

**Compliance Questionnaire and**

**Reliability Standard Audit Worksheet**

**TOP-006-2 — Monitoring System Conditions**

**Registered Entity:** *(Must be completed by the Compliance Enforcement Authority)*

**NCR Number:** *(Must be completed by the Compliance Enforcement Authority)*

**Applicable Function(s): TOP, BA, GOP, RC**

**Auditors:**

**Disclaimer**

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.

# Subject Matter Experts

Identify your company’s subject matter expert(s) responsible for this Reliability Standard. Include the person's title, organization and the requirement(s) for which they are responsible. Insert additional lines if necessary.

**Response: *(Registered Entity Response Required)***

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| **SME Name** | **Title** | **Organization** | **Requirement** |
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# Reliability Standard Language

**TOP-006-2 — Monitoring System Conditions**

**Purpose:**

To ensure critical reliability parameters are monitored in real-time.

**Applicability:**

Transmission Operators

Balancing Authorities

Generator Operators

Reliability Coordinators

**NERC BOT Approval Date:**

**FERC Approval Date:**

**Reliability Standard Enforcement Date in the United States:**

**Requirements:**

**R1.** Each Transmission Operator and Balancing Authority shall know the status of all generation and

transmission resources available for use.

**R1.1.** Each Generator Operator shall inform its Host Balancing Authority and the Transmission Operator

of all generation resources available for use.

**R1.2.** Each Transmission Operator and Balancing Authority shall inform the Reliability Coordinator and

other affected Balancing Authorities and Transmission Operators of all generation and

transmission resources available for use.

**Describe, in narrative form, how you meet compliance with this requirement: *(Registered Entity Response Required)***

# R1 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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

**Compliance Assessment Approach Specific to TOP-006-2 R1.**

Verify, as a TOP and/or BA, the entity knows the status of all generation and transmission resources available for use.

Verify the GOP has informed its host BA and TOP of all generation resources available for use.

Verify as a TOP and/or BA, the entity has informed its RC and other affected BAs and TOPs of all generation and transmission resources available for use

**Note to Auditor:**

CEAs are to assess compliance for the responsible entity within the context of TOP-006 R1.2 as follows:

1. A BA is the responsible entity for the reporting of generation resources available for use to the appropriate RC and the other affected BAs and TOPs; and

2. A TOP is the responsible entity for the reporting of transmission resources available for use to the appropriate RC and the other affected BAs and TOPs.

1. When auditing the BA, a CEA is to verify that the BA communicated generation resources, and

2. When auditing the TOP, a CEA is to verify that the TOP communicated transmission resources.

This evidence could include, but is not limited to: operator logs, voice recordings and electronic communications. A CEA is to verify the 90 days of historical data retained by the BA and TOP pursuant to the standard (*see* section D. Compliance, subsection 1.3 Data Retention of TOP-006 of Reliability Standard).

To verify compliance for the remainder of the audit period, a CEA may review processes, procedures, or other evidence to demonstrate compliance.

**Detailed notes:**

**R2.** Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor applicable

transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of

rotating and static reactive resources.

**Describe, in narrative form, how you meet compliance with this requirement: *(Registered Entity Response Required)***

# R2 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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

**Compliance Assessment Approach Specific to TOP-006-2 R2.**

\_\_\_Verify that the entity monitored applicable transmission line status, real and reactive power flows, voltage, load‑tap‑changer settings, and status of rotating and static reactive resources.

**Detailed notes:**

**R3.** Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate

technical information concerning protective relays to their operating personnel.

**Describe, in narrative form, how you meet compliance with this requirement: *(Registered Entity Response Required)***

# R3 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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

**Compliance Assessment Approach Specific to TOP-006-2 R3.**

Verify that the entity provided appropriate technical information concerning protective relays to their operating personnel.

**Note to Auditor:**

CEAs are to verify that each RC, TOP and BA provided to its operating personnel the appropriate technical information concerning the protective relays:

1. that are applied in the applicable entity’s area, and

2. that may impact that entity (the RC, TOP or BA), regardless of whether another entity has ownership or maintenance responsibility.

