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		Revision Number: 4 Revision Date: February 20, 2024
Owner: Manager, Control Room Operations		Approved by: M/LCC Heads
		Review Due Date: February 20, 2026

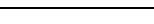
Master/Local Control Center Procedure No. 19

(M/LCC 19)

Geomagnetic Disturbance Operating Plan

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1. References

NERC Reliability Standard EOP-010 - Geomagnetic Disturbance Operations

Master Local Control Center Procedure No. 2 - Abnormal Conditions Alert (M/LCC 2)

NPCC Document C-15 – Procedures for Geomagnetic Disturbances Which Affect Electric Power Systems

2. Purpose

This document is the geomagnetic disturbance (GMD) Operating Plan of ISO New England (ISO). This GMD Operating Plan describes, at a high level, activities designed to mitigate the effects of GMD events on the reliable operation of the interconnected transmission system within the ISO Reliability Coordinator Area (RCA). A summary description of ISO actions and notifications is contained in Attachment A - GMD Action Summary.

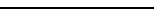
This document also specifies actions to be taken by the Local Control Centers (LCCs) to mitigate the effects of GMD events and serves as the GMD Operating Procedure for each LCC. A summary description of LCC actions is contained in Attachment A - GMD Action Summary. This document reflects coordination of actions to be taken by ISO and the LCCs to mitigate the effects of GMD events on the ISO RCA.

3. Introduction

GMD events have the potential to adversely impact the reliable operation of the ISO RCA. During a GMD event, geomagnetically-induced currents (GIC) may cause transformer hot-spot heating or damage, loss of Reactive Power sources, increased Reactive Power demand, and Protection System misoperation, the combination of which may result in voltage collapse and blackout.

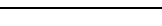
4. Responsibilities

1. ISO and the LCCs are each responsible for developing, maintaining and implementing this procedure to mitigate the effects of GMD events on the reliable operation of the ISO RCA.
2. As part of its normal periodic review of this procedure in coordination with the LCCs, ISO is responsible for verifying that the ISO and LCC actions and processes specified within are coordinated.
3. ISO is responsible for obtaining current and forecasted space weather information and for disseminating it to entities identified as recipients in this

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document, to facilitate coordination and consistent awareness of GMD events within the ISO RCA.

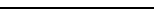
4. Each LCC is responsible for receiving space weather information from ISO and for taking actions specified in this document to address GMD events.
5. Any LCC that may have an associated implementing procedure (e.g., communication procedure, etc.) will keep such procedure consistent and **not** in conflict with this procedure.

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5. Instructions

5.1 ISO Activities Designed to Mitigate Effect of GMD Events

1. The following is a high-level list of the activities designed to mitigate the effects of GMD events on the reliable operation of the ISO RCA.
 - Obtain information regarding current and forecasted space weather pertaining to actual and expected GMD activity from various sources. Such information is reflected in an assigned GMD intensity level index (ISO uses the "K" index, where an index of 5 or 6 indicates a major GMD storm and an index of 7 or greater indicates a severe GMD storm). The primary source for this information is the Solar Terrestrial Dispatch (STD) Geomagnetic Storm Mitigation System (GSMS). The STD GSMS software provides an alert for forecasted and actual GMD events of K 6 or greater. For the purposes of this procedure, a GMD event is an actual or expected GMD storm that is assigned a "K" index of 6 or greater.
 - When ISO is notified of actual or expected GMD activity and that activity is (or is forecast to be) a major GMD storm ("K" index is greater than or equal to 6) or a severe GMD storm (i.e., when the "K" index is greater than or equal to 7), review the GIC activity on the available monitors via SCADA.
 - When ISO is notified of actual or expected GMD activity and that activity is (or is forecast to be) a severe GMD storm (i.e., when the "K" index is greater than or equal to 7), notify entities of GMD space weather information, including intensity (as reflected in the assigned "K" index), duration and probability (for an Alert). In some cases this notification may include a request that an entity take certain action(s). Such entities include:
 - LCCs
 - Designated Entities (DEs) and Demand Designated Entities (DDEs) for New England Generators and Demand Resources
 - Document GMD events in the Control Room Event Logserver and the Morning Report
 - Evaluate conflicting information received regarding a GMD event (if any) and request clarification, as needed, to resolve any discrepancies
 - Evaluate current and forecasted operating information for possible action(s) that may need to be taken to address a GMD event including implementation of procedure M/LCC 2 - Abnormal Conditions Alert
 - Take appropriate action(s) to address a GMD event, consulting with LCCs as necessary

