2B Inlet Valve</td>
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<td>HV-AZK104-2B2</td>
<td>LG-AZK104-2B Outlet Valve</td>
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<td>HV-AZK1-1B1</td>
<td>PDT-AZK104-1B Isolation Valve high side</td>
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<tr>
<td>HV-AZK1-1B2</td>
<td>PDT-AZK104-1B Isolation Valve (low side)</td>
<td>OPEN</td>
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<tr>
<td>HV-AZK1-1B3</td>
<td>Pdt-azk110-1B Isolation Valve (high side)</td>
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<td>HV-AZK1-1B4</td>
<td>PDT-AZK104-2B Isolation Valve (low side)</td>
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<td>MK-AZK1-3B</td>
<td>Primary Ventilation Cross-Tie Block Valve</td>
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<tr>
<td>MK-AZK105-1B1</td>
<td>Fan AZ-K1-5-1B Inlet Valve</td>
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<tr>
<td>MK-AZK105-1B2</td>
<td>Fan AZ-K1-5-1B Outlet Valve</td>
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<td>HV-AZK108-1A1</td>
<td>PDT-AZK108-1 isolation valve (high side)</td>
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<td>HV-AZK108-1A2</td>
<td>PDT-AZK108-1 isolation valve (low side)</td>
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<td>PDT-AZK109-1 isolation valve (high side)</td>
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<tr>
<td>HV-AZK109-1A2</td>
<td>PDT-AZK109-1 isolation valve (low side)</td>
<td>OPEN</td>
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Comments:

Operator Verified Initial/Date: _______ / ___________  Operator Independently Verified Initial/Date: _______ / _______
Attachment 1 - Primary Ventilation System Valve/Damper Lineup (Cont.)

### Primary Vent System

**NOTE 1** - valves were positioned and flange installed. Verification is not required unless flange has been removed.

<table>
<thead>
<tr>
<th>VALVE/DAMPER NUMBER</th>
<th>NAME AND LOCATION</th>
<th>REQUIRED POSITION</th>
<th>VERIFIED (✓)</th>
<th>IND VER (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HV-AZ800-1</td>
<td>AY Farm Primary Vent Encasement drain valve S.E. Corner of Primary Vent Cell at ground level. (remove flange to verify)</td>
<td>CLOSED</td>
<td>NOTE 1</td>
<td>NOTE 1</td>
</tr>
<tr>
<td>HV-AZ801-1</td>
<td>AZ Farm Primary Vent Encasement drain valve N.E. Corner of Primary Vent Cell at ground level. (remove flange to verify)</td>
<td>CLOSED</td>
<td>NOTE 1</td>
<td>NOTE 1</td>
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</table>

**NOTE 2** - valves were verified in the required position when the Primary Vent Cell cover block was installed. Position verification is not required for this procedure.

<table>
<thead>
<tr>
<th>VALVE/DAMPER NUMBER</th>
<th>NAME AND LOCATION</th>
<th>REQUIRED POSITION</th>
<th>VERIFIED (✓)</th>
<th>IND VER (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HV-AZCWR-1A2</td>
<td>Primary Vent Condenser Cooling Water Return Line Drain Valve</td>
<td>CLOSED</td>
<td>NOTE 2</td>
<td>NOTE 2</td>
</tr>
<tr>
<td>HV-AZCWS-1A3</td>
<td>Primary Vent Condenser Cooling Water Supply Line Drain Valve</td>
<td>CLOSED</td>
<td>NOTE 2</td>
<td>NOTE 2</td>
</tr>
<tr>
<td>HV-AZK108-1D</td>
<td>Condenser AZ-K1-8-1 shell side drain valve in Primary Vent Cell</td>
<td>OPEN</td>
<td>NOTE 2</td>
<td>NOTE 2</td>
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### Primary Vent Cell Exterior (South side)

