

**Reliability Standard Audit Worksheet[[1]](#footnote-2)**

EOP-010-1 – Geomagnetic Disturbance (GMD) Operations

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

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| **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]](#footnote-3):** | 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**

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|  | **BA** | **DP** | **GO** | **GOP** | **IA** | **LSE** | **PA** | **PSE** | **RC** | **RP** | **RSG** | **TO** | **TOP** | **TP** | **TSP** |
| **R1** |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |
| **R2** |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |
| **R3** |  |  |  |  |  |  |  |  |  |  |  |  | X[[3]](#footnote-4) |  |  |

**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 |

Findings

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

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

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| **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):**

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

1. Each Reliability Coordinator shall develop, maintain, and implement a GMD Operating Plan that coordinates GMD Operating Procedures or Operating Processes within its Reliability Coordinator Area. At a minimum, the GMD Operating Plan shall include:
	1. A description of activities designed to mitigate the effects of GMD events on the reliable operation of the interconnected transmission system within the Reliability Coordinator Area.
	2. A process for the Reliability Coordinator to review the GMD Operating Procedures or Operating Processes of Transmission Operators within its Reliability Coordinator Area.
2. Each Reliability Coordinator shall have a current GMD Operating Plan meeting all the provisions of Requirement R1; evidence such as a review or revision history to indicate that the GMD Operating Plan has been maintained; and evidence to show that the plan was implemented as called for in its GMD Operating Plan, such as dated operator logs, voice recordings, or voice transcripts.

**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:[[4]](#endnote-2)

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| **Provide the following evidence, or other evidence to demonstrate compliance.**  |
| Evidence identifying GMD event(s) occurring during the compliance monitoring period to verify implementation of the plan.  |
| Provide documented GMD Operating plan. |
| Evidence of implementation, such as operator logs, voice recordings, or other communications, for times when the GMD Operating Plan was executed during a GMD event. |

Registered Entity Evidence (Required):

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| **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 EOP-010-1, R1

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

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|  | (R1) Confirm the entity’s GMD Operating Plan was developed and maintained in accordance with Requirement R1 as follows:  |
|  | (Part 1.1) Verify the plan includes a description of activities to mitigate the effects of GMD events on the reliable operation of the interconnected transmission system within the Reliability Coordinator Area.  |
|  | (Part 1.2) Verify the plan includes a process for the entity to review the GMD Operating Procedures or Operating Processes of Transmission Operators within its Reliability Coordinator Area.  |
|  | (R1) Verify implementation of plan: * Implementation of plan as called for during GMD events listed. See Note to Auditor below for details regarding assessing implementation of GMD Operating Plan.
* Reviewed the GMD Operating Procedures or Operating Processes as developed in Requirement R3 for Transmission Operators within its Reliability Coordinator Area.
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| **Note to Auditor:** Requirement R1 includes implementation of the GMD Operating Plan. Auditors can gain reasonable assurance the plan was implemented by determining if actions prescribed by the plan have taken place. For example, if the plan calls for certain activities to occur, then auditors could ask for evidence demonstrating the plan has been implemented.  |

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Auditor Notes:

R2 Supporting Evidence and Documentation

1. Each Reliability Coordinator shall disseminate forecasted and current space weather information to functional entities identified as recipients in the Reliability Coordinator's GMD Operating Plan.
2. Each Reliability Coordinator shall have evidence such as dated operator logs, voice recordings, transcripts, or electronic communications to indicate that forecasted and current space weather information was disseminated as stated in its GMD Operating Plan.

