

**STATION DC SUPPLY - VLA and NiCad  
MAINTENANCE TEMPLATE**

AM-CE-P034-R1074  
Rev. 4

*Revisions to this document shall be communicated in accordance with program document AM-EU-P034 to ensure alignment between Maintenance Templates and field work procedures.*

*This document contains specific content that has been or will be used as "Evidence of Compliance" for regulatory audits. Any person(s) making revisions to this document shall contact the T&S Engineering Manager, T&S Compliance Analyst and the Exelon NERC Compliance and Security NERC Compliance Management Team (NERC CMT) to inform them of proposed revisions (Outlook address of Exelon NERC CMT O&P Compliance). A representative of the NERC CMT shall be included as a "reviewer" of any proposed revisions to this document. This document is related to NERC Standard PRC-005-6.*

*Maintenance Tasks and Task Frequencies shown below shall align with the applicable Protection System Maintenance Program for items covered under the PRC-005-6 Reliability Standard and it is the responsibility of the document writer to ensure the documents remain synchronized.*

STATION DC SUPPLY - VLA and NiCad, incl. station batteries and battery chargers								
Component Classification Categories								
Criticality	I	X				Nuclear Switchyards* ≥ 220 kV as defined in the respective Nuclear Plant Interface Requirements (NPIRs)		
	II		X			DC (Distribution Centers), SS, TDC, and TSS locations that serve O'Hare & Midway Airports		
	III			X		ComEd locations exclusive of Criticality I & II, DC (Distribution Centers), and ≤ 34kV ESS (Electric Service Stations) locations		
	IV				X	DC (Distribution Center) locations		
	V				X	≤ 34kV ESS (Electric Service Stations) locations		
Duty Cycle	Heavy Load	N/A	N/A	N/A	N/A			
	Normal Load	N/A	N/A	N/A	N/A			
Service Condition	In Service	X	X	X	X			
	Not In Service	N/A	N/A	N/A	N/A			
<b>Maintenance (Inspection Tasks)</b>								
		<b>Task Frequencies **</b>				<b>Failure Codes ①</b>	<b>Comments</b>	
Visual Inspection - Station (Battery and Charger) ②		5W	5W	10W	3M	6M	1a-b, 2a-b, 2d-f, 3a-b, 4a, 5a-b	Note that Visual Inspection includes Specific Gravity measurements
Verify Station DC Supply Voltage		5W ③	5W ③	10W ⑤	3M ⑦	6M		Tasks shall be executed in conjunction with the Quarterly Battery Inspection - Station PM. Tasks can be additionally executed in conjunction with the Station/Switchyard Inspection PM.
Inspect Electrolyte Level		5W ③	5W ③	10W ⑤	3M ⑦	6M		
Inspect for Unintentional Grounds		5W ③	5W ③	10W ⑤	3M ⑦	6M		
Verify Float Voltage of Battery Charger		5W ④	5W ④	10W ⑥	3M ⑧	6M		Task shall be executed in conjunction with the Battery Annual Maintenance PM
Quarterly Battery Inspection - Station ②		3M	3M	3M	3M	3M	2a-b, 3a-c, 4a	
Annual Battery Inspection - Station ②		1Y	1Y	1Y	1Y	1Y	1a, 2a-b, 2d, 3a-c, 4a	
Verify Battery Continuity		1Y ⑨	1Y ⑨	1Y ⑨	1Y ⑨	1Y		
Verify Battery Terminal Connection Resistance		1Y ⑨	1Y ⑨	1Y ⑨	1Y ⑨	1Y		
Verify Battery Intercell or Unit-to-Unit Connection Resistance		1Y ⑨	1Y ⑨	1Y ⑨	1Y ⑨	1Y		
Inspect Cell Condition of All Cells		1Y ⑨	1Y ⑨	1Y ⑨	1Y ⑨	1Y		Inspect all individual battery cells where visible; or measure battery cell/unit internal ohmic values where the cells are not visible
Inspect Physical Condition of Battery Rack		1Y ⑨	1Y ⑨	1Y ⑨	1Y ⑨	1Y		
Clean and Inspect (Charger) ②		1Y	1Y	1Y	1Y	1Y	5a-c	
		<b>Task Frequencies **</b>				<b>Failure Codes ①</b>	<b>Comments</b>	
Verify Station Battery Can Perform as Manufactured	Internal Impedance Test	N/A	1Y ⑨	1Y ⑨	1Y ⑨	1Y		
	Capacity Test	4.8Y ⑩	AR	AR	AR	AR		