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- Document the action(s) taken to address a GMD event
- Determine when the GMD event is terminated
- Notify entities of GMD event termination

5.2 LCC Activities Designed to Mitigate Effect of GMD Events

1. Receiving space weather information

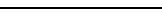
- LCCs receive GMD space weather information from ISO, including intensity (as reflected in the assigned “K” index), duration and probability (for an Alert) for severe GMD storms (forecasted and actual GMD events of K 7 or greater)

2. LCC actions to be initiated based on predetermined conditions

- Each LCC logs receipt of GMD space weather information from ISO
- Each LCC consults and coordinates with ISO regarding actions that ISO and/or the LCC(s) could take to address a GMD event. Such actions could include, but **not** be limited to:
 - Discontinue maintenance and avoid taking lines out-of-service
 - Closely monitor voltage-related contingencies and maintain system voltages
 - Monitor and dispatch Resources to manage system voltage
- Each LCC takes local action to address unusual MVar loadings and notifies ISO of any unusual MVar loading or voltage swings during a GMD event
- Each LCC takes actions to address a GMD event as requested by ISO
- Each LCC may take other actions to address a GMD event, as necessary to preserve the reliability of the Bulk Electric System (BES) within their respective LCC footprint and notify ISO of such actions
- Each LCC logs actions that it takes to address a GMD Event
- The LCC Operator notifies ISO whenever there is a > 20 amps GIC alarm from available GIC monitoring points if SCADA data or ICCP is unavailable.

3. Conditions for terminating this procedure

- The LCCs consider this procedure terminated when they receive notification of the termination of the GMD event from ISO

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6. Review of GMD Plans and Procedures

Review of this document by ISO and each LCC will take place as part of the normal review cycle for M/LCC documents, or more often, as necessary. As part of these reviews, ISO verifies that the ISO and LCC actions and processes specified within are coordinated.

7. Revision History

Rev. No.	Date	Reason
Rev 0	02/11/15	Initial M/LCC document to address requirements of NERC Reliability Standard EOP-010;
Rev 0.1	03/05/15	Corrected Section 5.2 title typo in T.O.C;
Rev 1	01/16/17	Completion of the biennial review by the procedure owner; Added required corporate document identity to all page footers; Section 1 and 2, corrected CROP 24003 title;
Rev 2	12/03/18	Biennial review by the procedure owner; Section 1 References, replaced "CROP 24003" with "MLCC 2" Globally, deleted all reference to CROP 24003; Section 2 Purpose, added references to new Attachment A; Section 5.1, added reference to MLCC 2 to list mitigating GMD actions; Section 8, added new Attachment A;
Rev 2.1	10/23/20	Biennial review by the procedure owner with no intent changes required:
Rev 3	10/13/22	Biennial review by the procedure owner; Added to Section 5.1.1: Contact the VELCO LCC Operator to determine the GIC activity on the available monitors; Added Step 5.2.2.I that the VELCO LCC Operator notifies ISO whenever there is a > 10amps GIC alarm from a VELCO transformer.
Rev 4	02/20/24	Biennial review completed by the procedure owner; Modified Step 5.1.1; Modified Step 5.2.2 G and removed VELCO.

8. Attachments

Attachment A - GMD Action Summary