

NB Appendix
PRC-005-4-NB-0 Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance

This appendix establishes modifications to the FERC approved NERC standard PRC-005-4 for its specific application in New Brunswick. This appendix must be read with PRC-005-4 to determine a full understanding of the requirements of the standard for New Brunswick. Where the standard and appendix differ, the appendix shall prevail.

For the purpose of this standard the term "Bulk Electric System" and its acronym, "BES" shall mean the "bulk power system" as defined in the New Brunswick Reliability Standards Regulation - Electricity Act.

A. Introduction

1. Title: Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance

2. Number: PRC-005-4

3. Purpose: No New Brunswick modifications

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 No New Brunswick modifications

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 No New Brunswick modifications

4.2.4 No New Brunswick modifications

4.2.5 No New Brunswick modifications

4.2.5.1 No New Brunswick modifications

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4.2.5.2 No New Brunswick modifications

4.2.5.3 No New Brunswick modifications

4.2.5.4 No New Brunswick modifications

4.2.6 No New Brunswick modifications

4.2.6.1 No New Brunswick modifications

4.2.6.2 No New Brunswick modifications

4.2.6.3 No New Brunswick modifications

5. **Effective Date:** No New Brunswick modifications

6. **Definitions Used in this Standard:**

Automatic Reclosing – No New Brunswick modifications

Sudden Pressure Relaying – No New Brunswick modifications

Unresolved Maintenance Issue –No New Brunswick modifications

Segment –No New Brunswick modifications

Component Type –No New Brunswick modifications

Component – No New Brunswick modifications

Countable Event – No New Brunswick modifications

B. Requirements and Measures

R1. No New Brunswick modifications:

1.1. No New Brunswick modifications

1.2. No New Brunswick modifications

M1. No New Brunswick modifications

R2. No New Brunswick modifications

M2. No New Brunswick modifications

R3. No New Brunswick modifications

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- M3.** No New Brunswick modifications
- R4.** No New Brunswick modifications
- M4.** No New Brunswick modifications
- R5.** No New Brunswick modifications
- M5.** No New Brunswick modifications

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

New Brunswick Energy and Utilities Board

1.2. Evidence Retention

No New Brunswick modifications

1.3. Compliance Monitoring and Assessment Processes:

No New Brunswick modifications

1.4. Additional Compliance Information

No New Brunswick modifications

Table of Compliance Elements

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

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D. Regional Variances

No New Brunswick modifications

E. Interpretations

No New Brunswick modifications

Supplemental Reference Documents

No New Brunswick modifications

Version History (maintained by NBEUB)

Version	NBEUB Approval Date	NB Appendix Effective Date	Change Tracking	Comments
0	05/17/16	07/01/16	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 standards" 3. Revised Section D to clarify the NBEUB as the entity having the compliance enforcement authority for NB	Approved Under NBEUB Matter 310 Effective dates: R1, R2 and R5 12/14/15 for Protection System Components.(See Matter 248) 10/01/16 for Automatic Reclosing Components. (See Matter 286) 07/01/17 for

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				Sudden Pressure Relaying Components R3 and R4 * See Implementation below

***Implementation Plan Timelines for R3 and R4**

Max. Maintenance Interval	% Compliant	By
Less than 1 year – Protection System Component	100	04/01/16
1-2 calendar years – Protection System Component	100	10/01/17
3 calendar years – Protection System Component	30	10/01/16
3 calendar years – Protection System Component	60	10/01/17
3 calendar years – Protection System Component	100	10/01/18
6 calendar years – Protection System Component	30	10/01/17
6 calendar years – Protection System Component	60	10/01/19
6 calendar years – Protection System Component	100	10/01/21
6 calendar years – Automatic Reclosing Component	30	10/01/18
6 calendar years - Automatic Reclosing Component	60	10/01/20
6 calendar years - Automatic Reclosing Component	100	10/01/22
6 calendar years - Sudden Pressure Relaying Component	30	07/01/19
6 calendar years - Sudden Pressure Relaying Component	60	07/01/21
6 calendar years - Sudden Pressure Relaying Component	100	07/01/23
12 calendar years – Protection System Component	30	10/01/19
12 calendar years – Protection System Component	60	10/01/23
12 calendar years – Protection System Component	100	10/01/27
12 calendar years – Automatic Reclosing Component	30	10/01/20
12 calendar years – Automatic Reclosing Component	60	10/01/24
12 calendar years – Automatic Reclosing Component	100	10/01/28
12 calendar years - Sudden Pressure Relaying Component	30	07/01/21
12 calendar years - Sudden Pressure Relaying Component	60	07/01/25
12 calendar years - Sudden Pressure Relaying Component	100	07/01/29

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Table 1-1 Component Type - Protective Relay Excluding distributed UFLS and distributed UVLS (see Table 3)		
Component Attributes	Maximum Maintenance Interval³	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
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³ No New Brunswick modifications

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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		

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-BES interrupting devices for RAS, non-distributed UFLS systems, or non-distributed UVLS systems is excluded (see Table 1-4(e)).		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
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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-BES interrupting devices for RAS, 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-BES interrupting devices for RAS, non-distributed UFLS system, or non-distributed UVLS systems is excluded (see Table 1-4(e)).		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
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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-BES interrupting devices for RAS, 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(e)		
Component Type – Protection System Station dc Supply for non-BES Interrupting Devices for RAS, non-distributed UFLS, and non-distributed UVLS systems		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
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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), Automatic Reclosing (see Table 4), and Sudden Pressure Relaying (see Table 5) Note: Table requirements apply to all Control Circuitry Components of Protection Systems, and RAS except as noted.		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
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Table 2 – Alarming Paths and Monitoring

In Tables 1-1 through 1-5, Table 3, Tables 4-1 through 4-2, and Table 5 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		

Table 3

Maintenance Activities and Intervals for distributed UFLS and distributed UVLS Systems

Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

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Table 4-1 Maintenance Activities and Intervals for Automatic Reclosing Components Component Type - Reclosing Relay		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

Table 4-2(a) Maintenance Activities and Intervals for Automatic Reclosing Components Component Type - Control Circuitry Associated with Reclosing Relays that are NOT an Integral Part of an RAS		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
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Table 4-2(b) Maintenance Activities and Intervals for Automatic Reclosing Components Component Type – Control Circuitry Associated with Reclosing Relays that ARE an Integral Part of an RAS		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

Table 5 Maintenance Activities and Intervals for Sudden Pressure Relaying Note: In cases where Components of Sudden Pressure Relaying are common to Components listed in Table 1-5, the Components only need to be tested once during a distinct maintenance interval.		
Component Attributes	Maximum Maintenance Interval	Maintenance Activities
No New Brunswick modifications		

PRC-005 – Attachment A

**Criteria for a Performance-Based Protection System Maintenance
Program**

No New Brunswick modifications

Rationale:

No New Brunswick modifications