Inspection and Maintenance of PA and ENS System Components

Tank Farm Maintenance Procedure

200E/200W

USQ # N/A-4

CHANGE HISTORY (≤ LAST 5 REV-MODS)

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
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<th>Summary of Changes</th>
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<td>A-1</td>
<td>08/14/2018</td>
<td>Request from maintenance.</td>
<td>Multiple changes to align with computer screen interface and field activities.</td>
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<tr>
<td>A-0</td>
<td>12/20/2017</td>
<td>New Procedure</td>
<td>New procedure for the inspection and maintenance of the Public Address (PA) and Event Notification System (ENS) system component.</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for the inspection and maintenance of the event notification system Public Address (PA) speaker poles located outside the fence of Tank Farms.

1.2 Scope

This procedure involves cleaning and inspecting the ENS enclosures. It also involves the maintenance and replacement of the internal batteries. Information shall be recorded on the applicable Data Sheet(s) for Tank Farms.

2.0 INFORMATION

NONE

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

WARNING - Batteries can spark causing explosion or burns if tools are not used cautiously during battery maintenance.

WARNING - When function testing loud speakers, hearing protection is required.

WARNING - Due to the tight enclosure of the battery cabinet and weight of battery (approximately 50 pounds), removing or replacing the battery has the potential for a spill if the battery is dropped or possible muscle strain if lifted improperly.

WARNING - Damaged or bulging batteries are a chemical hazard. Appropriate PPE is required.

3.1.1 Comply with DOE–0359, Hanford Site Electrical Safety Program.

3.1.2 If a lock and tag is required during the performance of this procedure, comply with DOE-0336, Hanford Site Lockout/Tagout Procedure.

3.1.3 Remove or insulate metallic objects such as jewelry and watches.
3.2 Radiation and Contamination Control

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

3.2.2 Opening of any system or component within a Radiological Area requires the presence of a Health Physics Technician to verify contamination control.

3.3 Environmental Compliance

3.3.1 IF working in Radiological areas or potentially radiologically contaminated equipment, ensure a Pre-Job radiological survey is performed. IF working on contaminated equipment, a Post-Job survey is required.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

NOTE - The amount of material taken into contaminated areas is to be minimized to reduce radioactive waste creation and future decontamination needs.

- The following supplies may be needed to perform this procedure:
  - Acid-resistant gloves
  - Face shield
  - Goggles
  - Apron
  - Sodium bicarbonate and water solution
  - Voltage Rated Gloves, within test certification period, and leather protectors for safe to work checks
  - Digital Volt Ohm Meter, accuracy 5%
  - Calibrated Torque wrench, accuracy 5%
  - Vacuum cleaner
  - Lint free cleaning rags
  - InTech 200 or InTech QD cleaner, or equivalent
  - Soft bristle brush
  - Material to place a barricade
  - Other tools, equipment and supplies as identified by Shift Manager/OE/FWS/User.
4.2 Performance Documents

The following document may be needed in performance of this procedure.
- Lifted/Landed Lead Record A-6003-876
- TO-100-052, Perform Waste Generation, Segregation, Accumulation and Clean-up.

4.3 Field Preparation

4.3.1 IF any step is not required for procedure completion, RECORD “N/A” in the applicable space(s) on the Data Sheet AND DOCUMENT the justification in Data Sheet’s Comments/Remarks section.

4.3.2 IF equipment is not listed on the Data Sheet, CONTACT responsible engineer/FWS prior to cleaning the additional equipment.

4.3.3 IF additional equipment requires cleaning, with OE/FWS approval DOCUMENT it on work record AND PERFORM appropriate section of procedure for identified equipment.

4.3.4 CONTACT engineering to update Data Sheets upon close-out.
5.0  **PROCEDURE**

**NOTE** - Individual sections in this procedure may be performed in any order or in parallel as field activities and conditions dictate.

- Because Data Sheets are tailored to individual components, Data Sheets will determine steps to be utilized during inspection and testing sections of this procedure.

- Any deficiencies found before or during maintenance shall be documented in the Comments Section of the applicable Data Sheet.