\* Exelon Nuclear Stations perform inspection and maintenance tasks on ComEd-owned batteries as identified in WC-AA-8000, Attachment 5. For this equipment, Exelon Nuclear reserves the right to perform inspection and maintenance tasks in accordance with the Nuclear Station maintenance program.

\*\*All intervals are performed with a 25% Grace Period unless otherwise noted. With grace period included, all task frequencies are within the maximum maintenance intervals as required by PRC-005-6 Reliability Standard.

- ① For items covered under the PRC-005-6 Reliability Standard, time-based maintenance is performed in accordance with the minimum maintenance activities and the maximum maintenance intervals prescribed in the tables of the PRC-005-6 standard.
- ② Not required for PRC-005-6 Reliability Standard compliance.
- ③ For items covered under the PRC-005-6 Reliability Standard, interval is 5W but not to exceed the Maximum Maintenance Interval of 4 calendar months.
- ④ For items covered under the PRC-005-6 Reliability Standard, interval is 5W but not to exceed the Maximum Maintenance Interval of 18 calendar months.
- ⑤ For items covered under the PRC-005-6 Reliability Standard, interval is 10W but not to exceed the Maximum Maintenance Interval of 4 calendar months.
- ⑥ For items covered under the PRC-005-6 Reliability Standard, interval is 10W but not to exceed the Maximum Maintenance Interval of 18 calendar months.
- ⑦ For items covered under the PRC-005-6 Reliability Standard, interval is 3M but not to exceed the Maximum Maintenance Interval of 4 calendar months.
- ⑧ For items covered under the PRC-005-6 Reliability Standard, interval is 3M but not to exceed the Maximum Maintenance Interval of 18 calendar months.
- ⑨ For items covered under the PRC-005-6 Reliability Standard, interval is 1Y but not to exceed the Maximum Maintenance Interval of 18 calendar months.
- ⑩ For items covered under the PRC-005-6 Reliability Standard, interval is 4.8Y but not to exceed the Maximum Maintenance Interval of 6 calendar years.

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BATTERY - Microwave			
Component Classification Categories			
Criticality	I	X	All locations
Duty Cycle	Heavy Load	N/A	
	Normal Load	N/A	
Service Condition	In Service	X	
	Not In Service	N/A	
Maintenance (Inspection Tasks)	Task Frequencies *	Failure Codes	Comments
Quarterly Battery Inspection - Microwave	3M	1a-b, 2a-b, 2d, 2f, 3a-c, 4a	
Annual Battery Inspection - Microwave	1Y	1a, 2a-b, 2d, 3a-c, 4a	
Testing	Task Frequencies *	Failure Codes	Comments
Internal Impedance Test	1Y	1c, 2d	

*\*Task Frequencies reflect Maintenance and Testing intervals. All preventive maintenance and testing tasks, as listed in Task Definitions, are performed concurrently, with a 25% grace period.*

