|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bwp_3l8 |  | | | | | | | |  |
|  | | | | | | | | | |
|  | | | | | | | | | |
|  | | | | | | | | | |
| Quarterly Check of 250 Volt Main Bank Number 2 Battery | | | | | | | | | |
| Revision | | | | | | | | | |
|  | | | | | | | | | |
|  | | | | | | | | | |
|  | | | | Level of Use or Other Information: Key # P2527B | | |  | | |
|  | | | | | | | | | |
|  | | | | | | | | | |
| Effective Date: | | |  | | |  | |  | |
| Responsible Organization: | | | | |  | | | | |
| Prepared By: | |  | | | | | | | |
|  | |  | | | | | | | |

| Current Revision Description | | | |
| --- | --- | --- | --- |
| Pages Affected: | 22 | | |
| Type of Change: | Design Change | Tracking Number: | 028 |
|  | | | |
| Revised procedure to address new Gutor battery charger installed by DEC BFN‑20‑1019‑02 for 250V Battery Charger 2A, and DEC BFN‑20‑1019‑03 for 250V Battery Charger 2B.  Revised procedure to incorporate lessons learned for new Gutor Battery Chargers.  Clarified Step 6.0[38] consistent with other battery charger quarterly procedures. | | | |

Table of Contents

[1.0 INTRODUCTION 4](#_Toc148338646)

[1.1 Purpose 4](#_Toc148338647)

[1.2 Scope 4](#_Toc148338648)

[1.3 Frequency and Conditions 4](#_Toc148338649)

[1.3.1 Frequency 4](#_Toc148338650)

[1.3.2 Conditions 4](#_Toc148338651)

[2.0 REFERENCES 4](#_Toc148338652)

[2.1 Performance References 4](#_Toc148338653)

[2.2 Developmental References 5](#_Toc148338654)

[2.3 Commitments 5](#_Toc148338655)

[3.0 PRECAUTIONS AND LIMITATIONS 6](#_Toc148338656)

[3.1 Precautions 6](#_Toc148338657)

[3.2 Limitations 6](#_Toc148338658)

[4.0 PREREQUISITE ACTIONS 7](#_Toc148338659)

[4.1 Preliminary Actions 7](#_Toc148338660)

[4.2 Special Tools, Measuring and Test Equipment, Parts, and Supplies 8](#_Toc148338661)

[4.2.1 Measuring and Test Equipment (M&TE) 8](#_Toc148338662)

[4.2.2 Tools / PPE / Material 9](#_Toc148338663)

[4.3 Approvals and Notifications 9](#_Toc148338664)

[5.0 ACCEPTANCE CRITERIA 10](#_Toc148338665)

[6.0 PERFORMANCE 11](#_Toc148338666)

[7.0 POST PERFORMANCE ACTIVITY 25](#_Toc148338667)

[8.0 RECORDS 25](#_Toc148338668)

Attachment 1: [250 Volt Main Bank #2 Battery Cell Data 26](#_Toc148338669)

Attachment 2: [Electrolyte Level and Water Addition 31](#_Toc148338670)

1. INTRODUCTION
   1. Purpose

This procedure is performed to determine the operability of the 250 Volt Main Bank Number 2 Battery. This procedure provides instruction to inspect each battery cell for cleanliness and corrosion buildup.

* 1. Scope

This procedure satisfies the following Technical Specifications Surveillance Requirements for 250 Volt Main Bank Number 2 Battery:

* 1. Technical Specification, 3.8.4.1 - Battery terminal voltage is greater than or equal to 248 Vdc.
  2. Technical Specification, 3.8.6.2 - Battery cell parameters meet Table 3.8.6-1 Category B limits.
  3. Technical Specification, 3.8.6.3 - Average electrolyte temperature of each representative cell is greater than or equal to 60°F.
  4. Frequency and Conditions
     1. Frequency

This procedure is to be performed every 92 days.

* + 1. Conditions
  1. This procedure must be performed when associated Direct Current (DC) electrical power subsystems are required to be operable.
  2. This procedure can be performed in all operational modes.

1. REFERENCES
   1. Performance References
   2. ECI‑0‑248‑BAT001, Equalize Charging the 250 Volt Main Bank Batteries
   3. EII‑0‑000‑TES001, Test Equipment Setup.
   4. Developmental References
   5. 2‑SR‑3.8.4.1(2), Monthly Check for 250 Volt Main Bank Number 2 Battery
   6. BFN- VTM-C173-0010, Vendor Technical Manual for C&D Standby Batteries and Battery Chargers (Not applicable to 250V Battery Chargers.)
   7. Final Safety Analysis Report, Chapter 8‑8.6, 250 Vdc Power Supply and Distribution
   8. Technical Specification Requirement, Section 3.8.4, DC Sources‑Operating
   9. Technical Specification Requirement, Section 3.8.6, Battery Cell Parameters
   10. VR# 22-B0091, Battery Charger 1, 2A, 2B, & 3 Operation Manual
   11. Commitments
   12. PER 568649, DMA35n Specific Gravity meter
   13. PER 205168, Diesel Generator 3C Battery
2. PRECAUTIONS AND LIMITATIONS
   1. Precautions
   2. Use caution when working around energized electrical equipment.
   3. Use caution when handling battery acid.
   4. Limitations
   5. Battery Sampling Limitations are as follows:
      1. Electrolyte sample should be taken at mid depth of battery jar.
      2. The first sample should be withdrawn and discharged into the filler hole and a second sample withdrawn for the actual reading.
      3. Take electrolyte samples from the sample tube.
   6. Recording Equipment Limitations are as follows:
      1. The DMA35ex Specific Gravity Meter reads to the nearest 1/1000.
      2. The Digital Multimeter reads to the nearest 1/100 Vdc.
   7. Changing Measuring and Test Equipment during performance of this surveillance requires documentation in Remarks section of the Surveillance Task Sheet (STS). Items to include are the identification number, calibration due date, and step numbers for which new Measuring and Test Equipment is used.
3. PREREQUISITE ACTIONS
   1. Preliminary Actions

