

QUALITY FIRST

## UNIT 2

мус/во

MAINTENANCE TYPE: SM

QUAL CLASS:2

\*\*\*\*\* NOTE: WORKLIST ATTACHED \*\*\*\*\*

PROVIDE ELECTRICAL/ELECTRICIAN SUPPORT IN SUPPORT OF: perform weekly/quarterly.

3-25-08

This M/O supports CM 08031721000 for low voltage on 2D2.

ENVIRN QUAL: N

SEIS: 1

(b)(6)

SECURITY REOD? N

SSR READ?

SSR READ?

ENGINEERING REOD? N

FME REQUIREMENTS? N

DATE	TIME	BY	REMARKS	RECD?	RECD BY
10/10/68	10:00	R.E.P.	EVAL.	RECD?	N

CREACUS BREACH? N

CREACUS BREACH? N

Cat 86  
4-26-08

(b)(6)

Perform a weekly and quarterly inspection of the battery bank to support crosstie work and delaring batteries operable.

08031738-0

Page 1

Originator File Copy

125

---

**FIRE PROTECTION/SECURITY REQUIREMENTS:**

---

**PRECAUTIONS:**

1. PRE-JOB BRIEF WILL BE CONDUCTED PRIOR TO START OF WORK TO ENSURE A COMPLETE UNDERSTANDING OF THE TASK.
2. WORK IN ACCORDANCE WITH THE SCE ACCIDENT PREVENTION MANUAL & SO123-XVI-24.

---

**WORK PLAN GENERAL INSTRUCTIONS:**

In support of MO(s): 08031729000

**RELIABILITY CLASS:**

1. HUMAN PERFORMANCE APPLICATIONS IAW SO123-I-1.43.

---

**HEALTH PHYSICS DOSE ESTIMATES:**

EST DOSE	ACT DOSE	PERCENT OF ESTIMATE
0	0	0%

08031738-0

---

**POSITIVE COMPONENT VERIFICATION:****REQUIRED OBSERVABLE BEHAVIOR STEPS**

As requested in the craft surveys, in order to increase compliance and effectiveness in conducting positive component verifications (PCV's), the below required observable behavior steps have been included in the MO/CWO as an aide. These steps should be performed PRIOR to performing work on equipment, components, or terminations. See SO123-I-1.43 "Maintenance Human Performance Application" for complete PCV program requirements and labeling exceptions.

**A. PRIOR TO LOCATING EQUIPMENT IN FIELD (TYPICALLY DONE DURING PRE-JOB BRIEF):**

Step 1: 'IDENTIFY TARGET ID' - Write down the "Target ID" on the PCV Tracking Record (Attachment 8 of SO123-I-1.43) or MO/CWO.

Step 2: 'VERIFY CORRECT ID' - Compare written "Target ID" with the "MO/CWO Equipment ID" to validate that the "Target ID" was written correctly.

**B. AT JOB SITE:**

Step 3: 'LOCATE EQUIPMENT' - With the MO/CWO in hand, compare the "Target ID" to the component-identifying label using verbalization (point-shout-shoot).

Step 4: 'WRITE EQUIPMENT ID' - Write down the component-identifying label "Equipment ID" near previously written "Target ID".

Step 5: 'INITIAL & DATE' - Compare the written down component-identifying label "Equipment ID" with the "Target ID" and initial and date if the ID's match exactly (See SO123-I-1.43 for approved labeling exceptions). If the ID's do not match exactly, STOP and contact the work supervisor to resolve in accordance with Procedure SO123-I-1.43.

**C. SECOND COGNIZANT EMPLOYEE:**

Step 6: 'SECOND-PERSON SELF-CHECK' - A second person should repeat Step 3 and initial signifying agreement that the intended component has been positively identified. (Note: The responsible supervisor may waive the second-person self-check based on a SAFER evaluation.)

08031738-0

## WORK PLAN DETAIL:

The correct equipment/component must be positively identified prior to performing any work.

\*\*\* THIS M.O. IS ON EQUIPMENT WHICH REQUIRES RECORDING OF M&TE USE AS \*\*\*  
 \*\*\* DESCRIBED IN SO123-XV-1 'CALIBRATION AND CONTROL OF MEASURE AND \*\*\*  
 \*\*\* TEST EQUIPMENT'. \*\*\*

DWGS/REFS:

EQ REFS: None

## POSITIVE COMPONENT VERIFICATION

The specific steps of performing Positive Component Verification should be repeated for each task:

- When conducted by different worker,
- After an extended break from work,
- When the level of distraction is high,
- When working in Skill-Base or Rule-Base performance modes,
- Or as directed by the work supervisor.

Equip ID's(WL)	Initial/Date	2nd Ver.	Equip ID's Field	Initial/Date	2nd Ver
521806EB008	(b) 3/28/08 (6)	(b)(6) 3/28/08	28008	(b) 3/28/08 (6)	(b) 3/28/08 (6)
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____
_____	____/____/____	____/____/____	_____	____/____/____	____/____/____

08031738-0

(WORK PLAN DETAIL CONTINUED)

- [1] Perform a weekly and quarterly battery inspection IAW SO123-I-2.2 and SO123-I-2.3. The completion of these procedures verifies the battery bank meets the Category "A" and "B" Limits, LCO Table 3.8.6-1.

**PLANNING APPROVALS:**

	BY	DATE	TIME
WORK PLANNED	(b)(6)	03/25/08	07:53:03
WORK PLANNED REVIEW		03/25/08	07:59:04
WORK SCHEDULED		03/25/08	08:01:38

**PROCEDURE LIST:**

PROCEDURE ID	REV	TCN
1 - SO123-I-1.43	005	000
Desc: MAINTENANCE HUMAN PERFORMANCE APPLICATION		
2 - SO123-I-2.2	007	002
Desc: 125 VDC PILOT CELL BATTERY INSPECTION		
3 - SO123-I-2.3	007	001
Desc: 125 VDC BATTERY INSPECTION		

**CRAFT INFORMATION:**

CRAFT CODE	CRAFT DESCRIPTION	QTY	ESTIMATED HOURS	ACTUAL HOURS
1 - EL	ELECTRICIAN	2.0	16.0	_____
2 - SP	FIRST LINE SUPERVISOR	1.0	2.0	_____

**WORK DONE:**

Work Started: Date - 3 / 25 / 08 Time - 08 : 05

3-25-08 GRANDS.

① PERFORMED WEEKLY/QUARTLY BATT. INSP. IAW SO123-I-2.2 /  
SO123-I-2.3. COMP. OF THESE PROCEDURES VERIFIES BATTERY  
BANK MEETS CAT A/B LIMITS, LCO TABLE 3.8.6-1.

5 EL x 1.5 HR

(b)(6)

08031738-0

**FINAL APPROVALS:**

Area meets management's "Clean As You Go" expectations IAW SO123-XV-23.1. Areas which individuals performed work are left in a better condition than it was before the work was performed. Tools, equipment and materials removed, and the area cleaned.

