

# Reliability Standard Audit Worksheet<sup>1</sup>

## PRC-004-5 – Protection System Misoperation Identification and Correction

*This section to be completed by the Compliance Enforcement Authority.*

**Audit ID:** Audit ID if available; or REG-NCRnnnnn-YYYYMMDD  
**Registered Entity:** Registered name of entity being audited  
**NCR Number:** NCRnnnnn  
**Compliance Enforcement Authority:** Region or NERC performing audit  
**Compliance Assessment Date(s):<sup>2</sup>** Month DD, YYYY, to Month DD, YYYY  
**Compliance Monitoring Method:** Audit  
**Names of Auditors:** Supplied by CEA

### Applicability of Requirements

	BA	DP	GO	GOP	IA	LSE	PA	PSE	RC	RP	RSG	TO	TOP	TP	TSP
<b>R1</b>		X	X									X			
<b>R2</b>		X	X									X			
<b>R3</b>		X	X									X			
<b>R4</b>		X	X									X			
<b>R5</b>		X	X									X			
<b>R6</b>		X	X									X			

<sup>1</sup> NERC developed this Reliability Standard Audit Worksheet (RSAW) language in order to facilitate NERC’s and the Regional Entities’ assessment of a registered entity’s compliance with this Reliability Standard. The NERC RSAW language is written to specific versions of each NERC Reliability Standard. Entities using this RSAW should choose the version of the RSAW applicable to the Reliability Standard being assessed. While the information included in this RSAW provides some of the methodology that NERC has elected to use to assess compliance with the requirements of the Reliability Standard, this document should not be treated as a substitute for the Reliability Standard or viewed as additional Reliability Standard requirements. In all cases, the Regional Entity should rely on the language contained in the Reliability Standard itself, and not on the language contained in this RSAW, to determine compliance with the Reliability Standard. NERC’s Reliability Standards can be found on NERC’s website. Additionally, NERC Reliability Standards are updated frequently, and this RSAW may not necessarily be updated with the same frequency. Therefore, it is imperative that entities treat this RSAW as a reference document only, and not as a substitute or replacement for the Reliability Standard. It is the responsibility of the registered entity to verify its compliance with the latest approved version of the Reliability Standards, by the applicable governmental authority, relevant to its registration status.

The NERC RSAW language contained within this document provides a non-exclusive list, for informational purposes only, of examples of the types of evidence a registered entity may produce or may be asked to produce to demonstrate compliance with the Reliability Standard. A registered entity’s adherence to the examples contained within this RSAW does not necessarily constitute compliance with the applicable Reliability Standard, and NERC and the Regional Entity using this RSAW reserves the right to request additional evidence from the registered entity that is not included in this RSAW. Additionally, this RSAW includes excerpts from FERC Orders and other regulatory references. The FERC Order cites are provided for ease of reference only, and this document does not necessarily include all applicable Order provisions. In the event of a discrepancy between FERC Orders, and the language included in this document, FERC Orders shall prevail.

<sup>2</sup> Compliance Assessment Date(s): The date(s) the actual compliance assessment (on-site audit, off-site spot check, etc.) occurs.

**Facilities**

**4.2.1** Protection Systems for BES Elements, with the following exclusions:

**4.2.1.1** Non-protective functions that are embedded within a Protection System.

**4.2.1.2** Protective functions intended to operate as a control function during switching.<sup>3</sup>

**4.2.1.3** Special Protection Systems (SPS).

**4.2.1.4** Remedial Action Schemes (RAS).

**4.2.1.5** Protection Systems of individual dispersed power producing resources identified under Inclusion I4 of the BES definition where the Misoperations affected an aggregate nameplate rating of less than or equal to 75 MVA of BES Facilities.

**4.2.2** Underfrequency load shedding (UFLS) that is intended to trip one or more BES Elements.

**4.2.3** Undervoltage load shedding (UVLS) that is intended to trip one or more BES Elements.

**Subject Matter Experts**

Identify Subject Matter Expert(s) responsible for this Reliability Standard. (Insert additional rows if necessary)

**Registered Entity Response (Required):**

SME Name	Title	Organization	Requirement(s)

<sup>3</sup> For additional information and examples, see the “Non-Protective Functions” and “Control Functions” sections in the Application Guidelines.

