All Changes Require Review by the following Organizations:

USQ

USQ # TF-18-0634-S, Rev. 1

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for operating the 200 Area TEDF standby power systems in normal and power loss conditions.

1.2 Scope

This procedure involves instructions for the 200 Area TEDF standby power systems, including instructions for loss of power to Pump Stations 1, 2, and 3. Pump Station 3 receives only utility power and has no standby power available.

2.0 INFORMATION

2.1 Terms and Definitions

- ATS – Automatic Transfer Switch.

2.2 General Information

2.2.1 When both utility and standby power is lost at Pump Station 1, Pump Station 2, or at the Disposal Station, the LCU switches to internal battery backup power, allowing the LCU to continue operation for 20 to 60 minutes.

2.2.2 Pump Station 1 receives both utility and standby (emergency) power from two, separate, independent 13.8 kV power lines, from disconnects located on a power pole north of the building. Utility power is fed from service disconnect F8X651, and standby power is fed from Service Disconnect F8X652. Both power lines feed into ATS 68A-01. The ATS will automatically transfer to standby power when utility power is lost, and will re-engage utility power when utility voltage returns to an acceptable level for a pre-determined period of time.

2.2.3 Pump Station 2 receives utility power from one 13.8 kV power line from disconnect F8X650, located on a power pole southwest of the building. Standby power for Pump Station 2 is supplied by a propane-fueled standby power generator located south of the building. The power line feeds into ATS 68B-ATS-001. The ATS will automatically start standby power generator and engage standby power when utility power is lost and will re-engage utility power and shut down the standby power generator when utility voltage returns to an acceptable level for a pre-determined period of time.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Radiation and Contamination Control

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

3.2 Environmental Compliance

3.2.1 In the event of a spill/leak/release, notify the SOM/FWS and respond per ETF-ERP-85B-003, Emergency Spill or Release at ETF.

4.0 PREREQUISITES

4.1 Performance Documents

The following documents may be needed to perform this procedure:

- ETF-ARP-68-001, Treated Effluent Disposal Facility (TEDF) Systems (High-High Diversion Box Level Alarm LI_68I001).
- TFC-OPS-OPER-C-17, Operating Logbooks.
5.0 PROCEDURE

NOTE - Sections of this procedure delineate responses to facility conditions that may occur. Only actions related to the specific facility condition are required to be performed.

5.1 Determine Response to Facility Conditions

5.1.1 (SOM) DETERMINE actions required to confirm and respond to facility conditions.

5.1.2 DIRECT performance of sections required.

5.2 Confirm Loss of Power to Pump Station 1

NOTE - Alarm JA-68A019 ATS ALRM PMP ST#1 indicates Pump Station 1 ATS has transferred from utility to backup power.

- Alarm JA-6820VAC AC ALRM PMP ST #1 120VAC FAIL indicates both of Pump Station 1 utility and standby power sources have been lost.

5.2.1 CHECK for the following alarms:

- JA-68A019 ATS ALRM PMP ST#1
- JA-6820VAC AC ALRM PMP ST #1 120VAC FAIL

5.2.2 IF alarm JA-68A019 is ON and alarm JA-6820VAC is not ON, GO TO Section 5.3.

5.2.3 IF both alarms JA-68A019 and JA-6820VAC are on, GO TO Section 5.4.
5.3 Respond to Loss of Utility Power at Pump Station 1

NOTE - Pump Station 1 standby operating light on the ATS indicates power is available on the standby power line, not standby power is in use.

- Utility light on and emergency light off indicate utility power has been restored by the ATS.

5.3.1 ON ATS panel located on the north wall outside of the building, CHECK emergency light is ON and utility light is OFF.

5.3.1.1 IF the following lights are OFF, GO TO Section 5.4:

- Utility light
- Emergency light.

5.3.1.2 IF the following lights display as indicated, EXIT this procedure:

- Utility light is ON
- Emergency light is OFF.

