ETF Alarm Response Procedure

Effluent Treatment Facility

USQ Not Required – ETF is a <Hazard Category 3 Radiological Facility

CHANGE HISTORY ( ≤ LAST 5 REV-MODS )

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<td>A-1</td>
<td>05/25/2016</td>
<td>Process Improvement</td>
<td>Add new alarm STEAM CONDENSATE TANK LEVEL LO LAL-65A001; correct number on the Feed pump 65A-P-1 discharge check valve</td>
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<tr>
<td>A-0</td>
<td>03/01/2016</td>
<td>Conversion to WRPS Format</td>
<td>New Procedure; Supersedes ETF-PRO-AR-51392 (ARP-65A-001)</td>
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Dryer Steam System

Alarm

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RECORDS

No records are generated during the performance of this procedure.
STEAM OPERATION FAILURE

DESCRIPTION:  STEAM OPERATION FAILURE
Setpoint:  Logic permissive(s) not met
Alarm Location:  Logic Generated Alarm
Graphic:  Alarm Summary Screen
Indications:  N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions:
1. Steam system goes to SHUTDOWN if operating in AUTOMATIC mode.

Immediate Actions:
[2] IF a source alarm exists, REFER to appropriate source alarm response per this ARP.
[3] ENSURE the Steam Boiler is aligned for Automatic operation per ETF-60J-001.

Possible Causes:
1. Any of the following alarmed conditions:
   • STEAM CONDENSATE TANK LEVEL LO
   • STEAM BOILER LEVEL LO
   • STEAM BOILER PRESSURE HI
   • STEAM BOILER FEED PUMP
   • AOV-65A001 FAULT.

(Continued on Next Page)
STEAM OPERATION FAILURE

**DESCRIPTION:** STEAM OPERATION FAILURE
**Setpoint:** Logic permissive(s) not met
**Alarm Location:** Logic Generated Alarm
**Graphic:** Alarm Summary Screen
**Indications:** N/A

(Continued)

**Possible Causes (Cont.):**

2. Any of the following equipment taken to MANUAL:
   - Steam Boiler 65A-B-1
   - Demineralized Makeup Water Supply valve AOV-95D021
   - Steam Boiler Feed pump 65A-P-1
   - Feed Pump Discharge valve AOV-65A001.


**References:**

- **Drawings:** H-2-88999, P&ID, Steam System
- **Documents:** ETF-60J-001, Thin Film Dryer Operation
STEAM CONDENSATE TANK LEVEL HI
LAH-65A001

DESCRIPTION:  STEAM CONDENSATE TANK LEVEL HI (LAH-65A001)
Setpoint:  7.5 inches (93.7%)
Alarm Location:  LT-65A001
Graphic:  Alarm Summary Screen
Indications:  N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions:
None.

Immediate Actions:
[1] ON both graphic Steam and locally, CHECK AOV-95D021, demineralized makeup water valve CLOSED.
[2] ON both graphic Steam and locally, CHECK LI-65A001, condensate tank 65A-TK-1 level.
[3] IF condensate tank 65A-TK-1 level is greater than or equal to 93.7% (on graphic Steam), or 7.5 inches (locally), SLOWLY OPEN 65A-063 manual Condensate Tank level gauge drain valve as required to reduce Condensate Tank 65A-TK-1 level to 50% (48 to 52%) on graphic Steam, or 4 inches (3.8 to 4.2 inches) locally.

Possible Causes:
1. Demineralized makeup water valve AOV-95D021 failed open or leaking past seat.
2. Excessive condensate return during startup.
4. Feed pump 65A-P-1 discharge check valve 65A-056 back leakage.

References:
Drawings:  H-2-88999, P&ID, Steam System
H-2-89309, Logic Diagram, Utility System, Steam
Documents:  ETF-60J-001, Thin Film Dryer Operation
STEAM CONDENSATE TANK LEVEL LO
LAL-65A001

DESCRIPTION: STEAM CONDENSATE TANK LEVEL LO (LAL-65A001)
Setpoint: 1.0 inches (12.5%)
Alarm Location: LT-65A001
Graphic: Alarm Summary Screen
Indications: N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions:
1. Steam system goes to SHUTDOWN if operating in AUTOMATIC mode.