VERIFIED BY:

3/25/2008 09:00

PRINT NAME:

STEM ENTRY REVIEWED BY

3/26/08 08:29

COMPLETED BY:

3/25/2008 09:00

PRINT NAME:

(b)(6)

1ST LINE SUPV:

3/26/08 08:29

PRINT NAME:

2ND LINE SUPV:

4/12/08 17:55

PRINT NAME:

PLANNER REVIEW:

4/14/08 15:05

PRINT NAME:

**EQUIPMENT WORK LIST:**

MAJOR EQUIPMENT ID	RC	SYSTEM	Q-CLASS	EQ	AREA	ROOM	ELEV	COLUMN	INITIAL	DATE
S21806EB008 125VDC STATION BATTERY 2D2		PKA	2	N	CB	306B	050	18.5L1	(b)(6)	<u>3/25/2008</u>
<b>NO. EQUIPMENT ID</b>										
1 - S21806EB017 BATTERY CHARGER 2B017		NKA	3	N	CB		050		N/A	
2 - S31806EB017 SPARE 1E BATTERY CHARGER		NKA	3	N	CB		050		N/A	

08031738-0

---

## 1.0 OBJECTIVES

- 1.1 This procedure provides guidance for performing the Weekly 125 volt Battery Bank and Charger operability verification checks.
- 1.2 This procedure satisfies the surveillance requirements specified in the Unit 2 and Unit 3 Technical Specifications, LCO - SR, Sections 3.8.4.1, 3.8.5.1, 3.8.6.1, and Table 3.8.6-1 Category "A" Limits.
- 1.3 This procedure performed at least monthly, satisfies the requirements stated in IEEE Std. 450-1980.
- 1.4 This procedure is applicable to the 125 VDC Station Battery Banks.

---

## 2.0 REFERENCES

- 2.1 Refer to Attachment 1 for the Procedure Resource List.

---

## 3.0 PREREQUISITES

- 3.1 Before starting work, the user **SHALL** verify this procedure is current by referring to NDMS or one of the other methods listed in SO123-I-1.3.
- 3.2 Enter the following data:  

MO# 08031738005

Unit 2

Equip Id: S21806EB008
- 3.3 This procedure **MAY** be performed while Equalize Charging the Battery Bank unless one of the conditions listed in Section 3.4 is true.

08031738-0

7

**NOTE:** IF the intent of performing this procedure is for information only, THEN a 72 hour Float Charge is **NOT** required.

- 3.4 When performing an "EQUALIZE CHARGE" for one of the following conditions, this procedure **SHALL NOT** be performed until verifying the Battery Bank has been on "FLOAT CHARGE" for 72 hours.

**NOTE:** Rapid Recharge is the exception to the following step, because when completed successfully, the Rapid Recharge ensures that the Battery Bank Charging Current is less than 2 amps. Technical Specification Table 3.8.6-1, Footnote (b) states that a Level Correction is **NOT** required when the Battery Charging current is less than 2 amps.

- 3.4.1 Battery Bank is on "EQUALIZE CHARGE" for quick recovery following any Battery Bank Discharge. .
- 3.4.2 Battery Bank is on "EQUALIZE CHARGE" following a water addition from below the "LOW LEVEL MARK" to one or more Battery Cells.
- 3.4.3 If the Battery Bank was on "EQUALIZE CHARGE" for one of the conditions listed above, the Supervisor **SHALL** verify the battery bank has been on "FLOAT" charge for 72 hours before performing this procedure.

VERIFIED BY Supervisor \_\_\_\_\_ Date \_\_\_\_\_

- 3.5 The battery room ventilation system is in operation.

- 3.6 An operable OSHA approved, eye wash facility is available near the battery bank.

- 3.7 The above Prerequisites have been verified.

VERIFIED BY \_\_\_\_\_ Date 13/05/2008

#### 4.0 PRECAUTIONS

- 4.1 For the tasks listed below, use the following minimum Personnel Protective Equipment ( PPE ) to prevent Acid / Caustic burns.

**NOTE:** The listed Physical Inspection PPE assumes that the corrosion material is mixed in with the grease on the Intercell Connections and there is no potential for airborne contamination.

- 4.1.1 **Physical Inspection / Cleaning:**  
Safety Glasses, and Long Sleeve Shirt ( Non-Synthetic )
- 4.1.2 **Battery Voltage Readings / Test Connections:**  
Safety Glasses, and Long Sleeve Shirt ( Non-Synthetic )
- 4.1.3 **Specific Gravity Readings:**  
Safety Glasses, Long Sleeve Shirt ( Non-Synthetic ), and Acid Resistant Gloves.
- 4.1.4 **Electrolyte Recirculation / Acid Additions:**  
Goggles, Face Shield, Rubber Apron, Acid Resistant Gloves, and Long Sleeve Shirt ( Non-Synthetic )

08031738-0



6.1.4 When using this procedure to verify the battery bank meets the Required Action stated in LCO 3.8.4C.1 ( *Table 3.8.6-1, Category "A" Limits* ) perform the following, and record data in Attachment 12:

- .1 Step 6.2.1 ( *Battery Bank Voltage* ), LCO SR 3.8.4.1,
- .2 Step 6.3.1 ( *Cell Voltage* ), Category "A" Limit,
- .3 Step 6.5.2 ( *Electrolyte Level* ), Category "A" Limit,
- .4 Section 6.6 ( *Specific Gravity Measurement* ), and
- .5 Section 6.8 ( *Calculation of Corrected Specific Gravity* ), Category "A" Limit.

6.1.5 As necessary, refer to the information below when using the listed test equipment:

- .1 DMA-35N Digital Hydrometer, Attachment 5,
- .2 DC Clamp-On Ammeter, Attachment 6.

6.1.6 Craft who initial a step in this procedure **SHOULD** print their name and initial below.

<div style="border: 1px solid black; width: 150px; height: 20px; margin-bottom: 5px;"></div>		<div style="border: 1px solid black; width: 150px; height: 20px; margin-bottom: 5px;"></div>	
<i>print name</i>	<i>initial</i>	<i>print name</i>	<i>initial</i>
<div style="border: 1px solid black; width: 150px; height: 20px; margin-bottom: 5px;"></div>		<div style="border: 1px solid black; width: 150px; height: 20px; margin-bottom: 5px;"></div>	
<i>print name</i>	<i>initial</i>	<i>print name</i>	<i>initial</i>

08031738-0

END OF SECTION

9

**NOTE:** When taking Battery Bank Terminal Voltage, use a Fluke 187 (equivalent or better) set on the 500V range. If necessary, reference Design Calc E4C-017.

## 6.2 Battery Bank Voltage

### T/S REQUIREMENT

6.2.1 Measure Battery Bank Terminal voltage. Record readings below.

#### ACCEPTANCE CRITERIA

All 125 VDC Battery Banks:  $\geq 129.17$  VDC

132.21 VDC

SAT	<input checked="" type="checkbox"/>	Go to Step 6.2.2.	UNSAT	<input type="checkbox"/>	Perform Corrective Actions as Follows.
-----	-------------------------------------	-------------------	-------	--------------------------	--

- .1 Immediately notify your Supervisor of the "UNSAT" condition.
- .2 This Supervisor **SHALL** report a failed Surveillance according to Procedure SO123-I-1.3.
- .3 Notify the Engineer, and generate an AR.

INT: (b)(6)

☐ CHK CPL

☐ CHK CPL

☐ CHK CPL

08031738-0

SECTION CONTINUES ON NEXT PAGE →

10

- 6.2.2 If the battery banks is on a "FLOAT CHARGE," measure the Battery Terminal voltage. As necessary, adjust the Float Voltage within the values shown below, and record "AS-LEFT" voltage below.

ACCEPTANCE CRITERIA		All 125 VDC Battery Banks:	Check Value
58 Cell Bank:	131.5 ( 131.0 to 132.0 )	VDC	<input checked="" type="checkbox"/>
59 Cell Bank:	133.5 ( 133.0 to 134.0 )	VDC	<input type="checkbox"/>
60 Cell Bank:	135.0 ( 134.5 to 135.5 )	VDC	<input type="checkbox"/>

131.85		"AS-LEFT" Float Voltage
SAT	<input checked="" type="checkbox"/> Go to Section 6.3.	UNSAT <input type="checkbox"/> Perform Corrective Actions as Follows.

- .1 Notify your Supervisor of the "UNSAT" condition. ( This condition does **NOT** require reporting a Failed Surveillance ).
- .2 This Supervisor **SHOULD** evaluate the condition, consult with the Engineer, and initiate the necessary corrective action.
- .3 Go to the next step.

