NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Web Meeting Agenda
Project 2013-03 (Geomagnetic Disturbance) Standard Drafting Team

June 19, 2013 | 10:00 - 11:00 EDT

Dial-in: 866.740.1260 | Access Code: 6251541 | Security Code: 9292
Web Access: www.readytalk.com; enter access code 6251541

Administrative

1. **NERC Antitrust Compliance Guidelines and Public Announcement***
2. **Participant Conduct Policy***
3. **Email List Policy***
4. **Review Meeting Agenda and Objectives**

Agenda Items

1. **Review Proposed Standards Authorization Request***
2. **Review Revised Initial Draft Stage 1 (EOP) Standard and Discuss Outstanding Issues**
3. **Review Next Steps and Project Milestones**
4. **Informal Outreach**
    a. Identify opportunities for industry outreach
5. **Future Meeting Dates**
    a. Conference Call Tuesday, June 25 | 10:00-11:00 EDT (Proposed) to review posting material if needed.

*Background materials included.

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Antitrust Compliance Guidelines

I. General

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC's antitrust compliance policy is implicated in any situation should consult NERC's General Counsel immediately.

II. Prohibited Activities

Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants' expectations as to their future prices or internal costs.
- Discussions of a participant's marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.

- Any other matters that do not clearly fall within these guidelines should be reviewed with NERC's General Counsel before being discussed.

III. Activities That Are Permitted

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC's Certificate of Incorporation, Bylaws, and Rules of Procedure are followed in conducting NERC business.

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.

Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.

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Public Announcements

REMINDER FOR USE AT BEGINNING OF MEETINGS AND CONFERENCE CALLS THAT HAVE BEEN PUBLICLY NOTICED AND ARE OPEN TO THE PUBLIC

Conference call version:
Participants are reminded that this conference call is public. The access number was posted on the NERC website and widely distributed. Speakers on the call should keep in mind that the listening audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

Face-to-face meeting version:
Participants are reminded that this meeting is public. Notice of the meeting was posted on the NERC website and widely distributed. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

For face-to-face meeting, with dial-in capability:
Participants are reminded that this meeting is public. Notice of the meeting was posted on the NERC website and widely distributed. The notice included the number for dial-in participation. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

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Standards Development Process Participant Conduct Policy

I. General

To ensure that the standards development process is conducted in a responsible, timely and efficient manner, it is essential to maintain a professional and constructive work environment for all participants. Participants include, but are not limited to, members of the standard drafting team and observers.

Consistent with the NERC Rules of Procedure and the NERC Standard Processes Manual, participation in NERC's Reliability Standards development balloting and approval processes is open to all entities materially affected by NERC's Reliability Standards. In order to ensure the standards development process remains open and to facilitate the development of reliability standards in a timely manner, NERC has adopted the following Participant Conduct Policy for all participants in the standards development process.

II. Participant Conduct Policy

All participants in the standards development process must conduct themselves in a professional manner at all times. This policy includes in-person conduct and any communication, electronic or otherwise, made as a participant in the standards development process. Examples of unprofessional conduct include, but are not limited to, verbal altercations, use of abusive language, personal attacks or derogatory statements made against or directed at another participant, and frequent or patterned interruptions that disrupt the efficient conduct of a meeting or teleconference.

III. Reasonable Restrictions in Participation

If a participant does not comply with the Participant Conduct Policy, certain reasonable restrictions on participation in the standards development process may be imposed as described below.
If a NERC Standards Developer determines, by his or her own observation or by complaint of another participant, that a participant's behavior is disruptive to the orderly conduct of a meeting in progress, the NERC Standards Developer may remove the participant from a meeting. Removal by the NERC Standards Developer is limited solely to the meeting in progress and does not extend to any future meeting. Before a participant may be asked to leave the meeting, the NERC Standards Developer must first remind the participant of the obligation to conduct himself or herself in a professional manner and provide an opportunity for the participant to comply. If a participant is requested to leave a meeting by a NERC Standards Developer, the participant must cooperate fully with the request.

Similarly, if a NERC Standards Developer determines, by his or her own observation or by complaint of another participant, that a participant's behavior is disruptive to the orderly conduct of a

teleconference in progress, the NERC Standards Developer may request the participant to leave the teleconference. Removal by the NERC Standards Developer is limited solely to the teleconference in progress and does not extend to any future teleconference. Before a participant may be asked to leave the teleconference, the NERC Standards Developer must first remind the participant of the obligation to conduct himself or herself in a professional manner and provide an opportunity for the participant to comply. If a participant is requested to leave a teleconference by a NERC Standards Developer, the participant must cooperate fully with the request. Alternatively, the NERC Standards Developer may choose to terminate the teleconference.

At any time, the NERC Director of Standards, or a designee, may impose a restriction on a participant from one or more future meetings or teleconferences, a restriction on the use of any NERC-administered list server or other communication list, or such other restriction as may be reasonably necessary to maintain the orderly conduct of the standards development process. Restrictions imposed by the Director of Standards, or a designee, must be approved by the NERC General Counsel, or a designee, prior to implementation to ensure that the restriction is not unreasonable. Once approved, the restriction is binding on the participant. A restricted participant may request removal of the restriction by submitting a request in writing to the Director of Standards. The restriction will be removed at the reasonable discretion of the Director of Standards or a designee.