5.3.2 ON LCU ALARM GROUP display on the LOI, CHECK alarm JA-68A019 ATS ALRM PMP ST#1 is still ON.

5.3.3 NOTIFY SOM of power loss.

5.3.4 REQUEST SOM provide the following:

- Cause of power loss
- Estimate of when utility power may be returned.

5.3.5 NOTIFY influent generator contacts for Pump Station 1 (Table 1) of the power loss AND

WARN of the possibility of required reductions in flow if standby power is lost.

5.3.6 MAINTAIN surveillance of Pump Station 1 equipment per SOM direction AND

RECORD SOM direction in the ETF Control Room Logbook.

5.3.7 WHEN utility power has been restored, CHECK for the following:

- All Pump Station 1 parameters are in normal ranges
- All equipment will operate normally from MCS.
5.4 Respond to Loss of Utility and Standby Power at Pump Station 1

NOTE - The level elements and level transmitters in the wet wells are powered from the battery backup and can continue to be monitored as long as the batteries supply power.

5.4.1 REQUEST SOM provide the following:
- Cause of the power loss
- Estimate of when utility power may be returned.

5.4.2 NOTIFY influent generator contacts for Pump Station 1 (Table 1) of the power loss AND REQUEST they reduce or stop their discharges to TEDF.

5.4.3 INFORM influent generator contacts of the estimated time for power return.

5.4.4 OPERATE portable heating and cooling equipment to maintain Pump Station 1 temperature between 0°C and 40°C (32°F and 100°F) until utility or standby power is restored.

5.4.5 IF utility or standby power is not restored immediately, CONFIRM incoming flows are low enough to prevent wet well overflow from occurring before restoring power.

5.5 Confirm Loss of Power to Pump Station 2

NOTE - Alarm JA-68B019 ATS ALRM PMP ST#2 indicates Pump Station 2 ATS has transferred from utility to backup power (indicating standby power generator is operating).

- Alarm JA-6810VAC AC ALRM PMP ST #2 120VAC FAIL indicates both Pump Station 2 utility and standby power sources have been lost.

5.5.1 CHECK for the following alarms:
- JA-68B019 ATS ALRM PMP ST#2
- JA-68B10VAC AC ALRM PMP ST #2 120VAC FAIL.

5.5.2 IF the following alarms are present, GO TO Section 5.6:
- Alarm JA-68B019 is ON and JA-68B10VAC is not ON
- Alarms JA-68B019 and JA-68B10VAC are ON.
5.6  **Respond to Loss of Utility Power at Pump Station 2**

**NOTE -** Alarm JA-68B019 off indicates utility power has been restored by the ATS.

5.6.1  **ON** LCU ALARM GROUP display on the LOI, **CHECK** alarm JA-68B019 ATS ALRM PMP ST#2 is ON.

   5.6.1.1  **IF** alarm JA-68B019 is not ON (off), **EXIT** this procedure.

**Special Instructions**

When standby power generator starts, it does not immediately pick up the power load as the standby power source. The standby power generator engine must operate for the amount of time set on the "Engine Warmup Timer" and generator voltage and frequency must reach the percentages set on the "Standby Voltage Sensor" and the "Standby Frequency Sensor" before the load will be transferred. This may require as long as 20 minutes to occur, but normally occurs within 2 minutes.

5.6.2  **ON** ATS panel (located south of the building by standby power generator enclosure), **CONFIRM** the following:

- Emergency and standby operating lights are **ON**
- Utility light **OFF**
- Standby power generator running.

5.6.3  **IF** conditions in step 5.6.2 are confirmed, **GO TO** step 5.6.9.

**NOTE -** If standby power generator engine does NOT start on the first attempt, it will automatically re-attempt to start up to nine times. If the engine has not started by this time, the "OVERCRANK" alarm on the generator control panel will activate.

5.6.4  **IF** generator is not running, **GO TO** step 5.6.8.