## STATION DC SUPPLY - VLA and NiCad MAINTENANCE TEMPLATE

FAILURE MODE	FAILURE CAUSES	MAINTENANCE TASKS
1. Fails to Provide Adequate Conduction Path	1a. External Loose/Corroded Post Connections	Visual Inspection - Station (Battery and Charger)
1. Fails to Provide Adequate Conduction Path	1a. External Loose/Corroded Post Connections	Annual Battery Inspection - Station
1. Fails to Provide Adequate Conduction Path	1a. External Loose/Corroded Post Connections	Quarterly Battery Inspection - Microwave
1. Fails to Provide Adequate Conduction Path	1a. External Loose/Corroded Post Connections	Annual Battery Inspection - Microwave
1. Fails to Provide Adequate Conduction Path	1b. Insulation Failure	Visual Inspection - Station (Battery and Charger)
1. Fails to Provide Adequate Conduction Path	1b. Insulation Failure	Quarterly Battery Inspection - Microwave
1. Fails to Provide Adequate Conduction Path	1c. Internal Post Connections	Capacity Test
1. Fails to Provide Adequate Conduction Path	1c. Internal Post Connections	Internal Impedance Test
2. Fails to Provide Adequate Voltage/Capacity	2a. Loss of Electrolyte	Visual Inspection - Station (Battery and Charger)
2. Fails to Provide Adequate Voltage/Capacity	2a. Loss of Electrolyte	Quarterly Battery Inspection - Station
2. Fails to Provide Adequate Voltage/Capacity	2a. Loss of Electrolyte	Annual Battery Inspection - Station
2. Fails to Provide Adequate Voltage/Capacity	2a. Loss of Electrolyte	Quarterly Battery Inspection - Microwave
2. Fails to Provide Adequate Voltage/Capacity	2a. Loss of Electrolyte	Annual Battery Inspection - Microwave
2. Fails to Provide Adequate Voltage/Capacity	2b. Loss of Active Material	Visual Inspection - Station (Battery and Charger)
2. Fails to Provide Adequate Voltage/Capacity	2b. Loss of Active Material	Quarterly Battery Inspection - Station
2. Fails to Provide Adequate Voltage/Capacity	2b. Loss of Active Material	Annual Battery Inspection - Station
2. Fails to Provide Adequate Voltage/Capacity	2b. Loss of Active Material	Quarterly Battery Inspection - Microwave
2. Fails to Provide Adequate Voltage/Capacity	2b. Loss of Active Material	Annual Battery Inspection - Microwave
2. Fails to Provide Adequate Voltage/Capacity	2b. Loss of Active Material	Capacity Test
2. Fails to Provide Adequate Voltage/Capacity	2c. Internal Component Contamination	Capacity Test
2. Fails to Provide Adequate Voltage/Capacity	2d. Loose/Corroded Connections	Annual Battery Inspection - Station
2. Fails to Provide Adequate Voltage/Capacity	2d. Loose/Corroded Connections	Visual Inspection - Station (Battery and Charger)
2. Fails to Provide Adequate Voltage/Capacity	2d. Loose/Corroded Connections	Capacity Test
2. Fails to Provide Adequate Voltage/Capacity	2d. Loose/Corroded Connections	Internal Impedance Test
2. Fails to Provide Adequate Voltage/Capacity	2d. Loose/Corroded Connections	Quarterly Battery Inspection - Microwave
2. Fails to Provide Adequate Voltage/Capacity	2d. Loose/Corroded Connections	Annual Battery Inspection - Microwave
2. Fails to Provide Adequate Voltage/Capacity	2e. Ground on System	Visual Inspection - Station (Battery and Charger)
2. Fails to Provide Adequate Voltage/Capacity	2f. Under/Over Charge (Due to Battery Charger)	Visual Inspection - Station (Battery and Charger)
2. Fails to Provide Adequate Voltage/Capacity	2f. Under/Over Charge (Due to Battery Charger)	Quarterly Battery Inspection - Microwave
3. Fails to Maintain Boundary Integrity	3a. Cell Wall Degradation	Visual Inspection - Station (Battery and Charger)
3. Fails to Maintain Boundary Integrity	3a. Cell Wall Degradation	Quarterly Battery Inspection - Station
3. Fails to Maintain Boundary Integrity	3a. Cell Wall Degradation	Annual Battery Inspection - Station
3. Fails to Maintain Boundary Integrity	3a. Cell Wall Degradation	Quarterly Battery Inspection - Microwave
3. Fails to Maintain Boundary Integrity	3a. Cell Wall Degradation	Annual Battery Inspection - Microwave
3. Fails to Maintain Boundary Integrity	3b. Cell Lid Degradation	Visual Inspection - Station (Battery and Charger)
3. Fails to Maintain Boundary Integrity	3b. Cell Lid Degradation	Quarterly Battery Inspection - Station
3. Fails to Maintain Boundary Integrity	3b. Cell Lid Degradation	Annual Battery Inspection - Station
3. Fails to Maintain Boundary Integrity	3b. Cell Lid Degradation	Quarterly Battery Inspection - Microwave
3. Fails to Maintain Boundary Integrity	3b. Cell Lid Degradation	Annual Battery Inspection - Microwave
3. Fails to Maintain Boundary Integrity	3b. Cell Lid Degradation	Quarterly Battery Inspection - Station
3. Fails to Maintain Boundary Integrity	3c. Post Leaks	Annual Battery Inspection - Station
3. Fails to Maintain Boundary Integrity	3c. Post Leaks	Quarterly Battery Inspection - Microwave
3. Fails to Maintain Boundary Integrity	3c. Post Leaks	Annual Battery Inspection - Microwave