ENSURE training qualification is met prior to performance of this procedure:

EMQ001.008 - Battery Maintenance - one Electrician \_\_\_\_\_\_\_\_

ENSURE a STS for this procedure and work activity is in work order. (Key # P2527B) \_\_\_\_\_\_\_\_

CHECK batteries have been on float charge for at least one hour. \_\_\_\_\_\_\_\_

* 1. Special Tools, Measuring and Test Equipment, Parts, and Supplies
     1. Measuring and Test Equipment (M&TE)

OBTAIN M&TE as listed in Step 4.2.1[2] \_\_\_\_\_\_\_\_

| 1. NOTE |
| --- |
| M&TE Used column will be completed in the performance of Step 7.0[5]. |

RECORD M&TE information. \_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Measuring and Test Equipment Table | | | | | |
| Voltage | Recommended Instrument | | | Required Range | Required Accuracy | M&TE Used |
| Digital Multimeter Fluke (8600A or 8050A or equivalent) with extra long leads | | | 0-200Vdc 0-5Vdc | ±.0.1Vdc ±.0.1Vdc |
| TVA ID# | Cal. Due Date | | Actual Range | Actual Accuracy | (Y or N) |
|  |  | |  |  |  |
| Temperature | Recommended Instrument | | | Required Range | Required Accuracy | M&TE Used |
| Digital Thermometer (Omega Model HH22 or equivalent) | | | 32°F to 110°F | ±2°F |
| TVA ID# | | Cal. Due Date | Actual Range | Actual Accuracy | (Y or N) |
|  | |  |  |  |  |
| Specific Gravity | Recommended Instrument | | | Required Range | Required Accuracy | M&TE Used |
| Mettler/Paar DMA35ex Specific Gravity Meter | | | N/A | N/A |
| TVA ID# | | Cal. Due Date | Actual Range | Actual Accuracy | (Y or N) |
|  | |  |  |  |  |

ENSURE, with peer check, M&TE meets range requirements and Actual Accuracy is better than or equal to Required Accuracy. \_\_\_\_\_\_\_\_

ENSURE DMA35ex is properly set up per EII‑0‑000‑TES001. \_\_\_\_\_\_\_\_

* + 1. Tools / PPE / Material

OBTAIN the following:

Safety goggles and face shield

Rubber gloves

Acid resistant rubber apron

Demineralized water

Bicarbonate of soda

Lint free liquid absorbent cloths/wipes

Tape Measure-capable of measuring 1/4 inch increments. \_\_\_\_\_\_\_\_

* 1. Approvals and Notifications

OBTAIN Unit Senior Reactor Operator (Unit SRO) authorization to begin. \_\_\_\_\_\_\_\_

1. ACCEPTANCE CRITERIA

Responses which fail to meet the acceptance criteria constitute unsatisfactory test results and require immediate notification of the Unit SRO at the time of failure.

* 1. Battery terminal voltage is greater than or equal to 248 Vdc. [TSR 3.8.4.1]
  2. The float voltage of each connected cell is greater than or equal to 2.13 Vdc. [TSR 3.8.6 Table 3.8.6-1 Category B]
  3. Specific gravity as follows: [TSR 3.8.6 Table 3.8.6-1 Category B]
     1. Specific gravity of each connected cell is greater than or equal to 1.195.
     2. Average specific gravity of all connected battery cells is greater than 1.205.

| 1. NOTE |
| --- |
| Institute of Electrical and Electronics Engineers (IEEE)-450 states that the temperature of electrolytes in representative (10 percent of) cells should be determined on a quarterly basis. This surveillance measures and records the electrolyte temperatures of 20 of the 120 cells (16 percent) of the 250 Volt Main Bank Number 2 Battery which exceeds that recommendation. |

* 1. Average cell (Electrolyte) temperature is greater than or equal to 60°F. [TSR‑ 3.8.6.3]
  2. Cell electrolyte level as follows: [TSR 3.8.6 Table 3.8.6-1 Category B]
     1. Above minimum level indication mark and
     2. NOT to exceed 1/4-inch above maximum level indication mark.

1. PERFORMANCE

NOTIFY the Unit 2 Reactor Operator (RO) before commencing procedure. \_\_\_\_\_\_\_\_

| 1. NOTES |
| --- |
| * 1. Exhaust Fans are considered running when one of the RED run lights is illuminated on upper left or right section of Panel 0-LPNL-925-0165, located in Unit 1 Mechanical Equipment Room, EL-617’.   2. Units 1 and 2 Main Bank Battery Rooms share the same exhaust fans. |

CHECK at least one exhaust fan is running:

|  |  |  |
| --- | --- | --- |
| 🞏 | BATTERY & BD ROOM EXHAUST FAN 1A |  |
| 🞏 | BATTERY & BD ROOM EXHAUST FAN 1B | \_\_\_\_\_\_\_\_ |

RECORD battery system ground voltage as indicated on 0‑GI‑280‑0002/103 BATTERY BOARD 2 250V DC BUS GRD INDICATOR.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0‑GI‑280‑0002/103: |  | Vdc |  | \_\_\_\_\_\_\_\_ |

ENSURE correct component prior to starting work.  
0-BATA-248-0002, 250V UNIT BATTERY No. 2. \_\_\_\_\_\_\_\_

CHECK operability of eye wash station. \_\_\_\_\_\_\_\_

IF eye wash station is NOT operable, THEN  
  
OBTAIN portable eye wash. (Otherwise, MARK N/A) \_\_\_\_\_\_\_\_

RECORD the ambient temperature of battery room near the battery.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Ambient Temperature: |  | °F |  | \_\_\_\_\_\_\_\_ |

