
PRC-001-AB-1 Protection System Coordination

1. Purpose

The purpose of this *reliability standard* is to ensure *protection systems* are coordinated among operating entities.

2. Applicability

This *reliability standard* applies to:

- ISO
- TFOs
- GFOs
- operators of generating units

3. Definitions

Italicized terms used in this *reliability standard* have the meanings as set out in the Alberta Reliability Standards Glossary of Terms and Part 1 of the ISO Rules.

4. Requirements

- R1** The operating personnel of the ISO, TFO's and operators of generating units must each be familiar with the purpose and limitations of protection system schemes applied in its area.
- R2** Each operator of a generating unit must do the following if a protective relay or any equipment of a *protection system* of a generating unit that measures voltage, current or frequency from the generating unit to the *AIES*, but excluding the prime mover and associated control systems fails, and such failure reduces *transmission system reliability*:
- R2.1** Notify the *TFO* in its area and the *ISO* as soon as possible, but no longer than 24 hours after receiving knowledge of such failure.
- R2.2** Commence as soon as possible, and proceed diligently thereafter, to correct such failure.
- R3** Each *TFO* must do the following if a protective relay or equipment fails, and such failure reduces *transmission system reliability* on the *BES*:
- R3.1** Notify the *ISO*, directly affected *TFOs* and *interconnected transmission operators* as soon as possible, but no longer than 24 hours after the earlier of receiving knowledge of or detecting such failure.
- R3.2** Commence as soon as possible, and proceed diligently thereafter, to correct such failure unless otherwise directed by the *ISO*.

- R4** The *ISO* must notify the *VRC* of a protective relay or equipment failure that reduces *system reliability* for *facilities* that operate at 200 kV and above as soon as possible, but no longer than 24 hours after such failure was reported to the *ISO*
- R5** Each *GFO* must coordinate all new *protection systems* and all *protection system* changes with its interconnecting *TFO* and the *ISO*.
- R6** Each *TFO* must coordinate all *protection systems* including existing, new and modified *protection systems* with adjacent *TFOs*, affected *GFOs*, affected *interconnected transmission operators* and the *ISO*.
- R7** Each *GFO* or *TFO* must identify and coordinate changes in generation, transmission, *load* and/or operating conditions that require changes in the *protection systems* of others as follows:
 - R7.1** Each *GFO* must identify changes in each of its generation, *load*, or operating conditions that may require changes in *protection systems* of others, and notify the *ISO* in advance of their changes.
 - R7.2** The *ISO* must notify affected *TFOs* and adjacent *interconnected transmission operators* in advance of changes in each of its generation or operating conditions that may require changes in *protection systems*.
 - R7.3** Each *TFO* must identify changes in any of its transmission, *load* or operating conditions that may require changes in *protection systems* of others, and provide reasonable prior notice to the *ISO* and other affected *TFOs* and adjacent *interconnected transmission operators* of such proposed changes.
- R8** Each *TFO* must monitor the status of each *RAS* in its area, and must notify affected *TFOs*, operators of generating units and the *ISO* of each change in status.
- R9** Each operator of a generating unit must provide reasonable prior notice to the *TFO* and *ISO* of proposed changes to the arming status (on, off and which generator) of any *RAS* in their *facility*.

5. Processes and Procedures

No procedures have been defined for this *reliability standard*.

6. Measures

The following measures correspond to the requirements identified in Section 4 of this *reliability standard*. For example, MR1 is the measure for R1.

- MR1** Training records are available that indicate training of staff who operate the *system* in *protection system* schemes and any *RASs* applicable within their system.
- MR2** Measures for this requirement are identified in the subsections below.
 - MR2.1** Notifications exist for each failure as specified in requirement R2.1.
 - MR2.2** Evidence exists that corrective actions have been taken as specified in requirement R2.2.
- MR3** Measures for this requirement are identified in the subsections below.
 - MR3.1** Notifications exist for each failure as specified in requirement R3.1.
 - MR3.2** Evidence exists that corrective actions have been taken as specified in requirement R3.2.

- MR4** Confirmation exists that a notification was sent to the *VRC* as specified in requirement R4.
- MR5** Evidence exists including, but not limited to, revised fault analysis study, letters of agreement on settings, notifications of changes, all of which meets the requirements as specified in requirement R5.
- MR6** Evidence exists that could include, but is not limited to, revised fault analysis study, letters of agreement on settings, notifications of changes, that meets the requirements as specified in requirement R6.
- MR7** Measures for this requirement are identified in the subsections below.
 - MR7.1** Evidence exists and shows that all changes requiring protection changes were made as specified in requirement R7.1.
 - MR7.2** Evidence exists and shows that all changes requiring protection changes were made as specified in requirement R7.2.
 - MR7.3** Evidence exists and shows that all changes requiring protection changes were made as specified in requirement R7.3.
- MR8** Operator logs, voice recordings or other evidence exists that affected parties were notified as specified in requirement R8.
- MR9** Operator logs, voice recordings or other evidence exists that affected parties were notified as specified in requirement R9.

7. Appendices

No appendices have been defined for this *reliability standard*.

8. Guidelines

No guidelines have been defined for this *reliability standard*.

Revision History

Effective	Description
2009-00-00	