

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

## TOP-009-1 – Knowledge of Composite Protection Systems and Remedial Action Schemes and Their Effects

*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:** [On-site Audit | Off-site Audit | Spot Check]  
**Names of Auditors:** Supplied by CEA

### Applicability of Requirements

	BA	DP	GO	GOP	IA	LSE	PA/PC	PSE	RC	RP	RSG	TO	TOP	TP	TSP
R1													X		
R2	X														
R3				X											

### Legend:

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

<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.

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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			

Req.	Areas of Concern

Req.	Recommendations

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 Transmission Operator shall ensure that its personnel responsible for Reliable Operation of its Transmission Operator Area have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes (RAS) that are necessary to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in order to maintain the reliability of the BES.
  
- M1.** Each Transmission Operator shall have evidence that demonstrates the knowledge according to Requirement R1. Evidence may include, but is not limited to, the following: training (including the effects on the BES), operating guides, manuals, procedures, output of operational tools (e.g., databases or analysis programs), or outcomes of analyses, monitoring, and assessments that identify the impacts on the BES.

**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>:**

<b>Provide the following evidence, or other evidence to demonstrate compliance.</b>
Provide evidence, such as training, operating guides, manuals, procedures, output of operational tools, or outcomes of analyses, monitoring and assessments, that the entity’s personnel have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes necessary to perform its Operational Planning Analysis, Real-time monitoring, and Real-time Assessments.

**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

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


**Compliance Assessment Approach Specific to TOP-009-1, R1**

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

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For all, or a sample, review evidence and verify that the entity’s personnel have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes necessary to perform its Operational Planning Analysis, Real-time monitoring, and Real-time Assessments.

**Note to Auditor:** Auditors shall use their professional judgment to determine whether the Transmission Operator personnel have the required knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes necessary to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The knowledge of operational functionality and effect on the BES for Composite Protection Systems may include, but is not limited to: 1) location; 2) intended function; 3) how they are applied; 4) trip for out of section faults; 5) failure to trip for in section faults; 6) susceptibility to trip on load; 7) impact on load limits; 8) impact when failed or out of service; and 9) function for loss of inputs. For Remedial Action Schemes it may include, but is not limited to: 1) location; 2) intended function; 3) how they are applied; 4) failure to operate when intended; or 5) operates when not intended. If documentation of training is provided, the training should be specific to the operational functionality and effects of Composite Protection Systems and Remedial Action Schemes on the BES necessary for the entity to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. If necessary, auditors may interview applicable Transmission Operator personnel that are required to have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes to obtain reasonable assurance that the required knowledge exists.

**Auditor Notes:**

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**R2 Supporting Evidence and Documentation**

- R2.** Each Balancing Authority shall ensure its personnel responsible for Reliable Operation of its Balancing Authority Area have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes (RAS) that are necessary to perform its Real-time monitoring in order to maintain generation-Load-Interchange balance.
- M2.** Each Balancing Authority shall have evidence that demonstrates the knowledge according to Requirement R2. Evidence may include, but is not limited to, the following: training (including the effects on the BES), operating guides, manuals, procedures, output of operational tools (e.g., databases or analysis programs), or outcomes of Real-time monitoring that identify the impacts on the BES.

**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>:**

<b>Provide the following evidence, or other evidence to demonstrate compliance.</b>
Provide evidence, such as training, operating guides, manuals, procedures, output of operational tools, or outcomes of monitoring, that the entity’s personnel have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes necessary to perform its Real-time monitoring.

**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

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


**Compliance Assessment Approach Specific to TOP-009-1, R2**

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

	For all, or a sample, review evidence and verify that the entity’s personnel have knowledge of operational
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functionality and effects of Composite Protection Systems and Remedial Action Schemes necessary to perform its Real-time monitoring.