CHECK that the ambient temperature of battery room is greater than or equal to 60° F. \_\_\_\_\_\_\_\_

IF ambient temperature of battery room is less than 60° F, THEN  
  
NOTIFY Unit SRO. (Otherwise, MARK N/A) \_\_\_\_\_\_\_\_

RECORD the as-found battery terminal voltage as measured with Digital Multimeter at the battery bank terminals.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| As-Found Battery Terminal Voltage: |  | Vdc |  | \_\_\_\_\_\_\_\_ |

CHECK as-found battery terminal voltage at battery bank terminals is greater than or equal to 248 Vdc. \_\_\_\_\_(AC)

RECORD on Attachment 1, Column 2, the as‑found cell voltage of cells 1 through 120. \_\_\_\_\_\_\_\_

| 1. CAUTION |
| --- |
| The as-found cell voltage of any cell less than 2.13 Vdc will initiate entry into LCO 3.8.6. |

CHECK the as-found cell voltage of each battery cell is greater than or equal to 2.13 Vdc. \_\_\_\_\_(AC)

IF As‑Found cell voltage of any connected cell is less than 2.13 VDC, THEN  
  
PERFORM the following, otherwise, MARK steps N/A:

IF As‑Found cell voltage of any connected cell is less than or equal to 2.07 VDC, THEN  
  
IMMEDIATELY NOTIFY the Unit SRO that all connected cell voltages are not greater than 2.07 VDC and 250 Volt Main Bank Number 2 Battery must be declared inoperable per LCO 3.8.6. \_\_\_\_\_\_\_\_

IF As-Found cell voltage of any connected cell is less than 2.13 VDC, and greater than 2.07 VDC, THEN  
  
IMMEDIATELY NOTIFY the Unit SRO that all connected cell voltages are not greater than or equal to 2.13 VDC and must be restored to acceptable limits within thirty one days from the time the condition is discovered and appropriate LCO must be entered. \_\_\_\_\_\_\_\_

SIGN below indicating notification of this condition.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unit SRO Signature |  | Date |  | Time |

INITIATE a Condition Report (CR) for troubleshooting of low voltage cells.  
  
CR No.: \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_

| 1. NOTE |
| --- |
| Steps 6.0[15] and 6.0[16] should be performed concurrently. |

RECORD on Attachment 1, Column 3, the as‑found representative cell electrolyte temps. in °F. \_\_\_\_\_\_\_\_

RECORD on Attachment 1, Column 4, the as‑found specific gravity of cells 1 through 120. \_\_\_\_\_\_\_\_

CALCULATE the average battery cell electrolyte temperature.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ÷ | 20 | = |  |  |
| Total of all Representative Cell Electrolyte Temp. 6.0[15] |  | No. of Representative Cells in Battery Bank (Typically 20) |  | Average Battery Cell Electrolyte Temp.(≥ 60 °F) |  |

\_\_\_\_\_\_\_\_  
  
 \_\_\_\_\_\_\_\_  
 IV

CHECK the as-found average battery cell electrolyte temperature is greater than or equal to 60°F. \_\_\_\_\_(AC)

CALCULATE the average battery cell specific gravity.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ÷ | 120 | = |  |  |
| Total of all Cells Specific Gravities 6.0[16] |  | No. of Cells in Battery Bank |  | Average Battery Cell Specific Gravity |  |

\_\_\_\_\_\_\_\_  
  
 \_\_\_\_\_\_\_\_  
 IV

RECORD the value of the battery cell with the lowest specific gravity:  
  
\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_

CALCULATE the Difference between the Average Battery Cell Specific Gravity and the lowest cell specific gravity.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ‑ |  | = |  |  |
| Average Battery Cell Specific Gravity |  | Lowest Cell Specific Gravity |  | Specific Gravity Difference |  |

\_\_\_\_\_\_\_\_

IF Specific Gravity of any connected cell, recorded in Step 6.0[16], is less than 1.195 OR Average Specific Gravity of all connected cells is less than or equal to 1.205, THEN  
  
PERFORM the following.

NOTIFY Unit SRO that all connected cells do NOT meet Tech Spec 3.8.6 Category B, Specific Gravity Requirements. \_\_\_\_\_\_\_\_

IF Difference between Average Battery Cell Specific Gravity and Lowest Cell Specific Gravity is greater than 0.020 OR Average Specific Gravity of all connected cells is less than 1.195, THEN  
  
NOTIFY Unit SRO that all connected cells do NOT meet Tech Spec 3.8.6 Category C Specific Gravity Requirements. \_\_\_\_\_\_\_\_

SIGN below indicating notification of this condition.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unit SRO Signature |  | Date |  | Time |

ENSURE a Condition Report (CR) initiated for troubleshooting specific gravity outside of Tech Spec requirements. \_\_\_\_\_\_\_\_

CHECK Average Specific Gravity of all connected cells greater than 1.205. \_\_\_\_\_(AC)

CHECK Specific Gravity of each connected cell greater than or equal to 1.195. \_\_\_\_\_(AC)

CALCULATE the average battery cell voltage.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ÷ | 120 | = |  |  |
| Battery Terminal Voltage 6.0[10] |  | No. of Cells in Battery Bank |  | Average Battery Cell Voltage (Vdc) |  |

\_\_\_\_\_\_\_\_  
  
 \_\_\_\_\_\_\_\_  
 IV

CHECK the as-found electrolyte level of each battery cell is as follows:

Above minimum level indication mark and NOT to exceed 1/4-inch above maximum level indication. \_\_\_\_\_(AC)

RECORD the as-found electrolyte level of each battery cell on Attachment 2. \_\_\_\_\_\_\_\_

ENSURE “As Found” Electrolyte Level is above top of the plates and NOT overflowing. \_\_\_\_\_\_\_\_