**STATION DC SUPPLY - VLA and NiCad  
MAINTENANCE TEMPLATE**

**FAILURE MODE**

**FAILURE CAUSES**

**MAINTENANCE TASKS**

- 4. Fails to Maintain Structural Integrity

- 4a. Structural Integrity of Rack/Cabinet/Ventilation

- Visual Inspection - Station (Battery and Charger)
- Quarterly Battery Inspection - Station
- Annual Battery Inspection - Station
- Quarterly Battery Inspection - Microwave
- Annual Battery Inspection - Microwave

- 5. Fails to Provide Proper DC Output

- 5a. Loose/Corroded Connections
- 5a. Loose/Corroded Connections
- 5b. Internal Component Failure
- 5b. Internal Component Failure
- 5c. Internal Component Drift

- Visual Inspection - Station (Battery and Charger)
- Clean and Inspect (Charger)
- Visual Inspection - Station (Battery and Charger)
- Clean and Inspect (Charger)
- Clean and Inspect (Charger)

## STATION DC SUPPLY - VLA and NiCad MAINTENANCE TEMPLATE

### TASK

### DEFINITION

Annual Battery Inspection - Microwave

Augment quarterly battery inspection to check and record:  
 -- Perform a detailed visual inspection of each cell.  
 -- Measure and record unit-to-unit and terminal connection resistance.  
 -- Check structural integrity of the battery rack and/or cabinet.

Annual Battery Inspection - Station

Augment Visual Inspection – Station (Battery and Charger) to:  
 -- Read and record float voltage of each cell.  
 -- Read and record temperature, specific gravity and level/temperature corrected specific gravity of all cells. Omit specific gravity measurement for NiCad batteries.  
 -- Measure and record overall Battery equalize voltage at terminals

Clean and Inspect (Charger)

Scope includes:  
 -- Open access panels and check for loose, missing or damaged parts and foreign material  
 -- Check cables and connections for discoloration or cracks  
 -- Check connections for tightness  
 -- Check printed circuit boards and relays for damage  
 -- Check for leaking or swelling capacitors  
 -- Check for signs of overheating (discoloration) on transformer windings and diodes  
 -- Check and adjust the charger current limit setting as required  
 -- Check charger DC voltmeter and ammeter and adjust if necessary  
 -- Measure and record AC ripple volts on DC output of charger (if multiple chargers, take one combined reading)  
 -- Check set points and operation of all charger alarms  
 -- Clean dust from charger cabinet, as required

Inspect Cell Condition of All Cells

Perform a detailed visual inspection of each cell. Inspect all individual battery cells where visible; or measure battery cell/unit internal ohmic values where the cells are not visible.

Inspect Electrolyte Level

Inspect electrolyte levels of all cells, add water as required.

Inspect for Unintentional Grounds

Inspect for unintentional battery grounds.

Inspect Physical Condition of Battery Rack

Inspect condition of battery rack by checking structural integrity of the rack and/or cabinet.

Internal Impedance Test - Microwave

Verify that the microwave battery can perform as manufactured by evaluating cell/unit measurements indicative of battery performance (e.g. internal ohmic values or float current) against the microwave battery baseline.