INT. (b)(6)

☐ CHK CPL

☐ CHK CPL

☐ CHK CPL

08031738-0

END OF SECTION

//

**NOTE:** When taking Battery Cell Voltage, use a **Fluke 187** ( *equivalent or better* ) set on the **5V** range. *If necessary, reference Design Calc E4C-017.*

**T/S REQUIREMENT**

**6.3 Cell Voltage**

- 6.3.1 Measure voltage between the Positive ( + ) and Negative ( - ) posts of each Pilot Cell. Record readings below.

**ACCEPTANCE CRITERIA**

Each Pilot Cell is:  $\geq 2.1317$  VDC

PILOT CELL ID	CELL VOLTS	SAT		UNSAT	
37	2.333	✓	Go to Section 6.4		Perform corrective actions as follows
57	2.312	✓			

INT: (b)(6)

- .1 Using a different volt meter, measure the voltage between the Positive ( + ) and Negative ( - ) posts of each connected battery cell found **UNSAT**. Record readings below and have a second person verify.

**ACCEPTANCE CRITERIA**

Each Pilot Cell is:  $\geq 2.1317$  VDC

PILOT CELL ID	CELL VOLTS	SAT		UNSAT	
			Go to Section 6.4		Perform corrective actions as follows

INT: \_\_\_\_\_

2nd Person INT: \_\_\_\_\_

- .2 Immediately notify the following of the **UNSAT** condition.

- Supervisor,
- Engineer, and
- Operations - 31 day action entered ( LCO 3.8.6 ). *Not considered a Failed SV until Allowable Values ( Category C ) verified.*

08031738-0

SECTION CONTINUES ON NEXT PAGE →

12

**T/S REQUIREMENT**

**6.4 Battery Charging Current**

**NOTE:** Refer to Attachment 8 for the DC Clamp-on Ammeter set up information.

- 6.4.1 At the Battery Terminal measure the charging current. Record  
amperage value below.

**INFORMATION ONLY**

.6  
Charging Amps

08:35  
Time

3/25/2008  
Date

INT: (b)  
(6)

08031738-0

SECTION CONTINUES ON NEXT PAGE →

- NOTES:** 1. The following step is for information only and applies only to the 1E Battery Banks if a Shunt is present at Cell #1, 2(3)B007 through 2(3)B010 and 2/3B00X.
2. Millivolt reading is taken at the Banana Jacks located in a TB Box near the Spare Cell Rail Charger. The Banana Jacks are connected to the Shunt located near Cell#1.

Banana Jack TB Box Equipment IDs are:

2B007	2AR3D8007TB ( 2B007TB )	3B007	3AR3D8007TB ( 3B007TB )
2B008	2BR3DB008TB ( 2B008TB )	3B008	3BR3DB008TB ( 3B008TB )
2B009	2CR3DB009TB ( 2B009TB )	3B009	3CR3DB009TB ( 3B009TB )
2B010	2DR3DB010TB ( 2B010TB )	3B010	3DR3DB010TB ( 3B010TB )
2/3B00X	OXR3DB00XTB ( 2/3B00XTB )		

3. Use a Fluke 187 DMM selected for DC 5mV range with "Average" mode duration of 5 minutes. Use a short length ( 18 to 24 inches ) of twisted leads with banana plugs at both ends. Use the same test leads for all Shunt Current readings.
4. Expected millivolt range for the 1E Battery Shunt Outputs are shown below.

Battery Bank	mV Range
B007 & B008	0.025 to 0.075
B009, B010 & B00X	0.040 to 0.120

- 6.4.2 Measure the Battery Bank Charging Current, in millivolts, and record value below for information.

INFORMATION ONLY

5218060B008  
Equipment ID

.059 millivolts  
Battery Bank  
Charging millivolts

(b)(6)  
INT

08031738-0

END OF SECTION

14

- 6.5.2 Verify the electrolyte level of the cells inspected meet the Acceptance Criteria below.

**ACCEPTANCE CRITERIA**

> **LOW LEVEL** Mark and  $\leq 1/4$  inch Above the **HIGH LEVEL** Mark.

SAT	<input checked="" type="checkbox"/>	Go to Section 6.6	UNSAT	<input type="checkbox"/>	Perform Corrective Actions as Follows.
-----	-------------------------------------	-------------------	-------	--------------------------	--

INT: (b)(6)

- 1 Immediately notify the supervisor, and Engineer of an **UNSAT** condition.

☐ CHK CPL

**NOTES:** 1. The following steps do **NOT** apply to **NON-1E** Battery Banks.  
2. When taking Battery Cell Voltage, use a **Fluke 187** ( *equivalent or better* ) set on the **5V** range. *If necessary, reference Design Calc E4C-017.*

- .2 Within **1 Hour** of discovering the **UNSAT** condition, verify the parameters below for each pilot cell. ( *refer LCO 3.8.6A.1* ).

**ALLOWABLE VALUE**

Pilot Cell Levels are Above the Plates and **NOT** Overflowing

Pilot Cell Voltages: **> 2.0717** VDC

PILOT CELL ID	SAT	UNSAT	PILOT CELL ID	VOLTS	SAT	UNSAT

INT: \_\_\_\_\_

- .3 If any Pilot Cell does **NOT** meet the Allowable Value in Step 6.5.2.2, the Supervisor **SHALL** report a failed Surveillance according to SO123-I-1.3. ( *The Battery Bank is inoperable per LCO 3.8.6B.1* ).

☐ CHK CPL

- .4 Start procedure SO123-I-2.3 and complete within **24 Hours**, and

(b)(6)

- .5 Go to the next step.

08031738-0

**END OF SECTION**

**T/S REQUIREMENT**

**6.7 Electrolyte Temperature**

- 6.7.1 Record the Pilot Cell Temperature below ( *may already be recorded* ).

**ACCEPTANCE CRITERIA**

UNIT 2 & 3 Battery Banks:

**> 61 °F**

PILOT CELL NO.	CELL TEMP.	SAT		UNSAT	
37	74°F	✓			
57	73°F	✓	Go to Section 6.8.		Perform corrective actions as follows

(b)(6)

INT:

~~N/A~~ CHK CPL

- .1 Contact your Supervisor and, generate an AR,

**NOTE:** If the battery cell temperature deviates more than 5 °F from each other notify your Supervisor.

- .2 Randomly select 10 cells connected within the Battery Bank and measure the Electrolyte Temperature. Record the Cell Numbers and Electrolyte Temperatures below.

(b)(6)

Cell Number	Cell Temperature	Cell Number	Cell Temperature
2	73	37	74
8	73	45	74
18	74	50	74
25	74	57	73
30	73	59	73

(b)(6)

INT:

08031738-0

SECTION CONTINUES ON NEXT PAGE →



6.8.2 Calculate the Corrected Specific Gravity ( **CSG** ) below and verify the results meet the Acceptance Criteria for each Pilot Cell. Have a second person verify the calculation.

**ACCEPTANCE CRITERIA**

Corrected Specific Gravity ( **CSG** ) is:  $\geq 1.202$

Pilot Cell No.	37	Pilot Cell No.	57	
Temperature °F	74°	Temperature °F	73°	
	1.225	Specific Gravity ( <b>H</b> )	1.216	
+	0	Level Correction ( <b>LC</b> )	+	0
	1.225	Corrected Specific Gravity ( <b>CSG</b> )	1.216	

SAT	<input checked="" type="checkbox"/>	Go to Section 6.9.	UNSAT	<input type="checkbox"/>	Notify Supervisor and continue as follows.
-----	-------------------------------------	--------------------	-------	--------------------------	--

(b)(6)

INT:

2nd Person INT:

6.8.3 If Step 6.8.2 does **NOT** meet the Acceptance Criteria do the following:

- .1 Immediately notify your Supervisor, and the Engineer of the **UNSAT** condition.