5.6.5  **IF** standby power generator engine is running, but emergency and standby operating lights are not ON, **PERFORM** the following:

   5.6.5.1  **WAIT** two minutes.

   5.6.5.2  **CHECK** emergency light again.

5.6.6  **IF** emergency light is not lit after two minutes, **CHECK** emergency light again nine more times (20 minutes total).
5.6 Respond to Loss of Utility Power at Pump Station 2 (Cont.)

Special Instructions

Performing steps 5.6.7 and 5.6.8 attempts to transfer pump station load to standby power generator by shutting down and restarting the standby power generator.

5.6.7 IF standby power generator engine is running, and emergency light is not lit after 20 minutes, PERFORM the following:

5.6.7.1 OPEN standby power generator enclosure west-end panel.
5.6.7.2 POSITION AUTO/MANUAL/OFF switch to MANUAL.
5.6.7.3 POSITION AND HOLD START/STOP switch to STOP until the generator stops.

5.6.8 PERFORM the following to manually start the standby power generator:

5.6.8.1 CONFIRM standby power generator propane supply valve, located on top of the propane tank, is OPEN.
5.6.8.2 NOTIFY CRO of intent to operate standby power generator.
5.6.8.3 OPEN west-end panel of the standby power generator enclosure.
5.6.8.4 CONFIRM emergency-stop button is OUT.
5.6.8.5 POSITION AUTO/MANUAL/OFF switch to MANUAL.

Special Instructions

When the standby power generator starts, it does not immediately pick up power load as the standby power source. The standby power generator engine must operate for the amount of time set on the “Engine Warmup Timer” and generator voltage and frequency must reach percentages set on the “Standby Voltage Sensor” and “Standby Frequency Sensor” before the load is transferred. This may require as long as 20 minutes to occur, but normally occurs within 2 minutes.

5.6.8.6 POSITION AND HOLD START/STOP switch to START until standby power generator starts.
5.6  Respond to Loss of Utility Power at Pump Station 2 (Cont.)

NOTE  Alarms are located on the engine monitor panel, which is located on the left side of the console. The pre-alarm annunciator panel is located on the right side of the console.

5.6.8.7  IF any alarm lights occur on engine monitor (i.e., not on pre-alarm annunciator panel), IMMEDIATELY RELEASE START/STOP switch.

5.6.8.8  IF standby power generator engine fails to start, OR

IF ATS fails to transfer to standby power generator after restart, GO TO Section 5.7.

5.6.9  IF standby power generator engine is running, and emergency and standby lights are ON, NOTIFY influent generator contacts for Pump Station 2 (Table 1) of the power loss AND WARN of the possibility of required reductions in flow if standby power is lost.

5.6.10  COMPLETE Data Sheet 1 – Pump Station 2 Standby Power Generator Checklist as follows:

5.6.10.1  RECORD reading on the ATS panel hour meter in the ATS Panel, “As Found” column.

5.6.10.2  POSITION ATS panel switch to positions 1, 2, and 3 AND RECORD indicated voltages and amperages in ATS Panel, “As Found” column.

5.6.10.3  RECORD frequency in Hz from ATS Panel frequency meter in ATS Panel, “As Found” column.

5.6.10.4  OPEN standby power generator enclosure west-end panel.

5.6.10.5  RECORD reading on the standby generator control panel hour meter in the generator control panel, “As Found” column.
5.6 Respond to Loss of Utility Power at Pump Station 2 (Cont.)

5.6.10.6 POSITION generator control panel switch to positions 1, 2, and 3 AND

RECORD indicated voltage and amperage in the generator control panel, “As Found” column.

5.6.10.7 RECORD the following readings from the generator control panel in the generator control panel, “As Found” column:
- Generator frequency (Hz)
- Coolant temperature (°F)
- Oil pressure (PSI)
- Oil temperature (°F)
- DC ammeter reading (AMPS).

5.6.11 CLOSE standby power generator enclosure west-end panel.

5.6.12 RECORD propane tank level (indicated on the gauge under the top cover of the propane tank) on Data Sheet 1, Generator Propane Tank section.