**R1 Supporting Evidence and Documentation**

- R1.** Each Transmission Owner, Generator Owner, and Distribution Provider that owns a BES interrupting device that operated shall, within 120 calendar days of the BES interrupting device operation, identify whether its Protection System component(s) caused a Misoperation under the following circumstances:
  - 1.1** The BES interrupting device operation was caused by a Protection System or by manual intervention in response to a Protection System failure to operate; and
  - 1.2** The BES interrupting device owner owns all or part of the Composite Protection System; and
  - 1.3** The BES interrupting device owner identified that its Protection System component(s) caused the BES interrupting device(s) operation.
- M1.** Each Transmission Owner, Generator Owner, and Distribution Provider shall have dated evidence that demonstrates it identified the Misoperation of its Protection System component(s), if any, that meet the circumstances in Requirement R1, Parts 1.1, 1.2, and 1.3 within the allotted time period. Acceptable evidence for Requirement R1, including Parts 1.1, 1.2, and 1.3 may include, but is not limited to, the following dated documentation (electronic or hardcopy format): reports, databases, spreadsheets, emails, facsimiles, lists, logs, records, declarations, analyses of sequence of events, relay targets, Disturbance Monitoring Equipment (DME) records, test results, or transmittals.

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

**Evidence Requested:<sup>i</sup>**

Provide the following evidence, or other evidence to demonstrate compliance. Please contact your CEA with any questions regarding requested evidence.
A list of BES interrupting device operations within the audit period meeting the criteria of Requirement R1 Parts 1.1 through 1.3.
Of these BES interrupting device operations, evidence such as in Measure M1 identifying whether its Protection System component(s) caused a Misoperation (or not).

**Registered Entity Evidence (Required):**

The following information is recommended for all evidence submitted: File Name, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

**Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):**

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**Compliance Assessment Approach Specific to PRC-004-5, R1**

*This section to be completed by the Compliance Enforcement Authority*

	Select, all or a sample thereof, BES interrupting device operations meeting the criteria of Requirement R1 Part 1.1 through 1.3 from the list of such operations outlined in the Evidence Requested section above.
	For selected BES interrupting device operations meeting the criteria of Requirement R1 Part 1.1 through 1.3, verify the entity identified whether or not its Protection System component(s) caused a Misoperation within 120 calendar days of the BES interrupting device operation.
<p><b>Note to Auditor:</b> Auditors should use their professional judgment in selecting BES interrupting device operations for testing. Sources of such operations could include entity lists or auditor’s knowledge of events occurring on the entity’s system. In order to determine if the entity identified whether there was a Misoperation (in accordance with Requirement R1) the auditor should seek evidence, such as that provided in Measure M1, associated with analyses of those BES interrupting device operations meeting Requirement R1, Parts 1.1 through 1.3.</p> <p>If the BES interrupting device operation does not meet the criteria, then no identification is necessary and no further audit testing is required.</p> <p>Auditor may identify instances where an entity identified a Misoperation of its Protection System component(s), but did not determine the cause(s) of the Misoperation (within the 120 calendar day period of R1) for verification of compliance with Requirement R4.</p>	

**Auditor Notes:**

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**R2 Supporting Evidence and Documentation**

- R2.** Each Transmission Owner, Generator Owner, and Distribution Provider that owns a BES interrupting device that operated shall, within 120 calendar days of the BES interrupting device operation, provide notification as described in 2.1 and 2.2:
  - 2.1** For a BES interrupting device operation by a Composite Protection System, notification of the operation shall be provided to the other owner(s) that share Misoperation identification responsibility for the Composite Protection System under the following circumstances:
    - 2.1.1** The BES interrupting device owner shares the Composite Protection System ownership with any other owner; and
    - 2.1.2** The BES interrupting device owner has determined that a Misoperation occurred or cannot rule out a Misoperation; and
    - 2.1.3** The BES interrupting device owner has determined that its Protection System component(s) did not cause the BES interrupting device(s) operation or cannot determine whether its Protection System components caused the BES interrupting device(s) operation.
  - 2.2** For a BES interrupting device operation by a Protection System component intended to operate as backup protection for a condition on another entity’s Element, notification of the operation shall be provided to the other Protection System owner(s) for which that backup protection was provided.
- M2.** Each Transmission Owner, Generator Owner, and Distribution Provider shall have dated evidence that demonstrates notification to the other owner(s), within the allotted time period for either Requirement R2, Part 2.1, including subparts 2.1.1, 2.1.2, and 2.1.3 and Requirement R2, Part 2.2. Acceptable evidence for Requirement R2, including Parts 2.1, and 2.2 may include, but is not limited to, the following dated documentation (electronic or hardcopy format): emails, facsimiles, or transmittals.