☐ CHK CPL

**NOTE:** The following steps do **NOT** apply to **NON-1E** Battery Banks. Go to Section 6.9.

- .2 The Supervisor **SHALL** report a failed Surveillance according to SO123-I-1.3.
- .3 Start procedure SO123-I-2.3, and complete within **24 Hours** , and
- .4 Go to Section 6.10, unless directed otherwise by the MO.

☐ CHK CPL

(b)(6)

08031738-0

**END OF SECTION**

- NOTES:**
1. If this procedure is being performed to satisfy the prerequisites of the Battery Service Test, Procedure SO123-I-2.5, or the Battery Performance Test, Procedure SO123-I-2.6, do **NOT** perform this Section.
  2. If a weekly Surveillance is being performed, go to Section 6.10. Otherwise, continue as follows for a Monthly PM.

## 6.9 Additional Battery Inspections

**NOTE:** The following steps satisfy IEEE Std. 450-1980 and **SHOULD NOT**, in themselves, cause the Battery Bank to be declared INOPERABLE. Any discrepancies **SHALL** be reported to your Supervisor for evaluation.

- 6.9.1 Record Battery Charger output Current and Voltage meter readings below.

INFORMATION ONLY
IEEE Std. 450-1980 Section 4.3.1(2)

AMPS: 110a.

VOLTS: 132vdc.

(b)(6)

INT:

- 6.9.2 Record the levels of each Battery Cell in Attachment 11 and verify Electrolyte Levels meet the Acceptance Criteria below.

ACCEPTANCE CRITERIA			
IEEE Std. 450-1980 Section 4.3.1(3)		> LOW LEVEL Indication Mark, and ≤ 1/4 Inch Above the HIGH LEVEL Indication Mark.	
SAT	<input checked="" type="checkbox"/>	UNSAT	<input type="checkbox"/>

(b)(6)

INT:

- 6.9.3 Visually inspect the external casing of each cell for cracks and evidence of Electrolyte Leakage.

ACCEPTANCE CRITERIA			
IEEE Std. 450-1980 Section 4.3.1(4)		NO Cracks or Leakage of Electrolyte.	
SAT	<input checked="" type="checkbox"/>	UNSAT	<input type="checkbox"/>

(b)(6)

INT:

- .1 If any acid droplets are found, clean the jar and record the findings in the MO.

☒ Ck Ck

08031738-0

SECTION CONTINUES ON NEXT PAGE →

- 6.9.4 Visually inspect the Intercell Connectors and Battery Terminals for signs of corrosion. Record *UNSAT* Cell Numbers in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( *for the other Battery Banks* ).

ACCEPTANCE CRITERIA			
IEEE Std. 450-1980 Section 4.3.1(5)		NO Evidence of Corrosion.	
SAT	<input checked="" type="checkbox"/>	Go to Step 6.9.9	UNSAT <input type="checkbox"/> Perform corrective actions as follows.

(b)(6)

- NOTES:**
1. Refer to Attachment 8 for examples of the different types of Battery Terminal Connections and the Shunt Connection configuration if present.
  2. For the following steps, place-keeping is required only where indicated. Completion of the required actions are tracked in Attachments 9 or 10 ( *for the applicable Battery Bank* ).

### WARNING

**Personnel Hazard:** Do **NOT** Ductor any of the Battery Bank Connections if the Battery Bank is on an *EQUALIZE* Charge.

Do **NOT** Place the Microhm Meter Probes Across the Positive ( + ) and Negative ( - ) Cell Posts of Any Battery Cell(s).

- 6.9.5 Measure the resistance of the cell connector(s) or terminals found *UNSAT* as follows:

- .1 Place a probe on each side of the connection point.

- NOTES:**
1. There **MAY** be more than two microhm reading for each battery post, the highest reading **SHOULD** be recorded.
  2. When taking connection resistance readings, use an AVO / Megger Model DLRO 10 Digital Microhm Meter ( *equivalent or better* ) set on "Auto." If necessary, refer to AR #070100063-03 "CLC" assignment for 1E Batteries.

- .2 Energize the microhm meter and observe the reading.
- .3 De-energize the microhm meter.
- .4 Record resistance readings as follows:
  - .4.1 For 2(3) B007 and 2(3) B008 Battery Banks, record the lowest and highest resistance readings on Attachment 9.
  - .4.2 For all other Battery Banks, Record the highest resistance reading on Attachment 10.

SECTION CONTINUES ON NEXT PAGE

08031738-0

19

6.9.10 Visually inspect the general appearance and cleanliness of the Battery Bank and Battery Room Area as follows:

- .1 As necessary, wipe spills with a solution of Bicarbonate of Soda and cold, Distilled or DI Water.
- .2 As necessary, wipe dust or dirt with a damp cloth.
- .3 As necessary or if directed, clean battery jars as follows:
  - .3.1 Wipe clean all sides of the Battery Jars, starting from the joint between the Cover and the Jar.
  - .3.2 As much as possible, wipe the narrow space between the adjacent Jar Covers.
  - .3.3 Clean the Jar Cover. *Be careful NOT to smear the Cover with the NO-OX-ID grease at the Battery Terminals.*
- .4 Verify removal of non-essential equipment from the Battery Room.
- .5 As necessary, seismically restrain equipment remaining in the battery room according to SO123-I-1.20. ( *Test equipment MAY be tied to the battery rack only while testing is in progress* ).
- .6 Battery Bank and Room Area inspection completed satisfactorily.

M/K ☐ CHK CPL

☒ CHK CPL

☒ CHK CPL

☒ CHK CPL

INFORMATION ONLY	
IEEE Std. 450-1980 Section 4.3.1(1)	Battery Bank and Battery Room Area are Clean.

INT: (b)(6)

6.9.11 Measure the ambient Battery Room temperature and record the temperature reading below.

INFORMATION ONLY
IEEE Std. 450-1980 Section 4.3.1(6)

Record Battery Room Temperature.

68 °F

INT: (b)(6)

08031738-0

END OF SECTION

20

---

## 6.10 Restoration

---

### 6.10.1 Verify the following:

- .1 All Measuring and Test Equipment have been removed from the Battery Cells.
- .2 All dust covers, cell caps, and flame arresters are installed.
- .3 Verify equipment remaining in the Battery Room is seismically restrained.
- .4 All Inter-cell dust covers are installed.
- .5 Have a second person verify the conditions listed above.

INT:	(b)(6)
INT:	
INT:	
INT:	
2nd Person INT:	

**NOTE:** If performing this procedure to satisfy the prerequisites of a Battery Service Test, Procedure SO123-I-2.5, or a Battery Performance Test, Procedure SO123-I-2.6, do **NOT** perform Section 6.10.2.

### 6.10.2 If one or more of the Pilot Cell individual Cell Voltage ( ICV ) is: < 2.14 VDC, perform the following:

- .1 Notify the Engineer, and generate an AR.
- .2 An MO **MAY** be initiated to perform an Equalize Charge according to SO123-I-4.53.

N/A

<input checked="" type="checkbox"/>	CHK CPL
<input type="checkbox"/>	CHK CPL

---

## 7.0 ACCEPTANCE CRITERIA

---

- 7.1 The Acceptance Criteria satisfying the Unit 2 and Unit 3 Technical Specifications for 125 VDC Battery Banks is included in Section 6.0.
- 7.2 Acceptance Criteria values listed in Section 6.0 include additional margin for measurement uncertainties of Measuring & Test Equipment associated with performing Technical Specification Surveillances of Class 1E 125VDC Battery System. *Information found in the 125 Volt Battery D.C. System Sizing Calculation E4C-017.*

---

## 8.0 RECORDS

---

- 8.1 Verify all data in the procedure is complete, then forward the procedure, and the entire work package to your Supervisor for review and record disposition according to SO123-I-1.3.