Immediate Actions:
[1] ON both graphic Steam and locally, CHECK 65A-P-1, Boiler Feed Pump is OFF.
[2] ON both graphic Steam and locally, CHECK LI 65A001, condensate tank 65A-TK-1 level.
[3] IF condensate tank 65A-TK-1 level is less than or equal to 12.5% (on graphic Steam), or 1.0 inches (locally), OPEN AOV-95D-021 demineralized makeup water valve as required to increase Condensate Tank 65A-TK-1 level to 50% (48 to 52%) on graphic Steam, or 4 inches (3.8 to 4.2 inches) locally.

Possible Causes:
1. Demineralized makeup water valve AOV-95D021 failed closed.
2. Condensate Tank level instrument LG/LT-65A001 failure.
3. Feed pump 65A-P-1 fails to shut off when filling boiler.
4. Valve misalignment.

References:
Drawings: H-2-88999, P&ID, Steam System
H-2-89309, Logic Diagram, Utility System, Steam
Documents: ETF-60J-001, Thin Film Dryer Operation
CONDENSATE TANK PRESSURE HI
PAH-65A003

DESCRIPTION: CONDENSATE TANK PRESSURE HI (PAH-65A003)
Setpoint: 10 psig
Alarm Location: PT-65A003
Graphic: Alarm Summary Screen
Indications: N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions:
None.

Immediate Actions:

[1] ON alarm summary screen, IF steam condensate tank level HI (LAH-65A001) alarm is present, RESPOND per this ARP.

[2] ON graphic Steam, IF condensate tank pressure PI-65A003 continues to increase, SHUT DOWN Steam Boiler per ETF-60J-001.

Possible Causes:

1. High condensate tank level.
2. Condensate tank vent valve 65A-074 ¾-inch disk hole plugged.
3. Dryer steam trap failed OPEN.
5. One or more dryer steam trap bypass valves OPEN.

References:

Drawings: H-2-88999, P&ID, Steam System
H-2-89309, Logic Diagram, Utility System, Steam
Documents: ETF-60J-001, Thin Film Dryer Operation
CONSENSATE TANK PRESSURE LO  
PAL-65A003

DESCRIPTION: CONSENSATE TANK PRESSURE LO (PAL-65A003) 
Setpoint: -1 psig
Alarm Location: PT-65A003
Graphic: Alarm Summary Screen
Indications: N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions: 
None.

Immediate Actions:
[1] BY inspection, CHECK PSV-65A106 and PSV-65A105 CLOSED.
[3] ON graphic Steam, IF condensate tank pressure PI-65A003 does not begin to increase within 30 minutes, SHUT DOWN Steam Boiler per ETF-60J-001.

Possible Causes:
1. PCV-65A035 control failure.
2. PSV-65A106 or PSV-65A105 stuck OPEN.

References:
Drawings: H-2-88999, P&ID, Steam System
H-2-89309, Logic Diagram, Utility System, Steam
Documents: ETF-60J-001, Thin Film Dryer Operation
**STEAM BOILER LEVEL HI**  
**LAH-65A010**

**DESCRIPTION:**  
STEAM BOILER LEVEL HI (LAH-65A010)

**Setpoint:**  
6 inches (75%)

**Alarm Location:**  
LT-65A010

**Graphic:**  
Alarm Summary Screen

**Indications:**  
N/A

**NOTE** - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

**Automatic Actions:**

None.

**Immediate Actions:**

[1] **CHECK** Boiler feed pump 65A-P-1 is OFF.

[2] **ON** graphic Steam, **MONITOR** Boiler level LI-65A010.