## STATION DC SUPPLY - VLA and NiCad MAINTENANCE TEMPLATE

### TASK

### DEFINITION

Quarterly Battery Inspection - Microwave

The following tasks are to be checked and recorded:

- Measure and record overall battery float voltage at terminals, adjust float voltage if necessary.
- Check general appearance and cleanliness of battery and battery rack.
- Check and record charger output current.
- Check electrolyte levels of all cells, add water as required.
- Check for cracks in cells or evidence of electrolyte leakage.
- Check for corrosion at terminals and connections.
- Check and record ambient temperature. Check microwave buildings for proper ventilation as required.
- Read and record pilot cell voltage, specific gravity, and temperature.
- Microwave battery is intentionally positive grounded. Verify ground in place.
- Verify flame arrestor integrity and replace any broken arrestors.
- Equalize battery as necessary (If equalizing battery, check for proper equalize voltage and adjust as necessary. Verify that equalize timer is functioning properly.)
- Read and record float voltage of each cell.
- Read and record temperature of the pilot cell. Record specific gravity of all cells. Record temperature corrected Specific Gravity of all cells.
- Read and record electrolyte level of all cells. Record level corrected SG on all cells.

Quarterly Battery Inspection - Station

Augment Visual Inspection - Station (Battery and Charger) to:

- Read and record float voltage of each cell
- Read and record temperature, specific gravity, and level/temperature corrected specific gravity of 10% of the cells including pilot cell. Omit specific gravity measurement for NiCad batteries.

Verify Battery Continuity

Verify battery continuity by measuring the internal impedance (i.e. perform a Battery Impedance Test Equipment [BITE] test) of all cells or recording specific gravity and temperature corrected specific gravity of all cells.

Verify Battery Intercell or Unit-to-Unit Connection Resistance

Verify unit-to-unit connection resistance (i.e. perform a Battery Impedance Test Equipment [BITE] test). Connection torque checks can be substituted for verification of unit-to-unit resistance if the cell design allows.

Verify Battery Terminal Connection Resistance

Verify terminal connection resistance (i.e. perform a Battery Impedance Test Equipment [BITE] test). Connection torque checks can be substituted for verification of terminal connection resistance if the cell design allows.

Verify Float Voltage of Battery Charger

Verify overall battery float voltage at terminals

Verify Station Battery Can Perform as Manufactured - Capacity Test

Verify that the station battery can perform as manufactured by conducting a performance or modified performance capacity test of the entire battery bank.

Verify Station Battery Can Perform as Manufactured - Internal Impedance Test

Verify that the station battery can perform as manufactured by evaluating cell/unit measurements indicative of battery performance (e.g. internal ohmic values or float current) against the station battery baseline.

Verify Station DC Supply Voltage

Verify DC supply voltage by measuring and recording overall battery float voltage at terminals

## STATION DC SUPPLY - VLA and NiCad MAINTENANCE TEMPLATE

### TASK

Visual Inspection - Station (Battery and Charger)

### DEFINITION

Visual assessment of the condition of the equipment. Items to check include:

- Check general appearance and cleanliness of battery and battery rack.
- Check and record charger output current.
- Visually check physical condition of all cells for general issues including cracks or evidence of electrolyte leakage.
- Check for corrosion at terminals and connections.
- Check and record ambient temperature. Functionally check for proper battery room ventilation.
- Read and record pilot cell voltage, temperature, specific gravity, and level/temperature corrected specific gravity. Omit specific gravity measurement for NiCad batteries.
- Verify flame arrestor integrity and replace any broken arrestors.
- Equalize battery as necessary
- Visually check charger for signs of deterioration and overheating.
- Check charger for abnormal sounds.
- Record readings taken from charger DC voltmeter and ammeter.

# STATION DC SUPPLY - VLA and NiCad MAINTENANCE TEMPLATE

## Station DC Supply Template Summary

The Preventive Maintenance program is documented via maintenance templates. Templates have been developed that address transmission, substation, and distribution equipment that is owned and maintained by Exelon Utilities. Each template documents the program tasks, frequencies, failure modes, and maintenance basis for the associated equipment. Tasks and associated frequencies are designed to address known failure modes of the equipment covered by the template. In general, the tasks included in the maintenance templates are the result of good industry practices, industry experience, and manufacturer recommendations. Additionally, this maintenance template addresses applicable NERC Reliability Standard requirements contained in PRC-005.