Any participant who has concerns about NERC's Participant Conduct Policy may contact NERC's General Counsel.

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NERC Email List Policy

NERC provides email lists, or "listservs," to NERC committees, groups, and teams to facilitate sharing information about NERC activities; including balloting, committee, working group, and drafting team work, with interested parties. All emails sent to NERC listserv addresses must be limited to topics that are directly relevant to the listserv group's assigned scope of work. NERC reserves the right to apply administrative restrictions to any listserv or its participants, without advance notice, to ensure that the resource is used in accordance with this and other NERC policies.

Prohibited activities include using NERC-provided listservs for any price-fixing, division of markets, and/or other anti-competitive behavior.[1] Recipients and participants on NERC listservs may not utilize NERC listservs for their own private purposes. This may include announcements of a personal nature, sharing of files or attachments not directly relevant to the listserv group's scope of responsibilities, and/or communication of personal views or opinions, unless those views are provided to advance the work of the listserv's group. Use of NERC's listservs is further subject to NERC's Participant Conduct Policy for the Standards Development Process.

- *Updated April 2013*

[1] Please see NERC's Antitrust Compliance Guidelines for more information about prohibited antitrust and anti-competitive behavior or practices. This policy is available at http://www.nerc.com/commondocs.php?cd=2

Standards Authorization Request Form

Request to propose a new or a revision to a Reliability Standard			
Title of Proposed Standard(s):	EOP-010-1 Geomagnetic Disturbance Operations TPL-007-1 Transmission System Planned Performance During Geomagnetic Disturbances		
Date Submitted:			
SAR Requester Information			
Name:	Kenneth Donohoo, Oncor		
Organization:	Chair, Geomagnetic Disturbance Task Force		
Telephone:	NA	E-mail:	NA
SAR Type (Check as many as applicable)			
☒ New Standard ☒ Revision to existing Standard		☐ Withdrawal of existing Standard ☐ Urgent Action	

SAR Information
Purpose (Describe what the standard action will achieve in support of Bulk Electric System reliability.):
To mitigate the risk of instability, uncontrolled separation, and Cascading in the Bulk-Power System as a result of geomagnetic disturbances (GMDs) through application of Operating Procedures and strategies that address potential impacts identified in a registered entity's assessment as directed in FERC Order 779.
Industry Need (What is the industry problem this request is trying to solve?):
While the impacts of space weather are complex and depend on numerous factors, space weather has demonstrated the potential to disrupt the operation of the Bulk-Power System. A technical discussion of the effects of geomagnetic disturbances on the Bulk-Power System and recommended actions for NERC and the industry is provided in the NERC 2012 GMD Report prepared by the GMD Task Force. During a GMD event, geomagnetically-induced current (GIC) flow in transformers may cause half-cycle

SAR Information
saturation, which can increase absorption of Reactive Power, generate harmonic currents, and cause transformer hot spot heating. Harmonic currents may cause protection system Misoperation leading to the loss of Reactive Power sources. The combination of these effects from GIC can lead to voltage collapse.
Brief Description (Provide a paragraph that describes the scope of this standard action.)
The proposed project will develop requirements for registered entities to employ strategies that mitigate risks of instability, uncontrolled separation and Cascading in the Bulk-Power System caused by GMD in two stages as directed in Order 779: 1. Stage 1 standard(s) will require applicable registered entities to develop and implement Operating Procedures with predetermined and actionable steps to take prior to and during GMD events which take into account entity-specific factors that can impact the severity of GMD events in the local area. The Stage 1 standard may also include associated training requirements for System Operators or development of training requirements may be deferred to Stage 2. 2. Stage 2 standard(s) will require applicable registered entities to conduct initial and on-going assessments of the potential impact of benchmark GMD events on their respective system as directed in Order 779. The Second Stage GMD Reliability Standards must identify benchmark GMD events that specify what severity GMD events applicable registered entities must assess for potential impacts. If the assessments identify potential impacts from benchmark GMD events, the Reliability Standards will require the registered entity to develop and implement a plan to mitigate the risk of instability, uncontrolled separation, or Cascading as a result of benchmark GMD events.
Detailed Description (Provide a description of the proposed project with sufficient details for the standard drafting team to execute the SAR. Also provide a justification for the development or revision of the standard, including an assessment of the reliability and market interface impacts of implementing or not implementing the standard action.)
The standards development project will respond to the directives in FERC Order 779 in the timeframe required by the order and draw upon the technical products of the GMD Task Force Phase 2 Project and other relevant information. The GMD Task Force Phase 2 Project addresses the recommendations in the 2012 GMD Report and is focused on improving the capabilities of industry to assess GMD risk and develop appropriate mitigation strategies.

SAR Information

Operating Procedures are the first stage in the Standards project to manage risks associated with GMD events with accompanying training requirements to be addressed in Stage 1 or 2 as determined by the Standards Drafting Team. Specifically, the project will require owners and operators of the Bulk-Power System to develop and implement Operating Procedures and accompanying operator training which may include:

- Procedures for acquiring and disseminating forecasting information and warning messages from the space weather forecasting community to the System Operators;
- Predetermined and actionable steps for System Operators to take prior to and during a GMD event that are tailored to the registered entity's assessment of entity-specific factors such as geography, geology, and system topology;
- Procedures to notify and coordinate with interconnected registered entities for effective action;
- Restoration procedures for applicable elements that may be impacted;
- Minimum training requirements for System Operators; and
- Criteria for discontinuing the use of Operating Procedures at the conclusion of a GMD event.

