

## Mapping Document Project 2010-05.1 Protection Systems: Phase 1(Misoperations)

Mapping Document Showing Translation of PRC-003-1 – Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems, and PRC-004-2a – Analysis and Mitigation of Transmission and Generation Protection System Misoperations into PRC-004-3 — Protection System Misoperation Identification and Correction.

### Standard: PRC-003-1 - Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems

Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed Language in PRC-004-3 – Protection System Misoperation Identification and Correction Or Comment
<p><b>R1.</b> Each Regional Reliability Organization shall establish, document and maintain its procedures for, review, analysis, reporting and mitigation of transmission and generation Protection System Misoperations. These procedures shall include the following elements:</p>	<p>PRC-004-3 Applicability Section 4.1 Functional Entities - assigns the Transmission Owner, Generator Owner, and Distribution Provider as the responsible entity(s) replacing the Regional Reliability Organization. PRC-004-3 replaces the RRO procedures.</p>	<p><b>4.1. Functional Entities:</b></p> <p><b>4.1.1</b> Transmission Owner <b>4.1.2</b> Generator Owner <b>4.1.3</b> Distribution Provider</p>
<p><b>R1. Part 1.1.</b> The Protection Systems to be reviewed and analyzed for Misoperations</p>	<p>PRC-004-3 Applicability Section 4.2</p>	<p><b>4.2. Facilities</b></p> <p><b>4.2.1</b> Protection Systems for BES Facilities</p>

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(due to their potential impact on BES reliability).	Facilities.	<p><b>4.2.2</b> Underfrequency Load Shedding (UFLS) that trips a BES Element</p> <p><b>4.2.3</b> Special Protection Systems (SPS), Remedial Action Schemes (RAS), and Undervoltage Load Shedding (UVLS) are excluded</p> <p><b>4.2.4</b> Non-protective functions that may be imbedded within a Protection System are excluded</p>
<b>R1. Part 1.2.</b> Data reporting requirements (periodicity and format) for Misoperations.	NERC Rules of Procedure, Section 1600 data request	N/A
<b>R1. Part 1.3.</b> Process for review, analysis follow up, and documentation of Corrective Action Plans for Misoperations.	PRC-004-3 Requirement R1 Requirement R2 Requirement R3 Requirement R4	<p><b>R1.</b> Each Transmission Owner, Generator Owner, and Distribution Provider shall:</p> <p><b>1.1</b> Within 120 calendar days of a BES interrupting device operation in its Facility caused by a Protection System operation, identify and review each Protection System operation.</p> <ul style="list-style-type: none"> <li>• If the entity owns both the BES interrupting device and the Protection System, determine if it was a correct operation or a Misoperation</li> <li>• If the entity owns the BES interrupting device but does not own all of the Protection System and</li> </ul>

Standard: PRC-003-1 - Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems

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		<p>cannot determine that the Protection System operation was correct, then notify the other owner(s) of the Protection System component(s) and provide any requested investigative information.</p> <ul style="list-style-type: none"> <li>o The Protection System component owner(s) that was notified by the BES interrupting device owner shall determine if there was a correct operation or a Misoperation of their component.</li> </ul> <p><b>1.2</b> Within the same 120 day period of a BES interrupting device operation caused by a Protection System operation, the owner of the Protection System component identified as contributing to the Misoperation shall investigate and document the findings for each Misoperation including a cause, if identified.</p> <p><b>R2.</b> Each Transmission Owner, Generator Owner, or Distribution Provider shall, within 60 calendar days of identifying the cause of each Misoperation:</p> <ul style="list-style-type: none"> <li>• Develop a Corrective Action Plan (CAP) for the identified Protection System component(s) that</li> </ul>

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		<p>includes an evaluation of the CAP’s applicability to the entity’s Protection Systems at other locations, or</p> <ul style="list-style-type: none"> <li>• Explain in a declaration why corrective actions are beyond the entity’s control or would reduce BES reliability.</li> </ul> <p><b>R3.</b> Each Transmission Owner, Generator Owner, or Distribution Provider shall, within 180 calendar days of the associated BES interrupting device operation, complete for each Misoperation without an identified cause:</p> <ul style="list-style-type: none"> <li>• Development of an action plan that identifies any additional investigative actions and/or Protection System modifications, including a work timetable, or</li> <li>• A declaration explaining why no further actions will be taken.</li> </ul> <p><b>R4.</b> Each Transmission Owner, Generator Owner, or Distribution Provider shall implement each CAP or action plan, and revise as needed through completion.</p>