<table>
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<th>VALVE/DAMPER NUMBER</th>
<th>NAME AND LOCATION</th>
<th>REQUIRED POSITION</th>
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<tbody>
<tr>
<td>HV-AZK109-1D</td>
<td>HEME AZ-K1-9-1 Spray Nozzle Isolation Valve</td>
<td>CLOSED</td>
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<tr>
<td>HV-AZK109-1E</td>
<td>HEME AZ-K1-9-1 Spray Nozzle Isolation Valve</td>
<td>CLOSED</td>
</tr>
<tr>
<td>HV-AZPCJ-1A</td>
<td>Jet AZ-PC-J-1 Outlet Block Valve</td>
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<tr>
<td>HV-AZPCJ-1B</td>
<td>Jet AZ-PC-J-1 Inlet Block Valve</td>
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</tr>
<tr>
<td>HV-AZPCJ-1C</td>
<td>Jet AZ-PC-J-1 Inlet Block Valve</td>
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### Primary Vent Cell Exterior (North side)

<table>
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<th>NAME AND LOCATION</th>
<th>REQUIRED POSITION</th>
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</thead>
<tbody>
<tr>
<td>HV-AZPCSP-1A</td>
<td>Primary Condensate Seal Pot (AZ-PC-S-1) Drain</td>
<td>THROTTLED</td>
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<tr>
<td>HV-AZPCSP-1B</td>
<td>Primary Condensate Seal Pot (AZ-PC-S-1) Drain BYPASS</td>
<td>CLOSED</td>
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</tbody>
</table>

Comments:

Operator Verified Initial/Date:_________/__________ | Operator Independently Verified Initial/Date:_________/__________
### Attachment 1 - Primary Ventilation System Valve/Damper Lineup (Cont.)

<table>
<thead>
<tr>
<th>VALVE/DAMPER NUMBER</th>
<th>NAME AND LOCATION</th>
<th>REQUIRED POSITION</th>
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<th>IND VER (✓)</th>
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<td><strong>Primary Vent Cell Exterior (East side)</strong></td>
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<tr>
<td>MK-AZK108-1A</td>
<td>Primary Vent Condenser AZ-K1-8-1 Vapor Inlet Valve</td>
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<tr>
<td>MK-AZK108-1B</td>
<td>Primary Vent Condenser AZ-K1-8-1 Vapor Outlet Valve</td>
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<td>MK-AZK108-1C</td>
<td>Primary Vent Condenser AZ-K1-8-1 Vapor Bypass Valve</td>
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<tr>
<td>MK-AZK109-1A</td>
<td>Primary Vent HEME AZ-K1-9-1 Vapor Inlet Valve</td>
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<tr>
<td>MK-AZK109-1B</td>
<td>Primary Vent HEME AZ-K1-9-1 Vapor Outlet Valve</td>
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<td>MK-AZK109-1C</td>
<td>Primary Vent HEME AZ-K1-9-1 Vapor Bypass Valve</td>
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<td><strong>Stack Monitor Room (in ENCL-AZK1-1)</strong></td>
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<tr>
<td>HV-AZK1-2</td>
<td>Primary Tank Vent Stack Monitor Record Sample Isolation Valve</td>
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<tr>
<td>HV-AZK1-1</td>
<td>Primary Tank Vent Stack Monitor Beta Sample Isolation Valve</td>
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<td><strong>Stack Monitor Room (in CAB-AZK1-1)</strong></td>
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<tr>
<td>HV-AZK1-1A5</td>
<td>Primary Vent Stack Beta/Gamma Sample Flow Transmitter Isolation Valve</td>
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<tr>
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<td><strong>AY-102 Vent Jumper (at AY-102 tank riser 065)</strong></td>
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<tr>
<td>AY102-VTP-V-201</td>
<td>TK-102 VTP/VTA Interconnect Isolation Damper</td>
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* Damper positioned as directed by Shift Manager/OE

**Comments:**

Operator Verified Initial/Date: __________ / __________
Operator Independently Verified Initial/Date: __________ / __________
Attachment 2 - Primary Ventilation System Electrical Power Lineup

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**Special Instructions:**
(1) - If checked (✓), This is a 480 volt breaker/disconnect that requires a qualified electrical worker to operate
(2) - If checked (✓), PRIOR to operating, ENSURE personnel trained in the operation of breakers and disconnects dons PPE (refer to Section 3.1).

