

May 13, 2015

Task Force on System Protection (TFSP) Response to Comments Received during the Open Process Posting of Directory #4 System Protection Criteria.

The TFSP would like to thank those who provided comments on the proposed revisions to Directory #4 posted from December 19th, 2014 through February 2nd, 2015.

The Task Force responses to individual comments are provided below.

Comment #1:

Comment - Hydro One:

A BPS Risk Mitigation Plan was put in place as a result of the June 9, 2010 RCC Meeting based on a previous recommendation by the Task Force on System Protection following an extensive survey by NPCC member entities of their BPS protection system conformance to D4 (Criteria A5 at the time).

The purpose of this plan was to provide direction to separately mitigate the two attributes identified by TFSP as the highest risk to reliability namely lack of 2 protection groups or lack of 2 batteries. At the time, members who owned protection systems that were subject to these high risk items were directed to provide a schedule to mitigate all based on their original survey which occurred in 2009.

TFSP was tasked with tracking and reporting to RCC on the progress of the implementation of this mitigation plan.

Hydro One believes to keep the spirit of this intent alive going forward, specific wording needs to be inserted in Directory 4 which would essentially remove any “grandfathering” on the two high risk items identified above.

This wording should be structured in such a way that should an entity discover a facility or an element lacking either 2 batteries or 2 protection groups respectively, that they be corrected in accordance with D4 and reported to TFSP in the manner prescribed in the Directory.

This direction would benefit TFSP by not having to track and report any identified protection systems lacking the high risk attributes.

Task Force response:

Comment accepted. TFSP has added the following wording to Section 1.6.2.2 of Directory 4 and a footnote:

“1.6.2.2.1 Facilities found lacking two batteries or **elements** lacking two independent sets of **protective relays**

If an entity becomes aware of an existing facility that lacks an independent battery for each **protection group**, or an **element** that lacks two independent sets of **protective relays**, a mitigation plan to meet the requirements of this Directory must be submitted to TFSP within six months. The mitigation plan shall correct these deficiencies within three years. Justification for a longer timeframe must be approved by TFSP.”

Footnote: “A BPS Risk Mitigation Plan was put in place in 2010 based on a recommendation by the Task Force on System Protection following an extensive survey by NPCC member entities of their BPS protection system conformance to Directory No. 4 (Criteria A5 at the time). The purpose of this plan was to provide direction to separately mitigate the two attributes identified by TFSP as the highest risk to reliability namely the lack of two independent sets of **protective relays** or two batteries. At the time, members who owned protection systems that were subject to these high risk items were directed to provide a schedule to mitigate the identified deficiencies based on their original survey which occurred in 2009.”

Comment #2:

Comment – National Grid:

<i>Section</i>	<i>Comment</i>
5.2.3	<p><i>The last sentence “If breaker failure protection is duplicated, the exceptions for single breaker failure protection do not apply” is not clear. What do we mean by exceptions?</i></p> <p>TFSP Response: Comment accepted. TFSP has revised the sentence to say “If breaker failure protection is duplicated, the exceptions, as allowed in 5.12.3 and 5.15.1 for single breaker failure protection, do not apply.” Also, see the revisions in response to 5.15.1 comment below.</p>
5.2.5	<p><i>With recent use of duplicate breaker failure protection, it would be beneficial to mention that this could serve as two local independent protections for frame ground protection if the duplicate breaker failure protection is designed so as not to be disabled by the same failure.</i></p> <p>TFSP Response: Thanks for the suggestion but it is not necessary as a criteria statement because it is up to each member to determine what combination of protections will satisfy requirements.</p>