[3] **ON** graphic Steam, **IF** Boiler level LI-65A010 continues to increases to 81%, or 6.5 inches on local indicator LG-65A010, **PERFORM** the following steps:

   [3.1] **SHUT DOWN** Steam Boiler per ETF-60J-001.

   [3.2] **SLOWLY OPEN** 65A-046 Boiler level switch LS-65A013 manual drain valve as required to reduce Steam Boiler 65A-B-1 level to 40% (38 to 42%) on graphic Steam, or 3.2 inches (3.0 to 3.4 inches) locally.

   [3.3] **RESTART** Steam Boiler per ETF-60J-001.

**Possible Causes:**

1. Overfilling cold Steam Boiler on initial fill.

2. Level gauge/transmitter LG/LT-65A010 malfunction.

**References:**

**Drawings:**  
H-2-88999, P&ID, Steam System  
H-2-89309, Logic Diagram, Utility System, Steam

**Documents:**  
ETF-60J-001, Thin Film Dryer Operation
# STEAM BOILER LEVEL LO
## LALX-65A010

<table>
<thead>
<tr>
<th>DESCRIPTION:</th>
<th>STEAM BOILER LEVEL LO (LALX-65A010)</th>
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<tr>
<td>Setpoint:</td>
<td>1.75 inches (22%)</td>
</tr>
<tr>
<td>Alarm Location:</td>
<td>LT-65A010, LS65A013</td>
</tr>
<tr>
<td>Graphic:</td>
<td>Alarm Summary Screen</td>
</tr>
<tr>
<td>Indications:</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**NOTE** - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

**Automatic Actions:**
1. Steam system goes to SHUTDOWN if operating in AUTOMATIC mode.

**Immediate Actions:**
1. CONFIRM valve alignment per ETF-60J-001.
2. RESTART steam system per ETF-60J-001.

**Possible Causes:**
1. Feed pump 65A-P-1 malfunction.
2. Steam Boiler 65A-B-1 level instrument LG/LT-65A001 failure.
4. Valve misalignment.

**References:**
- Drawings: H-2-88999, P&ID, Steam System
  H-2-89309, Logic Diagram, Utility System, Steam
- Documents: ETF-60J-001, Thin Film Dryer Operation
### STEAM BOILER PRESSURE HI
**PAHX-65A011**

**DESCRIPTION:** STEAM BOILER PRESSURE HI (PAHX-65A011)

- **Setpoint:** 168 psig
- **Alarm Location:** PT-65A011
- **Graphic:** Alarm Summary Screen
- **Indications:** N/A

**NOTE** - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

#### Automatic Actions:
1. Steam system goes to SHUTDOWN if operating in AUTOMATIC mode.

#### Immediate Actions:
1. **CONFIRM** Automatic Actions have occurred.
2. **LOCALLY CHECK** that all white lights indicating “heater bank energized” are OFF.
3. **IF** operating with Boiler Local/Remote (local) switch in LOCAL, **PLACE** the Local/Remote switch to REMOTE.
4. **IF** operating with Boiler Local/Remote (local) switch in REMOTE, **PLACE** the Local/Remote switch to LOCAL.
5. **ON** graphic Steam, **CHECK** that the steam boiler pressure is less than or equal to 155 psig.
6. **RESTART** the Steam Boiler per ETF-60J-001.

#### Possible Causes:
1. Pressure controller PC-65A041 malfunction if operating with Local/Remote switch in LOCAL.
2. MCS pressure controller PIC-65A014 malfunction if operating with Local/Remote switch in REMOTE.
3. Boiler heater contactor failed CLOSED.

#### References:
- **Drawings:** H-2-88999, P&ID, Steam System
  
- **Documents:** ETF-60J-001, Thin Film Dryer Operation
STEAM BOILER PRESSURE LO
PAL-65A011

DESCRIPTION: STEAM BOILER PRESSURE LO (PAL-65A011)
Setpoint: 120 psig
Alarm Location: PT-65A011
Graphic: Alarm Summary Screen
Indications: N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions:
None.