IF As Found Electrolyte Level is NOT above top of the plates or is overflowing, THEN  
  
PERFORM the following, otherwise, MARK steps N/A:

NOTIFY the Unit SRO that 250 Volt Main Bank Number 2 Battery should be declared inoperable per LCO 3.8.6. \_\_\_\_\_\_\_\_

SIGN below indicating notification of this condition.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unit SRO Signature |  | Date |  | Time |

IF any cell does NOT meet the criteria of Step 6.0[26], THEN  
  
PERFORM the following, otherwise, MARK steps N/A:

NOTIFY the Unit SRO that the appropriate LCO should be entered for 250 Volt Main Bank Number 2 Battery. \_\_\_\_\_\_\_\_

SIGN below indicating notification of this condition.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unit SRO Signature |  | Date |  | Time |

| 1. NOTES |
| --- |
| * 1. Main Bank Battery 2 is normally supplied from 250V Battery Charger 2A located in Battery Board Room No. 2, but may be fed from 250V Battery Charger 2B located in Battery Board Room No. 2.   2. The criteria in Step 6.0[34] is actually the tolerance for the battery charger when in normal float mode. 250V Main Bank Battery Chargers are programmed to output 270.0V DC +/- 0.5% when in float mode and is what will be seen at the battery terminals.   3. 250V Battery Charger 2A and 2B AC input and DC output voltages and currents are indicated on the analog meters on the front of the charger. These readings can also be displayed on the charger front panel display window by depressing the appropriate button on the foil pad. Unless M&TE is specified, the charger front panel display window is to be used, and NOT the analog meters, to obtain more accurate readings of AC input and DC output voltages and currents. |

INDICATE the battery charger in service to Main Bank Battery 2.

|  |  |  |  |
| --- | --- | --- | --- |
| 🞏 | 2‑CHGA‑248‑0002A, 250V BATTERY CHARGER 2A |  |  |
| 🞏 | 0‑CHGA‑248‑0002B, 250V BATTERY CHARGER 2B |  | \_\_\_\_\_\_\_\_ |

IF 2-CHGA-248-0002A 250V BATTERY CHARGER 2A is in service to Main Bank Battery 2, THEN  
  
using “DC Voltage” pushbutton on charger HMI, RECORD charger output voltage, otherwise, MARK step N/A.  
  
Battery Charger 2A Voltage: \_\_\_\_\_\_\_\_ VDC \_\_\_\_\_\_\_\_

IF 0-CHGA-248-0002B 250V BATTERY CHARGER 2B is in service to Main Bank Battery 2, THEN  
  
using “DC Voltage” pushbutton on charger HMI, RECORD charger output voltage, otherwise, MARK step N/A.  
  
Battery Charger 2B Voltage: \_\_\_\_\_\_\_\_ VDC \_\_\_\_\_\_\_\_

IF the battery terminal voltage on Step 6.0[10] is NOT between 268.7 and 271.3 Vdc, THEN  
  
PERFORM Steps 6.0[34.1] and 6.0[34.2], otherwise, MARK steps N/A.

INITIATE a Condition Report (CR) to troubleshoot Float Voltage setting for the battery charger checked in Step 6.0[31]. \_\_\_\_\_\_\_\_

RECORD CR No.: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_

IF any of the following conditions exist:

Condition 1‑The as-found cell voltage of any cell is less than 2.13 Vdc, (Attachment 1, column 2), OR

Condition 2‑The as-found specific gravity (Attachment 1, Column 4) of any cell is less than 1.195, OR

Condition 3‑The as-found average specific gravity (Step 6.0[19]) of all cells is less than or equal to 1.205, OR

Condition 4‑ The as-found cell voltage (Attachment 1, Column 2) of any cell is NOT within ± 0.1 volt of the average battery cell voltage recorded in Step 6.0[25], OR

Condition 5‑ The As Found Difference between the Average Battery Cell Specific Gravity and the Lowest Cell Specific Gravity is greater than 0.020 in Step 6.0[21], THEN

PERFORM ECI‑0‑248‑BAT001, Equalize Charging the 250 Volt Main Bank Batteries. (Otherwise, MARK N/A) \_\_\_\_\_\_\_\_

INITIATE a Condition Report for trending, documenting condition(s) found. (Otherwise, MARK N/A)

|  |  |  |  |
| --- | --- | --- | --- |
| Condition Report # |  |  | \_\_\_\_\_\_\_\_ |

IF ECI‑0‑248‑BAT001 was performed on Step 6.0[35] prior to completing this procedure, THEN  
  
PERFORM Steps 6.0[37.1] through 6.0[37.13]: (Otherwise, MARK N/A)

RECORD on Attachment 1 Column 6, the as-left cell voltage of cells 1 through 120. \_\_\_\_\_\_\_\_

CHECK the as-left cell voltage of each battery cell is greater than or equal to 2.13 Vdc. \_\_\_\_\_(AC)

IF as left cell voltage of any connected cell is less than or equal to 2.07 vdc, THEN  
  
IMMEDIATELY NOTIFY the Unit SRO that all connected cell voltage are NOT greater than 2.07 VDC and 250 Volt Main Bank Number 2 battery must be declared inoperable per LCO 3.8.6. Otherwise, MARK N/A. \_\_\_\_\_\_\_\_

IF Left Cell Voltage of any connected cell is less than 2.13 VDC, and greater than 2.07 VDC, THEN  
  
IMMEDIATELY NOTIFY the Unit SRO that all connected cell voltage are NOT greater than or equal to 2.13 VDC and must be restored to acceptable limits within thirty one days from the time the condition is discovered and appropriate LCO must be initiated. Otherwise, MARK N/A. \_\_\_\_\_\_\_\_