The second stage of the project will require applicable registered entities to conduct initial and periodic assessments of the risk and potential impact of benchmark GMD events to the Bulk-Power System and develop strategies to mitigate the risk of instability, uncontrolled separation, and Cascading.

- The definition of benchmark GMD events will be based on reviewed technical analysis.
- Periodic update of the assessments will be required to account for new Facilities and modifications to existing Facilities. It is expected that assessments will also consider new information and the use of new or updated tools, including new research on GMDs and the on-going work of the NERC GMD Task Force.
- The standards will require Planning Coordinators and Reliability Coordinators to review plans addressing the potential impact of benchmark GMD events in order to provide a wide-area perspective. The Standard Requirements for plans will be supported by reviewed technical analysis, with consideration of the directives in FERC Order 779.

When both stages have been completed as required by FERC Order 779, all directives in the Order will have been addressed.

Reliability Functions	
The Standard will Apply to the Following Functions (Check each one that applies.)	
☐ Regional Reliability Organization	Conducts the regional activities related to planning and operations, and coordinates activities of Responsible Entities to secure the reliability of the Bulk Electric System within the region and adjacent regions.
☒ Reliability Coordinator	Responsible for the real-time operating reliability of its Reliability Coordinator Area in coordination with its neighboring Reliability Coordinator's wide area view.
☒ Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within a Balancing Authority Area and supports Interconnection frequency in real time.
☐ Interchange Authority	Ensures communication of interchange transactions for reliability evaluation purposes and coordinates implementation of valid and balanced interchange schedules between Balancing Authority Areas.
☒ Planning Coordinator	Assesses the longer-term reliability of its Planning Coordinator Area.
☐ Resource Planner	Develops a >one year plan for the resource adequacy of its specific loads within a Planning Coordinator area.
☒ Transmission Planner	Develops a >one year plan for the reliability of the interconnected Bulk Electric System within its portion of the Planning Coordinator area.
☐ Transmission Service Provider	Administers the transmission tariff and provides transmission services under applicable transmission service agreements (e.g., the pro forma tariff).
☒ Transmission Owner	Owns and maintains transmission facilities.
☒ Transmission Operator	Ensures the real-time operating reliability of the transmission assets within a Transmission Operator Area.
☐ Distribution Provider	Delivers electrical energy to the End-use customer.
☒ Generator Owner	Owns and maintains generation facilities.

Reliability Functions		
☒	Generator Operator	Operates generation unit(s) to provide real and Reactive Power.
☐	Purchasing-Selling Entity	Purchases or sells energy, capacity, and necessary reliability-related services as required.
☐	Market Operator	Interface point for reliability functions with commercial functions.
☐	Load-Serving Entity	Secures energy and transmission service (and reliability-related services) to serve the End-use Customer.

Reliability and Market Interface Principles		
Applicable Reliability Principles (Check all that apply).		
☒	1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.	
☒	2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and Reactive Power supply and demand.	
☒	3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.	
☒	4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented.	
☐	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems.	
☒	6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.	
☒	7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis.	
☐	8. Bulk power systems shall be protected from malicious physical or cyber attacks.	
Does the proposed Standard comply with all of the following Market Interface Principles?		Enter (yes/no)
1. A reliability standard shall not give any market participant an unfair competitive advantage.		Yes
2. A reliability standard shall neither mandate nor prohibit any specific market structure.		Yes
3. A reliability standard shall not preclude market solutions to achieving compliance		Yes

Reliability and Market Interface Principles	
with that standard.	
4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards.	Yes

Related Standards	
Standard No.	Explanation
PER-005-1, R3	Training on GMD events and mitigation procedures will be added to this requirement as a specific element in required operator training unless included in a separate GMD standard.

Related SARs	
SAR ID	Explanation

Regional Variances	
Region	Explanation
ERCOT	
FRCC	
MRO	
NPCC	
RFC	
SERC	
SPP	
WECC	
The intent of the project is to develop continent-wide requirements that allow responsible entities to tailor operational procedures or strategies based on the responsible entity's assessment of entity-specific factors such as geography, geology, and system topology. However, the need for regional variances will be researched throughout the proposed project and may be supported by analysis required to develop stage 2 standards.	

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.

Development Steps Completed

Description of Current Draft

This draft is the first posting of the proposed standard and is being done in conjunction with the posting of the SAR for this project.

Anticipated Actions	Anticipated Date
30-day Formal Comment Period	June 2013
45-day Formal Comment Period with Parallel Initial Ballot	August 2013
Successive Ballot (if needed)	September 2013
Recirculation ballot	November 2013
BOT adoption	November 2013

Effective Dates

The first day of the first calendar quarter that is six months beyond the date that this standard is approved by applicable regulatory authorities. In those jurisdictions where regulatory approval is not required, the standard shall become effective on the first day of the first calendar quarter that is six months beyond the date this standard is approved by the NERC Board of Trustees, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities.

