

This appendix establishes modifications to the FERC approved NERC standard PRC-005-2 for its specific application in New Brunswick. This appendix must be read with PRC-005-2 to determine a full understanding of the requirements of the standard for New Brunswick. Where the standard and appendix differ, the appendix shall prevail.

A. Introduction

- 1. Title: Protection System Maintenance**
- 2. Number: PRC-005-2**
- 3. Purpose:** To document and implement programs for the maintenance of all Protection Systems affecting the reliability of the bulk power system so that these Protection Systems are kept in working order.
- 4. Applicability:**
 - 4.1. Functional Entities:**
 - 4.1.1** No New Brunswick modifications
 - 4.1.2** No New Brunswick modifications
 - 4.1.3** No New Brunswick modifications
 - 4.2. Facilities:**
 - 4.2.1** Protection Systems that are installed for the purpose of detecting Faults on bulk power system Elements (lines, buses, transformers, etc.)
 - 4.2.2** Protection Systems used for underfrequency load-shedding systems installed per underfrequency load-shedding requirements as set out in New Brunswick Energy and Utilities Board approved reliability standards.
 - 4.2.3** Protection Systems used for undervoltage load-shedding systems installed to prevent system voltage collapse or voltage instability for bulk power system reliability.
 - 4.2.4** Protection Systems installed as a Special Protection System (SPS) for bulk power system reliability.
 - 4.2.5** Protection Systems for generator Facilities that

are part of the bulk power system, including:

- 4.2.5.1** No New Brunswick modifications
- 4.2.5.2** Protection Systems for generator step-up transformers for generators that are part of the bulk power system.
- 4.2.5.3** Protection Systems for transformers connecting aggregated generation, where the aggregated generation is part of the bulk power system (e.g., transformers connecting facilities such as wind-farms to the bulk power system).
- 4.2.5.4** Protection Systems for station service or excitation transformers connected to the generator bus of generators which are part of the bulk power system, that act to trip the generator either directly or via lockout or tripping auxiliary relays.

5. Effective Date: See Implementation Plan

B. Requirements

- R1.** No New Brunswick modifications
No New Brunswick modifications
- 1.1.** No New Brunswick modifications
- 1.2.** No New Brunswick modifications
- R2.** No New Brunswick modifications
- R3.** No New Brunswick modifications
- R4.** No New Brunswick modifications
- R5.** No New Brunswick modifications

Component Type - No New Brunswick modifications

Component - No New Brunswick modifications.

C. Measures

- M1.** No New Brunswick modifications
- M2.** No New Brunswick modifications
- M3.** No New Brunswick modifications
- M4.** No New Brunswick modifications

Unresolved No New Brunswick modifications

M5. No New Brunswick modifications

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

New Brunswick Energy and Utilities Board

1.2. Compliance Monitoring and Enforcement Processes:

No New Brunswick modifications

1.3. Evidence Retention

No New Brunswick modifications

1.4. Additional Compliance Information

No New Brunswick modifications

2. Violation Severity Levels

Requirement Number	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	No New Brunswick modifications			
R2				
R3				
R4				
R5				

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E. Regional Variances

No New Brunswick modifications

F. Supplemental Reference Document

No New Brunswick modifications

1. No New Brunswick modifications

Version History (maintained by NBEUB)

Version	NBEUB Approval Date	NB Appendix Effective Date	Change Tracking	Comments
0	07/17/14	10/01/15	1. Bulk Electric System(BES)replaced with "Bulk power system" throughout 2. Revised Section A to replace "ERO" with "New Brunswick Energy and Utilities Board approved reliability standard" 3. Revised Section C to clarify the NBEUB as the entity having the compliance enforcement authority for NB	Approved Under NBEUB Matter 248 Effective dates: R1, R2 and R5 10/01/15 R3 and R5 * See Implementation Plan Timelines below

***Implementation Plan Timelines for R3 and R5**

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Max. Maintenance Interval	% Compliant	By
Less than 1 year	100%	04/01/16
1-2 calendar years	100%	10/01/17
3 calendar years	30%	10/01/16
3 calendar years	60%	10/01/17
3 calendar years	100%	10/01/18
6 calendar years	30%	10/01/17
6 calendar years	60%	10/01/19
6 calendar years	100%	10/01/21
12 calendar years	30%	10/01/19
12 calendar years	60%	10/01/23
12 calendar years	100%	10/01/27

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Table 1-1
Component Type - Protective Relay
Excluding distributed UFLS and distributed UVLS (see Table 3)

