

Reliability Standard Audit Worksheet¹

PRC-026-1 – Relay Performance During Stable Power Swings

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)²: Month DD, YYYY, to Month DD, YYYY
Compliance Monitoring Method: [On-site Audit | Off-site Audit | Spot Check]
Names of Auditors: Supplied by CEA

Applicability of Requirements *[RSAW developer to insert correct applicability]*

| | BA | DP | GO | GOP | IA | LSE | PC | PSE | RC | RP | RSG | TO | TOP | TP | TSP |
|----|----|----|----|-----|----|-----|----|-----|----|----|-----|----|-----|----|-----|
| R1 | | | | | | | X | | | | | | | | |
| R2 | | | X | | | | | | | | | X | | | |
| R3 | | | X | | | | | | | | | X | | | |
| R4 | | | X | | | | | | | | | X | | | |

Legend:

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|--|------------------------------|
| Text with blue background: | Fixed text – do not edit |
| Text entry area with Green background: | Entity-supplied information |
| Text entry area with white background: | Auditor-supplied information |

¹ 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.

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

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Findings

(This section to be completed by the Compliance Enforcement Authority)

| Req. | Finding | Summary and Documentation | Functions Monitored |
|------|---------|---------------------------|---------------------|
| R1 | | | |
| R2 | | | |
| R3 | | | |
| R4 | | | |

| Req. | Areas of Concern |
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| Req. | Recommendations |
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| Req. | Positive Observations |
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Subject Matter Experts

Identify the Subject Matter Expert(s) responsible for this Reliability Standard.

Registered Entity Response (Required; Insert additional rows if needed):

| SME Name | Title | Organization | Requirement(s) |
|----------|-------|--------------|----------------|
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R1 Supporting Evidence and Documentation

R1. Each Planning Coordinator shall, at least once each calendar year, provide notification of each generator, transformer, and transmission line BES Element in its area that meet one or more of the following criteria, if any, to the respective Generator Owner and Transmission Owner:

Criteria:

1. Generator(s) where an angular stability constraint exists that is addressed by a System Operating Limit (SOL) or a Remedial Action Scheme (RAS) and those Elements terminating at the Transmission station associated with the generator(s).
2. An Element that is monitored as part of a SOL identified by the Planning Coordinator’s methodology³ based on an angular stability constraint.
3. An Element that forms the boundary of an island in the most recent underfrequency load shedding (UFLS) design assessment based on application of the Planning Coordinator’s criteria for identifying islands, where the island is formed by tripping the Element due to angular instability.
4. An Element identified in the most recent annual Planning Assessment where relay tripping occurs due to a stable or unstable power swing during a simulated disturbance.

M1. Each Planning Coordinator shall have dated evidence that demonstrates notification of the generator, transformer, and transmission line BES Element(s) that meet one or more of the criteria in Requirement R1, if any, to the respective Generator Owner and Transmission Owner. Evidence may include, but is not limited to, the following documentation: emails, facsimiles, records, reports, transmittals, lists, or spreadsheets.

Registered Entity Response (Required):

Question: Did the entity have any BES Element(s) (i.e., generator, transformer, or transmission line) that met one or more of the criteria of Requirement R1, within its area?

Yes No

If yes, provide a list of such Elements. If auditor is reasonably sure of the entity’s ‘No’ ‘no’ answer, then no further auditing of the Requirement is necessary.

Note to Auditor:

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

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.

³ NERC Reliability Standard FAC-10 – *System Operating Limits Methodology for the Planning Horizon*

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Evidence Requested:

Provide the following evidence, or other evidence to demonstrate compliance.
 Dated documentation such as in Measure M1 (e.g., transmittals), within the compliance monitoring period, demonstrating that the Planning Coordinator notified the respective Generator Owner or Transmission Owner each calendar year of the BES Element(s) that met one or more of the criteria in Requirement R1.

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

| File Name | Document Title | Revision or Version | Document Date | Relevant Page(s) or Section(s) | Description of Applicability of Document |
|-----------|----------------|---------------------|---------------|--------------------------------|--|
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to PRC-026-1, R1

This section to be completed by the Compliance Enforcement Authority

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| | Interview an entity representative to understand the entity’s process for notifying respective Generator Owners and Transmission Owners of BES Elements that met one or more of the criteria of Requirement R1. |
| | Select all, or a sample, of the notification(s) of BES Elements that met one or more of the criteria of Requirement R1. Of the selected notifications in each calendar year of the compliance monitoring period, verify the notification(s) identified the BES Elements and the respective Generator Owner(s) and Transmission Owner(s). |

Note to Auditor: Auditors may use their professional judgment in selecting BES Elements for audit testing. In cases where an auditor expected an Element to meet one or more of the criteria of Requirement R1, but was not identified; the auditor should obtain an explanation why an Element was not identified.