Version History

Version	Date	Action	Change Tracking
1	TBD	Project 2013-03	N/A

Definitions of Terms Used in Standard

This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Glossary.

None

A. Introduction

1. Title: Geomagnetic Disturbance Operations

2. Number: EOP-010-1

3. Purpose: To mitigate the effects of geomagnetic disturbance (GMD) events by implementing Operating Procedures.

4. Applicability:

4.1. Functional Entities:

4.1.1 Reliability Coordinator

4.1.2 Balancing Authority with a Balancing Authority Area that includes any transformer with high side terminal voltage greater than 200 V

4.1.3 Transmission Operator with a Transmission Operator Area that includes any transformer with high side terminal voltage greater than 200 kV

4.1.4 Generator Operator with a Facility or Facilities that include any transformer with high side voltage terminal greater than 200 kV

5. Background:

Geomagnetic disturbance (GMD) events have the potential to negatively impact the reliable operation of interconnected transmission systems. During a GMD event, geomagnetically-induced currents (GIC) may cause transformer hot-spot heating or damage, loss of Reactive Power sources, and protection system Misoperation, the combination of which can lead to voltage collapse and blackout.

B. Requirements and Measures

R1. Each Reliability Coordinator shall have an Operating Plan to mitigate the effects of GMD events within its Reliability Coordinator Area. At a minimum, the Operating Plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

1.1 A description of activities to be employed during GMD events to mitigate the effects of GMD events to the reliable operation of the interconnected transmission system within the Reliability Coordinator Area.

1.2 Reporting requirements among entities within the Reliability Coordinator Area during GMD events.

M1. Each Reliability Coordinator shall have an approved GMD Operating Plan meeting all the provisions of this requirement.

R2. Each Reliability Coordinator shall review its GMD Operating Plan for adequacy within 36 calendar months of the approval date. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

M2. Each Reliability Coordinator shall have evidence that it has reviewed its GMD Operating Plan within the timeframe of the requirement such as a dated review signature sheet or revision history.

R3. Each Transmission Operator and Balancing Authority shall develop, maintain, and implement Operating Procedures to mitigate the effects of GMD events to the reliable operation of its respective system. At a minimum, the Operating Procedures shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

3.1. Steps or tasks for the acquisition and dissemination of space weather information to System Operators.

3.2. Steps or tasks to be employed by System Operators that are coordinated with the Reliability Coordinator's GMD Operating Plan to mitigate the effects on the system from GMD events.

3.3 Predetermined trigger conditions for initiating and terminating steps or tasks in the Operating Procedure. A trigger condition may be based on space weather information, real-time measured data, or other information that indicates GMD conditions.

M3. Each Transmission Operator and Balancing Authority shall have approved GMD Operating Procedures meeting all the provisions of this requirement.

R4. Each Generator Operator shall develop, maintain, and implement Operating Procedures to mitigate the effects of GMD events to the reliable operation of its respective system. At a minimum, the Operating Procedures shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

4.1 Steps or tasks for the acquisition and dissemination of space weather information to System Operators.

4.2 Steps or tasks to be employed by System Operators that are coordinated with the GMD Operating Procedures of the Transmission Operator and Balancing Authority to mitigate the effects on the system from GMD events.

4.3 Predetermined trigger conditions for initiating and terminating steps or tasks in the Operating Procedure. A trigger condition may be based on space weather information, real-time measured data, or other information that indicates GMD conditions.

M4. Each Generator Operator shall have approved GMD Operating Procedures meeting all the provisions of this requirement.

R5. Each Transmission Operator, Balancing Authority, and Generator Operator shall review its GMD Operating Procedures and submit them for coordination and approval at least once every 36 months on a predetermined schedule that is agreed to by the Reliability Coordinator. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

5.1 Each Generator Operator shall review its GMD Operating Procedures and submit them to the Balancing Authority for approval.

5.2 Each Transmission Operator and Balancing Authority shall review its GMD Operating Procedures and submit them to the Reliability Coordinator for approval.

M5. Each Transmission Operator, Balancing Authority, and Generator Operator shall have evidence that it has reviewed its GMD Operating Procedures within the timeframe of the requirement such as a dated review signature sheet or revision history; and correspondence to demonstrate that GMD Operating Procedures were submitted as stated in the requirement such as dated e-mails with receipts or registered mail receipts.

R6. Each Balancing Authority shall determine whether the Generator Operator's submitted GMD Operating Procedures are coordinated and compatible with the Balancing Authority's GMD Operating Procedures and other Generator Operators' GMD Operating Procedures within its Balancing Authority Area. The Balancing Authority shall approve or disapprove, with stated reasons, the Generator Operator's submitted GMD Operating Procedures within 30 calendar days following the receipt of the GMD Operating Procedures from the Generator Operator. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

M6. Each Balancing Authority shall have evidence, such as a review signature sheet and dated emails or registered mail receipts, that it has reviewed, approved or disapproved the GMD Operating Procedures submitted by the Generator Operator provided notifications within the timeframe of the requirement.