NOTE - Propane tank, serial # 7SA0003992, is 120-gallon capacity.

5.6.13 WHEN standby power generator propane tank decreases to 40%, CALL the material coordinator to request propane tank refill.

5.6.14 IF standby power generator runs for more than one hour, REPEAT steps 5.6.10 to 5.6.13 every hour.

5.6.15 MAINTAIN surveillance of Pump Station 2 equipment per SOM direction AND

RECORD SOM direction in ETF Control Room Logbook.

5.6.16 NOTIFY Environmental Field Representation (phone or email) of standby generator usage to ENSURE compliance with run hour limits.

5.6.17 WHEN utility power has been restored, CHECK for the following:
- All Pump Station 2 parameters are within their normal ranges
- All equipment operates normally from MCS.

5.6.18 GO TO Section 5.11, TEDF Standby Power Generator Shutdown.
5.7  **Respond to Loss of Utility and Standby Power at Pump Station 2**

**NOTE** - The level elements and level transmitters in the wet wells are powered from battery backup and can be monitored as long as batteries supply power.

5.7.1  **REQUEST** SOM provide the following:
- Cause of power loss
- Estimate of when utility power may be returned.

5.7.2  **NOTIFY** influent generator contacts for Pump Station 2 (Table 1) of the power loss **AND**

**REQUEST** they reduce or stop their discharges to TEDF.

5.7.3  **INFORM** influent generator contacts of estimated time for power return.

5.7.4  **OPERATE** portable heating and cooling equipment to maintain Pump Station 2 temperature between 0°C and 40°C (32°F and 100°F) until utility or standby power is restored.

5.8  **Respond to Loss of Power at Pump Station 3**

**NOTE** - Pump Station 3 receives only utility power and has no standby power available.

5.8.1  **REQUEST** SOM provide the following:
- Cause of power loss
- Estimate of when utility power may be returned.

5.8.2  **AT** Pump Station 3, **CHECK** that power has been lost to the entire station:

5.8.2.1  **CHECK** that the lights will come ON.

5.8.2.2  **CHECK** that the pumps will come ON.

5.8.3  **CONFIRM** level in diversion box 68I-DB-001 is not rising and is not overflowing to B pond.

5.8.4  **IF** level in the diversion box is rising or diversion box is overflowing to B Pond, **RESPOND** per ETF-ARP-68-001.
5.9 **Respond to Loss of Power at the Disposal Station**

**NOTE** - The disposal station receives only utility power and has no standby power available.

- Alarm JA-6816VAC AC ALRM 6653 120 VAC FAIL will activate upon loss of utility power to the disposal station.

**5.9.1 REQUEST** SOM provide the following:

- Cause of power loss
- Estimate of when utility power may be returned.

**5.9.2 AT** the disposal station, **CHECK** power has been lost to the entire station, not just the LCU.

- **5.9.2.1 CHECK** that the lights will come ON.
- **5.9.2.2 CHECK** that the samplers will turn ON.

**5.9.3 CONFIRM** at least one disposal valve is open to a disposal pond:

- **5.9.3.1 LIFT** disposal pond valve pit hatch.
- **5.9.3.2 CONFIRM** at least one valve shows a yellow arrow pointing down the pipeline toward a disposal pond.

**NOTE** - The disposal valve pit is a non-permitted confined space.

**5.9.4 IF** no valves are open to a disposal pond, **PERFORM** the following:

- **5.9.4.1 NOTIFY** SOM.
- **5.9.4.2 PERFORM** actions specified by SOM to correct the valving situation **AND**

**RECORD** SOM direction in ETF Control Room Logbook.

**5.9.5 OPERATE** portable heating and cooling equipment to maintain disposal station temperature between 0°C and 40°C (32°F and 100°F) until utility power is restored.