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

**Evidence Requested:<sup>i</sup>**

Provide the following evidence, or other evidence to demonstrate compliance. Please contact your CEA with any questions regarding requested evidence.
A list of BES interrupting device operations within the audit period meeting the criteria of Part 2.1, Parts 2.1.1 through 2.1.3.
For Requirement R2 Part 2.2, a list of BES interrupting device operations within the audit period that operated as backup protection for a condition on another entity’s Element.
Of these BES interrupting device operations, evidence such as in Measure M2 of entity notifying other owner(s) of the Composite Protection System.

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**Registered Entity Evidence (Required):**

The following information is recommended for all evidence submitted:  
File Name, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description  
Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

**Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):**

**Compliance Assessment Approach Specific to PRC-004-5, R2**

*This section to be completed by the Compliance Enforcement Authority*

Select, all or a sample thereof, BES interrupting device operations meeting Requirement R2, Parts 2.1 and 2.2.

For selected BES interrupting device operations requiring notifying other owner(s), verify the entity notified the other owners of the operation within 120 days of the operation.

**Note to Auditor:** Auditors should use their professional judgment in selecting BES interrupting device operations for testing. Sources of such operations could include entity lists or auditor’s knowledge of events occurring on the entity’s system. In order to determine if the entity notified other owners of the Composite Protection System (in accordance with Requirement R2) auditor should seek evidence, as provided in Measure M2 associated with selected operations.  
  
See Application Guidelines under section Requirement R2 for notification requirements for vertically integrated utilities.

**Auditor Notes:**

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**R3 Supporting Evidence and Documentation**

- R3.** Each Transmission Owner, Generator Owner, and Distribution Provider that receives notification, pursuant to Requirement R2 shall, within the later of 60 calendar days of notification or 120 calendar days of the BES interrupting device(s) operation, identify whether its Protection System component(s) caused a Misoperation.
- M3.** Each Transmission Owner, Generator Owner, and Distribution Provider shall have dated evidence that demonstrates it identified whether its Protection System component(s) caused a Misoperation within the allotted time period. Acceptable evidence for Requirement R3 may include, but is not limited to, the following dated documentation (electronic or hardcopy format): reports, databases, spreadsheets, emails, facsimiles, lists, logs, records, declarations, analyses of sequence of events, relay targets, Disturbance Monitoring Equipment (DME) records, test results, or transmittals.

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

**Evidence Requested:<sup>i</sup>**

Provide the following evidence, or other evidence to demonstrate compliance. Please contact your CEA with any questions regarding requested evidence.
List of notifications received by entity within the audit period pursuant to Requirement R2.
Of these notifications, evidence such as in Measure M3 of the entity identifying whether its Protection System component(s) caused a Misoperation (or not).

**Registered Entity Evidence (Required):**

The following information is recommended for all evidence submitted: File Name, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

**Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):**


**Compliance Assessment Approach Specific to PRC-004-5, R3**

***This section to be completed by the Compliance Enforcement Authority***

	Select, all or a sample thereof, notifications received by entity pursuant to Requirement R2.
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For notifications received by entity, as selected by auditor, verify entity identified, within the timeframes established in Requirement R3, whether its Protection System component(s) caused a Misoperation.

**Note to Auditor:** Auditors should use their professional judgment in selecting notifications for audit testing. Sources of such notifications could include entity lists, auditor’s knowledge of events occurring on the entity’s system, or inquiries of neighboring entities. In order to determine if entity identified whether its Protection System component(s) caused a Misoperation, the auditor should seek evidence, as provided in Measure M3, associated with selected notifications.

Auditor may identify instances where an entity identified a Misoperation of its Protection System component(s) (in accordance with Requirement R3), but did not determine the cause(s) of the Misoperation for verification of compliance with Requirement R4.

**Auditor Notes:**

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**R4 Supporting Evidence and Documentation**

**R4.** Each Transmission Owner, Generator Owner, and Distribution Provider that has not determined the cause(s) of a Misoperation, for a Misoperation identified in accordance with Requirement R1 or R3 shall perform investigative action(s) to determine the cause of the Misoperation at least once every two full calendar quarters after the Misoperation was first identified, until one of the following completes the investigation:

- The identification of the cause(s) of the Misoperation; or
- A declaration that no cause was identified.