**Comments:**

Operator Verified Initial/Date:_______/__________  Operator Independently Verified Initial/Date:_______/__________
## Attachment 2 - Primary Ventilation System Electrical Power Lineup (Cont.)

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<tr>
<th>BREAKER</th>
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<td>1</td>
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<td>ELECTRICAL RM 105 RECEPTACLES</td>
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<td>RM 100, 102, 104 RECEPTACLES</td>
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<td>FIRE ALARM SYSTEM RM 101</td>
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<td>10</td>
<td>RM 102 BASEBOARD HEATER</td>
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<td>11</td>
<td>EVAPORATOR COOLER ECU-1</td>
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<td>VESTIBULE RM 103 BASEBOARD HTR</td>
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<td>13</td>
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<td>14</td>
<td>BACKFLOW PREVENTER RM 101 UNIT HEATER UH-1</td>
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<td>17</td>
<td>RM 100 UNIT HEATER UH-2</td>
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<td>18</td>
<td>ELECTRICAL RM 105 UNIT HEATER UH-4</td>
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<td>RM 104 BASEBOARD HEATER</td>
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<td>22</td>
<td>ACCESS SYSTEM</td>
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<td>23</td>
<td>RM 100 EXHAUST FAN EF-1</td>
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<td>24</td>
<td>DATA LOGGER</td>
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Comments:

Operator Verified Initial/Date: _______ / _______
Operator Independently Verified Initial/Date: _______ / _______
## Attachment 2 - Primary Ventilation System Electrical Power Lineup (Cont.)

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<tr>
<th>BREAKER</th>
<th>DOE-0359 Requirement</th>
<th>BREAKER NAME</th>
<th>POSITION</th>
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<th>IND VER (✓)</th>
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<tr>
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<td>QEW (1)</td>
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<td>SECONDARY MAIN</td>
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<td>OUTDOOR RCPT and LTG</td>
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### PANEL PP-6 (Chiller Pad)

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<th>IND VER (✓)</th>
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<td>Unverified</td>
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<td>REMOTE CONTROL UNIT NO.1 (RCU1)</td>
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### PANEL BOARD UPS-PP-13 (E/I Room A 106)

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<tr>
<td>RCU2</td>
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<tr>
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### PANEL BOARD UPS-PP-14 (E/I Room B 104)

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<td>PANELBOARD MAIN CIRCUIT BREAKER NO. 4</td>
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### Special Instructions:

1. If checked (√), This is a 480 volt breaker/disconnect that requires a qualified electrical worker to operate.
2. If checked (√), PRIOR to operating, ENSURE personnel trained in the operation of breakers and disconnects dons PPE (refer to Section 3.1).

Comments:

Operator Verified Initial/Date: ______/_______
Operator Independently Verified Initial/Date: ______/_______
### Attachment 2 - Primary Ventilation System Electrical Power Lineup (Cont.)

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#### AZ-CWR-1 AIR-COOLED CHILLER CONTROL PANEL (Chiller Pad)

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#### STANDBY PANELBOARD No. 1 (Transfer Switch Room #102)

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#### STANDBY PANELBOARD No. 2 (Transfer Switch Room #104)

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#### VSD 1 (E/I ROOM A 106)

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#### VSD 2 (E/I ROOM B 104)

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<td>VSD-2</td>
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### Special Instructions:

1. If Checked (✓), This is a 480 volt breaker/disconnect that requires a qualified electrical worker to operate.
2. If Checked (✓), PRIOR to operating, ENSURE personnel trained in the operation of breakers and disconnects dons PPE (refer to Section 3.1).