**5.9.6 NOTIFY** Sampling Engineer and Environmental Field Representative of power loss to **ENSURE** required daily sampling is initiated.
5.10 TEDF Standby Power Generator Manual Operation and Testing

5.10.1 ENSURE standby power generator propane supply valve, located on top of the propane tank, is OPEN.

5.10.2 NOTIFY CRO of intent to operate standby power generator.

5.10.3 OPEN west-end panel of the standby power generator enclosure.

5.10.4 CONFIRM emergency-stop button is OUT.

5.10.5 POSITION AUTO/MANUAL/OFF switch to MANUAL.

Special Instructions

When the standby power generator starts, it does not immediately pick up power load as the standby power source. The standby power generator engine must operate for the amount of time set on the “Engine Warmup Timer” and generator voltage and frequency must reach percentages set on the “Standby Voltage Sensor” and “Standby Frequency Sensor” before the load is transferred. This may require as long as 20 minutes to occur, but normally occurs within 2 minutes.

5.10.6 POSITION AND HOLD START/STOP switch to START until standby power generator starts.

NOTE - Alarms are located on the engine monitor panel, which is located on the left side of the console. The pre-alarm annunciator panel is located on the right side of the console.

5.10.7 IF any alarm lights occur on engine monitor (i.e., not on pre-alarm annunciator panel), IMMEDIATELY RELEASE START/STOP switch.

NOTE - Data is not required to be taken for the weekly generator test, but is required for monthly test. Monthly generator test may be shut down after Data Sheet 1 readings are complete.

5.10.8 IF performing weekly test, and standby power generator engine has operated for ten minutes, GO TO Section 5.11, TEDF Standby Power Generator Shutdown.
5.10 TEDF Standby Power Generator Manual Operation and Testing (Cont.)

5.10.9 IF performing monthly test, and standby power generator engine has operated for ten minutes, COMPLETE Data Sheet 1 as follows:

5.10.9.1 RECORD ATS panel hour meter reading in “As Found” column of ATS panel section.

5.10.9.2 POSITION the ATS panel switch to each of position 1, 2, and 3, AND

RECORD indicated voltage and amperage in “As Found” column of ATS panel section.

5.10.9.3 RECORD frequency from the ATS panel frequency meter in “As Found” column of ATS panel section.

5.10.9.4 RECORD generator control panel hour meter reading in “As Found” column of generator control panel section.

5.10.9.5 POSITION generator control panel switch to position 1, 2, and 3 AND

RECORD indicated voltage and amperage in “As Found” column of generator control panel section.

5.10.9.6 RECORD the following readings from the generator control panel in “As Found” column of generator control panel section:

- Generator frequency (Hz)
- Coolant temperature (°F)
- Oil pressure (PSI)
- Oil temperature (°F)
- DC ammeter reading (AMPS).

NOTE - Propane tank, serial #7SA0003992, is 120-gallon capacity.

5.10.9.7 CHECK AND RECORD propane tank level on the gauge under the top cover of the propane tank in Data Sheet 1, Generator Propane Tank section.
5.10 TEDF Standby Power Generator Manual Operation and Testing (Cont.)

5.10.10 IF standby power generator runs for more than one hour, REPEAT step 5.10.9 every hour.

5.10.11 NOTIFY Environmental Field Representation (phone or email) of standby generator usage lasting greater than one hour to ENSURE compliance with run hour limits.

5.10.12 WHEN standby power generator no longer needs to operate, GO TO Section 5.11, TEDF Standby Power Generator Shutdown.
5.11 TEDF Standby Power Generator Shutdown

NOTE - When START/STOP switch is positioned to STOP, the standby power
generator engine does not immediately stop; the engine must slow to idle speed
for the amount of time set on the cool down timer (currently set at two
minutes) before the engine will automatically shut down.

5.11.1 OPEN standby power generator enclosure west-end panel.

5.11.2 PLACE AND HOLD START/STOP switch on the generator control panel
in STOP position until generator reaches idle speed.