08031738-0

## 1.0 OBJECTIVES

- 1.1 This procedure provides guidance for performing the Quarterly 125 volt Battery Bank and Charger operability verification checks.
- 1.2 This procedure satisfies the surveillance requirements specified in the Unit 2 and Unit 3 Technical Specifications, LCO - SR, Sections 3.8.4.2, 3.8.5.1, 3.8.6.2, 3.8.6.3, and Table 3.8.6-1 Category "B" Limits.
- 1.3 If the battery cells fail to meet the surveillance requirements, this procedure satisfies the **REQUIRED ACTIONS** specified in the Unit 2 and Unit 3 Technical Specifications, LCO - SR, Section 3.8.6A.1, 3.8.6A.2, and 3.8.6A.3.
- 1.4 This procedure performed at least quarterly, satisfies the requirements stated in IEEE Std. 450-1980.
- 1.5 This procedure is applicable to the 125 VDC Station Battery Banks.

## 2.0 REFERENCES

- 2.1 Refer to Attachment 1 for the Procedure Resource List.

## 3.0 PREREQUISITES

- 3.1 Before starting work, the user **SHALL** verify this procedure is current by referring to NDMS or one of the other methods listed in SO123-I-1.3.

- 3.2 Enter the following data:

MO# 08031738000

Unit: 2

Equip ID: 521806EB008

- 3.3 This procedure **MAY** be performed while Equalize Charging the Battery Bank unless one of the conditions listed in Section 3.4 is true.

**NOTE:** IF the intent of performing this procedure is for information only, THEN a 72 hour Float Charge is **NOT** required.

- 3.4 When performing an "EQUALIZE CHARGE" for one of the following conditions, this procedure **SHALL NOT** be performed until verifying the Battery Bank has been on "FLOAT CHARGE" for 72 hours.
  - 3.4.1 Battery Bank is on "EQUALIZE CHARGE" for quick recovery following any Battery Bank Discharge.
  - 3.4.2 Battery Bank is on "EQUALIZE CHARGE" following a water addition from below the "LOW LEVEL MARK" to one or more Battery Cells.
  - 3.4.3 If the Battery Bank was on "EQUALIZE CHARGE" for one of the conditions listed above, the Supervisor **SHALL** verify the battery bank has been on "FLOAT" charge for 72 hours before performing this procedure.

VERIFIED BY Supervisor N/A Date 1

08031738-0

22

3.5 The battery room ventilation system is in operation.

3.6 An operable OSHA approved, eye wash facility is available near the battery bank.

3.7 The above Prerequisites have been verified.

(b)(6)

VERIFIED BY

Date

3-25-08

#### 4.0 PRECAUTIONS

4.1 For the tasks listed below, use the following minimum Personnel Protective Equipment ( PPE ) to prevent Acid / Caustic burns.

**NOTE:** The listed Physical Inspection PPE assumes that the corrosion material is mixed in with the grease on the Intercell Connections and there is no potential for airborne contamination.

4.1.1 **Physical Inspection / Cleaning:**

Safety Glasses, and Long Sleeve Shirt ( Non-Synthetic )

4.1.2 **Battery Voltage Readings / Test Connections:**

Safety Glasses, and Long Sleeve Shirt ( Non-Synthetic )

4.1.3 **Specific Gravity Readings:**

Safety Glasses, Long Sleeve Shirt ( Non-Synthetic ), and Acid Resistant Gloves.

4.1.4 **Electrolyte Recirculation / Acid Additions:**

Goggles, Face Shield, Rubber Apron, Acid Resistant Gloves, and Long Sleeve Shirt ( Non-Synthetic )

4.2 If Acid contacts the eyes or skin, flush with copious amounts of water and seek first aid.

4.3 Exercise care when handling Acid. Immediately clean up residual Acid. For Acid spills in excess of 1 gallon, contact the Fire Department at 86-911.

4.4 Prohibit smoking, open flame or any activity which may cause ignition of hydrogen gas.

4.5 Ensure the exit from the battery room remains unblocked.

4.6 Use insulated tools when working on or around exposed battery terminals or intercell connectors. Refer to SO123-XVI-24, Electrical Safe Work Practices.

4.7 Prohibit the use of any type of oil, solvent, detergent, or ammonia solution on or around the battery case. These materials will cause permanent damage to the plastic case.

4.8 Discharge static electricity from your body by touching a grounded surface before touching a cell terminal or connector.

08031738-0

23

- 6.1.4 For the battery bank to be considered **"OPERABLE"** when parameters are found outside the Acceptance Criteria in Sections 6.3, 6.5, or 6.8 verify the following:
- .1 Verify the pilot cells electrolyte level and float voltage meet the Table 3.8.6-1 Category "C" values within **1 Hour**, ( *Verified while performing this procedure* ) and
  - .2 Verify all cells meet the Table 3.8.6-1 Category "C" Allowable Values within **24 hours**, ( *Verified while performing this procedure* ) and
  - .3 The cells are restored to the battery surveillance requirements stated in Table 3.8.6-1 Category "A" & "B" Limits within **31 Days**. This is verified by satisfactorily completing SO123-I-2.2 ( *125 VDC Battery Pilot Cell Inspection* ) and SO123-I-2.3 ( *125 VDC Battery Inspection* ).
- 6.1.5 If this procedure was initiated due to a failed Weekly Surveillance, SO123-I-2.2, the battery bank **MAY** be considered **"OPERABLE"** if:
- .1 All cells meet the Table 3.8.6-1 Category "C" Allowable Values within **24 Hours**, ( *Verified while performing this procedure* ) and
  - .2 The cells are restored to the battery surveillance requirements ( *Table 3.8.6-1 Category "A" & "B" Limits* ) within **31 Days**. Verified by satisfactorily completing SO123-I-2.2 ( *125 VDC Battery Pilot Cell Inspection* ) and this procedure.
- 6.1.6 If this procedure was initiated due to the Battery Room Temperature falling below the Setpoint, Section 6.7, Electrolyte Temperature, **MAY** be performed first to verify Cell Temperatures.
- 6.1.7 If this procedure was initiated due to a failed Weekly Surveillance, Procedure SO123-I-2.2, Sections 6.2, 6.7, 6.9, and 6.10 Are **NOT** required. **"N/A"** these sections.
- 6.1.8 Perform this procedure once within **7 Days** after a battery discharge resulting in a battery terminal voltage *Below 110 Volts* or an overcharge resulting in a battery terminal voltage *Above 150 Volts*. ( *LCO 3.8.6.2 requires the battery to meet the Table 3.8.6-1 Category "B" Limits* ).
- 6.1.9 As necessary, refer to the information below when using the listed test equipment:
- .1 DMA-35N Digital Hydrometer, Attachment 6,
  - .2 DC Clamp-On Ammeter, Attachment 7.
- 6.1.10 Craft who initial a step in this procedure **SHOULD** print their name and initial below.

		(b)(6)	
_____	_____	_____	_____
<i>print name</i>	<i>initial</i>	<i>print name</i>	<i>initial</i>
		(b)(6)	
_____	_____	_____	_____
<i>print name</i>	<i>initial</i>	<i>print name</i>	<i>initial</i>
_____	_____	_____	_____
<i>print name</i>	<i>initial</i>	<i>print name</i>	<i>initial</i>

08031738-0

END OF SECTION

24



**NOTE:** When taking Battery Bank Terminal Voltage, use a **Fluke 187** ( *equivalent or better* ) set on the **500V** range. *If necessary, reference Design Calc E4C-017.*

## 6.2 Battery Bank Voltage

### T/S REQUIREMENT

6.2.1 Measure Battery Bank Terminal voltage. Record readings below.

#### ACCEPTANCE CRITERIA

All 125 VDC Battery Banks:  $\geq 129.17$  VDC

		132.21	VDC
SAT	<input checked="" type="checkbox"/>	Go to Step 6.2.2.	UNSAT <input type="checkbox"/> Perform Corrective Actions as Follows.