**Detailed notes:**

**R4.** Each Transmission Operator and Balancing Authority shall have information,

including weather forecasts and past load patterns, available to predict the system’s near-term load

pattern.

**Describe, in narrative form, how you meet compliance with this requirement: *(Registered Entity Response Required)***

# R4 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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

**Compliance Assessment Approach Specific to TOP-006-2 R4.**

Verify that the entity has the following information available to predict the system’s near term load

Weather forecasts

Past load patterns

**Detailed notes:**

**R5.** Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use monitoring

equipment to bring to the attention of operating personnel important deviations in operating conditions

and to indicate, if appropriate, the need for corrective action.

**Describe, in narrative form, how you meet compliance with this requirement: *(Registered Entity Response Required)***

# R5 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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

**Compliance Assessment Approach Specific to TOP‑006‑2 R5.**

Verify that the entity is using monitoring equipment which brings to the attention of operating personnel important deviations in operating conditions

(and if appropriate) the need for corrective action.

**Detailed notes:**

**R6.** Each Balancing Authority and Transmission Operator shall use sufficient metering of suitable range, accuracy and sampling rate (if applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations.

**Describe, in narrative form, how you meet compliance with this requirement: *(Registered Entity Response Required)***

# R6 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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

**Compliance Assessment Approach Specific to TOP-006-2 R6.**

\_\_\_Verify that the entity utilizes metering to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations of suitable range, accuracy sampling rate (if applicable).

**Detailed notes:**

**R7.** Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor system frequency.

**Describe, in narrative form, how you meet compliance with this requirement: *(Registered Entity Response Required)***

# R7 Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

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

**Compliance Assessment Approach Specific to TOP-006-2 R7.**

\_\_\_Verify that the entity monitors system frequency.

**Detailed notes:**

# Supplemental Information

**Other ‑** The list of questions above is not all inclusive of evidence required to show compliance with the Reliability Standard. Provide additional information here**, as necessary that** demonstrates compliance with this Reliability Standard.

**Entity** **Response: *(Registered Entity Response)***

# Compliance Findings Summary (to be filled out by auditor)

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| **Req.** | **NF** | **PV** | **OEA** | **NA** | **Statement** |
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**Excerpts from FERC Orders -- For Reference Purposes Only**

**Updated Through October 11, 2011**

**TOP-006-2**

**Order No. 693**

P 1567. The eight Transmission Operations (TOP) Reliability Standards apply to transmission operators, generator operators and balancing authorities. The goal of these Reliability Standards is to ensure that the transmission system is operated within operating limits. Specifically, these Reliability Standards cover the responsibilities and decision-making authority for reliable operations, requirements for operations planning, planned outage coordination, real-time operations, provision of operating data, monitoring of system conditions, reporting of operating limit violations and actions to mitigate such violations. The Interconnection Reliability Operations and Coordination (IRO) group of Reliability Standards complement these proposed TOP Reliability Standards.

P 1652. TOP-006-1 requires operating personnel to continuously monitor essential Bulk-Power System parameters such as line flows, circuit breaker status, generator resources, relays, weather forecasts and frequency to ensure that the facilities do not exceed their operating limits.

P 1659. The Commission approves TOP-006-1 as mandatory and enforceable….

P 1665. Accordingly, the Commission approves Reliability Standard TOP-006-1….

**May 18, 2007, Order on Violation Risk Factors, Docket Nos. RR07-9-000 and RR07-10-000**

P 32. In this category, we address a single Requirement that co-mingles a higher risk reliability objective and a lesser risk reliability objective, for example, the co-mingling of an obligation to perform an action relevant to a reliability objective with an obligation to document the action. The Commission seeks to ensure that the Violation Risk Factor assignment for such Requirements is not watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

P 33. For example, Reliability Standard TOP-006-1, Requirement R3 establishes a transmission operations requirement that each Reliability Coordinator, Transmission Operator, and Balancing Authority provide appropriate technical information concerning protective relays to its operating personnel. The Requirement has both the lower risk administrative objective of providing information and the higher-risk reliability objective of ensuring situational awareness of critical reliability parameters.

