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

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Effluent pH Adjustment System

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Records

No records are generated during the performance of this procedure.
EFF PH ADJ RDY ATTEMPT FAIL
VD235499

DESCRIPTION: Effluent pH Adjustment System Ready Attempt 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. Effluent pH Adjustment System will go to SHUTDOWN mode.

Immediate Actions:
[1] ENSURE AUTO setting on handswitches and air operated valves (AOV) per ETF-60-002.

[2] CHECK for pH adjustment tank level alarms for the following:
   • LAH-60C-211
   • LAL-60C-211.

[3] ENSURE selected pump 60C-P-2A/B, is in AUTO and not in ALARM.

[4] ENSURE valve 60G-003, Effluent pH Adjustment System bypass, CLOSED.

[5] CONFIRM following utilities are in OPERATION:
   • Chemical Feed
   • Instrument Air
   • Vessel Off-Gas.


[7] IF low level alarm is ON, ADJUST tank level per ETF-60-002.

[8] IF high level alarm is ON, LOWER tank level to 50% or less per ETF-60-002.

(Continued on Next Page)
EFF PH ADJ RDY ATTEMPT FAIL
VD235499

DESCRIPTION: Effluent pH Adjustment System Ready Attempt Failure
Setpoint: Logic permissive(s) not met
Alarm Location: Logic generated alarm
Graphic: Alarm Summary Screen
Indications: N/A

Possible Causes:
1. AUTO condition not met.
2. Tank low or high level alarm ON.
3. Selected pump in alarm or in MANUAL.
4. Utility systems not in OPERATION.

References:
Drawings: None
Documents: ETF-60-002, Integrated MTT Operation
ETF-60-006, Initial MTT Lineup in Configuration 1
EFF PH ADJ OPER ATTEMPT FAIL  
VD235500

DESCRIPTION:  Effluent pH Adjustment System Operate Attempt 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. Effluent pH Adjustment System will go to SHUTDOWN mode.

Immediate Actions:
[1] ENSURE AUTO setting on handswitches and AOVs per ETF-60-002.
[2] CHECK for pH adjustment tank level alarms for the following:  
   • LAH-60C-211  
   • LAL-60C-211.
[3] ENSURE selected pump 60C-P-2A/B, is in AUTO and not in ALARM.  
[4] ENSURE valve 60G-003, Effluent pH Adjustment System bypass, CLOSED.  
[5] CONFIRM following utilities are in OPERATION:  
   • Chemical Feed  
   • Instrument Air  
   • Vessel Off-Gas.  
[7] IF low level alarm is ON, ADJUST tank level per ETF-60-002.  
[8] IF high level alarm is ON, LOWER tank level to 50% or less per ETF-60-002.

(Continued on Next Page)
EFF PH ADJ OPER ATTEMPT FAIL VD235500

DESCRIPTION: Effluent pH Adjustment System Operate Attempt Failure
   Setpoint: Logic permissive(s) not met
   Alarm Location: Logic generated alarm
   Graphic: Alarm Summary Screen
   Indications: N/A

(Continued)

Possible Causes:
1. AUTO condition not met.
2. Tank low or high level alarm ON.
3. Selected pump in alarm or in MANUAL.
4. Utility systems not in OPERATION.

References:
   Drawings: None
   Documents: ETF-60-002, Integrated MTT Operation
**EFF PH ADJ LAH 60C211 VD235502**

**DESCRIPTION:** Effluent pH Adjustment System Tank Level High (LAH-60C-211)

**Setpoint:** Effluent pH Adjustment System Tank Level at 95%

**Alarm Location:** LT-60C-211

**Graphic:** Alarm Summary Screen

**Indications:** N/A

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**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. Effluent pH Adjustment System will go to SHUTDOWN mode.

**Immediate Actions:**

1. **ON** graphic EffpH, CHECK LIC-60C-211 indicates greater than 95%.
2. **ENSURE** closed valve 60H-037 (verification water inlet).
3. **CHECK** FIC-60C-218 is in CASCADE.
4. **CHECK** LIC-60C-211 is in AUTO with correct setpoint per ETF-60-002.
5. **LOWER** tank level per ETF-60-002.

**Possible Causes:**

1. pH adjustment pump A (B) not operating correctly.
2. Admittance of verification water into system, 60H-037.
3. Malfunction of level control valve LCV-60C-211 or transmitter, LT-60C-211, or flow control valve, FIC-60C-218, or transmitter or FIT-60C-218.