5.1  **Guardian Battery and Status Check**

5.1.1  **LOG IN** to the CentrAlert Maintenance Guardian Workstation that is connected to the Hanford Local Area Network (HLAN) with your LACS card and pin.

5.1.2  **IF** not started, **THEN** start the CentrAlert Maintenance Guardian application by left-clicking (mouse) its icon on the desktop.

5.1.3  **CONFIRM** in the horizontal lower-center chat window says “The connected system is fully functional Main system”, **IF NOT** CONTACT FWS/Engineering for further direction.

5.1.4  **SELECT** the ‘Maintenance’ tab from the left column by left-clicking on that tab.

5.1.5  **SELECT** the triangle (►) to the left of ESS PA Units.

5.1.6  **SELECT** ‘All Farm Status Test’ by left-clicking on that sub-tab.

**NOTE** - This will activate the test for all PA units in all tank farms as indicated.

5.1.7  **ACTIVATE** the “All Farm Status Test” of all ESS PA Units with the Activate button located by left-clicking in the top row menu.

5.1.8  **SELECT** ‘Activate’ to confirm running the test.

5.1.8.1  **IF** the timer runs out before activating is confirmed, **GO TO** Step 5.1.6.

5.1.9  **WHEN** running, **CONFIRM** “All Farm Status Test” action sub-tab indicates that it is running and display status of percent complete in the horizontal lower-center chat window.
5.1 Guardian Battery and Status Check

5.1.10 WHEN complete, CONFIRM “All Farm Status Test” action sub-tab indicates that it is 100% complete status in the horizontal lower-center chat window.

5.1.11 SELECT the ‘Close’ button to the right of the ‘Video’ button in the top menu row by left-clicking.

5.1.12 SELECT “Yes” to confirm closing the action.

5.1.12.1 IF the timer runs out before confirming closed, GO TO Step 5.1.10.

NOTE - The following steps are to obtain status information from ESS PA Units tested.

5.1.13 SELECT Primary or DCTWKH2 button on the upper left hand corner by left-clicking.

5.1.14 SELECT Reports in the top menu on the right side by left-clicking.

5.1.15 SELECT the ‘Device’ button that appears just under the top menu row by left-clicking.

5.1.16 SELECT the ‘ESS’ Device Type from the drop-down list.

5.1.17 SELECT the ‘ESS Status Button’ under the Device Type by left-clicking.

5.1.18 INSPECT the ESS Status Report for each Device Name and the columns for any noted failures (that are shown as FAIL).

5.1.19 PRINT ESS Status Report AND

PLACE it in the work package.

5.1.20 CLOSE out of program using X in the upper right corner by left-clicking.
5.2 Battery Maintenance

5.2.1 ENSURE disconnect As-Found position is **RECORDED** on Data Sheet.

**WARNING**
Batteries can spark causing explosion or burns if tools are not used cautiously during battery maintenance.

5.2.2 **DE-ENERGIZE** unit by turning the local disconnect to the OFF position.

5.2.3 **DISCONNECT** batteries.

5.2.4 **VISUALLY INSPECT** battery for evidence of the following detrimental conditions:

- Cracks in case
- Excessive distortion of case
- Excessive corrosion
- Evidence of fluid leakage
- Damage to terminals
- Damaged cables.

5.2.5 **IF** unfavorable conditions are found, **RECORD** on datasheet.

5.2.6 **MEASURE** battery voltage **AND** **RECORD** on datasheet.

5.2.7 **IF** voltage does not meet the requirements specified on datasheet **NOTIFY** FWS.

5.2.8 **PERFORM** the following when required:

5.2.8.1 **CLEAN** battery and battery terminals with solution of sodium bicarbonate and water **AND**

  **REPEAT** until battery acid/corrosion products are neutralized.

5.2.8.2 **RE-CONNECT AND TIGHTEN** battery connections and mounting equipment.
5.3 Clean and Inspect

5.3.1 **ENSURE** disconnect As-Found position is **RECORDED** on Data Sheet.