SIGN below indicating notification of conditions in Steps 6.0[37.2.1] OR 6.0[37.2.2] if applicable. Otherwise MARK N/A.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unit SRO Signature |  | Date |  | Time |

| 1. NOTE |
| --- |
| Steps 6.0[37.3] and 6.0[37.4] should be performed concurrently. |

RECORD on Attachment 1, Column 7, the as-left cell electrolyte temperature, in °F, of cells 1 through 120. \_\_\_\_\_\_\_\_

RECORD on Attachment 1, Column 8 the as-left specific gravity of cells 1 through 120. \_\_\_\_\_\_\_\_

CALCULATE the average battery cell electrolyte temperature.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ÷ | 120 | = |  |  |
| Total of all Cells Electrolyte Temp. 6.0[37.3] |  | No. of Cells in Battery Bank |  | Average Battery Cell Electrolyte Temp.(≥ 60°F) |  |

\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_  
 IV

CHECK the as-left average battery cell temperature is greater than or equal to 60°F. \_\_\_\_\_(AC)

IF the as-left cell temperature difference between the highest and lowest cell is greater than 5°F, THEN  
  
INITIATE a Condition Report to investigate. (Otherwise, MARK N/A)

|  |  |  |  |
| --- | --- | --- | --- |
| Condition Report # |  |  | \_\_\_\_\_\_\_\_ |

CALCULATE the average battery cell specific gravity.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ÷ | 120 | = |  |  |
| Total of all Cells Specific Gravities 6.0[37.4] |  | No. of Cells in Battery Bank |  | Average Battery Cell Specific Gravity |  |

\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_  
 IV

RECORD value of battery cell with lowest specific gravity:  
  
\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_

CALCULATE the Difference between the Average Battery Cell Specific Gravity and the lowest cell specific gravity.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ‑ |  | = |  |  |
| Average Battery Cell Specific Gravity |  | Lowest Cell Specific Gravity |  | Specific Gravity Difference |  |

\_\_\_\_\_\_\_\_

IF Specific Gravity of any connected cell, recorded in Step 6.0[37.4], is less than 1.195 OR Average Specific Gravity of all connected cells is less than or equal to 1.205, THEN  
  
PERFORM the following.

NOTIFY Unit SRO that all connected cells do NOT meet Tech Spec 3.8.6 Category B, Specific Gravity Requirements. \_\_\_\_\_\_\_\_

IF Difference between Average Battery Cell Specific Gravity and Lowest Cell Specific Gravity is greater than 0.020 OR Average Specific Gravity of all connected cells is less than 1.195, THEN  
  
NOTIFY Unit SRO that all connected cells do NOT meet Tech Spec 3.8.6 Category C Specific Gravity Requirements. \_\_\_\_\_\_\_\_

SIGN below indicating notification of this condition.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Unit SRO Signature |  | Date |  | Time |

ENSURE a Condition Report (CR) initiated for troubleshooting specific gravity outside of Tech Spec requirements. \_\_\_\_\_\_\_\_

CHECK Average Specific Gravity of all connected cells greater than 1.205. \_\_\_\_\_(AC)

CHECK Specific Gravity of each connected cell greater than or equal to 1.195. \_\_\_\_\_(AC)

IF ECI‑0‑248‑BAT001 was NOT performed on Step 6.0[35] prior to completing this procedure, THEN  
  
MARK As-Left Data columns 6, 7 and 8 N/A on Attachment 1. (Otherwise, MARK N/A) \_\_\_\_\_\_\_\_

RECORD as-left battery float voltage as measured with Digital Multimeter at the battery bank terminals.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| As-Left Battery Terminal Voltage: |  | Vdc |  | \_\_\_\_\_\_\_\_ |

CHECK the as-left battery terminal voltage is greater than or equal to 268.7 Vdc and less than or equal to 271.3 Vdc. \_\_\_\_\_\_\_\_

| 1. NOTE |
| --- |
| Water added should NOT bring Electrolyte Level any higher than 1/8‑inch below the high level mark. |

IF the electrolyte level is NOT approximately 1/4 inch below the high level mark for any battery cell, THEN  
  
PERFORM Steps 6.0[41.1] and 6.0[41.2]: (Otherwise, MARK N/A)

ADD demineralized water to bring to the Electrolyte Level to approximately 1/4‑inch below the high level mark. \_\_\_\_\_\_\_\_

RECORD in milliliters on Attachment 2 the amount of water added to any cell. (MARK blocks on Attachment 2 N/A for cells that do NOT require water addition) \_\_\_\_\_\_\_\_

IF cleaning is necessary, THEN  
  
PERFORM the following: (Otherwise, MARK N/A)

NOTIFY operations of potential alarms. \_\_\_\_\_\_\_\_

CLEAN batteries with a mild solution of baking soda and water making sure all baking soda is rinsed from battery jars. \_\_\_\_\_\_\_\_

CLEAN terminals with corrosion with a mild solution of baking soda and water. \_\_\_\_\_\_\_\_

ENSURE all baking soda is rinsed from battery jars. \_\_\_\_\_\_\_\_

INSPECT battery jars and caps for the following

cracks

external damage

acid leaks \_\_\_\_\_\_\_\_

CHECK all dust/flame arrestors, covers and battery jar caps are installed. \_\_\_\_\_\_\_\_

IF any dust/flame arrestors, covers or battery jar caps are missing or are damaged, THEN  
  
INITIATE a Condition Report to replace missing or damaged components. (Otherwise, MARK N/A)

|  |  |  |  |
| --- | --- | --- | --- |
| Condition Report # |  |  | \_\_\_\_\_\_\_\_ |

| 1. NOTE |
| --- |
| The 2.17 Vdc minimum cell voltage is not acceptance criteria and was established as an alert/action level in the System Monitoring plan. This is to help ensure that cell voltages do NOT approach the degraded voltage level of less than 2.13 Vdc. |

[PER/C] IF as-left cell voltage of any cell is less than 2.17 Vdc, THEN  
  
PERFORM the following subSteps.