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<p><b>R1. Part 1.4.</b> Identification of the Regional Reliability Organization group responsible for the procedures and the process for approval of the procedures.</p>	<p>PRC-004-3                      Applicability Section 4.1                      Functional Entities - assigns the Transmission Owner, Generator Owner, and Distribution Provider as the responsible entity(s) replacing the Regional Reliability Organization.                      PRC-004-3 replaces the RRO procedures.</p>	<p><b>4.1. Functional Entities:</b></p> <ul style="list-style-type: none"> <li><b>4.1.1</b> Transmission Owner</li> <li><b>4.1.2</b> Generator Owner</li> <li><b>4.1.3</b> Distribution Provider</li> </ul>
<p><b>R2.</b> Each Regional Reliability Organization shall maintain and periodically update documentation of its procedures for review, analysis, reporting, and mitigation of transmission and generation Protection System Misoperations.</p>	<p>PRC-004-3                      Applicability Section 4.1                      Functional Entities - assigns the Transmission Owner, Generator Owner, and Distribution Provider as the responsible entity(s) replacing the Regional Reliability Organization.                      PRC-004-3 replaces the RRO procedures.</p>	<p>PRC-004-3 is a results-based standard that achieves the reliability objectives of PRC-003-1. The requirements in the standard define the process for the responsible entities to follow. The standards development process mandates the standards be reviewed once every five years.</p> <p><b>4.1. Functional Entities:</b></p> <ul style="list-style-type: none"> <li><b>4.1.1</b> Transmission Owner</li> <li><b>4.1.2</b> Generator Owner</li> <li><b>4.1.3</b> Distribution Provider</li> </ul>

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		See <b>PRC-004-3</b>
<p><b>R3.</b> Each Regional Reliability Organization shall distribute procedures in Requirement 1 and any changes to those procedures, to the affected Transmission Owners, Distribution Providers that own transmission Protection Systems, and Generator Owners within 30 calendar days of approval of those procedures.</p>	<p>PRC-004-3                      Applicability Section 4.1                      Functional Entities - assigns the Transmission Owner, Generator Owner, and Distribution Provider as the responsible entity(s) replacing the Regional Reliability Organization.                      PRC-004-3 replaces the RRO procedures.</p>	<p>PRC-004-3 is a results-based standard that achieves the reliability objectives of PRC-003-1. The requirements in the standard define the process for the responsible entities to follow.</p> <p><b>4.1. Functional Entities:</b></p> <ul style="list-style-type: none"> <li><b>4.1.1</b> Transmission Owner</li> <li><b>4.1.2</b> Generator Owner</li> <li><b>4.1.3</b> Distribution Provider</li> </ul> <p>See <b>PRC-004-3</b></p>

Standard: PRC-004-2a - Analysis and Mitigation of Transmission and Generation Protection System Misoperations

Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed Language in PRC-004-3 – Protection System Misoperation Identification and Correction or Comment
<p><b>R1.</b> The Transmission Owner and any Distribution Provider that owns a transmission Protection System shall each analyze its transmission Protection System Misoperations and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Entity’s procedures.</p>	<p>PRC-004-3 Requirement R1 Requirement R2 Requirement R3 Requirement R4</p>	<p><b>R1.</b> Each Transmission Owner, Generator Owner, and Distribution Provider shall:</p> <p><b>1.1</b> Within 120 calendar days of a BES interrupting device operation in its Facility caused by a Protection System operation, identify and review each Protection System operation.</p> <ul style="list-style-type: none"> <li>• If the entity owns both the BES interrupting device and the Protection System, determine if it was a correct operation or a Misoperation</li> <li>• If the entity owns the BES interrupting device but does not own all of the Protection System and cannot determine that the Protection System operation was correct, then notify the other owner(s) of the Protection System component(s) and provide any requested investigative information.               <ul style="list-style-type: none"> <li>o The Protection System component owner(s) that was notified by the BES interrupting device owner shall determine if there was a correct operation or a Misoperation of their</li> </ul> </li> </ul>