P 34. Similarly, Reliability Standard TOP-006-1, Requirement R4 establishes that each Reliability Coordinator, Transmission Operator, and Balancing Authority shall have information, including weather forecasts and past load patterns, available to predict the system’s near-term load pattern. Again, in this Requirement, the administrative objective of having certain information is co-mingled with the reliability objective of accurately predicting load.

P 35. In both examples, NERC assigns the Requirement a “Lower” overall Violation Risk Factor. The Commission believes, in both examples, that an overall Violation Risk Factor assignment of “Medium” to reflect the higher risk associated with the more important reliability objective is appropriate.

**November 16, 2007, Order on Compliance Filing, Docket Nos. RR07-9-003 and RR07-10-003**

P 63. TOP-006-1,Requirement R3states that each reliability coordinator, transmission operator, and balancing authority shall provide appropriate technical information concerning protective relays to its operating personnel.NERC has assigned a “lower” Violation Risk Factor to this Requirement, stating that “appropriate technical information” is ambiguous.

P 65. Further, as stated in the May 2007 Order, the Commission expects consistency within a Reliability Standard. Requirement R3 requires appropriate technical information concerning protective relays be provided by reliability coordinators, transmission operators, and balancing authorities. The Commission views the provision of this information similar to that required in TOP-006-1, Requirement R1, which requires that each transmission operator and balancing authority shall know the status of all generation and transmission resources available for use. The Commission believes each of these Requirements is relevant to ensuring situational awareness, the absence of which was identified as a principal cause of the August 14, 2003 blackout. Further, given that the Commission approved a “medium” Violation Risk Factor assignment for TOP-006, Requirement R1, a “lower” Violation Risk Factor for Requirement R3 is inconsistent. Therefore, the Commission directs NERC to revise the subject Violation Risk Factor to “medium.”

**Order No. 748, 18 CFR Part 40 Mandatory Reliability Standards for Interconnection Reliability Operating Limits, 134 FERC, ¶ 61,213 (March 17, 2011)**

1. Under section 215 of the Federal Power Act (FPA), n1 the Federal Energy Regulatory Commission (Commission) approves three new Interconnection Reliability Operations and Coordination (IRO) Reliability Standards and seven revised Reliability Standards related to Emergency Preparedness and Operations (EOP), IRO, and Transmission Operations (TOP). The proposed Reliability Standards were submitted to the Commission for approval by the North American Electric Reliability Corporation (NERC), which the Commission has certified as the Electric Reliability Organization (ERO) responsible for developing and enforcing mandatory Reliability Standards. n2 These Reliability Standards were designed to prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring that the reliability coordinator has the data necessary to assess its reliability coordinator area during the operations horizon and that it takes prompt action to prevent or mitigate instances of exceeding Interconnection Reliability Operating Limits (IROL). n3 The Commission also approves the addition of two new terms to the NERC Glossary of Terms (NERC Glossary). In addition, the Commission approves NERC's proposed revisions to Reliability Standards EOP-001-1, IRO-002-2, IRO-004-2, IRO-005-3, TOP-003-1, TOP-005-2, and TOP-006-2, which remove requirements for the reliability coordinator to monitor and analyze system operating limits (SOL) n4 other than IROLs.

7. On December 31, 2009, NERC submitted a petition to the Commission (NERC Petition) n13 seeking approval of proposed Reliability Standards IRO-008-1, IRO-009-1, and IRO-010-1a. Under these Reliability Standards, reliability coordinators must analyze and monitor IROLs within their Wide-Area n14 to prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection. These Reliability Standards do not require the reliability coordinator to analyze and monitor SOLs other than IROLs or to take preventive action to avoid or mitigate SOL violations within their reliability coordinator area. In developing the proposed IRO Reliability Standards, NERC determined that it was necessary to retire or modify certain requirements from several existing Reliability Standards. Therefore, NERC proposed revisions to Reliability Standards EOP-001-1, n15 IRO-002-2, IRO-004-2, IRO-005-3, TOP-003-1, TOP-005-2, and TOP-006-2, which remove requirements for the reliability coordinator to monitor and analyze SOLs other than IROLs. NERC also requests approval of new definitions "Operational Planning Analysis" and "Real-time Assessment."