R7. Each Reliability Coordinator shall determine whether the GMD Operating Procedures submitted by the Transmission Operator and Balancing Authority are coordinated and compatible with the Reliability Coordinator's GMD Operating Plan and the GMD Operating Procedures submitted by other entities within its Reliability Coordination Area. The Reliability Coordinator shall approve or disapprove, with stated reasons, the GMD Operating Procedures submitted by the Transmission Operator and Balancing Authority within 30 calendar days following receipt. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

M7. Each Reliability Coordinator shall have evidence, such as a review signature sheet and dated emails or registered mail receipts, that it has reviewed, approved or disapproved the GMD Operating Procedures submitted by the Transmission Operator and Balancing Authority and provided notifications within the timeframe of the requirement.

R8. Each Transmission Operator, Balancing Authority, and Generator Operator receiving notification of disapproval of its GMD Operating Procedures shall make the necessary corrections and re-submit its GMD Operating Procedures to the disapproving entity within 30 calendar days of receipt. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

M8. Each Transmission Operator, Balancing Authority, and Generator Operator receiving notification of disapproval of its GMD Operating Procedures shall have evidence that it has made the necessary corrections such as revision history, records of review, or workflow evidence from a document management system; and correspondence to demonstrate that GMD Operating Procedures were re-submitted as stated in the requirement such as dated e-mails with receipts or registered mail receipts.

R9. Each Reliability Coordinator, Transmission Operator, Balancing Authority, and Generator Operator shall have a copy of its approved GMD Operating Procedures in its primary control room and any applicable backup control rooms so that it is available to

its operating personnel prior to its implementation date. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

M9. Each Reliability Coordinator, Transmission Operator, Balancing Authority, and Generator Operator shall have hard copies or electronic copies of its approved GMD Operating Procedure as stated.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, "Compliance Enforcement Authority" means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Reliability Coordinator, Transmission Operator, Balancing Authority, and Generator Operator shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The responsible entities shall retain documentation as evidence for 3 years.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints Text

1.4. Additional Compliance Information

None

Table of Compliance Elements

R #	Time Horizon	VRF	Violation Severity Levels			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Operations Planning	Medium	N/A	N/A	The Reliability Coordinator's GMD Operating Plan failed to include one of the elements listed in Requirement R1 parts 1.1 and 1.2.	The Reliability Coordinator did not have a GMD Operating Plan to mitigate the effects of GMD OR The Reliability Coordinator's GMD Operating Plan failed to include any elements listed in Requirement R1 parts 1.1 and 1.2.
R2	Operations Planning	Medium	The Reliability Coordinator reviewed its GMD Operating Plan more than 36 months, but less than 39 months, since the approval date.	The Reliability Coordinator reviewed its GMD Operating Plan more than 39 months, but less than 42 months, since the approval date.	The Reliability Coordinator reviewed its GMD Operating Plan more than 42 months since the approval date.	The Reliability Coordinator did not review its GMD Operating Plan
R3	Operations Planning	Medium	N/A	The responsible entity's GMD Operating Procedures	The responsible entity's GMD Operating Procedures	The responsible entity did not have Operating Procedures to mitigate

				failed to include one element in parts 3.1 through 3.3.	failed to include two or more elements in parts 3.1 through 3.3.	the effects of GMD.
R4	Operations Planning	Medium	N/A	The responsible entity's GMD Operating Procedures failed to include one element in parts 4.1 through 4.3.	The responsible entity's GMD Operating Procedures failed to include two or more elements in parts 4.1 through 4.3.	The responsible entity did not have Operating Procedures to mitigate the effects of GMD.
R5	Operations Planning	Medium	The responsible entity reviewed its GMD Operating Procedures and submitted them for approval more than 36 months, but less than 39 months, since the last approval date.	The responsible entity reviewed its GMD Operating Procedures and submitted them for approval more than 39 months, but less than 42 months, since the last approval date.	The responsible entity reviewed its GMD Operating Procedures and submitted them for approval more than 42 months since the last approval date.	The responsible entity did not review its GMD Operating Procedures and submit them for approval.
R6	Operations Planning	Medium	The Balancing Authority reviewed and approved or disapproved the Generator Operator's submitted GMD Operating Procedures more than 30 calendar days, but less than 45 calendar days, following receipt from the Generator	The Balancing Authority reviewed and approved or disapproved the Generator Operator's submitted GMD Operating Procedures more than 45 calendar days, but less than 60 calendar days, following receipt from the Generator	The Balancing Authority reviewed and approved or disapproved the Generator Operator's submitted GMD Operating Procedures more than 60 calendar days following receipt from the Generator Operator.	The Balancing Authority did not review and approve or disapprove the Generator Operator's submitted GMD Operating Procedures.