PLACE 250 VDC Main Battery Bank Number 2 on 72 hours equalize charge per ECI‑0‑248‑BAT001.

INITIATE Condition Report (CR) providing a list of cell numbers less than 2.17 VDC.[205168-001]

|  |  |  |  |
| --- | --- | --- | --- |
| Condition Report # |  |  | \_\_\_\_\_\_\_\_ |

1. POST PERFORMANCE ACTIVITY

IF battery system ground voltage is outside the range of ‑30 volts to +30 volts, as recorded in Step 6.0[3], THEN  
  
INITIATE a Condition Report to troubleshoot ground. (Otherwise MARK N/A)

|  |  |  |  |
| --- | --- | --- | --- |
| Condition Report# |  |  | \_\_\_\_\_\_\_\_ |

IF any acceptance criteria step was NOT satisfied, THEN  
  
ENSURE a Condition Report is initiated. (Otherwise, MARK N/A)

|  |  |  |  |
| --- | --- | --- | --- |
| Condition Report# |  |  | \_\_\_\_\_\_\_\_ |

IF during inspection of battery jars and caps for cracks, external damage or acid leaks are found, THEN  
  
INITIATE a Condition Report. (Otherwise, MARK N/A)

|  |  |  |  |
| --- | --- | --- | --- |
| Condition Report# |  |  | \_\_\_\_\_\_\_\_ |

ENSURE all areas checked by this surveillance are clean and free of all debris. \_\_\_\_\_\_\_\_

RECORD M&TE Used (Y or N) in table in Step 4.2.1[2]. \_\_\_\_\_\_\_\_

NOTIFY Unit 2 RO procedure is complete. \_\_\_\_\_\_\_\_

NOTIFY Unit SRO procedure is complete. \_\_\_\_\_\_\_\_

1. RECORDS

The Data Package is a QA Record, is handled in accordance with the approved Document Control and Records Management Program, and contains the following:

* 1. Surveillance Task Sheet
  2. Completed Sections 4.0, 5.0, 6.0, and 7.0
  3. Attachments 1 and 2, other sheets added during performance