21. The Commission hereby adopts its NOPR proposals and approves new Reliability Standards IRO-008-1, IRO-009-1, and IRO-010-1a; revised Reliability Standards EOP-001-1, IRO-002-2, IRO-004-2, IRO-005-3, TOP-003-1, TOP-005-2, and TOP-006-2; and the two new NERC Glossary terms: "Operational Planning Analysis" and "Real-time Assessment." In approving these Reliability Standards, the Commission concludes that they are just, reasonable, not unduly discriminatory or preferential, and in the public interest. These Reliability Standards serve an important reliability purpose in seeking to prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring that the reliability coordinator has the data necessary to assess its reliability coordinator area during the operations horizon and that it takes prompt action to prevent or mitigate instances of exceeding IROLs. Moreover, they clearly identify the entities to which they apply and contain clear and enforceable requirements. Commenters addressed many of the Commission concerns discussed in the NOPR and in some areas the ERO has indicated that it is continuing to study some issues related to the Commission concerns. The Commission encourages the ERO, applying its technical expertise, to continue such reviews and make any necessary changes to applicable Reliability Standards.

70. Separately from NERC's Petition here, on March 5, 2010, NERC submitted the first of two VSL compliance filings (Filing 1) to the Commission's VSL Orders, n40 which contained the VSL assignments for the original set of 83 Reliability Standards approved by the Commission and NUC-001-2. In addition, NERC requested an extension for filing the remaining VSLs until the 3rd quarter of 2010. On July 6, 2010, the Commission issued a Notice of Extension of Time up to and including December 1, 2010, for Filing 2. n41 On December 1, 2010, NERC submitted a compliance filing to the Commission in Docket No. RR08-04-006 (Filing 2). In Filing 2, NERC submitted VSLs both for Reliability Standards that are pending at the Commission and Reliability Standards previously approved by the Commission. Filing 2 includes VSLs to supersede those in NERC's Petition in Docket No. RM10-15-000 for EOP-001-1, IRO-002-2, IRO-004-2, IRO-005-3, IRO-008-1, IRO-009-1, IRO-010-1, IRO-010-1a, TOP-003-1, TOP-005-2, and TOP-006-2. n42

74. The Commission approves new Reliability Standards IRO-008-1, IRO-009-1, and IRO-010-1a; revised Reliability Standards EOP-001-1, IRO-002-2, IRO-004-2, IRO-005-3, TOP-003-1, TOP-005-2, and TOP-006-2; and the two new NERC Glossary terms: "Operational Planning Analysis" and "Real-time Assessment." The three new Reliability Standards (IRO-008-1, IRO-009-1 and IRO-010-1a, governing reliability coordinator analyses, operational actions and data collection) replace parts of the currently-effective Reliability Standards EOP-001-0, IRO-002-1, IRO-004-1, IRO-005-2, TOP-003-0, TOP-005-1 and TOP-006-1 approved by the Commission in Order No. 693.

75. Thus, this final rule does not impose entirely new burdens on the affected entities. With the exception of the addition of Interchange Authority as an applicable entity in IRO-010-1a, the currently-effective standards EOP-001-0, IRO-002-1, IRO-004-1, IRO-005-2, TOP-003-0, TOP-005-1 and TOP-006-1 require actions by the same applicable group of entities. IRO-010-1a clarifies that balancing authorities, generator owners, generator operators, interchange authorities, load-serving entities, reliability coordinators, transmission operators, and transmission owners shall provide data and information, as specified, to the reliability coordinator(s) with which it has a reliability relationship. n45 The requirements of IRO-008-1 and IRO-009-1 provide clarification from existing requirements, dictating the analysis and operational roles of the reliability coordinator.

**Revision History**

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| **Version** | **Date** | **Reviewers** | **Revision Description** |
| 1 | September 2011 | QRSAW WG | Original Document |
| 1 | October 2011 | NERC Legal | Updated Excerpts from FERC Orders from March 31, 2009 through and including October 11, 2011. |
| 1.1 | March 2014 | RSAW Task Force | Added compliance guidance from CAN-0026 and CAN-0028 to RSAW. |
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