			Operator.	Operator.		
R7	Operations Planning	Medium	The Reliability Coordinator reviewed and approved or disapproved the submitted GMD Operating Procedures more than 30 calendar days, but less than 45 calendar days, following receipt.	The Reliability Coordinator reviewed and approved or disapproved the submitted GMD Operating Procedures more than 45 calendar days, but less than 60 calendar days, following receipt.	The Reliability Coordinator reviewed and approved or disapproved the submitted GMD Operating Procedures more than 60 calendar days following receipt.	The Reliability Coordinator did not review and approve or disapprove the submitted GMD Operating Procedures.
R8	Operations Planning	Medium	The responsible entity made corrections and re-submitted its GMD Operating Procedures to the disapproving entity more than 30 calendar days, but less than 45 calendar days, following receipt of disapproval notification.	The responsible entity made corrections and re-submitted its GMD Operating Procedures to the disapproving entity more than 45 calendar days, but less than 60 calendar days, following receipt of disapproval notification.	The responsible entity made corrections and re-submitted its GMD Operating Procedures to the disapproving entity more than 60 calendar days following receipt of disapproval notification.	The responsible entity did not make corrections to its disapproved GMD Operating Procedures and resubmit them to the disapproving entity.
R9	Operations Planning	Medium	N/A	N/A	N/A	The responsible entity did not have copies of its approved GMD Operating Procedures in its primary control room and all backup control rooms if applicable.

D. Regional Variances

None.

E. Interpretations

None.

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.

Development Steps Completed

Description of Current Draft

This draft is the first posting of the proposed standard and is being done in conjunction with the posting of the SAR for this project.

Anticipated Actions	Anticipated Date
30-day Formal Comment Period	June 2013
45-day Formal Comment Period with Parallel Initial Ballot	August 2013
Successive Ballot (if needed)	September 2013
Recirculation ballot	November 2013
BOT adoption	November 2013

Effective Dates

The first day of the first calendar quarter that is six months beyond the date that this standard is approved by applicable regulatory authorities. In those jurisdictions where regulatory approval is not required, the standard shall become effective on the first day of the first calendar quarter that is six months beyond the date this standard is approved by the NERC Board of Trustees, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities.

Version History

Version	Date	Action	Change Tracking
1	TBD	Project 2013-03	N/A

Definitions of Terms Used in Standard

This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Glossary.

None

A. Introduction

1. Title: Geomagnetic Disturbance Operations

2. Number: EOP-010-1

3. Purpose: To mitigate the effects of geomagnetic disturbance (GMD) events by implementing Operating Procedures.

4. Applicability:

4.1. Functional Entities:

4.1.1 Reliability Coordinator

4.1.2 Balancing Authority ~~operating~~with a Balancing Authority Area that includes ~~a Facility or Facilities~~any transformer with high side terminal voltage greater than 200 ~~KV~~V

4.1.3 Transmission Operator with a Transmission Operator Area that includes any transformer with high side terminal voltage greater than 200 kV

4.1.4 Generator Operator ~~operating~~with a Facility or Facilities that include any transformer with high side voltage terminal greater than 200 ~~KV~~kV

5. Background:

Geomagnetic disturbance (GMD) events have the potential to negatively impact the reliable operation of interconnected transmission systems. During a GMD event, geomagnetically-induced currents (GIC) may cause transformer hot-spot heating or damage, loss of Reactive Power sources, and protection system Misoperation, the combination of which can lead to voltage collapse and blackout.

B. Requirements and Measures

R1. Each Reliability Coordinator shall ~~develop, maintain, and implement~~have an Operating ~~Procedures~~Plan to mitigate the effects of GMD events within ~~the~~its Reliability Coordinator Area. At a minimum, the Operating ~~Procedures~~Plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

1.1 A description of ~~the actions~~activities to be employed during GMD events to mitigate the effects of GMD events to the reliable operation of the interconnected transmission system within the Reliability Coordinator Area.

1.2 Reporting requirements ~~for~~among entities within the Reliability Coordinator Area during GMD events.

M1. Each Reliability Coordinator shall have ~~dated and~~an approved GMD Operating ~~Procedures~~Plan meeting all the provisions of this requirement.

R2. Each Reliability Coordinator shall review its GMD Operating Plan for adequacy within 36 calendar months of the approval date. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

M2. Each Reliability Coordinator shall have evidence that it has reviewed its GMD Operating Plan within the timeframe of the requirement such as a dated review signature sheet or revision history.

~~R2.~~R3. Each Transmission Operator and Balancing Authority shall develop, maintain, and implement Operating Procedures to mitigate the effects of GMD events to the reliable operation of its respective system. At a minimum, the Operating Procedures shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

~~2~~3.1. Steps or tasks for the acquisition and dissemination of space weather information to System Operators.

~~2~~3.2. Steps or tasks to be employed by System Operators that are coordinated with the Reliability Coordinator's GMD Operating ~~Procedures~~Plan to mitigate the effects on the system from GMD events. ~~The actions may include, but are not limited to: reduction of equipment loading, increasing reactive reserves, reconfiguration of the system, and Load shedding.~~

~~2.~~3 ~~One or more predetermined triggers.~~3 Predetermined trigger conditions for initiating and terminating steps or tasks in the Operating Procedure. A trigger condition may be based on ~~K-index warnings~~space weather information, real-time measured data, or other information that indicates GMD conditions.

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~~2.4 Exit criteria for the termination of actions in 2.2 when the GMD event has ended.~~

~~M2~~

M3. Each Transmission Operator and Balancing Authority shall have ~~dated and~~ approved GMD Operating Procedures meeting all the provisions of this requirement.

~~R3.~~R4. Each Generator Operator shall develop, maintain, and implement Operating Procedures to mitigate the effects of GMD events to the reliable operation of its respective system. At a minimum, the Operating Procedures shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

~~3~~4.1 Steps or tasks for the acquisition and dissemination of space weather information to System Operators.