5.11.3 WAIT until standby power generator shuts down.

5.11.4 SET AUTO/MANUAL/OFF switch to AUTO.

5.11.5 CLOSE standby power generator enclosure west-end panel.

5.11.6 NOTIFY CRO standby power generator is shut down.

NOTE - Propane tank, serial #7SA0003992, is 120-gallon capacity.

5.11.7 WHEN standby power generator propane tank decreases to 40%, CALL the
material coordinator to request propane tank refill.

5.11.8 ENSURE standby power generator propane supply valve, located on top of
the propane tank, remains OPEN.
5.12 Records

5.12.1 PERFORM the following for records identified within this procedure.

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

       OR

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

5.12.1.2 SUBMIT the package for verification of completed records.

<table>
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<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (✓)</th>
</tr>
</thead>
</table>
| Data Sheets
  Data Sheet 1 – Pump Station 2 Standby Power Generator Checklist |              |         |
| FWS/OE/Shift Manager SEND the completed records to the Central Shift Office for records retention. |
| _______________ / _______________ / _______________ |
| Signature       | Print (First and Last)    | Date    |
| FWS/OE/Shift Manager |

The record custodian identified in the Company Level Record Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
Table 1 - Influent Generator Contact List

<table>
<thead>
<tr>
<th>Generator Contact</th>
<th>Phone</th>
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<tbody>
<tr>
<td><strong>Pump Station 1</strong></td>
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</tr>
<tr>
<td>PFP Shift Office</td>
<td>373-0891</td>
</tr>
<tr>
<td>T-Plant Shift Office</td>
<td>373-1077 / 376-2900</td>
</tr>
<tr>
<td>222-S Lab Leader</td>
<td>373-2435</td>
</tr>
<tr>
<td>284-W Water Utility Shift Office</td>
<td>373-2748 / 521-4070</td>
</tr>
<tr>
<td>222-S and 283-W Package Boiler Annexes</td>
<td>543-2628 / 543-2625 (Pager)</td>
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<tr>
<td><strong>Pump Station 2</strong></td>
<td></td>
</tr>
<tr>
<td>WESF Shift Office</td>
<td>372-0054</td>
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<tr>
<td><strong>Pump Station 3</strong></td>
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<tr>
<td>East Tank Farms Shift Office</td>
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<tr>
<td>- 241-A Tank Farm Cooling Water</td>
<td>373-2689</td>
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<tr>
<td>- 244-AR Wastewater</td>
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<tr>
<td>242-A Evaporator Shift Office</td>
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<tr>
<td>283-E Package Boiler Annex</td>
<td>543-2628 / 543-2625 (Pager)</td>
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<td><strong>H” Line</strong></td>
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<td>242-A Package Boiler Annex</td>
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# Data Sheet 1 – Pump Station 2 Standby Power Generator Checklist

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<th>Operating Range</th>
<th>As Found</th>
<th>Initials</th>
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<td>Generator Control Panel</td>
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<tr>
<td>Hour Meter</td>
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<td>Voltage Checks</td>
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<tr>
<td>Phase 1 to Phase 2</td>
<td>464 to 505 VAC</td>
<td>VAC</td>
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<tr>
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<td>AMPS</td>
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<td>DC Ammeter</td>
<td>&gt; 0 AMPS</td>
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(Continued on Next Page)
### Data Sheet 1 – Pump Station 2 Standby Power Generator Checklist (Cont.)

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<th>Equipment Description</th>
<th>Operating Range</th>
<th>Date:</th>
<th>Time:</th>
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<tr>
<td><strong>ATS Panel</strong></td>
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<td>Phase 1 to Phase 2 (Switch Position 1)</td>
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<td>Phase 2 to Phase 3 (Switch Position 2)</td>
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<td><strong>Amperage Checks</strong></td>
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<tr>
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<td>Standby Generator Propane Supply Valve</td>
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#### Comments:

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**Signature** / **Print (First & Last)** / **Initials** / **Date**

NCO

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

SOM Completion Review