**M4.** Each Transmission Owner, Generator Owner, and Distribution Provider shall have dated evidence that demonstrates it performed at least one investigative action according to Requirement R4 every two full calendar quarters until a cause is identified or a declaration is made. Acceptable evidence for Requirement R4 may include, but is not limited to, the following dated documentation (electronic or hardcopy format): reports, databases, spreadsheets, emails, facsimiles, lists, logs, records, declarations, analyses of sequence of events, relay targets, Disturbance Monitoring Equipment (DME) records, test results, or transmittals.

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

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**Evidence Requested:<sup>i</sup>**

Provide the following evidence, or other evidence to demonstrate compliance. Please contact your CEA with any questions regarding requested evidence.
List of identified Misoperations pursuant to Requirement R1 or R3, within the audit period, where the cause of the Misoperation was not revealed.
Of the Misoperation list, documented cause(s) of the Misoperation pursuant to Requirement R4.
Of the Misoperation list, declarations where no cause was identified.
Evidence such as in Measure M4.

**Registered Entity Evidence (Required):**

The following information is recommended for all evidence submitted: File Name, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

**Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):**


**Compliance Assessment Approach Specific to PRC-004-5, R4**

***This section to be completed by the Compliance Enforcement Authority***

	Select, all or a sample of, identified Misoperations where a cause has not been identified by the entity.
	For each identified Misoperation without a cause selected, verify entity performed (or is performing) investigative action(s) to determine the cause(s) of the Misoperation at least once every two full calendar quarters after the Misoperation was first identified.
	For completed investigative actions, verify that entity has either determined a cause or has a declaration that no cause was identified.
<p><b>Note to Auditor:</b> Auditors should use their professional judgment in selecting Misoperations for audit testing. Sources of such Misoperations could include entity lists or knowledge gained by the auditor via their review of Requirements R1 or R3. In order to determine if entity performed the investigative action(s) established in Requirement R4, the auditor should seek evidence, as provided in Measure M4, associated with selected Misoperations.</p> <p>The following is an example of what is meant by “once every two full calendar quarters after the Misoperation was first identified:” A Misoperation (with no cause) initially identified on February 10 (Quarter One) must be investigated (per Requirement R4) by September 30 (Quarter three) of the same year. Quarters two and three are the full quarters counted.</p>	

**Auditor Notes:**

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**R5 Supporting Evidence and Documentation**

- R5.** Each Transmission Owner, Generator Owner, and Distribution Provider that owns the Protection System component(s) that caused the Misoperation shall, within 60 calendar days of first identifying a cause of the Misoperation:
- Develop a Corrective Action Plan (CAP) for the identified Protection System component(s), and an evaluation of the CAP’s applicability to the entity’s other Protection Systems including other locations, or
  - Explain in a declaration why corrective actions are beyond the entity’s control or would not improve BES reliability, and that no further corrective actions will be taken.
- M5.** Each Transmission Owner, Generator Owner, and Distribution Provider shall have dated evidence that demonstrates it developed a CAP and an evaluation of the CAP’s applicability to other Protection Systems and locations, or a declaration in accordance with Requirement R5. Acceptable evidence for Requirement R5 may include, but is not limited to the following dated documentation (electronic or hardcopy format): CAP and evaluation, or declaration.

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

**Evidence Requested:<sup>i</sup>**

Provide the following evidence, or other evidence to demonstrate compliance. Please contact your CEA with any questions regarding requested evidence.

Within the audit period, evidence such as in Measure M5 for Misoperations with an identified cause.

**Registered Entity Evidence (Required):**

The following information is recommended for all evidence submitted:

File Name, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description

Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

**Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):**


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**Compliance Assessment Approach Specific to PRC-004-5, R5**

***This section to be completed by the Compliance Enforcement Authority***

	Select, all or a sample thereof, identified Misoperations with a cause.
	For identified Misoperations with a cause, as selected by the auditor, verify entity developed a CAP and evaluation, or a declaration as described in Requirement R5.
	Verify CAP and evaluation, or declaration, was developed within 60 calendar days of the first identified cause.
	Verify CAP contains actions and a timetable to resolve the cause(s) of the identified Misoperation and verify entity evaluated the CAP's applicability to the entity's other Protection Systems and locations; or that the declaration contains why no corrective action will be taken according to Requirement R5.
<b>Note to Auditor:</b> Auditors should use their professional judgment in selecting Misoperations with an identified cause for audit testing. Sources of such Misoperations for audit testing should be obtained from information learned by, or provided to, the auditor from testing of Misoperations for Requirements R1, R3, or R4.	