### References:

IEEE Standard 450-2010

NERC Standard PRC-005-6 - Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance

ComEd PSMP AM-CE-P181 - Protection System Maintenance Program

Nuclear Electric Insurance Limited (NEIL) Loss Control Manual - January 2019 Edition

### Boundary Definition

The boundary of the station DC supply for the purpose of this program is defined to include the battery, inter-cell connections, positive and negative terminal connections, battery charger(s) and battery rack. Excluded are disconnects, upstream or downstream breakers, and instruments on the DC bus.

### Periodicity Justification

Station DC Supply - ComEd's Preventive Maintenance and Testing Program Intervals for Station DC Supply, with maintenance and testing tasks performed concurrently is based on excerpts from IEEE Standard 450-2010 and industry benchmarking data captured in EPRI document 1008975 "Results of Survey on Substation Batteries" (September, 2003) and NEETRAC Baseline Project Number: 09-064 "Battery Management Systems – Scoping Study" (January, 2011).

Justification not applicable to intervals established to comply with PRC-005-6 Protection System Maintenance standard.

### Vendor Recommendations

## **STATION DC SUPPLY - VLA and NiCad MAINTENANCE TEMPLATE**

OEM manuals were referenced and interviews conducted during the development of this template.

N/A to maintenance tasks and intervals established to comply with PRC-005-6 Protection System Maintenance standard.

### **Disposition of Vendor Recommendations**

Recommendations were incorporated into the template as appropriate based on operating experience.

N/A to maintenance tasks and intervals established to comply with PRC-005-6 Protection System Maintenance standard.

### **Basis For Template Tasks**

**Annual Battery Inspection:** Supplements quarterly battery inspection task scope.

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**Verify Station Battery can Perform as Manufactured - Capacity Test:** NERC Reliability Standard PRC-005 requires periodic verification that the station battery can perform as manufactured by either evaluating cell/unit measurements indicative of battery performance against the station battery baseline or by conducting a performance or modified performance capacity test of the entire bank. IEEE 450 provides the basis for recommended practice for maintenance, testing and replacement of VLA batteries. For locations where Capacity Testing is employed, battery shall be replaced following recommendations of IEEE 450, except that replacement SHALL occur within one year and before capacity is projected to fall below duty cycle requirements.

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**Verify Station Battery can Perform as Manufactured - Internal Impedance Test:** NERC Reliability Standard PRC-005 requires periodic verification that the station battery can perform as manufactured by either evaluating cell/unit measurements indicative of battery performance against the station battery baseline or by conducting a performance or modified performance capacity test of the entire bank.

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**Clean and Inspect (Charger):** The task is focused on the detection of overheating components that may be in early stages of failure and on the condition of printed circuit boards, capacitors, and relays.

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**Quarterly Battery Inspection:** Supplements routine visual inspection task scope.

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**Enhanced Quarterly Battery Inspection:** Supplements routine visual inspection task scope, provides additional documentation.

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## **STATION DC SUPPLY - VLA and NiCad MAINTENANCE TEMPLATE**

**Visual Inspection (Battery and Charger):** This inspection approximates real-time condition monitoring that can detect developing problems and degradation, and provides condition data used to initiate corrective actions.