Auditor Notes:

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R2 Supporting Evidence and Documentation

- R2.** Each Generator Owner and Transmission Owner shall determine:
- 2.1.** Within 12 full calendar months of notification of a BES Element pursuant to Requirement R1, determine whether its load-responsive protective relay(s) applied to that BES Element meets the criteria in PRC-026-1 - Attachment B where an evaluation of that Element's load-responsive protective relay(s) based on PRC-026-1 - Attachment B criteria has not been performed in the last five calendar years.
 - 2.2.** Within 12 full calendar months of becoming aware of a generator, transformer, or transmission line BES Element that tripped in response to a stable or unstable power swing due to the operation of its protective relay(s), determine whether its load-responsive protective relay(s) applied to that BES Element meets the criteria in PRC-026-1 - Attachment B.
- M2.** Each Generator Owner and Transmission Owner shall have dated evidence that demonstrates the evaluation was performed according to Requirement R2. Evidence may include, but is not limited to, the following documentation: apparent impedance characteristic plots, email, design drawings, facsimiles, R-X plots, software output, records, reports, transmittals, lists, settings sheets, or spreadsheets.

Registered Entity Response (Required):

Question: Did the entity receive notification of any Element(s) according to Requirements R2, Part 2.1 (i.e., pursuant to Requirement R1) or identify any Element(s) according to Requirement R2, Part 2.2 (i.e., actual Element trips due to a stable or unstable power swing)?

Yes No

If yes, then provide a list of such Elements. If auditor is reasonably sure of the entity's 'no' answer, then no further auditing of the Requirement is necessary.

Note to Auditor:

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

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:

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| Provide the following evidence, or other evidence to demonstrate compliance. |
| Dated documentation such as in Measure M2 (e.g., lists), within the compliance monitoring period, of any identified generator, transformer, or transmission line BES Element(s) where the entity was notified by the Planning Coordinator according to Requirement R2, Part 2.1 (i.e., pursuant to Requirements R1) or any Element(s) identified by the entity becoming aware of a stable or unstable power swing that tripped a BES Element according to Requirement R2, Part 2.2. |
| Dated documentation such as in Measure M2 (e.g., software output), within the compliance monitoring period, demonstrating the determination of whether the load-responsive protective relay(s) for each identified Element pursuant to Requirement R2, Parts 2.1 and 2.2 met the PRC-026-1 – Attachment B criteria. |

Registered Entity Evidence (Required):

| The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found. | | | | | |
|---|-----------------------|----------------------------|----------------------|---------------------------------------|---|
| File Name | Document Title | Revision or Version | Document Date | Relevant Page(s) or Section(s) | Description of Applicability of Document |
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to PRC-026-1, R2

This section to be completed by the Compliance Enforcement Authority

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| | (R2) Interview an entity representative to understand the entity’s process for identifying applicable load-responsive protective relays applied on the terminals of the BES Elements identified pursuant to Requirement R2, Parts 2.1 and 2.2 and whether the applicable load-responsive protective relays meet the PRC-0026-1 – Attachment B criteria. |
| | Select all, or a sample, of BES Elements where the Elements have a load-responsive protective relay applied at the terminals meeting PRC-026-1 – Attachment A. Of those BES Elements, select all, or a sample, of the load-responsive protective relay(s) applied at all of the terminals of the BES Elements identified in R2, Parts 2.1 and 2.2 and verify the following: |
| | (2.1.) That the entity made a determination whether any load-responsive protective relays applied at the terminals of the Element met PRC-026-1 – Attachment B criteria, within 12 calendar months of notification according to Requirement R2, Part 2.1, unless the entity had previously evaluated the load-responsive protective relay(s) according to the PRC-026-1 – Attachment B criteria within the last five calendar years. |

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(2.2) That the entity made a determination whether any load-responsive protective relays applied at the terminals of the Element met PRC-026-1 – Attachment B criteria, within 12 calendar months of notification according to Requirement R2, Part 2.2.

