AM-CE-P034-R1028
Rev. 1

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.

Meters, Panel (Volt/Amp/Watt/Var)								
Component Classification Categories								
Criticality	I	X						Nuclear switchyards ≥ 220 kV as defined in the respective Nuclear Plant Interface Requirements (NPIRs)
	II		X					DC, SS, TDC, TSS locations that serve O'Hare & Midway Airports
	III			X				ComEd locations exclusive of Criticality I & II, DC, and ≤34 kV ESS locations
	IV				X			DC locations
	V					X		≤ 34 kV ESS locations
Duty Cycle	Heavy Load	N/A	N/A	N/A	N/A	N/A		
	Normal Load	N/A	N/A	N/A	N/A	N/A		
Service Condition	In Service	X	X	X	X	X		
	Spare	N/A	N/A	N/A	N/A	N/A		

Condition Monitoring Tasks	**Task Frequencies**					**Failure Codes**	**Comments**
None	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
Time Directed	**Task Frequencies**					**Failure Codes**	**Comments**
None	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	
Failure Finding Tasks	**Task Frequencies**					**Failure Codes**	**Comments**
Visual Inspection	**5W**	**5W**	**10W**	**3M**	**6M**	**1a, 2a**	
Condition Directed Tasks	**Task Frequencies**					**Failure Codes**	**Comments**
None	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**		

METER, PANEL (VOLT-AMP-WATT-VAR)
FAILURE MODES

FAILURE MODE	FAILURE CAUSES	MAINTENANCE TASKS
1. Incorrect metering display	1a. Impeded indicator movement or damaged display	Visual Inspection
2. No display of data	2a. Mechanical or electrical damage	Visual Inspection

METER, PANEL (VOLT-AMP-WATT-VAR)
MAINTENANCE BASIS

TASK	DEFINITION
Visual Inspection	Visually assess the condition of meters; report defects by exception. Items to check may include: -- Check meter for signs of cracked or broken glass -- Verify meter is functional by checking that it displays a reading (digital meters) or shows deflection of indicator needle (analog meters). -- Inspect the meter and observe any structural damage and/or damage from electrical failures.

METER, PANEL (VOLT-AMP-WATT-VAR)
MAINTENANCE BASIS

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.

References:

1. ANSI/IEEE C57.13.1-1981 IEEE Guide for Field Testing of Relaying Current Transformers.

Boundary Definition

The boundary of the Amp, Volt, Watt/Var Meters for the purpose of this document are defined to include the meter, the secondary wiring that provides input to the meter, associated fuse blocks and control switches.
Excluded from this treatment are: The associated secondary equipment that are fed by the free standing current transformer such as relays, SCADA equipment, and CT links are not included as part of this maintenance program.

Failure Modes

In general the most critical failure mode is for the panel meter to not provide indication of its intended measured quantity. Other failure modes can lead to miss information but there are numerous checks and balances that are able to point out the inaccuracies.

Failure Experiences

N/A

Disposition of Vendor Recommendations

N/A

Basis for Template Tasks

Visual Inspection: With analog meters, the meter movement is very fragile. Any debris that accumulates in the meter movement due to a broken faceplate will inhibit proper operation. In general, most meters should display a reading when the associated equipment is in service. To perform properly, the meter should be free of mechanical damage or electrical burns / overheating.

METER, PANEL (VOLT-AMP-WATT-VAR)
DEVELOPMENT HISTORY

	Revision 0	**Date 08/06/2015**
Writer	Chris Stefanski (Exelon Utilities)	
Reviewer(s)	Ken Wendt	
Approver(s)	Michael Moy (UFAM ComEd)	
Reason Written	Revised criticality definitions and modified document to serve as the ComEd maintenance standard.	

	Revision 1	**Date 05/04/2018**
Writer	Kevin Swiat (ComEd)	
Reviewer(s)	Martin Copello (ComEd)	
Approver(s)	Michael Moy (ComEd)	
Reason Written	Added headers to all tabs; Revised criticalities to align with AM-CE-P034-R0001, Completed 3 year review.	