### Comments:

Operator Verified Initial/Date: __________ / __________
Operator Independently Verified Initial/Date: __________ / __________
## Attachment 3 - Primary Ventilation System Hand Switch Lineup

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<th>SWITCH NAME AND LOCATION</th>
<th>REQUIRED POSITION</th>
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<th>IND VER (✓)</th>
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<tbody>
<tr>
<td>HAND/OFF/AUTO</td>
<td>PRIMARY VENTILATION A FILTER TRAIN HEATER (AZ-K1-2-1A) CONTROL SWITCH FILTER ROOM A</td>
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<tr>
<td>HAND/OFF/AUTO</td>
<td>PRIMARY VENTILATION B FILTER TRAIN HEATER (AZ-K1-2-1B) CONTROL SWITCH FILTER ROOM B</td>
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<td>HS-AZCWP-1A1</td>
<td>CHILLER GLYCOL PUMP A (AZ-CW-P-1A) CONTROL SWITCH</td>
<td>REMOTE</td>
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<tr>
<td>HS-AZCWP-1B1</td>
<td>CHILLER GLYCOL PUMP B (AZ-CW-P-1B) CONTROL SWITCH</td>
<td>REMOTE</td>
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<td>HS-AZK111-1A</td>
<td>PRIMARY VENTILATION SYSTEM VACUUM PUMP AZ-K1-11-1 CONTROL SWITCH (LOCAL) (ENCL-AZK1-1 STACK MONITOR ROOM 105)</td>
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<td>BYPASS-OFF-INV SWITCH</td>
<td>PRIMARY EXHAUST FAN AZ-K1-5-1A VSD1 (E/I ROOM A 106)</td>
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<tr>
<td>START/STOP CONTROL</td>
<td>PRIMARY EXHAUST FAN AZ-K1-5-1B VSD2 (E/I ROOM B 104)</td>
<td>REMOTE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPEED CONTROL</td>
<td>PRIMARY EXHAUST FAN AZ-K1-5-1B VSD2 SPEED CONTROL (E/I ROOM B 104)</td>
<td>REMOTE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KEY SWITCH</td>
<td>HEME AZ-K1-9-1 Radiation Mon System POS 1-2 RIAS-AZK109-1</td>
<td>KEY ON NORMAL LIGHT ON</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HS-AZK1 1-2</td>
<td>Low flow alarm horn local control switch (E/I Room B)</td>
<td>Micon Enabled (Off)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:

Operator Verified Initial/Date: __________ / __________         Operator Independently Verified Initial/Date: __________ / __________
## Attachment 4 - Evacuation Horn Configuration Mode

<table>
<thead>
<tr>
<th>CONTROL BUTTON</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AUTO/MANUAL</strong></td>
<td>Low Vacuum and Flow Alarm (MCS Graphic 15)</td>
</tr>
<tr>
<td>AUTO -</td>
<td>Automatically activates evacuation horn when vacuum and flow setpoints are reached.</td>
</tr>
<tr>
<td>MANUAL -</td>
<td>Toggles ON/OFF button to display which allows for manual operation of evacuation horn by Operator.</td>
</tr>
<tr>
<td><strong>ON/OFF</strong></td>
<td>ON - Manually activates the evacuation horn.</td>
</tr>
<tr>
<td>OFF -</td>
<td>Manually shuts off the evacuation horn.</td>
</tr>
<tr>
<td><strong>NORMAL/SILENCE</strong></td>
<td>NORMAL - Normal evacuation horn operation.</td>
</tr>
<tr>
<td></td>
<td>SILENCE - Silences the evacuation horn.</td>
</tr>
</tbody>
</table>

## Low Vacuum and Flow Alarm (MCS Graphics 10, 11, 12, 13)

<table>
<thead>
<tr>
<th>CONTROL BUTTON</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENABLED/DISABLED</strong></td>
<td>Low Vacuum and Flow Alarm (MCS Graphics 10, 11, 12, 13)</td>
</tr>
<tr>
<td>ENABLED -</td>
<td>Automatically activates evacuation horn when vacuum and flow setpoints are reached for the applicable tank.</td>
</tr>
<tr>
<td>DISABLED -</td>
<td>Disables automatic activation of the evacuation horn for the applicable tank.</td>
</tr>
</tbody>
</table>

AUTO & NORMAL mode are the preferred modes for operating the evacuation horn. MANUAL mode of operation is normally used when maintenance activities may require MANUAL activation of the horn.