**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:i

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| **Provide the following evidence, or other evidence to demonstrate compliance.**  |
| Evidence that forecasted and current space weather information was disseminated to recipients as specified in the GMD Operating Plan, such as operator logs, voice recordings, or other documented communications. |

Registered Entity Evidence (Required):

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| **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 EOP-010-1, R2

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

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|  | Confirm ***current and forecasted*** space weather information was disseminated to functional entities identified as recipients in the GMD Operating Plan.  |
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| **Note to Auditor:** In accordance with the approved Implementation Plan for EOP-010-1, Requirement R2 will not become effective until the first day following retirement of Reliability Standard IRO-005-3.1a. Until that time, the Reliability Coordinator’s obligation for GMD forecast information is contained in IRO-005-3.1a Requirement R3 and the auditor should not assess compliance with EOP-010-1 Requirement R2. |

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Auditor Notes:

R3 Supporting Evidence and Documentation

1. Each Transmission Operator shall develop, maintain, and implement a GMD Operating Procedure or Operating Process to mitigate the effects of GMD events on the reliable operation of its respective system. At a minimum, the Operating Procedure or Operating Process shall include:
	1. Steps or tasks to receive space weather information.
	2. System Operator actions to be initiated based on predetermined conditions.
	3. The conditions for terminating the Operating Procedure or Operating Process.
2. Each Transmission Operator shall have a GMD Operating Procedure or Operating Process meeting all the provisions of Requirement R3; evidence such as a review or revision history to indicate that the GMD Operating Procedure or Operating Process has been maintained; and evidence to show that the Operating Procedure or Operating Process was implemented as called for in its GMD Operating Procedure or Operating Process, such as dated operator logs, voice recordings, or voice transcripts.

**Registered Entity Response (Required):**

**Question:** Does the Transmission Operator Area include a power transformer with a high side wye-grounded winding with terminal voltage greater than 200 kV? [ ]  Yes [ ]  No

If Yes, proceed to the Compliance Narrative below. If No, information supporting the entity’s No response (such as a description of the entity’s process for identifying applicable equipment, an explanation regarding why they are confident there is no such equipment, or other information) that provides the auditor with the necessary reasonable assurance that there is no applicable equipment in the entity’s Area may eliminate further audit testing of this requirement.

[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 Requested:i

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| **Provide the following evidence, or other evidence to demonstrate compliance.**  |
| Evidence identifying GMD event(s) occurring during the compliance monitoring period to verify implementation of the plan.  |
| Provide documented Operating Procedure or Operating Process. |
| Evidence of implementation, such as operator logs, voice recordings, or other communications, for times when the Operating Procedure or Operating Process was executed during a GMD event. |

Registered Entity Evidence (Required):

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| **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 EOP-010-1, R3

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

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|  | (R3) Confirm the Operating Procedure or Operating Process was developed and maintained to mitigate the effects of GMD events and: |
|  | (Part 3.1) Included Steps or tasks to receive space weather information |
|  | (Part 3.2) Included System Operator actions to be initiated based on predetermined conditions. |
|  | (Part 3.3) Included the conditions for terminating the Operating Procedure or Operating Process. |
|  | (R3) Verify implementation of the Operating Procedure or Operating Process (see note below) |
|  | (R3.2) Verify System Operator actions were initiated based on predetermined conditions. |
|  | (R3.3) Verify the Operating Procedure or Operating Process was terminated at specified conditions. |
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| **Note to Auditor:** Requirement R3 includes implementation of the GMD Operating Procedure or Operating Process. Auditors can gain reasonable assurance of implementation by determining if specific actions prescribed by the Operating Procedure or Operating Process have taken place. For example, if the procedure calls for an operator to take an action, then auditors could ask for evidence demonstrating that the action occurred, such as drills. Otherwise, procedure availability, training records, operator knowledge, and/or a dry-run walk-through of the procedure could provide assurance of implementation. Requirement is not applicable ifTransmission Operator Area does not include a power transformer with a high side wye-grounded winding with terminal voltage greater than 200 kV. |

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Auditor Notes:

Additional Information:



Reliability Standard

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

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

Regulatory Background

In [Order No. 779](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Order779_GMD_RM12-22_20130516.pdf), FERC directed NERC to develop Reliability Standards that address the impact of geomagnetic disturbances (GMD) on the reliable operation of the Bulk-Power System.[[5]](#footnote-5) FERC directed that the development of the Reliability Standards be accomplished in two stages, the first submission of a Reliability Standard within six months of the effective date of the order and a second submission within eighteen months of the effective date of the order.