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		<p>component.</p> <p><b>1.2</b> Within the same 120 day period of a BES interrupting device operation caused by a Protection System operation, the owner of the Protection System component identified as contributing to the Misoperation shall investigate and document the findings for each Misoperation including a cause, if identified.</p> <p><b>R2.</b> Each Transmission Owner, Generator Owner, or Distribution Provider shall, within 60 calendar days of identifying the cause of each Misoperation:</p> <ul style="list-style-type: none"> <li>• Develop a Corrective Action Plan (CAP) for the identified Protection System component(s) that includes an evaluation of the CAP’s applicability to the entity’s Protection Systems at other locations, or</li> <li>• Explain in a declaration why corrective actions are beyond the entity’s control or would reduce BES reliability.</li> </ul> <p><b>R3.</b> Each Transmission Owner, Generator Owner, or Distribution Provider shall, within 180 calendar</p>



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		<p>days of the associated BES interrupting device operation, complete for each Misoperation without an identified cause:</p> <ul style="list-style-type: none"> <li>• Development of an action plan that identifies any additional investigative actions and/or Protection System modifications, including a work timetable, or</li> <li>• A declaration explaining why no further actions will be taken.</li> </ul> <p><b>R4.</b> Each Transmission Owner, Generator Owner, or Distribution Provider shall implement each CAP or action plan, and revise as needed through completion.</p>
<p><b>R2.</b> The Generator Owner shall analyze its generator Protection System Misoperations, and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Entity’s procedures.</p>	<p>PRC-004-3 Requirement R1 Requirement R2 Requirement R3 Requirement R4</p>	<p><b>R1.</b> Each Transmission Owner, Generator Owner, and Distribution Provider shall:</p> <p><b>1.1</b> Within 120 calendar days of a BES interrupting device operation in its Facility caused by a Protection System operation, identify and review each Protection System operation.</p> <ul style="list-style-type: none"> <li>• If the entity owns both the BES interrupting</li> </ul>

Standard: PRC-004-2a - Analysis and Mitigation of Transmission and Generation Protection System Misoperations

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		<p>device and the Protection System, determine if it was a correct operation or a Misoperation</p> <ul style="list-style-type: none"> <li>• If the entity owns the BES interrupting device but does not own all of the Protection System and cannot determine that the Protection System operation was correct, then notify the other owner(s) of the Protection System component(s) and provide any requested investigative information.               <ul style="list-style-type: none"> <li>o The Protection System component owner(s) that was notified by the BES interrupting device owner shall determine if there was a correct operation or a Misoperation of their component.</li> </ul> </li> </ul> <p><b>1.2</b> Within the same 120 day period of a BES interrupting device operation caused by a Protection System operation, the owner of the Protection System component identified as contributing to the Misoperation shall investigate and document the findings for each Misoperation including a cause, if identified.</p>

Standard: PRC-004-2a - Analysis and Mitigation of Transmission and Generation Protection System Misoperations

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		<p><b>R2.</b> Each Transmission Owner, Generator Owner, or Distribution Provider shall, within 60 calendar days of identifying the cause of each Misoperation:</p> <ul style="list-style-type: none"> <li>• Develop a Corrective Action Plan (CAP) for the identified Protection System component(s) that includes an evaluation of the CAP’s applicability to the entity’s Protection Systems at other locations, or</li> <li>• Explain in a declaration why corrective actions are beyond the entity’s control or would reduce BES reliability.</li> </ul> <p><b>R3.</b> Each Transmission Owner, Generator Owner, or Distribution Provider shall, within 180 calendar days of its associated interrupting device operation, complete for each Misoperation without an identified cause:</p> <ul style="list-style-type: none"> <li>• Development of an action plan that identifies any additional investigative actions and/or Protection System modifications, including a work timetable, or</li> </ul>

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		<ul style="list-style-type: none"> <li>• A declaration explaining why no further actions will be taken.</li> </ul> <p><b>R4.</b> Each Transmission Owner, Generator Owner, or Distribution Provider shall implement each CAP or action plan, and revise as needed through completion.</p>
<p><b>R3.</b> The Transmission Owner, any Distribution Provider that owns a transmission Protection System, and the Generator Owner shall each provide to its Regional Entity, documentation of its Misoperations analyses and Corrective Action Plans according to the Regional Entity’s procedures.</p>	<p>PRC-004-3 Requirement 4</p> <p>NERC Rules of Procedure, Section 1600 data request</p>	<p><b>R4.</b> Each Transmission Owner, Generator Owner, or Distribution Provider shall implement each CAP or action plan, and revise as needed through completion.</p> <p>N/A</p>