Note to Auditor: Auditors may use their professional judgment when the entity provides no evidence of a load-responsive protective relay being applied at any terminal of an identified BES (i.e., Requirement R2, Parts 2.1 and 2.2), in such cases, the auditor should obtain an explanation of why the entity has no load-responsive protective relays are applied at such terminals.

The auditor should ensure that all load-responsive protective relays applied at the terminals of a selected BES Element have a determination of whether the load-responsive protective relay meets the PRC-026-1 – Attachment B criteria based on the entity’s evaluation. For example, if an entity owns load-responsive protective relays at both ends of a transmission line BES Element and only one end of the line tripped due to a stable or unstable power swing according to Requirement R2, Part 2.2, the entity must evaluate the load-responsive protective relays at each end of the identified BES Element (e.g., all terminals for which it owns).

Through a review of compliance monitoring workpapers from the entity’s last audit, the auditor may identify instances where a load-responsive protective relay did not have a determination whether it met PRC-026-1 – Attachment B; if so, the auditor should verify the entity completed the determination in the current compliance monitoring period in accordance with Requirement R2.

Auditor Notes:

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R3 Supporting Evidence and Documentation

- R3.** Each Generator Owner and Transmission Owner shall, within six full calendar months of determining a load-responsive protective relay does not meet the PRC-026-1 – Attachment B criteria, develop a Corrective Action Plan (CAP) to meet one or more of the following:
- The Protection System meets the PRC-026-1 – Attachment B criteria, while maintaining dependable fault detection and dependable out-of-step tripping (if out-of-step tripping is applied at the terminal of the BES Element); or
 - The Protection System is excluded under the PRC-026-1 – Attachment A criteria (e.g., modifying the Protection System so that relay functions are supervised by power swing blocking or using relay systems that are immune to power swings), while maintaining dependable fault detection and dependable out-of-step tripping (if out-of-step tripping is applied at the terminal of the BES Element).
- M3.** The Generator Owner and Transmission Owner shall have dated evidence that demonstrates the development of a CAP in accordance with Requirement R3. Evidence may include, but is not limited to, the following documentation: corrective action plans, maintenance records, settings sheets, project or work management program records, or work orders.

Registered Entity Response (Required):

Question: Did the entity have any load-responsive protective relays, determined through evaluation, that did not meet the PRC-026-1 – Attachment B criteria?

Yes No

If yes, provide a list of such load-responsive protective relays. If auditor is reasonably sure of the entity's 'no' answer, then no further auditing of Requirement R3 is necessary.

Note to Auditor:

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

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 Requested¹:

Provide the following evidence, or other evidence to demonstrate compliance.

Dated documentation such as in Measure M3 (e.g., work management program records), within the compliance monitoring period, demonstrating the development of the CAP(s), if any, so that the Protection System(s) meets the PRC-026-1 – Attachment B criteria and/or that the Protection System is excluded under the PRC-026-1 – Attachment A criteria (e.g., modifying the Protection System so that relay functions are

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supervised by power swing blocking or using relay systems that are immune to power swings), while maintaining dependable fault detection and dependable out-of-step tripping (if out-of-step tripping is applied at the terminal of the BES Element).

Registered Entity Evidence (Required):

The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found.

| File Name | Document Title | Revision or Version | Document Date | Relevant Page(s) or Section(s) | Description of Applicability of Document |
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to PRC-026-1, R3

This section to be completed by the Compliance Enforcement Authority

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| | Interview an entity representative to understand the entity’s process for developing a CAP in accordance with Requirement R3. |
| | Select all, or a sample of, CAP(s), within the compliance monitoring period, where the Protection System(s) did not meet PRC-026-1 – Attachment B criteria. |
| | For the selected CAP(s), verify that each selected CAP documentation contains actions and a timetable to allow the Protection System(s) to meet PRC-026-1 – Attachment B criteria and/or the Protection System to be excluded under the PRC-026-1 – Attachment A criteria (e.g., modifying the Protection System so that relay functions are supervised by power swing blocking or using relay systems that are immune to power swings), while maintaining dependable fault detection and dependable out-of-step tripping (if out-of-step tripping is applied at the terminal of the BES Element). |
| | For the selected CAP(s), verify that each selected CAP was developed within six calendar months of identifying a load-responsive protective relay that did not meet PRC-026-1 – Attachment B criteria. |
| Note to Auditor: Through a review of compliance monitoring workpapers from the entity’s last audit, the auditor may identify instances where a CAP was in development; if so, the auditor should verify the CAP’s development was completed during the current compliance monitoring period in accordance with Requirement R3. | |

Auditor Notes:

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R4 Supporting Evidence and Documentation

- R4.** Each Generator Owner and Transmission Owner shall implement each CAP developed pursuant to Requirement R3 and update each CAP if actions or timetables change until all actions are complete.
- M4.** The Generator Owner and Transmission Owner shall have dated evidence that demonstrates implementation of each CAP according to Requirement R4, including updates to the CAP when actions or timetables change. Evidence may include, but is not limited to, the following documentation: corrective action plans, maintenance records, settings sheets, project or work management program records, or work orders.