|  |
| --- |
| Attachment |
| (Page 1 of 5) |
| 250 Volt Main Bank #2 Battery Cell Data |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| STEP | 6.0[12] | 6.0[15] | 6.0[16] |  | STEP | 6.0[37.1] | 6.0[37.3] | 6.0[37.4] |
| 1 | 2 | 3 | 4 |  | 5 | 6 | 7 | 8 |
| Cell No. | As-Found Cell Vdc | As-Found Cell Electrolyte Temp. °F | As-Found Specific Gravity |  | Cell No. | As-Left Cell Vdc | As-Left Cell Electrolyte Temp. °F | As-Left Specific Gravity |
| 1 |  | N/A |  |  | 1 |  |  |  |
| 2 |  | N/A |  |  | 2 |  |  |  |
| 3 |  | N/A |  |  | 3 |  |  |  |
| 4 |  | N/A |  |  | 4 |  |  |  |
| 5 |  | N/A |  |  | 5 |  |  |  |
| 6 |  |  |  |  | 6 |  |  |  |
| 7 |  | N/A |  |  | 7 |  |  |  |
| 8 |  | N/A |  |  | 8 |  |  |  |
| 9 |  | N/A |  |  | 9 |  |  |  |
| 10 |  | N/A |  |  | 10 |  |  |  |
| 11 |  | N/A |  |  | 11 |  |  |  |
| 12 |  |  |  |  | 12 |  |  |  |
| 13 |  | N/A |  |  | 13 |  |  |  |
| 14 |  | N/A |  |  | 14 |  |  |  |
| 15 |  | N/A |  |  | 15 |  |  |  |
| 16 |  | N/A |  |  | 16 |  |  |  |
| 17 |  | N/A |  |  | 17 |  |  |  |
| 18 |  |  |  |  | 18 |  |  |  |
| 19 |  | N/A |  |  | 19 |  |  |  |
| 20 |  | N/A |  |  | 20 |  |  |  |
| Total Page 1 | N/A |  |  |  | Total Page 1 | N/A |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| STEP | 6.0[12] | 6.0[15] | 6.0[16] |  | STEP | 6.0[37.1] | 6.0[37.3] | 6.0[37.4] |
| 1 | 2 | 3 | 4 |  | 5 | 6 | 7 | 8 |
| Cell No. | As-Found Cell Vdc | As-Found Cell Electrolyte Temp. °F | As-Found Specific Gravity |  | Cell No. | As-Left Cell Vdc | As-Left Cell Electrolyte Temp. °F | As-Left Specific Gravity |
| 21 |  | N/A |  |  | 21 |  |  |  |
| 22 |  | N/A |  |  | 22 |  |  |  |
| 23 |  | N/A |  |  | 23 |  |  |  |
| 24 |  |  |  |  | 24 |  |  |  |
| 25 |  | N/A |  |  | 25 |  |  |  |
| 26 |  | N/A |  |  | 26 |  |  |  |
| 27 |  | N/A |  |  | 27 |  |  |  |
| 28 |  | N/A |  |  | 28 |  |  |  |
| 29 |  | N/A |  |  | 29 |  |  |  |
| 30 |  |  |  |  | 30 |  |  |  |
| 31 |  | N/A |  |  | 31 |  |  |  |
| 32 |  | N/A |  |  | 32 |  |  |  |
| 33 |  | N/A |  |  | 33 |  |  |  |
| 34 |  | N/A |  |  | 34 |  |  |  |
| 35 |  | N/A |  |  | 35 |  |  |  |
| 36 |  |  |  |  | 36 |  |  |  |
| 37 |  | N/A |  |  | 37 |  |  |  |
| 38 |  | N/A |  |  | 38 |  |  |  |
| 39 |  | N/A |  |  | 39 |  |  |  |
| 40 |  | N/A |  |  | 40 |  |  |  |
| 41 |  | N/A |  |  | 41 |  |  |  |
| 42 |  |  |  |  | 42 |  |  |  |
| 43 |  | N/A |  |  | 43 |  |  |  |
| 44 |  | N/A |  |  | 44 |  |  |  |
| 45 |  | N/A |  |  | 45 |  |  |  |
| 46 |  | N/A |  |  | 46 |  |  |  |
| 47 |  | N/A |  |  | 47 |  |  |  |
| 48 |  |  |  |  | 48 |  |  |  |
| 49 |  | N/A |  |  | 49 |  |  |  |
| 50 |  | N/A |  |  | 50 |  |  |  |
| Total Page 2 | N/A |  |  |  | Total Page 2 | N/A |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| STEP | 6.0[12] | 6.0[15] | 6.0[16] |  | STEP | 6.0[37.1] | 6.0[37.3] | 6.0[37.4] |
| 1 | 2 | 3 | 4 |  | 5 | 6 | 7 | 8 |
| Cell No. | As-Found Cell Vdc | As-Found Cell Electrolyte Temp. °F | As-Found Specific Gravity |  | Cell No. | As-Left Cell Vdc | As-Left Cell Electrolyte Temp. °F | As-Left Specific Gravity |
| 51 |  | N/A |  |  | 51 |  |  |  |
| 52 |  | N/A |  |  | 52 |  |  |  |
| 53 |  | N/A |  |  | 53 |  |  |  |
| 54 |  |  |  |  | 54 |  |  |  |
| 55 |  | N/A |  |  | 55 |  |  |  |
| 56 |  | N/A |  |  | 56 |  |  |  |
| 57 |  | N/A |  |  | 57 |  |  |  |
| 58 |  | N/A |  |  | 58 |  |  |  |
| 59 |  | N/A |  |  | 59 |  |  |  |
| 60 |  |  |  |  | 60 |  |  |  |
| 61 |  | N/A |  |  | 61 |  |  |  |
| 62 |  | N/A |  |  | 62 |  |  |  |
| 63 |  | N/A |  |  | 63 |  |  |  |
| 64 |  | N/A |  |  | 64 |  |  |  |
| 65 |  | N/A |  |  | 65 |  |  |  |
| 66 |  |  |  |  | 66 |  |  |  |
| 67 |  | N/A |  |  | 67 |  |  |  |
| 68 |  | N/A |  |  | 68 |  |  |  |
| 69 |  | N/A |  |  | 69 |  |  |  |
| 70 |  | N/A |  |  | 70 |  |  |  |
| 71 |  | N/A |  |  | 71 |  |  |  |
| 72 |  |  |  |  | 72 |  |  |  |
| 73 |  | N/A |  |  | 73 |  |  |  |
| 74 |  | N/A |  |  | 74 |  |  |  |
| 75 |  | N/A |  |  | 75 |  |  |  |
| 76 |  | N/A |  |  | 76 |  |  |  |
| 77 |  | N/A |  |  | 77 |  |  |  |
| 78 |  |  |  |  | 78 |  |  |  |
| 79 |  | N/A |  |  | 79 |  |  |  |
| 80 |  | N/A |  |  | 80 |  |  |  |
| Total Page 3 | N/A |  |  |  | Total Page 3 | N/A |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| STEP | 6.0[12] | 6.0[15] | 6.0[16] |  | STEP | 6.0[37.1] | 6.0[37.3] | 6.0[37.4] |
| 1 | 2 | 3 | 4 |  | 5 | 6 | 7 | 8 |
| Cell No. | As-Found Cell Vdc | As-Found Cell Electrolyte Temp. °F | As-Found Specific Gravity |  | Cell No. | As-Left Cell Vdc | As-Left Cell Electrolyte Temp. °F | As-Left Specific Gravity |
| 81 |  | N/A |  |  | 81 |  |  |  |
| 82 |  | N/A |  |  | 82 |  |  |  |
| 83 |  | N/A |  |  | 83 |  |  |  |
| 84 |  |  |  |  | 84 |  |  |  |
| 85 |  | N/A |  |  | 85 |  |  |  |
| 86 |  | N/A |  |  | 86 |  |  |  |
| 87 |  | N/A |  |  | 87 |  |  |  |
| 88 |  | N/A |  |  | 88 |  |  |  |
| 89 |  | N/A |  |  | 89 |  |  |  |
| 90 |  |  |  |  | 90 |  |  |  |
| 91 |  | N/A |  |  | 91 |  |  |  |
| 92 |  | N/A |  |  | 92 |  |  |  |
| 93 |  | N/A |  |  | 93 |  |  |  |
| 94 |  | N/A |  |  | 94 |  |  |  |
| 95 |  | N/A |  |  | 95 |  |  |  |
| 96 |  |  |  |  | 96 |  |  |  |
| 97 |  | N/A |  |  | 97 |  |  |  |
| 98 |  | N/A |  |  | 98 |  |  |  |
| 99 |  | N/A |  |  | 99 |  |  |  |
| 100 |  | N/A |  |  | 100 |  |  |  |
| 101 |  | N/A |  |  | 101 |  |  |  |
| 102 |  |  |  |  | 102 |  |  |  |
| 103 |  | N/A |  |  | 103 |  |  |  |
| 104 |  | N/A |  |  | 104 |  |  |  |
| 105 |  | N/A |  |  | 105 |  |  |  |
| 106 |  | N/A |  |  | 106 |  |  |  |
| 107 |  | N/A |  |  | 107 |  |  |  |
| 108 |  |  |  |  | 108 |  |  |  |
| 109 |  | N/A |  |  | 109 |  |  |  |
| 110 |  | N/A |  |  | 110 |  |  |  |
| Total Page 4 | N/A |  |  |  | Total Page 4 | N/A |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| STEP | 6.0[12] | 6.0[15] | 6.0[16] |  | STEP | 6.0[37.1] | 6.0[37.3] | 6.0[37.4] |
| 1 | 2 | 3 | 4 |  | 5 | 6 | 7 | 8 |
| Cell No. | As-Found Cell Vdc | As-Found Cell Electrolyte Temp. °F | As-Found Specific Gravity |  | Cell No. | As-Left Cell Vdc | As-Left Cell Electrolyte Temp. °F | As-Left Specific Gravity |
| 111 |  | N/A |  |  | 111 |  |  |  |
| 112 |  | N/A |  |  | 112 |  |  |  |
| 113 |  | N/A |  |  | 113 |  |  |  |
| 114 |  |  |  |  | 114 |  |  |  |
| 115 |  | N/A |  |  | 115 |  |  |  |
| 116 |  | N/A |  |  | 116 |  |  |  |
| 117 |  | N/A |  |  | 117 |  |  |  |
| 118 |  | N/A |  |  | 118 |  |  |  |
| 119 |  | N/A |  |  | 119 |  |  |  |
| 120 |  |  |  |  | 120 |  |  |  |
| Total Page 5 | N/A |  |  |  | Total Page 5 | N/A |  |  |
| Total Page 4 | N/A |  |  |  | Total Page 4 | N/A |  |  |
| Total Page 3 | N/A |  |  |  | Total Page 3 | N/A |  |  |
| Total Page 2 | N/A |  |  |  | Total Page 2 | N/A |  |  |
| Total Page 1 | N/A |  |  |  | Total Page 1 | N/A |  |  |
| Total | N/A |  |  |  | Total | N/A |  |  |