The evacuation horn will sound when flow indication for any tank is < 50 scfm and the pressure is > - 0.25 inches WC. When the evacuation horn is SILENCED, Operations monitoring of exhauster operations is normally required for personnel entry into the Farm. Loss of Tank Farm ventilation may require MANUAL activation of the evacuation horn.

## Low Vacuum and Flow Alarm Local Control (HS-AZK1 1-2) (E/I room B)

<table>
<thead>
<tr>
<th>CONTROL BUTTON</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand Switch</td>
<td>Micon Enabled (OFF) - Allows MCS control of AY/AZ evacuation horn</td>
</tr>
<tr>
<td>(HS-AZK1 1-2)</td>
<td>Micon Bypass (ON) - Bypasses MCS control of AY/AZ evacuation horn</td>
</tr>
<tr>
<td>Manual Button</td>
<td>Push to activate AY/AZ evacuation horn. Turn until button pops out to clear alarm</td>
</tr>
</tbody>
</table>

Pressing the local evacuation horn button in E/I Room B will activate the evacuation horn even if the MCS evacuation horn is silenced.
Attachment 5 - Operate Variable Speed Drives (VSD-1 and VSD-2)

NOTE – Refer to Figure 3 - VSD Keypad or Figure 4 – VSD Keypad and Controls for VSD layout.

Configure VSD-1 or VSD-2 For REMOTE (MCS) Control

A. On the START/STOP CONTROL section of the keypad, PRESS SELECT button until REMOTE indicator light comes on.

B. On the SPEED CONTROL section of the keypad, PRESS SELECT button until REMOTE indicator light comes on.

C. ENSURE INVERTER/OFF/BYPASS switch is in INV. position

NOTE - NORM/TEST/RUN switch is located inside the cabinet and requires an electrician for verification of switch position

D. IF maintenance has been performed AND the NORM/TEST/RUN switch has been repositioned, ENSURE NORM/TEST/RUN switch is in NORM position.

Configure VSD-1 or VSD-2 For Local Keypad Control

A. On the START/STOP CONTROL section of the keypad, PRESS SELECT button until the KEYPAD indicator light comes on.

B. On the SPEED CONTROL section of the keypad, PRESS SELECT button until the KEYPAD indicator light comes on.

C. ENSURE INVERTER/OFF/BYPASS switch is in INV. position

NOTE - NORM/TEST/RUN switch is located inside the cabinet and requires an electrician for verification of switch position

D. IF maintenance has been performed and the NORM/TEST/RUN switch has been repositioned, ENSURE NORM/TEST/RUN switch is in NORM position.
Start and Control VSD-1 or VSD-2 From The Keypad

A. **ENSURE** keypad has been configured for local keypad control.
B. **PRESS** DISPLAY button on Setup/Display Control section of keypad until Operations Display light is lit.
C. **PRESS** INCREASE button on Setup/Display Control section of keypad until “SpdSet” appears on top section of LCD display.
D. **PRESS** DECREASE button on Setup/Display Control section of keypad until “Speed” appears on bottom section of LCD display.
E. **PRESS** START button on Start/Stop Control section of keypad.

**NOTE** - If the FASTER or SLOWER button is pressed and held in, the value changes at an increasing rate

F. **PRESS** FASTER or SLOWER button on the Speed Control section of keypad to adjust fan to desired speed

G. **OBSERVE** LCD shows desired speed setpoint (SpdSet) is displayed, and the Change Settings indicator is flashing on the Setup/Display Control section of the keypad.
H. **ENSURE** VSD adjusts Speed to setpoint (approximately).

I. **Stop Variable Frequency Drive (VSD-1 and VSD-2)**

A. **IF** INVERTER/OFF/BYPASS switch is in the INV. position, **PRESS** the STOP button to stop the fan (See Figure 4).
   
   1. **OBSERVE** Run indicator flashes as the drive is stopping **AND** Run light goes out when the drive reaches zero speed.