Immediate Actions:
NOTE - Immediate Actions shown below are performed only if the corresponding Possible Cause has been identified as the actual cause.

[1] BY inspection, CHECK the following are CLOSED:
   • PSV-65A035
   • SV-65A023.

[2] IF operating with Boiler Local/Remote (local) switch in LOCAL, PLACE the Local/Remote switch in REMOTE.

[3] IF operating with Boiler Local/Remote (local) switch in REMOTE, PLACE the Local/Remote switch in LOCAL.

[4] LOCALLY CHECK all heater bank indicating lights are ON.


[6] REDUCE concentrate feed flow to the Thin Film Dryer per ETF-60J-001.

(Continued on Next Page)
STEAM BOILER PRESSURE LO
PAL-65A011

DESCRIPTION: STEAM BOILER PRESSURE LO (PAL-65A011)
Setpoint: 120 psig
Alarm Location: PT-65A011
Graphic: Alarm Summary Screen
Indications: N/A

Possible Causes:

1. PSV-65A035 or PSV-65A023 stuck OPEN.
2. Pressure controller PC-65A041 malfunction if operating with Local/Remote switch in LOCAL.
3. MCS pressure controller PIC-65A014 malfunction if operating with Local/Remote switch in REMOTE.
4. Boiler heater contactor failed OPEN.
5. One or more steam trap blowdown valves open excessively.
6. Concentrate feed rate to Thin Film Dryer too high, resulting in steam demand higher than boiler capacity.

References:

Drawings: H-2-88999, P&ID, Steam System
          H-2-89309, Logic Diagram, Utility System, Steam
Documents: ETF-60J-001, Thin Film Dryer Operation
**STEAM FDPMP DISCH PRES**  
**PAH 65A002**

**DESCRIPTION:**  
TFD BOILER FEEDPUMP PRESSURE HI (PAH-65A002)

Setpoint: 170 psig  
Alarm Location: PIT-65A002  
Graphic: Alarm Summary Screen  
Indications: N/A

**NOTE** - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

**Automatic Actions:**  
None.

**Immediate Actions:**

1. **CONFIRM** boiler pressure is within normal operating range per ETF-60J-001.
2. **CONFIRM** boiler feedpump discharge isolation valve 65A-057 is OPEN.
3. **IF** boiler is still in OPERATION, **SHUT DOWN AND RESTART** the Steam Boiler per ETF-60J-001.
4. **IF** boiler shuts down on low level, **RESTART** the Steam Boiler per ETF-60J-001.

**Possible Causes:**

1. Boiler pressure abnormal (high).
2. Boiler feedpump discharge isolation valve 65A-057 CLOSED.

**References:**

Drawings:  
- H-2-88999, P&ID, Steam System  
- H-2-89309, Logic Diagram, Utility System, Steam

Documents:  
- ETF-60J-001, Thin Film Dryer Operation
STEAM FDPMP DISCHG PRES LO
PAL-65A002

DESCRIPTION: TFD BOILER FEEDPUMP PRESSURE LO (PAL-65A002)
Setpoint: 50 psig
Alarm Location: PIT-65A002
Graphic: Alarm Summary Screen
Indications: N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions:
None.

Immediate Actions:
[1] CONFIRM boiler pressure is within normal operating range per ETF-60J-001.
[2] CONFIRM feed pump recirculation throttle valve 65A-065 is throttled per ETF-60J-001.
[3] IF boiler is still in OPERATION, SHUT DOWN AND RESTART the Steam Boiler per ETF-60J-001.

Possible Causes:
1. Boiler pressure abnormal (low).
2. Boiler feed pump recirculation throttle valve 65A-065 opens too far.
3. Boiler feed pump discharge check valve 65A-056 failed to close completely, resulting in pump vapor lock.