**Note to Auditor:** Auditors shall use their professional judgment to determine whether the Balancing Authority personnel have the required knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes necessary to perform Real-time monitoring to maintain generation-Load-Interchange balance. The knowledge of operational functionality and effect on the BES for Composite Protection System and Remedial Action Schemes may include, but is not limited to, what the intended function is, how they are applied, how they affect the Real-time operation of generating units, and whether it functions as expected or fails to operate. If documentation of training is provided, the training should be specific to the operational functionality and effects of Composite Protection Systems and Remedial Action Schemes on the BES necessary for the entity to perform Real-time monitoring to maintain generation-Load-Interchange balance. If necessary, auditors may interview applicable Balancing Authority personnel that are required to have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes to obtain reasonable assurance that the required knowledge exists.

**Auditor Notes:**

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**R3 Supporting Evidence and Documentation**

**R3.** Each Generator Operator shall ensure its personnel responsible for Reliable Operation of its generating Facilities have knowledge of operational functionality and effects of Composite Protection Systems and RASs necessary to operate its generating Facilities in order to maintain BES reliability.

**M3.** Each Generator Operator shall have evidence that demonstrates the knowledge according to Requirement R3. Evidence may include, but is not limited to, the following: training (including the effects on the Generator Operator area), operating guides, manuals, procedures, interconnection agreements or studies, or access to third-party documentation.

**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:**

<b>Provide the following evidence, or other evidence to demonstrate compliance.</b>
Provide evidence, such as training, operating guides, manuals, procedures, interconnection agreements or studies, or access to third-party documentation, that the entity’s personnel have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes necessary to operate its generating Facilities.

**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

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


**Compliance Assessment Approach Specific to TOP-009-1, R3**

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

	For all, or a sample, review evidence and verify that the entity’s personnel have knowledge of operational
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functionality and effects of Composite Protection Systems and Remedial Action Schemes necessary to operate its generating Facilities.

**Note to Auditor:** Auditors shall use their professional judgment to determine whether the Generator Operator personnel have the required knowledge of Composite Protection Systems and Remedial Action Schemes necessary to operate its generating facilities. The knowledge of operational functionality and effect on the BES for Composite Protection System and Remedial Action Schemes may include, but is not limited to, what the intended function is, how they are applied, and whether it functions as expected or fails to operate. If documentation of training is provided, the training should be specific to the operational functionality and effects of Composite Protection Systems and Remedial Action Schemes on the BES necessary for the entity to operate its generating Facilities. If necessary, auditors may interview applicable Generator Operator personnel that are required to have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes to obtain reasonable assurance that the required knowledge exists.

**Auditor Notes:**

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**Additional Information:**

**Reliability Standard**

*The RSAW developer should provide the following information without hyperlinks. Update the information below as appropriate.*

The full text of STD-OXX-N may be found on the NERC Web Site (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 Web Site.

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

Capitalized terms in the Reliability Standard refer to terms in the NERC Glossary, which may be found on the NERC Web Site.

**Sampling Methodology [If developer deems reference applicable]**

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 (see NERC website), 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 [If developer deems applicable]**

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

**Composite Protection Systems** – The total complement of Protection System(s) that function collectively to protect an Element. Backup protection provided by a different Element’s Protection System(s) is excluded.

**Element** – Any electrical device with terminals that may be connected to other electrical devices such as a generator, transformer, circuit breaker, bus section, or transmission line. An element may be comprised of one or more components.

**Protection System** –

- Protective relays which respond to electrical quantities,

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- Communications systems necessary for correct operation of protective functions
  - Voltage and current sensing devices providing inputs to protective relays,
  - Station dc supply associated with protective functions (including station batteries, battery chargers, and nonbattery-based dc supply), and
  - Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.
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### Revision History for RSAW

Version	Date	Reviewers	Revision Description
1	08/11/2015	RSAW Task Force, Standard Drafting Team, NERC Compliance Assurance	New Document

### Revision History for RSAW Template

Version	Date	Reviewers	Revision Description
0.9	11/6/2013	RSAW Working Group	Initial Draft
1.0	11/20/2013	CMFG	First Review
1.1	12/1/2014	RSAW TF, CMFG	Minor text changes
1.2	2/17/2014	Jerry Hedrick	Removed Internal Controls approach for additional consideration

<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.