B. **IF** the INVERTER/OFF/BYPASS switch is in the BYPASS position, **POSITION** the INVERTER/OFF/BYPASS switch to OFF to stop the fan (See Figure 4).
Attachment 5 - Operate Variable Speed Drives (VSD-1 and VSD-2) (Cont.)

II. Select Different Operation Display Values

    NOTE - Possible operation display values are: SpdSet, Speed, Load, KW, KW Hours, Line V, Bus V, Motor V, Bus I, Motor I, RunHrs, and Config.

A. To change the top line of the LCD display, **PERFORM** the following:

   1. **ENSURE** Operation Display indicator is lit by using the Display button.

      NOTE - When the end of the list of parameters is reached, the list recycles to the top and displays the first operation display parameter.

   2. **PRESS** the INCREASE button until the desired parameter is indicated **AND RELEASE** button.

B. To change the bottom line of the LCD display, **PERFORM** the following:

   1. **ENSURE** Operation Display indicator is lit by using the Display button.

      NOTE - When the end of the list of parameters is reached, the list recycles to the top and displays the first operation display parameter.

   2. **PRESS** the DECREASE button until the desired parameter is indicated **AND RELEASE** button.

III. Display Fault Messages

    NOTE - The FAULT indicator comes on and the Run indicator goes out when the drive discovers a problem.

A. **OBSERVE** FAULT indicator is on at the VSD-1 or VSD-2 in E/I Room B.

B. **PRESS** DISPLAY button until the Operation Display indicator goes out and the Diagnostic Display indicator is lit (if in the Setup mode, the DISPLAY button will need to be pressed twice).

    NOTE - The LCD displays the most recent fault message.

C. **PRESS** INCREASE or DECREASE button to review all of the fault messages.

D. **REFER** to vendors manual for probable causes and suggested remedies.
Attachment 5 - Operate Variable Speed Drives (VSD-1 and VSD-2) (Cont.)

NOTE - Make sure when pressing the START button the intended operation is to clear the fault and resume running the drive. Pressing the START button clears the fault and starts the drive.

- Pressing the STOP button clears the fault but does not start the drive.

E. AFTER the problem is resolved, PRESS the STOP button to clear the fault.

F. OBSERVE FAULT indicator goes out.

G. AFTER Fault has been cleared, RESTART VSD-1 or VSD-2 per Shift Manager/OE either in Remote or Local Manual control.

IV. Operation of Fan Without Variable Speed Control Ability

NOTE - The fan will only run at 3600 rpm (full speed) when operated by bypassing the variable speed control.

A. ENSURE Shift Manager/OE has authorized operation of the fan at full speed.

NOTE - When the INVERTER/OFF/BYPASS switch is positioned to the BYPASS position, the fan will IMMEDIATELY start and run at full speed. (RPP-11413)

B. POSITION the INVERTER/OFF/BYPASS switch to the BYPASS position to IMMEDIATELY start and run fan at full speed (See Figure 4).
Figure 1 - Primary Ventilation Condenser and HEME
Figure 2 - Primary Ventilation Heaters, HEPAs and Fans
Figure 3 - VSD Keypad
Figure 4 – VSD Keypad and Controls

- **RUN**
- **FAULT**
- **INVERT**
- **BYPASS**
- **OVERLOAD**
- **RESET**
- **STOP**
- **Forward / Reverse**
- **Scroll Parameters**
- **Change Settings**
- **Operation Display**
- **Diagnostic Display**
- **Start / Stop Control**
- **Setup / Display Control**
- **INCREASE**
- **FASTER**
- **+**
- **GREEN**
- **+**
- **ORANGE**
- **MOTOR ON**
- **BYPASS**
- **MOTOR ON INVERTER**
- **MOTOR ON BYPASS**
- **OFF INV. BYP.**
- **OVERLOAD**
- **RESET**
Figure 5 - Primary Exhaust Stack CAM Interlock Bypass Switch