Component Attributes	Maximum Maintenance Interval ¹	Maintenance Activities
No New Brunswick modifications		

Table 1-2
Component Type - Communications Systems Excluding distributed UFLS and distributed UVLS (see Table 3)

Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

Table 1-3
Component Type - Voltage and Current Sensing Devices Providing Inputs to Protective Relays Excluding distributed UFLS and distributed UVLS (see Table 3)

Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

¹ No New Brunswick modifications

Table 1-4(a) Component Type - Protection System Station dc Supply Using Vented Lead-Acid (VLA) Batteries Excluding distributed UFLS and distributed UVLS (see Table 3) Protection System Station dc supply used only for non-bulk power system interrupting devices for SPS, non-distributed UFLS systems, or non-distributed UVLS systems is excluded (see Table 1-4(e)).		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

Table 1-4(b) Component Type - Protection System Station dc Supply Using Valve-Regulated Lead-Acid (VRLA) Batteries Excluding distributed UFLS and distributed UVLS (see Table 3) Protection System Station dc supply used only for non-bulk power system interrupting devices for SPS, non-distributed UFLS systems, or non-distributed UVLS systems is excluded (see Table 1-4(e)).		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

Table 1-4(c) Component Type – Protection System Station dc Supply Using Nickel-Cadmium (NiCad) Batteries Excluding distributed UFLS and distributed UVLS (see Table 3) Protection System Station dc supply used only for non-bulk power system interrupting devices for SPS, non-distributed UFLS system, or non-distributed UVLS systems is excluded (see Table 1-4(e)).		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

Table 1-4(d) Component Type – Protection System Station dc Supply Using Non Battery Based Energy Storage Excluding distributed UFLS and distributed UVLS (see Table 3) Protection System Station dc supply used only for non-bulk power system interrupting devices for SPS, non-distributed UFLS system, or non-distributed UVLS systems is excluded (see Table 1-4(e)).		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

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Table 1-4(e) Component Type - Protection System Station dc Supply for non-bulk power system Interrupting Devices for SPS, non-distributed UFLS, and non- distributed UVLS systems		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
Any Protection System dc supply used for tripping only non- bulk power system interrupting devices as part of a SPS, non-distributed UFLS, or non-distributed UVLS system and not having monitoring attributes of Table 1-4(f).	No New Brunswick modifications	No New Brunswick modifications

Table 1-4(f) Exclusions for Protection System Station dc Supply Monitoring Devices and Systems		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

Table 1-5 Component Type - Control Circuitry Associated With Protective Functions Excluding distributed UFLS and distributed UVLS (see Table 3) Note: Table requirements apply to all Control Circuitry Components of Protection Systems, and SPSs except as noted.		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

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Table 2 – Alarming Paths and Monitoring		
In Tables 1-1 through 1-5 and Table 3, alarm attributes used to justify extended maximum maintenance intervals and/or reduced maintenance activities are subject to the following maintenance requirements		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

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Table 3 Maintenance Activities and Intervals for distributed UFLS and distributed UVLS Systems		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications	No New Brunswick modifications	No New Brunswick modifications
No New Brunswick modifications	No New Brunswick modifications	No New Brunswick modifications
No New Brunswick modifications	No New Brunswick modifications	No New Brunswick modifications
No New Brunswick modifications	No New Brunswick modifications	No New Brunswick modifications
Protection System dc supply for tripping non-bulk power system interrupting devices used only for a UFLS or UVLS system.	No New Brunswick modifications	No New Brunswick modifications

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Table 3 Maintenance Activities and Intervals for distributed UFLS and distributed UVLS Systems		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
Control circuitry between the UFLS or UVLS relays and electromechanical lockout and/or tripping auxiliary devices (excludes non-bulk power system interrupting device trip coils).	No New Brunswick modifications	No New Brunswick modifications
Electromechanical lockout and/or tripping auxiliary devices associated only with UFLS or UVLS systems (excludes non-bulk power system interrupting device trip coils).	No New Brunswick modifications	No New Brunswick modifications
Control circuitry between the electromechanical lockout and/or tripping auxiliary devices and the non-bulk power system interrupting devices in UFLS or UVLS systems, or between UFLS or UVLS relays (with no interposing electromechanical lockout or auxiliary device) and the non-bulk power system interrupting devices (excludes non-bulk power system interrupting device trip coils).	No New Brunswick modifications	No New Brunswick modifications
Trip coils of non-bulk power system interrupting devices in UFLS or UVLS systems.	No New Brunswick modifications	No New Brunswick modifications

PRC-005 – Attachment A

No New Brunswick modifications