- .1 Immediately notify your Supervisor of the "UNSAT" condition.
- .2 This Supervisor **SHALL** report a failed Surveillance according to Procedure SO123-I-1.3.
- .3 Notify the Engineer, and generate an AR.

INT. (b)(6)

☐ CHK CPL

☐ CHK CPL

☐ CHK CPL

08081738-0

SECTION CONTINUES ON NEXT PAGE

25

- 6.2.2 If the battery banks is on a "FLOAT CHARGE," measure the Battery Terminal voltage. As necessary, adjust the Float Voltage within the values shown below, and record "AS-LEFT" voltage below.

ACCEPTANCE CRITERIA		All 125 VDC Battery Banks:		Check One
58 Cell Bank:	131.5 ( 131.0 to 132.0 )	VDC	<input checked="" type="checkbox"/>	
59 Cell Bank:	133.5 ( 133.0 to 134.0 )	VDC	<input type="checkbox"/>	
60 Cell Bank:	135.0 ( 134.5 to 135.5 )	VDC	<input type="checkbox"/>	
		131.85	VDC	
SAT	<input checked="" type="checkbox"/>	Go to Section 6.3.	UNSAT	<input type="checkbox"/> Perform Corrective Actions as Follows.

- .1 Notify your Supervisor of the "UNSAT" condition. ( This condition does **NOT** require reporting a Failed Surveillance ).
- .2 This Supervisor **SHOULD** evaluate the condition, consult with the Engineer, and initiate the necessary corrective action.
- .3 Go to the next step.

INT: (b)(6)

☐ CHK CPL

☐ CHK CPL

08031738-0

END OF SECTION

26

**NOTE:** When taking Battery Cell Voltage, use a **Fluke 187** ( *equivalent or better* ) set on the **5V** range. *If necessary, reference Design Calc E4C-017.*

**T/S REQUIREMENT**

**6.3 Cell Voltage**

- 6.3.1 Measure voltage between the Positive ( + ) and Negative ( - ) posts of each connected battery cell. Record readings in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( *for the other Battery Banks* ).

**ACCEPTANCE CRITERIA**

Each Battery Cell is: **≥ 2.1317 VDC**

SAT	<input checked="" type="checkbox"/>	Go to Section 6.4	UNSAT	<input type="checkbox"/>	Perform Corrective Actions as Follows.
-----	-------------------------------------	-------------------	-------	--------------------------	--

INT: (b)(6)

- .1 Using a different volt meter, measure the voltage between the Positive ( + ) and Negative ( - ) posts of each connected battery cell found **UNSAT**. Record readings in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( *for the other Battery Banks* ) and have a second person verify.

**ACCEPTANCE CRITERIA**

Each Battery Cell is: **≥ 2.1317 VDC**

SAT	<input type="checkbox"/>	Go to Section 6.4	UNSAT	<input type="checkbox"/>	Perform Corrective Actions as Follows.
-----	--------------------------	-------------------	-------	--------------------------	--

INT: N/A

2nd Person INT:

- .2 Notify the Supervisor and Engineer of the **UNSAT** condition.

☐ CHK CPL

**NOTE:** The following steps do **NOT** apply to **NON-1E** Battery Banks.

- .3 Verify the designated pilot cells meet the requirements stated in Attachment 11 within **1 Hour** of discovering the **UNSAT** condition, **AND**
- .4 Complete this procedure within **24 Hours**.
- .5 Make the following notifications:
- o Supervisor,
  - o Engineer, and
  - o Operations - *31 day action entered ( LCO 3.8.6 ). Not considered a Failed SV until Allowable Values ( Category C ) verified.*
- .6 Generate an AR to document the **UNSAT** condition.

☐ CHK CPL

☐ CHK CPL

☐ CHK CPL

SECTION CONTINUES ON NEXT PAGE

08031738-0

27

**T/S REQUIREMENT**

**6.4 Battery Charging Current**

**NOTE:** Refer to Attachment 7 for the DC Clamp-on Ammeter set up information.

- 6.4.1 At the Battery Terminal measure the charging current. Record amperage value below.

**INFORMATION ONLY**

.6  
Charging Amps

8:35  
Time

3/25/08  
Date

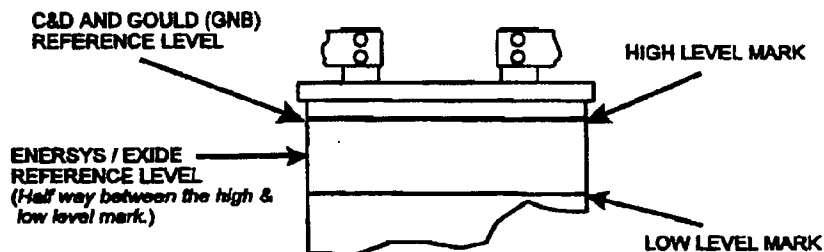
INT: (b)  
(6)

**T/S REQUIREMENT**

**6.5 Electrolyte Level**

**NOTE:** For the following steps, place-keeping is required only where indicated. Completion of the required actions are tracked in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( for the other Battery Banks ).

- 6.5.1 Find the Electrolyte Level correction as follows:



- .1 Find the difference between the "REFERENCE LEVEL" and the "ELECTROLYTE LEVEL."
- .2 Refer to Attachment 5 for the Level Correction ( LC ) value.
- .3 Record the ( LC ) value in Record readings in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( for the other Battery Banks ).
- .4 Repeat Steps 6.5.1.1 through 6.5.1.3 For each connected cell.
- .5 Electrolyte Level Correction verified complete.

INT: (b)(6)

08031738-0

SECTION CONTINUES ON NEXT PAGE

28

**NOTE:** According to Table 3.8.6-1 Note "a" of the Technical Specifications:

It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is **NOT** overflowing.

- 6.5.2 Verify the electrolyte level of the connected cells recorded in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( for the other Battery Banks ) meet the Acceptance Criteria below.

**ACCEPTANCE CRITERIA**

> LOW LEVEL Mark and ≤ 1/4 inch Above the HIGH LEVEL Mark.

SAT	<input checked="" type="checkbox"/>	Go to Section 6.6	UNSAT	<input type="checkbox"/>	Perform corrective actions as follows.
-----	-------------------------------------	-------------------	-------	--------------------------	--

INT: (b)  
(6)

- .1 If the **UNSAT** Cell(s) is **ABOVE** the **HIGH LEVEL MARK** determine if the battery bank is on an **EQUALIZE CHARGE**. Table 3.8.6-1 Note "a" allows a temporary increase above the high level mark during an equalize charge provided the cell is **NOT** overflowing. Record condition in the MO. If there are **NO** other **UNSAT** conditions go to Section 6.6.

N/A  
☐ CHK CPL

**NOTE:** The following steps do **NOT** apply to **NON-1E** Battery Banks.

- .2 Verify the designated pilot cells meet the requirements stated in Attachment 11 Within **1 Hour** of discovering the **UNSAT** condition, and complete this procedure within **24 Hours**.
- .3 Notify the Supervisor, and Engineer of the **UNSAT** condition.
- .4 Generate an AR.
- .5 Verify the Battery Cell(s) found **UNSAT** in Step 6.5.2 Are within the Allowable Value below.