5.4.2	<p><i>Can we elaborate what we mean by position or state of control devices by providing examples? Could this be misinterpreted to mean test switches, etc.?</i></p> <p><u>TFSP Response:</u> Yes, TFSP has added the following sentence to elaborate on this requirement in 5.4.2: “These devices include but are not limited to communication cutoff switches, relay test mode switch, and protection scheme cutoff switches.”</p>
5.4.5	<p><i>For clarity, can we mention “Protection system components of a protection group with redundant power supplies shall be powered from the same DC battery system”?</i></p> <p><u>TFSP Response:</u> Comment not accepted. TFSP believes the suggested change does not improve clarity.</p>
5.7.1	<p><i>As the voltage range for relay accuracy is wider than metering accuracy, would it be better to retain relay accuracy due to dual purpose use of voltage transformers.</i></p> <p><u>TFSP Response:</u> TFSP believes the term “rated accuracy” is proper as the connected VT burden should not exceed allowable rating because performance outside of those rating is not accurate.</p>
5.8.5	<p><i>As this relates to protective devices/auxiliary trip relays, why is this under Battery and Direct Current Supply Criteria.?</i></p> <p><u>TFSP Response:</u> Comment accepted. Paragraph 5.8.5 “Contact outputs used for tripping interrupting devices shall be properly rated to make and carry the DC current for the tripping circuits that they are applied to.” is moved under 5.4 – Criteria for Dependability and Security as a new paragraph 5.4.6.</p>
5.15.1	<p><i>With recent use of duplicate breaker failure protection, suggest capturing how each of the protection groups should initiate the breaker failure protection.</i></p> <p><u>TFSP Response:</u> Comment accepted. TFSP has added a new paragraph 5.15.2 “For redundant breaker failure protection, each breaker failure protection shall be initiated only by its respective protection groups which trip the breaker (i.e.: System 1 line protection initiates System 1 breaker failure protection), with the optional exception of a breaker failure protection for an adjacent breaker.” and revised 5.15.1 to say: “Non-redundant breaker failure protection shall be initiated by each of the protection groups which trip the breaker, with the optional exception of a breaker failure protection for an adjacent breaker.”</p>
5.15.3	<p><i>For clarity suggest modifying the sentence “then initiation of breaker failure protection is not required” to read “then breaker failure protection is not required for both the series circuit breakers”.</i></p> <p><u>TFSP Response:</u> Comment accepted. However, this paragraph has been revised to say: “A series breaker can be an acceptable means of providing fault clearing for a failed circuit breaker, in lieu of breaker-failure protection. This requires both series breakers be in the same overlapping zones of relay protection, and both series breakers are tripped by these same protection zones.”</p>

5.20.3	<p><i>Need an expansion for the abbreviation DME.</i></p> <p>TFSP Response: DME is a defined acronym in the NPCC Glossary.</p>
Appendix –A, 2.3.3	<p><i>Failover scheme for what?</i></p> <p>TFSP Response: Comment accepted. The word “merging unit” has been added in front of “failover scheme” so that the paragraph now reads: “2.3.3 If a merging unit failover scheme is used, the loss of sampled value data shall not result in any undesired protection operations.”</p>
Appendix A, 2.7	<p><i>Should we mention CCVT transient response so that this aspect is taken into consideration while specifying the CCVT for the application?</i></p> <p>TFSP Response: Comment accepted. A new paragraph was added “2.7.3 Relay systems utilizing capacitive voltage transformer should be designed with due regard for transient response”</p>
Appendix A, 2.12.2	<p><i>How do we define sufficiently rated? When we say enough time, what is the event at t=0.</i></p> <p>TFSP Response: Comment not accepted. TFSP intentionally did not define a time for this guide but rather is leaving it up to the entity to define.</p>
Appendix A, 2.12.2	<p><i>How do we establish sufficient separation? When we say enough time, what is the event at t=0.</i></p> <p>TFSP Response: Comment not accepted. TFSP intentionally did not define a time for this guide but rather is leaving it up to the entity to define.</p>

Task Force response:

See TFSP Responses highlighted in red above.

Comment #3:

Comment – Hydro Quebec Trans Energie:

5.5. ***Bulk power system protection shall take corrective action within times determined by studies in accordance with Directory No. 1, Design and Operation of the Bulk Power System. Studies shall give due regard to security, dependability and selectivity.***

5.12.8. ***"Any outdoor enclosure shall have as a minimum a NEMA 4X rating or***

equivalent for non-EMI related environmental conditions. For none polluted locations, outdoor enclosure shall have as a minimum a NEMA 4 or equivalent."

Task Force response:

5.5 – Comment not accepted. TFSP does not have the authority to add criteria beyond what is in Directory No. 1 and thus elected to not use this wording.