References:
Drawings: H-2-88999, P&ID, Steam System
H-2-89309, Logic Diagram, Utility System, Steam
Documents: ETF-60J-001, Thin Film Dryer Operation
STEAM BOILER FEED PUMP
65A-P1A-A

DESCRIPTION: STEAM BOILER FEED PUMP (65A-P1A-A)
Setpoint: Logic permissive(s) not met
Alarm Location: Logic Generated Alarm
Graphic: Alarm Summary Screen
Indications: N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions:
1. Steam system goes to SHUTDOWN if operating in AUTOMATIC mode.

Immediate Actions:
[1] CONFIRM breaker MCC-3, 65A-P-1 is ON.
[2] IF breaker is tripped, REQUEST Maintenance troubleshoot and reset.

Possible Causes:
1. Breaker MCC-3, 65A-P-1 OFF/TRIPPED.
3. Control fuses blown.

References:
Drawings: H-2-88999, P&ID, Steam System
H-2-89309, Logic Diagram, Utility System, Steam
Documents: ETF-60J-001, Thin Film Dryer Operation
65A-P-1 START FAIL

DESCRIPTION: 65A-P-1 START FAIL (BOILER FEED PUMP FAIL TO START)
Setpoint: Logic permissive(s) not met
Alarm Location: Logic Generated Alarm
Graphic: Alarm Summary Screen
Indications: N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions:
1. Steam system goes to SHUTDOWN if operating in AUTOMATIC mode.

Immediate Actions:
[1] CONFIRM Automatic Actions have occurred.
[2] LOCALLY CHECK that all white lights indicating “heater bank energized” are OFF.

Possible Causes:
1. Boiler feed pump problem causing failure of pump to start within fifteen seconds of demand signal.

References:
Drawings: H-2-88999, P&ID, Steam System
H-2-89309, Logic Diagram, Utility System, Steam
Documents: ETF-60J-001, Thin Film Dryer Operation
AOV-95D021 MAKE-UP FAILURE

DESCRIPTION: AOV-95D021 MAKE-UP FAILURE (BOILER COND. TK. MAKE-UP FAILURE)
Setpoint: Logic permissive(s) not met
Alarm Location: Logic Generated Alarm
Graphic: Alarm Summary Screen
Indications: N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions:
1. Steam system goes to SHUTDOWN if operating in AUTOMATIC mode.

Immediate Actions:
[1] CONFIRM Automatic Actions have occurred.
[2] LOCALLY CHECK that all white lights indicating “heater bank energized” are OFF.

Possible Causes:
1. Makeup valve to condensate tank AOV-95D021 did not open within 20 seconds of demand signal.
2. Limit switch on AOV-95D021 out of adjustment.
3. AOV-95D021 stuck CLOSED.

References:
Drawings: H-2-88999, P&ID, Steam System
H-2-89309, Logic Diagram, Utility System, Steam
Documents: ETF-60J-001, Thin Film Dryer Operation
AOV-65A001 FAULT

DESCRIPTION: AOV-65A001 FAILURE TO OPEN (BOILER FEED PUMP DISCHARGE AOV FAILURE)

Setpoint: Logic permissive(s) not met
Alarm Location: VD61545
Graphic: Alarm Summary Screen
Indications: N/A

NOTE - Alarm response procedures are not designed for, nor intended to be applied to, “expected” alarms generated by approved work activities or procedures.

Automatic Actions:

1. Steam system goes to SHUTDOWN if operating in AUTOMATIC mode.

Immediate Actions:

[1] CONFIRM Automatic Actions have occurred.
[2] LOCALLY CHECK that all white lights indicating “heater bank energized” are OFF.

Possible Causes:

1. Boiler feed pump discharge valve to boiler (AOV-65A001) did not open within 20 seconds of demand signal.
2. Limit switch on AOV-65A001 is out of adjustment.
3. AOV-65A001 stuck CLOSED.

References:

Drawings: H-2-88999, P&ID, Steam System
H-2-89309, Logic Diagram, Utility System, Steam
Documents: ETF-60J-001, Thin Film Dryer Operation