☐ CHK CPL  
☐ CHK CPL  
☐ CHK CPL

**ALLOWABLE VALUE**

**ABOVE** the Top of the Plates, and **NOT** Overflowing.

SAT	<input type="checkbox"/>	Go to Section 6.6	UNSAT	<input type="checkbox"/>	Perform corrective actions as follows.
-----	--------------------------	-------------------	-------	--------------------------	--

INT: N/A

- .6 Immediately notify your Supervisor of the **UNSAT** condition.
- .7 Notify the Engineer.
- .8 This Supervisor **SHALL** report a failed Surveillance according to Procedure SO123-I-1.3. ( Battery Bank is inoperable per LCO 3.8.6B.1 )

☐ CHK CPL  
☐ CHK CPL  
☐ CHK CPL

08031738-0

END OF SECTION

29

**T/S REQUIREMENT**

**6.7 Electrolyte Temperature**

- NOTES:** 1. If the battery cell temperatures deviate more than 5°F from each other notify your Supervisor, and the Engineer.  
( *IEEE Std. 450-1980 requirement.* )
2. To determine immediate condition of the Battery Bank the craft **MAY** randomly select 10 Cells and take the Electrolyte Temperature.

- 6.7.1 Randomly select **10** cells recorded in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( *for the other Battery Banks* ).  
Record the Cell Numbers and Electrolyte Temperatures below.

Cell Number	Cell Temperature	Cell Number	Cell Temperature
2	73	37	74
8	73	45	74
18	74	50	74
25	74	57	73
30	73	59	73

(b)(6)  
INT:

- 6.7.2 Calculate Average Cell Electrolyte Temperature below. Have a second person verify the calculation.

ACCEPTANCE CRITERIA			
UNIT 2 & 3 Battery Banks:		> 61 °F ( <i>average cell temperature</i> )	
SUM OF CELL TEMPS ( <i>Recorded in Step 6.7.1</i> )		= [ 735 ]	= [ 73.5 ]
TOTAL NO. OF CELLS		= 10	( <i>average cell temp.</i> )
SAT	<input checked="" type="checkbox"/>	Go to Step 6.7.3.	UNSAT <input type="checkbox"/> Perform corrective actions as follows

(b)(6)  
INT:   
2nd Person INT:

- .1 Immediately notify your Supervisor, and the Engineer of the **UNSAT** condition.

**NOTE:** The following steps do **NOT** apply to **NON-1E** Battery Banks. Go to Step 6.7.3.

- .2 This Supervisor **SHALL** report a failed Surveillance according to procedure SO123-I-1.3. ( *Battery Bank is inoperable per LCO 3.8.6 action B.1* )
- .3 Go to next step.

☐ CHK CPL

08031738-0

SECTION CONTINUES ON NEXT PAGE →

30

- 6.8.2 Verify the Corrected Specific Gravity for all connected cells recorded in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( for the other Battery Banks ) meet the Acceptance Criteria below.

ACCEPTANCE CRITERIA					
Corrected Specific Gravity:				$\geq 1.197$	
SAT	<input checked="" type="checkbox"/>	Go to Step 6.8.3.	UNSAT	<input type="checkbox"/>	Perform corrective actions as follows

INT: (b)(6)

- .1 Verify the designated pilot cells meet the requirements stated in Attachment 11 within 1 Hour of discovering the UNSAT condition, and complete this procedure within 24 Hours.
- .2 Immediately notify your Supervisor, and the Engineer of the UNSAT condition. ( Battery Operability MAY be determined by meeting the Allowable Value in Step 6.8.4. ) Generate an AR.

N/A  
CHK CPL  
☐ CHK CPL

- 6.8.3 Calculate the average Corrected Specific Gravity ( CSG ) of all connected cells and record below. Have a second person verify the calculation.

ACCEPTANCE CRITERIA					
Average Corrected Specific Gravity of All Connected Cells: $\geq 1.206$					
Sum of All Connected Cells CSG		=	[ 70.626 ]	=	[ 1.218 ]
Total No. Of Cells		=	[ 58 ]	( average CSG )	
SAT	<input checked="" type="checkbox"/>	Go to Section 6.9	UNSAT	<input type="checkbox"/>	Perform corrective actions as follows

INT: (b)(6)  
2nd Person INT:

- .1 Verify the designated pilot cells meet the requirements stated in Attachment 11 within 1 Hour of discovering the UNSAT condition, and complete this procedure within 24 Hours.
- .2 Immediately notify your Supervisor, and the Engineer of the UNSAT condition. ( Battery Operability MAY be determined by meeting the Allowable Value in Step 6.8.5 ). Generate an AR.

N/A  
CHK CPL  
☐ CHK CPL

**NOTE:** The following steps do NOT apply to NON-1E Battery Banks. Go to Section 6.9.

- .3 Go to the next step

08031738 - 0 SECTION CONTINUES ON NEXT PAGE →

31

**NOTE:** If this procedure is being performed to satisfy the prerequisites of the Battery Service Test, Procedure SO123-I-2.5, or the Battery Performance Test, Procedure SO123-I-2.6, do **NOT** perform this Section.

**T/S REQUIREMENT**

**6.9 Intercell Connector and Battery Terminal Inspection**

- 6.9.1 Visually inspect all Intercell, Interrack, Intertier, and Terminal Connections for signs of corrosion. Record the **UNSAT** Cell Numbers in the MO.

**ACCEPTANCE CRITERIA**

**NO** Visible Corrosion on Intercell, Interrack, Intertier, or Terminal Connections.

SAT	<input checked="" type="checkbox"/>	Go to Section 6.10	UNSAT	<input type="checkbox"/>	Perform Corrective Actions as Follows
-----	-------------------------------------	--------------------	-------	--------------------------	---------------------------------------

NT: (b)(6)

- .1 Immediately notify your Supervisor and proceed as follows to determine the connection resistance.

**NOTES:**

1. Refer to Attachment 8 for examples of the different types of Battery Terminal Connections and the Shunt Connection configuration if present.
2. For the following steps, place-keeping is required only where indicated. Completion of the required actions are tracked in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( for the other Battery Banks ).

**WARNING**

**Personnel Hazard:** Do **NOT** Ductor any of the Battery Bank Connections if the Battery Bank is on an **EQUALIZE** Charge.

Do **NOT** Place the Microhm Meter Probes Across the Positive ( + ) and Negative ( - ) Cell Posts of any Battery Cell(s).

- 6.9.2 Place a probe on each side of the connection point.

08031738-0

SECTION CONTINUES ON NEXT PAGE ➡

32



**NOTE:** If this procedure is being performed to satisfy the prerequisites of the Battery Service Test, Procedure SO123-I-2.5, or the Battery Performance Test, Procedure SO123-I-2.6, do **NOT** perform the following section.

#### 6.10 Additional Battery Inspections

**NOTE:** The Plastic / Rubber Boot Cover is a dust cover, and has been previously evaluated by Engineering to have **NO** safety significance.

- 6.10.1 Inspect the Battery Post Seal Boot Cover on each battery cell for cracking. Use check list in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( *for the other Battery Banks* ) to track inspection, sign-off step when completed.

##### ACCEPTANCE CRITERIA

**NO Visible Cracking or Tearing**

SAT	<input checked="" type="checkbox"/>	Go to Section 6.10.2	UNSAT	<input type="checkbox"/>	Contact Supervisor for Direction
-----	-------------------------------------	----------------------	-------	--------------------------	----------------------------------

INT: (b)  
(6)

- .1 Immediately notify your Supervisor.
- .2 Notify the Engineer, and generate an AR.
- .3 Initiate an AR and record the number in the MO. Corrective work **MAY** be scheduled later.

N/A  
CHK CPL  
☐ CHK CPL  
☐ CHK CPL

08031738-0

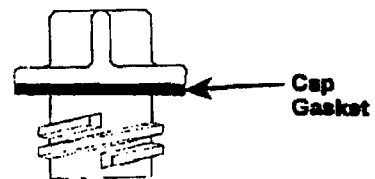
SECTION CONTINUES ON NEXT PAGE ➡

33

- NOTES:**
1. The Withdrawal Tube Cap Gasket inspection **MAY** be performed while measuring the cell specific gravity.
  2. The following inspection is applicable to Battery Cells using a threaded Withdrawal Tube Cap.
  3. For the following steps, place-keeping is required only where indicated. Completion of the required actions are tracked in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( *for the other Battery Banks* ).