5.12.8 – Comment not accepted. The proposed criteria require as a “minimum” a NEMA 4X rating as recommended in the SP-8 Report. Hence, the term “equivalent” is not necessary. Also, the suggested addition of “non-polluted locations” is not clearly defined.

Comment #4:

Comment – Dominion:

1. *Section 1.5 - 2nd paragraph “and revised protection system is provided in Appendix B”, change revised to modified and change system to systems.*

TFSP Response:

Comment accepted.

2. *Section 1.6 - 1st sentence “The requirements of an NPCC Directory”, change ‘an’ to ‘this’*

TFSP Response:

Comment not accepted. This is a general statement and is applicable to all NPCC Directories.

3. *Section 4.0 - suggest adding -- retiring on 4/1/15 behind Directory #3 - Maintenance Criteria for Bulk Power System Protection.*

TFSP Response:

Comment accepted; however, the reference is deleted.

4. *Appendix A 2.1.4. says - “Whenever changes are anticipated in generating sources, transmission facilities, or operating conditions, Generator Owners and Transmission Owners should review those protection system applications (i.e., settings, ac and dc supplies) which can reasonably be expected to be impacted by those changes.” Should NPCC consider adding DP to this review, since they have been added as a functional entity in 1.6.1.?*

TFSP Response:

Comment accepted.

Task Force response:

See TFSP Responses highlighted in red above.

Comment #5:

Comment – David Kiguel:

Please consider the following comments and suggested red-lined wording.

Section 1.3 Objective:

The purpose of this Directory is to provide the protection criteria, for protection of the Bulk Power System in NPCC INC. member Areas and to list protection related requirement in the applicable NERC standards.

Explanation: Directories also contain a list of applicable NERC standards.

TFSP Response:

Comment not accepted. TFSP believes the suggested addition is not a part of the objective of this Directory.

Section 1.6 Applicability

The requirements of ~~an~~ the criteria portion of this NPCC Directory apply only to those facilities defined as NPCC bulk power system elements as identified through the performance based methodology of NPCC Document A-10, "Classification of Bulk Power System Elements," the list of which is maintained by the NPCC Task Force on System Studies and approved by the NPCC Reliability Coordinating Committee.

Requirements The obligation to abide by the criteria in an NPCC Directory may also reside in external tariff requirements, bilateral contracts and other agreements between facility owners and/or operators and their assigned Reliability Coordinator, Planning Coordinator, Transmission Operator, Balancing Authority and/or Transmission Owner as applicable and may be enforceable through those external tariff requirements, bilateral contracts and other agreements.

Explanation: Only criteria portion applies to the NPCC BPS as opposed to the NERC BES to which NERC standards apply.

TFSP Response:

Comment not accepted.

The subject language was developed in order to provide additional clarity regarding the scope of the NPCC criteria.

The language has been reviewed by the RCC and NPCC's legal staff and has been inserted into the Applicability section of each NPCC Directory as standard language.

Although the TFSP appreciates the further effort to improve the clarity of this language, the Task Force believes the language is sufficiently concise as written.

Section 6 Compliance Requirements

Suggest modifying R1 and adding a requirement (R2) and re-number the subsequent requirements as follows:

*R1 An entity, proposing to install a new **protection system** or a modification to an existing **protection system**, shall **obtain acceptance by TFSP by submitting** documentation to TFSP in accordance with Appendix B of this Directory.*

R2 TFSP shall review and develop a position statement according the procedure detailed in appendix B of this Directory.

Explanation: TFSP response to the submission should be incorporated in the Requirements section

TFSP Response:

Comment not accepted. Section 6, Compliance Requirements, was already vetted by the NPCC Compliance Committee. TFSP response is part of its responsibility and is included in the review procedure in Appendix B and should not be a requirement in the Directory.

Appendix A Section 2.5.5

*Sampled values and **Generic Object Oriented Substation Events (GOOSE)** messages should have the highest priority among all traffic in the network and network interfaces of end-devices.*

Explanation: Suggest giving full name of abbreviations and acronyms the first time they appear in the document.

TFSP Response:

Comment accepted.

Task Force response:

See TFSP responses highlighted in red above.