|  |
| --- |
| Attachment |
| (Page 1 of 2) |
| Electrolyte Level and Water Addition |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Step | 6.0[27] | 6.0[41.2] |  | Step | 6.0[27] | 6.0[41.2] |
| Cell # | As-Found  Level > min. and ≤ 1/4” above max mark x  \*(AC) | Water Added  (ml)  (N/A cells not requiring water addition) |  | Cell # | As-Found  Level > min. and ≤ 1/4” above max mark x  \*(AC) | Water Added  (ml)  (N/A cells not requiring water addition) |
| 1 |  |  |  | 31 |  |  |
| 2 |  |  |  | 32 |  |  |
| 3 |  |  |  | 33 |  |  |
| 4 |  |  |  | 34 |  |  |
| 5 |  |  |  | 35 |  |  |
| 6 |  |  |  | 36 |  |  |
| 7 |  |  |  | 37 |  |  |
| 8 |  |  |  | 38 |  |  |
| 9 |  |  |  | 39 |  |  |
| 10 |  |  |  | 40 |  |  |
| 11 |  |  |  | 41 |  |  |
| 12 |  |  |  | 42 |  |  |
| 13 |  |  |  | 43 |  |  |
| 14 |  |  |  | 44 |  |  |
| 15 |  |  |  | 45 |  |  |
| 16 |  |  |  | 46 |  |  |
| 17 |  |  |  | 47 |  |  |
| 18 |  |  |  | 48 |  |  |
| 19 |  |  |  | 49 |  |  |
| 20 |  |  |  | 50 |  |  |
| 21 |  |  |  | 51 |  |  |
| 22 |  |  |  | 52 |  |  |
| 23 |  |  |  | 53 |  |  |
| 24 |  |  |  | 54 |  |  |
| 25 |  |  |  | 55 |  |  |
| 26 |  |  |  | 56 |  |  |
| 27 |  |  |  | 57 |  |  |
| 28 |  |  |  | 58 |  |  |
| 29 |  |  |  | 59 |  |  |
| 30 |  |  |  | 60 |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Step | 6.0[27] | 6.0[41.2] |  | Step | 6.0[27] | 6.0[41.2] |
| Cell # | As-Found  Level > min. and ≤ 1/4” above max mark x  \*(AC) | Water Added  (ml)  (N/A cells not requiring water addition) |  | Cell # | As-Found  Level > min. and ≤ 1/4” above max mark x  \*(AC) | Water Added  (ml)  (N/A cell not requiring water addition) |
| 61 |  |  |  | 91 |  |  |
| 62 |  |  |  | 92 |  |  |
| 63 |  |  |  | 93 |  |  |
| 64 |  |  |  | 94 |  |  |
| 65 |  |  |  | 95 |  |  |
| 66 |  |  |  | 96 |  |  |
| 67 |  |  |  | 97 |  |  |
| 68 |  |  |  | 98 |  |  |
| 69 |  |  |  | 99 |  |  |
| 70 |  |  |  | 100 |  |  |
| 71 |  |  |  | 101 |  |  |
| 72 |  |  |  | 102 |  |  |
| 73 |  |  |  | 103 |  |  |
| 74 |  |  |  | 104 |  |  |
| 75 |  |  |  | 105 |  |  |
| 76 |  |  |  | 106 |  |  |
| 77 |  |  |  | 107 |  |  |
| 78 |  |  |  | 108 |  |  |
| 79 |  |  |  | 109 |  |  |
| 80 |  |  |  | 110 |  |  |
| 81 |  |  |  | 111 |  |  |
| 82 |  |  |  | 112 |  |  |
| 83 |  |  |  | 113 |  |  |
| 84 |  |  |  | 114 |  |  |
| 85 |  |  |  | 115 |  |  |
| 86 |  |  |  | 116 |  |  |
| 87 |  |  |  | 117 |  |  |
| 88 |  |  |  | 118 |  |  |
| 89 |  |  |  | 119 |  |  |
| 90 |  |  |  | 120 |  |  |