On November 14, 2013, NERC petitioned FERC to approve Reliability Standard EOP-010-1. In [Order No. 797](http://www.nerc.com/FilingsOrders/us/FERCOrdersRules/Final%20Rule%20on%20GMD.pdf), FERC approved Reliability Standard EOP-010-1 on June 19, 2014.[[6]](#footnote-6) Reliability Standard EOP-010-1 addresses the first part of the FERC directive by mitigating the effects of GMD on the Bulk-Power system by requiring responsible entities to implement Operating Plans and Operating Procedures or Processes.

**Order No. 797**

P1 Pursuant to section 215 of the Federal Power Act (FPA),the Commission approved Reliability Standard EOP-010-1 (Geomagnetic Disturbance Operations). NERC submitted the Reliability Standard for Commission approval in response to a Commission directive in Order No. 779. The Reliability Standard is designed to mitigate the effects of GMD on the Bulk-Power System by requiring responsible entities to implement Operating Plans and Operating Procedures or Processes. The Commission also approves the associated violation risk factors and violation severity levels, implementation plan, and effective dates proposed by NERC.

P15 The Commission determined that “the Reliability Standard requires coordination of operational procedures and processes, overseen by a functional entity with a wide-area perspective (i.e., reliability coordinators), which is also consistent with the guidance in Order No. 779.”

P26 The applicability criteria for Reliability Standard EOP-010-1 determine which transmission operators must comply with the Reliability Standard (i.e., those with a power transformer with a high side wye-grounded winding with terminal voltage greater than 200 kV in the transmission operator area). While this criterion excludes transmission operators operating transformers 200 kV and below, the 200 kV threshold does not mean that applicable transmission operators will ignore reactive power supplies operating at 200 kV or below on their systems when developing the required GMD Operating Procedures or Operating Processes. Reliability Standard EOP-010-1, Requirement R3 supports this conclusion because it directs each applicable transmission operator to “develop, maintain, and implement a GMD Operating Procedure or Operating Process to mitigate the effects of GMD events on the reliable operation of its respective system.” Accordingly, because Requirement R3 addresses an applicable transmission operator’s entire system, the requirement is not limited to transformers operating above 200 kV for the purposes of developing GMD Operating Procedures or Operating Processes by applicable transmission operators.

P35 Reliability Standard EOP-010-1 does not mandate the use of space weather to trigger the GMD operational procedures.

Revision History for RSAW

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| **Version** | **Date** | **Reviewers** | **Revision Description** |
| 1 | 12/16/2014 | RSAW Task Force, NERC Compliance, CMFG, ECEMG | New Document |
| 2 | 5/13/2015 | RSAW Task Force, CMFG, ECEMG | Edits to R1, added question and Note to Auditor in R3 concerning TOP applicability. |
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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 ensure 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. [↑](#footnote-ref-2)
2. Compliance Assessment Date(s): The date(s) the actual compliance assessment (on-site audit, off-site spot check, etc.) occurs. [↑](#footnote-ref-3)
3. Requirement R3 applies to Transmission Operators with a Transmission Operator Area that includes a power transformer with a high side wye-grounded winding with terminal voltage greater than 200 kV. [↑](#footnote-ref-4)
4. 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. [↑](#endnote-ref-2)
5. *Reliability Standards for Geomagnetic Disturbances*, 143 FERC ¶ 61,147, *reh’g denied*, 144 FERC ¶ 61,113 (2013). [↑](#footnote-ref-5)
6. *Reliability Standards for Geomagnetic Disturbances*, 143 FERC ¶ 61,209 (June 19, 2014). [↑](#footnote-ref-6)