**References:**

- **Drawings:** None
- **Documents:** ETF-60-002, Integrated MTT Operation
EFF PH ADJ LAL 60C211 VD235503

DESCRIPTION: Effluent pH Adjustment System Tank Level Low (LAL-60C-211)
Setpoint: Effluent pH Adjustment System Tank Level at 10%
Alarm Location: LT-60C-211
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. Pump (60C-P-2A) [60C-P-2B] shuts down.
2. Effluent pH Adjustment System will go to SHUTDOWN mode.

Immediate Actions:
[1] ENSURE pump (60C-P-2A) [60C-P-2B] stopped.
[2] ON graphic EffpH, CHECK LIC-60C-211 indicates less than 10%.
[3] ENSURE the following system drain valves are CLOSED:
   • 60C-028
   • 60C-031
   • 60C-032
   • 60C-035
   • 60C-036.
[4] ENSURE valve 60G-003 (effluent pH adjustment tank bypass valve) CLOSED.
[5] ENSURE the following valves are OPEN:
   • 60G-031 (inlet valve to effluent pH adjustment tank)
   • 60C-020 (recycle valve).

(Continued on Next Page)
EFF PH ADJ LAL 60C211 VD235503

DESCRIPTION: Effluent pH Adjustment System Tank Level Low (LAL-60C-211)
Setpoint: Effluent pH Adjustment System Tank Level at 10%
Alarm Location: LT-60C-211
Graphic: Alarm Summary Screen
Indications: N/A

Immediate Actions: (Cont.)

[6] CHECK LIC-60C-211 is in AUTO with correct setpoint per ETF-60-002.
[7] ENSURE valve position in polisher graphic AOV-60G-401 aligned to EFF pH ADJ TK.
[8] ADD verification water per ETF-60C-002.

Possible Causes:

1. Valve misalignment.
2. Malfunction of level control valve LCV-60C-211 or transmitter, LT-60C-211, or flow control valve, FIC-60C-218, or transmitter or FIT-60C-218.
3. AOV-60G-401 is diverted to SURGE.

References:

Drawings: None
Documents: ETF-60-002, Integrated MTT Operation
EFF PH ADJ AAHHX 60C222 OR 60C223

DESCRIPTION: Effluent pH Adjust System pH A HI-HI (AAHHX 60C222), VD235508
Effluent pH Adjust System pH B HI-HI (AAHHX 60C223), VD235518

Setpoint: pH = 14.0
Alarm Location: AIT-60C-222 or AIT-60C-223
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:
[3] IF polisher pH is within normal range, SELECT alternate pH probe.

Possible Causes:
1. High pH of polisher effluent.
2. pH probe failure.

References:
Drawings: None
Documents: None
EFF PH ADJ AAHX 60C222 OR 60C223

DESCRIPTION: Effluent pH Adjust System pH A HI (AAHX 60C222), VD235509  
 Effluent pH Adjust System pH B HI (AAHX 60C223), VD235519

Setpoint: pH = 14.0

Alarm Location: AIT-60C-222 or AIT-60C-223

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:
[3] IF polisher pH is within normal range, SELECT alternate pH probe.

Possible Causes:
1. High pH of polisher effluent.
2. pH probe failure.

References:
Drawings: None
Documents: None
### EFF PH ADJ AALLX 60C222 OR 60C223

**DESCRIPTION:** Effluent pH Adjust System pH A Lo-Lo (AALLX 60C222), VD235511
Effluent pH Adjust System pH B Lo-Lo (AALLX 60C223), VD235521

<table>
<thead>
<tr>
<th>Setpoint</th>
<th>pH = 0.0</th>
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<tr>
<td>Alarm Location</td>
<td>AIT-60C-222 or AIT-60C-223</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:**
None.

**Immediate Actions:**
1. **MONITOR** Effluent pH Adjustment System pH for oscillations.
2. **CHECK** polisher outlet pH Historian.
3. **IF** polisher pH is within normal range, **SELECT** alternate pH probe.

**Possible Causes:**
1. Low pH of polisher effluent.
2. pH probe failure.

**References:**
- Drawings: None
- Documents: None
**EFF PH ADJ AALX 60C222 OR 60C223**

**DESCRIPTION:** Effluent pH Adjust System pH A Lo (AALX 60C222), VD235510
Effluent pH Adjust System pH B Lo (AALX 60C223), VD235520

**Setpoint:** $pH = 0.0$

**Alarm Location:** AIT-60C-222 or AIT-60C-223

**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. **MONITOR** Effluent pH Adjustment System pH for oscillations.
2. **CHECK** polisher outlet pH Historian.
3. **IF** polisher pH is within normal range, **SELECT** alternate pH probe.