Registered Entity Response (Required):

Question: Did the entity develop any CAPs pursuant to Requirement R3?

Yes No

If yes, provide a list of such CAPs. If auditor is reasonably sure of the entity's 'no' answer, then no further auditing of the Requirement is necessary.

Note to Auditor:

[Note: A separate spreadsheet or other document may be used. If so, provide the document reference below.]

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 Requestedⁱ:

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| Provide the following evidence, or other evidence to demonstrate compliance. |
| Dated documentation such as in Measure M4 (e.g., work management program records), within the compliance monitoring period, demonstrating the implementation of the CAP(s), if any, that were developed pursuant to Requirement R3. |

Registered Entity Evidence (Required):

| The following information is requested for each document submitted as evidence. Also, evidence submitted should be highlighted and bookmarked, as appropriate, to identify the exact location where evidence of compliance may be found. | | | | | |
|---|-----------------------|----------------------------|----------------------|---------------------------------------|---|
| File Name | Document Title | Revision or Version | Document Date | Relevant Page(s) or Section(s) | Description of Applicability of Document |
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Audit Team Evidence Reviewed (This section to be completed by the Compliance Enforcement Authority):

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Compliance Assessment Approach Specific to PRC-026-1, R4

This section to be completed by the Compliance Enforcement Authority

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| | Interview an entity representative to understand the entity’s process for implementing a CAP. For example, the updating the CAP’s actions and timetables and/or evidence of completing actions according to the CAP’s timetable to demonstrate implementation. |
| | Select all, or a sample, of the CAP(s) within the compliance monitoring period. |
| | For each CAP selected, verify that the CAP was implemented or is being implemented. |

Note to Auditor: Auditors may use their professional judgment in selecting the CAPs for audit testing. The auditor may consider verifying that actions or activities prescribed by the CAP were actually completed by the entity.

Through a review of compliance monitoring workpapers from the entity’s last audit, the auditor may identify instances where a CAP was being implemented, but not completed; if so, the auditor should verify the CAP’s implementation remains ongoing or was completed during the current compliance monitoring period in accordance with Requirement R4.

The auditor should be aware that a CAP may be considered complete if the problem for which the CAP anticipated resolving was remedied by some other action. For example, a system configuration change that allowed the Protection System to meet the PRC-026-1 – Attachment B criteria or that the Protection System was excluded under the PRC-026-1 – Attachment A criteria (e.g., modifying the Protection System so that relay functions are supervised by power swing blocking or using relay systems that are immune to power swings), while maintaining dependable fault detection and dependable out-of-step tripping (if out-of-step tripping is applied at the terminal of the BES Element).

Auditor Notes:

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Additional Information:

Reliability Standard

To be inserted by RSAW developer prior to posting of this RSAW associated with the enforceable date of this Reliability Standard.

Sampling Methodology

To be inserted by RSAW developer prior to posting of this RSAW associated with the enforceable date of this Reliability Standard, if applicable.

Regulatory Language

To be inserted by NERC Legal prior to posting of this RSAW associated with the enforceable date of this Reliability Standard.

Selected Glossary Terms

To be inserted by RSAW developer prior to posting of this RSAW associated with the enforceable date of this Reliability Standard, if applicable.

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Revision History for RSAW

| Version | Date | Reviewers | Revision Description |
|---------|------------|------------------------------------|---|
| 1 | 05/23/2014 | RSAW Task Force | New RSAW – Draft 1 of the Standard |
| 2 | 9/8/2014 | NERC Compliance, NERC Standards | Updated to reflect changes to Requirements and Measures in Draft 2 of the Standard. |
| 3 | 11/12/2014 | NERC Compliance, NERC Standards | Updated to reflect changes to Requirements and Measures in Draft 3 of the Standard. |

ⁱ 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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