6.10.2 Inspect the Cap Gasket for degradation. Verify the following conditions:

- .1 **NO** tears,
- .2 **NO** cracks,
- .3 Rubber material is still pliable and **NOT** hard.
- .4 **NOT** Stretched from tightening the Cap.
- .5 As necessary, replace with **New In-Kind** Gasket.
- .6 Check next to the cell completed in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( *for the other Battery Banks* ) to track completed cells.
- .7 Verify completion by reviewing Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( *for the other Battery Banks* ).



INT: (b)(6)

6.10.3 Inspect for weepage around the perimeter of the Battery Jar Covers and the surrounding jar sides. Use check list in Attachment 9 [ 2(3)B007 & 2(3)B008 ] or Attachment 10 ( *for the other Battery Banks* ) to track inspection, sign-off step when completed.

**ACCEPTANCE CRITERIA**

**NO** Visible Weepage Found on the Cover-to-Jar Joint or Jar Sides

SAT	<input checked="" type="checkbox"/>	Go to Section 6.11	UNSAT	<input type="checkbox"/>	Perform corrective actions as follows.
-----	-------------------------------------	--------------------	-------	--------------------------	--

INT: (b)(6)

- .1 As necessary, wipe off Jar Covers and sides as follows:
  - .1.1 Wipe clean all sides of the Battery Jars, starting from the joint between the Cover and the Jar.

INT: (b)(6)

08031738-0

SECTION CONTINUES ON NEXT PAGE

34

6.10.3.1.2 As much as possible, wipe the narrow space between the adjacent Jar Covers.

.1.3 Clean the Jar Cover. *Be careful NOT to smear the Cover with the NO-OX-ID grease at the Battery Terminals.*

.2 Record Cell Numbers showing weepage in the MO.

☐ CHK CPL

6.10.4 If necessary, clean visible corrosion from the Battery Connections and coat with NO-OX-ID Special Grade "A" Grease.

N/A

INT: \_\_\_\_\_

## 6.11 Restoration

6.11.1 Verify the following:

- .1 All Measuring and Test Equipment have been removed from the Battery Cells.
- .2 All dust covers, cell caps, and flame arresters are installed.
- .3 Verify equipment remaining in the Battery Room is seismically restrained.
- .4 All Inter-cell dust covers are installed.
- .5 Have a second person verify the conditions listed above.

INT:

INT:

INT:

INT:

2nd Person INT:

(b)(6)

**NOTE:** If performing this procedure to satisfy the prerequisites of a Battery Service Test, Procedure SO123-I-2.5, or a Battery Performance Test, Procedure SO123-I-2.6, do **NOT** perform Steps 6.11.2 through 6.11.2.3.

6.11.2 Notify the Engineer. An MO **MAY** be initiated to perform an Equalize Charge if one of the following conditions exist:

**NOTE:** Verify low or abnormally high Specific Gravity readings by triple dipping. ( Read Specific Gravity at the top, middle, and bottom of the cell to determine the Average Specific Gravity ).

- .1 If one or more Cell's Corrected Specific Gravity is more than 0.010 below the average of all cells at the time of inspection,
- .2 If the Average Corrected Specific Gravity of all cells:  $\leq 1.205$ ,
- .3 If one or more individual Cell Voltage ( ICV ) is:  $\leq 2.14$  VDC.

08031738-0

END OF SECTION

35

2(3)B007 & 2(3)B008 BATTERY DATA FORM

CELL NO.	POST SEAL	CAP GASKET	WEEPAGE	CELL VOLTS	LEVEL CORR. (LC)	HYDROMETER (H)	TEMP °F	TEMP CORR. Electrolyte Outside Allowed Range	CORRECTED SPECIFIC GRAVITY (CSG)
32.	-	-	-	2.274	0	12 11	73	N/A	12.11
33.	-	-	-	2.240	+ 2	12 16	73		12.18
34.	-	-	-	2.232	- 2	12 14	73		12.12
35.	-	-	-	2.238	- 2	12 19	73		12.17
36.	-	-	-	2.240	0	12 16	73		12.16
37.	-	-	-	2.333	0	12 25	74		12.25
38.	-	-	-	2.370	0	12 19	74		12.19
39.	-	-	-	2.401	0	12 20	74		12.20
40.	-	-	-	2.381	0	12 21	74		12.21
41.	-	-	-	2.341	- 2	12 11	74		12.09
42.	-	-	-	2.390	- 2	12 16	74		12.14
43.	-	-	-	2.192	0	12 14	74		12.14
44.	-	-	-	2.219	+ 2	12 12	74		12.14
45.	-	-	-	2.181	- 2	12 12	74		12.10
46.	-	-	-	2.200	- 2	12 06	74		12.04
47.	-	-	-	2.191	0	12 18	74		12.18
48.	-	-	-	2.332	+ 2	12 16	74		12.18
49.	-	-	-	2.285	0	12 20	74		12.20
50.	-	-	-	2.369	+ 2	12 19	74		12.21
51.	-	-	-	2.371	0	12 16	74		12.16
52.	-	-	-	2.432	+ 4	12 24	74		12.28
53.	-	-	-	2.249	+ 4	12 16	73		12.20
54.	-	-	-	2.414	+ 7	12 15	77		12.22
55.	-	-	-	2.416	+ 7	12 17	73		12.24
56.	-	-	-	2.406	0	12 15	73		12.15
57.	-	-	-	2.312	0	12 16	73		12.16
58.	-	-	-	2.236	- 2	12 14	73		12.12
59.	-	-	-	2.245	0	12 12	73		12.12
60.	-	-	-	2.233	+ 2	12 16	73	↓	12.18

08031738-0

36

2(3)B007 & 2(3)B008 BATTERY DATA FORM

CELL NO.	POST SEAL	CAP GASKET	WEEPAGE	CELL VOLTS	LEVEL CORR. (LC)	HYDROMETER (H)	TEMP °F	TEMP CORR. Electrolyte Outside Allowed Range	CORRECTED SPECIFIC GRAVITY (CSG)
1.	/	/	/	2.173	0	1217	73	N/A	1217
2.	/	/	/	2.212	0	1224	73		1214
3.	/	/	/	2.238	+2	1220	73		1222
4.	/	/	/	2.230	0	1222	73		1221
5.	/	/	/	2.216	0	1218	73		1218
6.	/	/	/	2.235	0	1218	73		1218
7.	/	/	/	2.189	-2	1221	73		1219
8.	/	/	/	2.219	0	1214	73		1214
9.	/	/	/	2.397	0	1219	74		1219
10.	/	/	/	2.376	+2	1222	74		1224
11.	/	/	/	2.228	0	1221	74		1221
12.	/	/	/	2.209	0	1211	74		1211
13.	/	/	/	2.263	+4	1219	74		1223
14.	/	/	/	2.265	+7	1200	74		1207
15.									
16.									
17.	/	/	/	2.211	-2	1222	74		1220
18.	/	/	/	2.224	0	1220	74		1220
19.	/	/	/	2.231	-2	1224	74		1222
20.	/	/	/	2.187	0	1218	74		1218
21.	/	/	/	2.224	-2	1223	74		1221
22.	/	/	/	2.220	-2	1216	74		1214
23.	/	/	/	2.229	0	1220	74		1220
24.	/	/	/	2.218	+2	1219	74		1221
25.	/	/	/	2.235	0	1222	74		1222
26.	/	/	/	2.231	-2	1224	73		1222
27.	/	/	/	2.185	-2	1217	73		1215
28.	/	/	/	2.314	0	1220	73		1220
29.	/	/	/	2.284	-2	1225	73		1223
30.	/	/	/	2.338	0	1218	73		1218
31.	/	/	/	2.410	+4	1221	73	✓	1225

(b)(6)

(b)(6)

05-25-08

05-25-08

(b)(6)

08031738-0