**Possible Causes:**

1. Low pH of polisher effluent.
2. pH probe failure.

**References:**

- **Drawings:** None
- **Documents:** None
EFF PH ADJ LAL 65C143 LSL - 65C143

DESCRIPTION: Effluent pH Adjust System H₂SO₄ Dilution Pot Level Low (LAL-65C143)

Setpoint: Alarm ON
Alarm Location: LS-65C-143
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] IF Effluent pH Adjustment System pH is not being controlled (acceptable pH control range is 0 through 14), TAKE no action.
[2] IF Effluent pH Adjustment System pH is being controlled (is not in acceptable pH control range 0 through 14), NOTIFY SOM.

Possible Causes:
1. Acid dilution pot empty.

References:
Drawings: None
Documents: None
EFF PH ADJ LAL 65C243 LSL-65C243

DESCRIPTION: Effluent pH Adjust System NaOH Dilution Pot Level Low (LAL-65C243)

Setpoint: Alarm ON
Alarm Location: LS-65C-243
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] IF Effluent pH Adjustment System pH is not being controlled (acceptable pH control range is 0 through 14), **TAKE** no action.

[2] IF Effluent pH Adjustment System pH is being controlled (is not in acceptable pH control range 0 through 14), **NOTIFY** SOM.

Possible Causes:

1. NaOH dilution pot 65C-TK-6 is empty.

References:

Drawings: None
Documents: None
EFF PH ADJ 60C P2A A OR 60C P2B A

DESCRIPTION: Effluent pH Adjust System Pump A Failure (60C-P-2A), VD235532
Effluent pH Adjust System Pump B Failure (60C-P-2B), VD235539

Setpoint: Pump not running when required
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. Effluent pH Adjustment System goes to SHUTDOWN mode.

Immediate Actions:
[1] ENSURE Effluent pH Adjustment System is in SHUTDOWN.
[4.1] IF troubleshooting performed, RECORD SOM instruction in ETF Control Room Logbook.

Possible Causes:
1. Pump failure.
2. Possible breaker tripped.

References:
Drawings: None
Documents: ETF-60-002, Integrated MTT Operation
**EFF PH ADJ H2SO4 INJ ATT FAIL VD235546**

**DESCRIPTION:** Effluent pH Adjustment System H\textsubscript{2}SO\textsubscript{4} Injection Attempt Failure

Setpoint: AOV-65C-80 or AOV-65C-119 did not close after opening for one minute.

(Note: Logic assumes AOV-65C-80 and AOV-65C-119 open within ten seconds after commanded in logic. If AOV-65C-80 or AOV-65C-119 do not open within ten seconds of their open command, the injection will terminate prematurely without triggering Injection Attempt Failure alarms.)

**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:**

None.

**Immediate Actions:**

[1] **FOR** 20 minutes, **MONITOR** the Effluent pH Adjustment System in READY mode to verify system operation is normal per MTT surveillance parameters for Operation.

[2] **IF** Effluent pH Adjustment System does not return to normal, **PERFORM** the following:

[2.1] **SELECT** redundant pH controller.

[2.2] **MONITOR** Effluent pH Adjustment System in the READY mode to verify system operation is normal.

**Possible Causes:**

1. Injection valve(s) malfunction(s).

**References:**

Drawings: None
Documents: None
**EFF PH ADJ NAOH INJ ATT FAIL VD235547**

**DESCRIPTION:** Effluent pH Adjustment System NaOH Injection Attempt Failure

**Setpoint:** AOV-65C-81 or AOV-65C-119 did not close after opening for one minute.

(Note: Logic assumes AOV-65C-81 and AOV-65C-120 open within ten seconds after commanded in logic. If AOV-65C-81 or AOV-65C-120 do not open within ten seconds of their open command, the injection will terminate prematurely without triggering Injection Attempt Failure alarms.)

**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:**

None.

**Immediate Actions:**

[1] **FOR** 20 minutes, **MONITOR** the Effluent pH Adjustment System in READY mode to verify system operation is normal per MTT surveillance parameters for Operation.

[2] **IF** Effluent pH Adjustment System does not return to normal, **PERFORM** the following:

[2.1] **SELECT** redundant pH controller.

[2.2] **MONITOR** Effluent pH Adjustment System in the READY mode to verify system operation is normal.

**Possible Causes:**

1. Injection valve(s) malfunction(s).

**References:**

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<thead>
<tr>
<th>Drawings:</th>
<th>Documents:</th>
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