

Note: an Interpretation cannot be used to change a standard.

Request for an Interpretation of a Reliability Standard
Date submitted: November 25, 2008
Contact information for person requesting the interpretation:
Name: K. Jennifer Moroz
Organization: Manitoba Hydro
Telephone: (204) 474-4539
E-mail: kjmoroz@hydro.mb.ca
Identify the standard that needs clarification:
TOP-005-1 — Operational Reliability Information IRO-005-1 — Reliability Coordination - Current Day Operations PRC-012-0 — Special Protection System Review Procedure
Identify specifically what needs clarification (If a category is not applicable, please leave it blank):
<p>TOP-005-1 Requirement R3.</p> <p>R3. Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 “Electric System Reliability Data,” unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.</p> <p style="text-align: center;"><i>The above-referenced Attachment 1 - TOP-005-0 specifies the following data as item 2.6:</i></p> <p style="text-align: center;">2.6. New or <u>degraded</u> special protection systems. <i>[Underline added for emphasis.]</i></p> <p>IRO-005-1 Requirement R12.</p> <p>R12. Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of</p>

the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected. [*Underline added for emphasis.*]

PRC-012-0 Requirement R1 and R1.3:

R1. Each Regional Reliability Organization with a Transmission Owner, Generator Owner, or Distribution Providers that uses or is planning to use an SPS shall have a documented Regional Reliability Organization SPS review procedure to ensure that SPSs comply with Regional criteria and NERC Reliability Standards. The Regional SPS review procedure shall include:

R1.3. Requirements to demonstrate that the SPS shall be designed so that a single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.

Clarification needed

[See attached letter.](#)

Identify the material impact associated with this interpretation:

[Noncompliance could result in penalties and sanctions.](#)



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November 25, 2008

The North American Electric Reliability Corporation
Princeton Forrestal Village
115 Village Boulevard
PRINCETON, New Jersey
U.S.A. 08540-5731

ATTENTION: **Ms. Maureen E. Long , Standards Process Manager**

Dear Ms. Long:

RE: REQUEST FOR INTERPRETATION OF NERC STANDARDS TOP-005-1; IRO-005-1

Manitoba Hydro respectfully requests an interpretation of Reliability Standards TOP-005-1 and IRO-005-1 pursuant to Appendix 3A of the North American Electric Reliability Corporation's ("NERC") Rules of Procedure. As a Balancing Authority and an operator of transmission facilities that is bound by Manitoba law to adhere to NERC reliability standards, except as modified or disallowed by order of the government of Manitoba, Manitoba Hydro is directly and materially affected by the above-referenced standards. Accordingly, Manitoba Hydro is entitled to request NERC's interpretation of these standards, pursuant to Appendix 3A of the NERC Rules of Procedure.

Request

Manitoba Hydro requests an interpretation of the meaning of the term "degraded/degradation" as used in NERC Standards TOP-005-1 and IRO-005-1 and specifically, whether a Special Protection System that is operating with only one communication channel in service would be considered "degraded" for the purposes of these standards.

Standards To Be Interpreted

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NERC Standard TOP-005-1 entitled “Operational Reliability Information” governs the operating data that is required by various reliability entities to monitor system conditions within their area. Requirement R3 of TOP-005-1 obligates Balancing Authorities and Transmission Operators to provide the types of data as listed in Attachment 1 - TOP-005-0 (“Electric System Reliability Data”), to other Balancing Authorities and Transmission Operators unless otherwise agreed. The above-referenced Attachment 1 - TOP-005-0 specifies the following data as item 2.6:

“2.6 New or degraded special protection systems.”

Similarly, NERC Standard IRO-005-1 entitled “Reliability Coordination - Current Day Operations”, which governs the monitoring responsibilities of Reliability Coordinators, includes requirements for the exchange of information between Transmission Operators and their respective Reliability Coordinators concerning special protection systems. Requirement R12 of IRO-005-1 provides the following:

“The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected.”

Basis for Clarification

Manitoba Hydro respectfully requests that NERC clarify that a Special Protection System is not considered “degraded” for the purpose of the above-referenced NERC Standards if it is operating with one communication channel out of service. Manitoba Hydro considers this to be a reasonable interpretation for the following reasons.

Since the terms “degraded/degradation” are not defined in the NERC Glossary of Terms, it is necessary to explore alternative sources for interpretation. A review of the Merriam-Webster Collegiate Dictionary does not provide an adequate definition of the terms in question. As technical experts recognized throughout the electrical industry, the Institute of Electrical and Electronics Engineers, Inc. (“IEEE”) defines “degraded” as the inability of an item to perform its required function. Specifically, the IEEE definition of “degraded” is:

a failure that is gradual, or partial or both; for example, the equipment degrades to a level that, in effect, is a termination of the ability to perform its required function.¹

Correspondingly, the IEEE definition of “failure (Reliability)” is:

The termination of the ability of an item to perform its required function.²

1 IEEE 100, *The Authoritative Dictionary of IEEE Standards Terms* (7th ed.)

2 Supra no.1

According to the NERC Glossary of Terms, the function of a Special Protection System (“SPS”) is “to detect abnormal or predetermined system conditions, and take corrective actions other than and/or in addition to the isolation of faulted components to maintain system reliability.” Since an SPS that has one communication channel out of service can still fully perform this function, Manitoba Hydro submits that under such circumstances the SPS is not “degraded”.