~~3~~4.2 Steps or tasks to be employed by System Operators that are coordinated with the GMD Operating Procedures of the Transmission Operator and Balancing Authority to mitigate the effects on the system from GMD events. ~~The steps or tasks may include, but are not limited to: reduction of equipment loading, increasing reactive reserves, and reconfiguration of the system.~~

~~4.~~3.~~3 One or more predetermined triggers~~ Predetermined trigger conditions for initiating and terminating steps or tasks in the Operating Procedure. A trigger condition may be based on ~~K-index warnings~~space weather information, real-time measured data, or other information that indicates GMD conditions.

~~3.4 Exit criteria for the termination of actions in 3.2 when the GMD event has ended.~~

~~M3~~**M4.** Each Generator Operator shall have ~~dated and~~ approved GMD Operating Procedures meeting all the provisions of this requirement.

~~R4.~~R5. Each ~~Reliability Coordinator,~~ Transmission Operator, Balancing Authority, and Generator Operator shall review its GMD Operating Procedures and submit them for coordination and approval at least once every 36 months on a predetermined schedule that is agreed to by the Reliability Coordinator. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

~~M4.~~**5.1** Each Generator Operator shall review its GMD Operating Procedures and submit them to the Balancing Authority for approval.

5.2 Each Transmission Operator and Balancing Authority shall review its GMD Operating Procedures and submit them to the Reliability Coordinator~~,~~ for approval.

M5. Each Transmission Operator, Balancing Authority, and Generator Operator shall have evidence that it has reviewed its GMD Operating Procedures within the timeframe of the requirement such as a dated review signature sheet or revision history; and correspondence to demonstrate that GMD Operating Procedures were submitted as stated in the requirement such as dated e-mails with receipts or registered mail receipts.

R6. Each Balancing Authority shall determine whether the Generator Operator's submitted GMD Operating Procedures are coordinated and compatible with the Balancing Authority's GMD Operating Procedures and other Generator Operators' GMD Operating Procedures within its Balancing Authority Area. The Balancing Authority shall approve or disapprove, with stated reasons, the Generator Operator's submitted GMD Operating Procedures within 30 calendar days following the receipt of the GMD Operating Procedures from the Generator Operator. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

M6. Each Balancing Authority shall have evidence, such as a review signature sheet and dated emails or registered mail receipts, that it has reviewed, approved or disapproved the GMD Operating Procedures submitted by the Generator Operator provided notifications within the timeframe of the requirement.

R7. Each Reliability Coordinator shall determine whether the GMD Operating Procedures submitted by the Transmission Operator and Balancing Authority are coordinated and compatible with the Reliability Coordinator's GMD Operating Plan and the GMD Operating Procedures submitted by other entities within its Reliability Coordination Area. The Reliability Coordinator shall approve or disapprove, with stated reasons, the GMD Operating Procedures submitted by the Transmission Operator and Balancing Authority within 30 calendar days following receipt. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

M7. Each Reliability Coordinator shall have evidence, such as a review signature sheet and dated emails or registered mail receipts, that it has reviewed, approved or disapproved the GMD Operating Procedures submitted by the Transmission Operator and Balancing Authority and provided notifications within the timeframe of the requirement.

R8. Each Transmission Operator, Balancing Authority, and Generator Operator receiving notification of disapproval of its GMD Operating Procedures shall make the necessary corrections and re-submit its GMD Operating Procedures to the disapproving entity

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within 30 calendar days of receipt. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

M8. Each Transmission Operator, Balancing Authority, and Generator Operator receiving notification of disapproval of its GMD Operating Procedures shall have evidence that it has made the necessary corrections such as revision history, records of review, or workflow evidence from a document management system; and correspondence to demonstrate that GMD Operating Procedures were re-submitted as stated in the requirement such as dated e-mails with receipts or registered mail receipts.

~~R5.~~R9. Each Reliability Coordinator, Transmission Operator, Balancing Authority, and Generator Operator shall have a copy of its approved GMD Operating Procedures in its primary control room and any applicable backup control rooms so that it is available to its operating personnel prior to its implementation date. *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

~~M5.~~M9. Each Reliability Coordinator, Transmission Operator, Balancing Authority, and Generator Operator shall have hard copies or electronic copies of its approved GMD Operating Procedure as stated.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

As defined in the NERC Rules of Procedure, "Compliance Enforcement Authority" means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

The Reliability Coordinator, Transmission Operator, Balancing Authority, and Generator Operator shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The responsible entities shall retain documentation as evidence for 3 years.