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The following maintenance tasks and intervals, associated with Protection System dc supply used only for BES interrupting devices for SPS, non-distributed UFLS systems and non-distributed UVLS systems, were established to comply with PRC-005-6 Reliability Standard:

- Verify Station DC Supply Voltage**
- Inspect Electrolyte Level**
- Inspect for Unintentional Grounds**
- Verify Float Voltage of Battery Charger**
- Verify Battery Continuity**
- Verify Battery Terminal Connection Resistance**
- Verify Battery Intercell or Unit-to-Unit Connection Resistance**
- Inspect Cell Condition of All Cells**
- Inspect Physical Condition of Battery Rack**

**STATION DC SUPPLY - VLA and NiCad  
MAINTENANCE TEMPLATE**

<b>Revision 0</b>		<b>Date 03/31/2015</b>
Writer	Chris Stefanski (Exelon Utilities)	
Reviewer(s)	Ken Wendt, Ron Diotallevi, Greg Voice, Dave Carlson (BSC - TOP TS&C), Dan Wasilewski, Kevin Swiat	
Approver(s)	Mike Moy (UFAM ComEd)	
Reason Written	Transferred program documentation from AM-CE-P137-R0001 and created document to serve as the ComEd maintenance standard. Included requirements set forth in Reliability Standard PRC-005-2.	

<b>Revision 1</b>		<b>Date 05/27/2016</b>
Writer	Kevin Swiat (ComEd)	
Reviewer(s)	Dan Wasilewski (ComEd), Ruth Miller (BSC - TOP TS&C)	
Approver(s)	Michael Moy (UFAM ComEd)	
Reason Written	Updated document number on <i>Battery MW</i> tab to reflect actual document number (AM-CE-P034-R1074).	

<b>Revision 2</b>		<b>Date 12/31/2016</b>
Writer	Kevin Swiat (ComEd)	
Reviewer(s)	Dan Wasilewski, Hugo Castaneda, Philip Derr, Ruth Miller (EU TS&C)	
Approver(s)	Michael Moy (UFAM ComEd)	
Reason Written	Updated all references of PRC-005-2 to PRC-005-6. NERC Review Complete.	

<b>Revision 3</b>		<b>Date 12/1/2017</b>
Writer	Kevin Swiat	
Reviewer(s)	Dan Wasilewski, Hugo Castaneda, Philip Derr, Aisha Jolly (EU TS&C)	
Approver(s)	Michael Moy (UFAM ComEd)	
Reason Written	Added comment to clarify that select tasks shall be executed in conjunction with the Quarterly Battery Inspection - Station PM and can be additionally executed in conjunction with the Station/Switchyard Inspection PM. Added comment to clarify that <i>Verify Float Voltage of Battery Charger</i> task shall be executed in conjunction with the Battery Annual Maintenance PM. Aligned task definitions for <i>Annual Battery Inspection - Station</i> and <i>Quarterly Battery Inspection - Station</i> with AM-CE-P181-R0004.	

**STATION DC SUPPLY - VLA and NiCad  
MAINTENANCE TEMPLATE**

<b>Revision 4</b>		<b>Date 11/15/2019</b>
Writer	Kevin Swiat (ComEd Material Condition)	
Reviewer(s)	Philip Derr (T&S Equipment Standards); Dan Wasilewski (Principal Compliance Specialist); Doug Adams (Principal Compliance Specialist); Martin Copello (T&S Engineering Standards and Applications); Daniel Gacek (NERC CMT)	
Approver(s)	Michael Moy (UFAM ComEd)	
Reason Written	Specify that maintenance on Sta DC Supply tab is for VLA and NiCAD battery systems; revised criticalities to align with AM-CE-P034-R0001; Updated disclaimer statement to reference the Exelon NERC Compliance and Security NERC Compliance Management Team (NERC CMT); added comment that visual inspection includes Specific Gravity measurements; corrected failure codes for Microwave Battery internal impedance test; aligned task title for Visual Inspection - Station (Battery and Charger) on Failure Modes tab with other tabs; corrected task definitions for Visual Inspection - Station, Quarterly Battery Inspection - Station, and Annual Battery Inspection - Station to avoid capturing the same task within multiple definitions; removed comments to "adjust float voltage if necessary" from Verify Float Voltage of Battery Charger and Verify Station DC Supply Voltage; added task definition for Microwave Internal Impedance Test; added the battery cell impedance check (BITE test) into the Verify Battery Continuity task; added the NEIL Loss Control Manual - 2019 Edition as a reference document; added statement in Maintenance Basis tab for Capacity Tests to align replacement expectations with requirements of NEIL's Loss Control Manual.	