5.3.2 **DE-ENERGIZE** unit by turning the local disconnect to the OFF position.

5.3.3 **PERFORM** safe to work check in each enclosure opened for maintenance **AND**

**INITIAL** Data Sheet after completion.

5.3.4 **CLEAN** ENS enclosure **AND**

**CHECK** Data Sheet after completion.

5.3.5 **INSPECT** ENS enclosure **AND**

**CHECK** Data Sheet (after completion) for the following:
- Corrosion
- Signs of overheating
- Condition of insulating material
- Wiring for damage or deterioration
- Signs of moisture
- Loose connectors.

5.3.6 **IF** connections/terminations require tightened **TIGHTEN** loose connections/terminations.

5.3.7 **OPERATE** all enclosure switches manually to confirm smooth operation.

5.3.8 **LEAVE** switches in the As-Found position, **OR** contact FWS for further instruction.

5.3.9 **RECORD** any discrepancies in comments section of Data Sheet.
5.4 Battery Change-Out and Inspection

5.4.1 ENSURE disconnect As-Found position is RECORDED on Data Sheet.

**WARNING**
Damaged or bulging batteries are a chemical hazard. Appropriate PPE is required.

5.4.2 DE-ENERGIZE unit by turning the local disconnect to the OFF position.

NOTE - Batteries are connected in parallel.

5.4.3 DISCONNECT batteries.

**WARNING**
Due to the tight enclosure of the battery cabinet and weight of battery (approximately 50 pounds), removing or replacing the battery has the potential for a spill if the battery is dropped or possible muscle strain if lifted improperly.

5.4.4 GRASP each battery at a time AND
TILT the battery forward to begin removal.

5.4.5 LIFT each battery from tray AND
PLACE batteries on a firm surface.

5.4.6 INSTALL new replacement batteries.

5.4.7 TORQUE battery post connectors at 97 to 130 inch pounds.
5.4 Battery Change-Out and Inspection (Cont.)

5.4.8 PLACE fully charged battery into battery compartment AND RECONNECT batteries.

5.4.8.1 DOCUMENT the installation date on Battery Sticker of the replacement battery.

WARNING
When function testing loud speakers, hearing protection is required.

5.4.9 CONFIRM all connectors are secure to batteries.

5.4.10 CONFIRM “BAT” LED on the ESS board is lit. (this indicates battery power is present in cabinet.)

5.4.11 CONFIRM 12 V LED on the ESS board is lit. (this indicates battery power.)

5.4.12 ONCE checks are complete, ENERGIZE hand switch to ON.

5.4.13 RECORD the As-Left results on Data Sheet.

5.4.14 IF Functional Check fails, NOTIFY FWS for resolution.

5.4.15 TRANSPORT removed battery back to charging station (shop).
### 5.5 Restoration

5.5.1 **ENSURE** all test equipment has been disconnected and removed.

5.5.2 **RESTORE** maintained equipment to original configuration.

5.5.3 **ENSURE** all Lifted Leads are Re-Landed.

5.5.4 **ENSURE** work area is clean **AND**

   **DISPOSE** of waste per Waste Planning Checklist.

5.5.5 **ENSURE** all maintained equipment is energized as requested by Operations.

### 5.6 Acceptance Criteria

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily performed and As-Left values meet the specifications and tolerance(s) per the Data Sheet.

### 5.7 Review

5.7.1 **INFORM** Operations Management that maintenance is completed.

5.7.2 **PLACE** any filled out Lifted/Landed Lead Record(s) in the Work Package.

5.7.3 **PROVIDE** completed data sheets (originals or a copy) to Electrical Engineer for review upon completion of the task.

5.7.4 **RECORD** in the Comment/Remarks Section of Data Sheet, work request number(s) of work documents generated as a result of these instructions, if applicable.

5.7.5 **IF** additional equipment was cleaned, **ENSURE** engineering has updated the Data Sheets upon close-out.

### 5.8 Records

This procedure is performed within a work package, as such, the procedure in its entirety will be maintained as a record per the Work Control process.

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.