If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Assessment Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints Text

1.4. Additional Compliance Information

None

Table of Compliance Elements

R #	Time Horizon	VRF	Violation Severity Levels			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Operations Planning	Medium	N/A	N/A	The Reliability Coordinator's GMD Operating ~~Procedures~~Plan failed to include one of the elements listed in Requirement R1 parts 1.1 and 1.2.	The Reliability Coordinator did not have a GMD Operating ~~Procedures~~Plan to mitigate the effects of GMD OR The Reliability Coordinator's GMD Operating ~~Procedures~~Plan failed to include any elements listed in Requirement R1 parts 1.1 and 1.2.
R2	Operations Planning	Medium	The Reliability Coordinator reviewed its GMD Operating Plan more than 36 months, but less than 39 months, since the approval date.	The Reliability Coordinator reviewed its GMD Operating Plan more than 39 months, but less than 42 months, since the approval date.	The Reliability Coordinator reviewed its GMD Operating Plan more than 42 months since the approval date.	The Reliability Coordinator did not review its GMD Operating Plan

~~R2~~R3	Operations Planning	Medium	~~The responsible entity's GMD Operating Procedures failed to include one elements in parts 2.1 through 2.4.~~N/A	The responsible entity's GMD Operating Procedures failed to include ~~two elements~~one element in parts ~~2~~3.1 through ~~2.4~~3.3.	The responsible entity's GMD Operating Procedures failed to include ~~three~~two or more elements in parts ~~2~~3.1 through ~~2.4~~3.3.	The responsible entity did not have Operating Procedures to mitigate the effects of GMD.
~~R3~~R4	Operations Planning	Medium	~~The responsible entity's GMD Operating Procedures failed to include one elements in parts 3.1 through 3.4.~~N/A	The responsible entity's GMD Operating Procedures failed to include ~~two elements~~one element in parts ~~3~~4.1 through 4.3.~~4.~~	The responsible entity's GMD Operating Procedures failed to include ~~three~~two or more elements in parts ~~3~~4.1 through 4.3.~~4.~~	The responsible entity did not have Operating Procedures to mitigate the effects of GMD.
~~R4~~R5	Operations Planning	Medium	The responsible entity reviewed its GMD Operating Procedures and submitted them for approval more than 36 months, but less than 39 months, since the last approval date.	The responsible entity reviewed its GMD Operating Procedures and submitted them for approval more than 39 months, but less than 42 months, since the last approval date.	The responsible entity reviewed its GMD Operating Procedures and submitted them for approval more than 42 months since the last approval date.	The responsible entity did not review its GMD Operating Procedures and submit them ~~to the Reliability Coordinator~~for approval.
R6	Operations Planning	Medium	The Balancing Authority reviewed and approved or disapproved the Generator Operator's submitted GMD	The Balancing Authority reviewed and approved or disapproved the Generator Operator's submitted GMD	The Balancing Authority reviewed and approved or disapproved the Generator Operator's submitted GMD	The Balancing Authority did not review and approve or disapprove the Generator Operator's submitted GMD

			Operating Procedures more than 30 calendar days, but less than 45 calendar days, following receipt from the Generator Operator.	Operating Procedures more than 45 calendar days, but less than 60 calendar days, following receipt from the Generator Operator.	Operating Procedures more than 60 calendar days following receipt from the Generator Operator.	Operating Procedures.
R7	Operations Planning	Medium	The Reliability Coordinator reviewed and approved or disapproved the submitted GMD Operating Procedures more than 30 calendar days, but less than 45 calendar days, following receipt.	The Reliability Coordinator reviewed and approved or disapproved the submitted GMD Operating Procedures more than 45 calendar days, but less than 60 calendar days, following receipt.	The Reliability Coordinator reviewed and approved or disapproved the submitted GMD Operating Procedures more than 60 calendar days following receipt.	The Reliability Coordinator did not review and approve or disapprove the submitted GMD Operating Procedures.
~~R5~~R8	Operations Planning	Medium	~~N/A~~The responsible entity made corrections and re-submitted its GMD Operating Procedures to the disapproving entity more than 30 calendar days, but less than 45 calendar days, following receipt of disapproval notification.	~~N/A~~The responsible entity made corrections and re-submitted its GMD Operating Procedures to the disapproving entity more than 45 calendar days, but less than 60 calendar days, following receipt of disapproval notification.	~~N/A~~The responsible entity made corrections and re-submitted its GMD Operating Procedures to the disapproving entity more than 60 calendar days following receipt of disapproval notification.	The responsible entity did not ~~have copies of~~make corrections to its ~~approved~~disapproved GMD Operating Procedures ~~in its primary control room~~ and ~~all backup control rooms if applicable~~resubmit them to the disapproving entity.

R9	Operations Planning	Medium	N/A	N/A	N/A	The responsible entity did not have copies of its approved GMD Operating Procedures in its primary control room and all backup control rooms if applicable.

D. Regional Variances

None.

E. Interpretations

None.

Notional Schedule (Revised Process)

- 45-day comment and ballot: June 26 – August 9
  - August 19-20: SDT meeting to review comments and revise
- 45-day comment and ballot: August 21 – October 4
  - Week of October 7: SDT meeting to review comments and revise
- 10-day recirculation ballot: October 16 – October 25
- Board of Trustees Approval: November 7

Alternate Schedule

- 30-day comment period: June 27 – July 26
  - Week of July 29: SDT meeting to review comments and revise
- 45-day comment and ballot: August 6 – September 19
  - September 23/24: SDT meeting to review comments and revise
- 10-day recirculation ballot: September 25 – October 4

Or if needed

- *30-day comment and ballot: September 26 – October 25*
- *7-day recirculation ballot*: October 29 – November 4*

- Board of Trustees Approval: November 7

**shortened recirculation ballot requires Standards Committee approval*