Unlike other facilities, Special Protection Systems are required by NERC standards to be designed with redundant communication channels, so that if one communication channel fails the SPS is able to remain in operation. Requirement R1.3 of NERC Standard PRC-012-0 requires a Regional Reliability Organization with Transmission Owners that use SPSs to have a documented review procedure to ensure that SPSs comply with reliability standards and criteria, including: “requirements to demonstrate that the SPS shall be designed so that a single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements in TPL-001-0, TPL-002-0 and TPL-003-0”. Accordingly, SPSs are designed to continue to perform their function with only one communication channel in service.

Manitoba Hydro believes this is a reasonable interpretation, since in our view the SPS will still operate as required to protect for the next N-1 condition. If the remaining communication channel were to come out of service, power transfers would be reduced to again protect for the next worst N-1 condition.

For the foregoing reasons, Manitoba Hydro respectfully requests an interpretation that clarifies the requirements of NERC Standards TOP-005-0 and IRO-005-0 with respect to Special Protection Systems.

Yours truly,

MANITOBA HYDRO LAW DEPARTMENT

Per:

K. JENNIFER MOROZ

Barrister & Solicitor

KJM/sc

Project 2008-18: Response to Request for an Interpretation of TOP-005-1, Requirement R3; IRO-005-1, Requirement R12; and PRC-012-0, Requirement R1 and R1.3 for Manitoba Hydro

The following interpretation of TOP-005-1 — Operational Reliability Information, Requirement R3; IRO-005-1 — Reliability Coordination — Current Day Operations, Requirement R12; and PRC-012-0 — Special Protection System Review Procedure, Requirements R1 and R1.3 was developed by a subset of the Real-time Operations Standards Drafting Team on December 29, 2008.

Requirement Number and Text of Requirement

TOP-005-1 Requirement R3

Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 "Electric System Reliability Data," unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.

The above-referenced Attachment 1 - TOP-005-0 specifies the following data as item 2.6: New or degraded special protection systems. [Underline added for emphasis.]

IRO-005-1 Requirement R12

R12. Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected. [Underline added for emphasis.]

PRC-012-0 Requirements R1 and R1.3

R1. Each Regional Reliability Organization with a Transmission Owner, Generator Owner, or Distribution Providers that uses or is planning to use an SPS shall have a documented Regional Reliability Organization SPS review procedure to ensure that SPSs comply with Regional criteria and NERC Reliability Standards. The Regional SPS review procedure shall include:

R1.3. Requirements to demonstrate that the SPS shall be designed so that a single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.

Background Information for Interpretation

The TOP-005-1 standard focuses on two key obligations. The first key obligation (Requirement R1) is a "responsibility mandate." Requirement R1 establishes who is responsible for the obligation to provide operating data "required" by a Reliability

Coordinator within the framework of the Reliability Coordinator requirements defined in the IRO standards. The second key obligation (Requirement R3) is a “performance mandate.” Requirement R3 defines the obligation to provide data “requested” by other reliability entities that is needed “to perform assessments and to coordinate operations.”

The Attachment to TOP-005-1 is provided as a guideline of what “can be shared.” The Attachment is not an obligation of “what must be shared.” Enforceable NERC Requirements must be explicitly contained within a given Standard’s approved requirements. In this case, the standard only requires data “upon request.” If a Reliability Coordinator or other reliability entity were to request data such as listed in the Attachment, then the entity being asked would be mandated by Requirements R1 and R3 to provide that data (including item 2.6, whether it is or is not in some undefined “degraded” state).

IRO-002-1 requires the Reliability Coordinator to have processes in place to support its reliability obligations (Requirement R2). Requirement R4 mandates that the Reliability Coordinator have communications processes in place to meet its reliability obligations, and Requirement R5 et al mandate the Reliability Coordinator to have the tools to carry out these reliability obligations.

IRO-003-2 (Requirements R1 and R2) requires the Reliability Coordinator to monitor the state of its system.

IRO-004-1 requires that the Reliability Coordinator carry out studies to identify Interconnection Reliability Operating Limits (Requirement R1) and to be aware of system conditions via monitoring tools and information exchange.

IRO-005-1 mandates that each Reliability Coordinator monitor predefined base conditions (Requirement R1), collect additional data when operating limits are or may be exceeded (Requirement R3), and identify actual or potential threats (Requirement R5). The basis for that request is left to each Reliability Coordinator. The Purpose statement of IRO-005-1 focuses on the Reliability Coordinator’s obligation to be aware of conditions that may have a “significant” impact upon its area and to communicate that information to others (Requirements R7 and R9). Please note: it is from this communication that Transmission Operators and Balancing Authorities would either obtain or would know to ask for SPS information from another Transmission Operator.

The IRO-005-1 (Requirement R12) standard implies that degraded is a condition that will result in a failure to operate as designed. If the loss of a communication channel will result in the failure of an SPS to operate as designed then the Transmission Operator would be mandated to report that information. On the other hand, if the loss of a communication channel will not result in the failure of the SPS to operate as designed, then such a condition can be, but is not mandated to be, reported.

Conclusion

The TOP-005-1 standard does not provide, nor does it require, a definition for the term “degraded.”

The IRO-005-1 (R12) standard implies that degraded is a condition that will result in a failure of an SPS to operate as designed. If the loss of a communication channel will result in the failure of an SPS to operate as designed, then the Transmission Operator would be mandated to report that information. On the other hand, if the loss of a communication channel will not result in the failure of the SPS to operate as designed, then such a condition

can be, but is not mandated to be, reported.

To request a formal definition of the term degraded, the Reliability Standards Development Procedure requires the submittal of a Standards Authorization Request.