**Auditor Notes:**

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**R6 Supporting Evidence and Documentation**

- R6.** Each Transmission Owner, Generator Owner, and Distribution Provider shall implement each CAP developed in Requirement R5, and update each CAP if actions or timetables change, until completed.
- M6.** Each Transmission Owner, Generator Owner, and Distribution Provider shall have dated evidence that demonstrates it implemented each CAP, including updating actions or timetables. Acceptable evidence for Requirement R6 may include, but is not limited to the following dated documentation (electronic or hard copy format): records that document the implementation of each CAP and the completion of actions for each CAP including revision history of each CAP. Evidence may also include work management program records, work orders, and maintenance records.

**Registered Entity Response (Required):**

**Compliance Narrative:**

Provide a brief explanation, in your own words, of how you comply with this Requirement. References to supplied evidence, including links to the appropriate page, are recommended.

**Evidence Requested:<sup>1</sup>**

Provide the following evidence, or other evidence to demonstrate compliance. Please contact your CEA with any questions regarding requested evidence.

From the CAPs developed in Requirement R5, evidence such as in Measure M6 demonstrating implementation of each CAP.

**Registered Entity Evidence (Required):**

The following information is recommended for all evidence submitted:  
 File Name, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description  
 Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

**Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):**


**Compliance Assessment Approach Specific to PRC-005-3, R6**

***This section to be completed by the Compliance Enforcement Authority***

	Select, all or a sample thereof, CAPs for correcting the cause(s) of an identified Misoperation.
	For CAPs selected, verify implementation and that CAP was updated in accordance with Requirement R6.

**Note to Auditor:** Auditors should use their professional judgment in selecting CAPs for audit testing. Sources of CAPs for audit testing should be obtained from information learned by, or provided to, the auditor in Requirement R5.

In checking for implementation, auditors should verify evidence (such as described in Measure M6) that the actions or activities prescribed by the CAP were actually performed by the entity.

Items, such as work management records, supporting the implementation of actions and timetables to implement the CAP are alternatives to a written document.

**Auditor Notes:**

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**Additional Information:**

**Reliability Standard**

The full text of PRC-004-5 may be found on the NERC website ([www.nerc.com](http://www.nerc.com)) under “Program Areas & Departments”, “Reliability Standards.”

In addition to the Reliability Standard, there is an applicable Implementation Plan available on the NERC website.

In addition to the Reliability Standard, there is background information available on the NERC website.

Capitalized terms in the Reliability Standard refer to terms in the *Glossary of Terms Used in NERC Reliability Standards*, which may be found on the NERC website.

**Sampling Methodology**

Sampling is essential for auditing compliance with NERC Reliability Standards since it is not always possible or practical to test 100% of either the equipment, documentation, or both, associated with the full suite of enforceable standards. The [Sampling Methodology Guidelines and Criteria](#), or sample guidelines, provided by the Electric Reliability Organization help to establish a minimum sample set for monitoring and enforcement uses in audits of NERC Reliability Standards.

**Regulatory Language [Developer to ensure RSAW has been provided to NERC Legal for links to appropriate Regulatory Language – See example below]**

E.g. FERC Order No. 742 paragraph 34: “Based on NERC’s.....”

E.g. FERC Order No. 742 Paragraph 55, Commission Determination: “We affirm NERC’s.....”

**Selected Glossary Terms**

The following Glossary terms are provided for convenience only. Please refer to the NERC web site for the current enforceable terms.

- Composite Protection System
  - Corrective Action Plan (CAP)
  - Misoperation
  - Protection System
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**Revision History**

Version	Date	Reviewers	Revision Description
1	2/19/2015	NERC Compliance	New Document for PRC-004-5 based on version of RSAW posted for PRC-004-3.

<sup>i</sup> Items in the Evidence Requested section are suggested evidence that may, but will not necessarily, demonstrate compliance. These items are not mandatory and other forms and types of evidence may be submitted at the entity's discretion.

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