

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

GMD User Training

October 2020

RELIABILITY | RESILIENCE | SECURITY



- Introduction
- Training Topics:
 - Reporting Schedule
 - ERO Portal (Creating Account, Reporting Confirmation, and Requesting Access to GMD Reporting Application)
 - Reporting Process (Import Devices, Check Events, Import Data, Provide Missing Data Reports)
 - Imports and validations
 - Manual Entry
 - Download Process (Selecting Criteria, Data Packages, Exports)



Introduction

- Understand how the GMD data collection requirement was established
- Who must report?
- What is reported?
- Reporting Deadlines

- FERC Order No. 830 directs NERC to collect GMD data to “improve our collective understanding” of GMD risk
- NERC developed the GMD Data Request with GMD Task Force (GMDTF) and technical committee input
 - In August 2018, NERC Board approved Rules of Procedure Section 1600 data request for collecting GMD data
- Reporting entities must report data annually by June 30
 - First collection deadline June 30, 2021

[The Commission] also direct NERC, pursuant to Sections 1500 and 1600 of the NERC Rules of Procedure, to collect and make GIC monitoring and magnetometer data available. We determine that the dissemination of GIC monitoring and magnetometer data will facilitate a greater understanding of GMD events that, over time, will improve Reliability Standard TPL-007-1. The record in this proceeding supports the conclusion that access to GIC monitoring and magnetometer data will help facilitate GMD research, for example, by helping to validate GMD models.

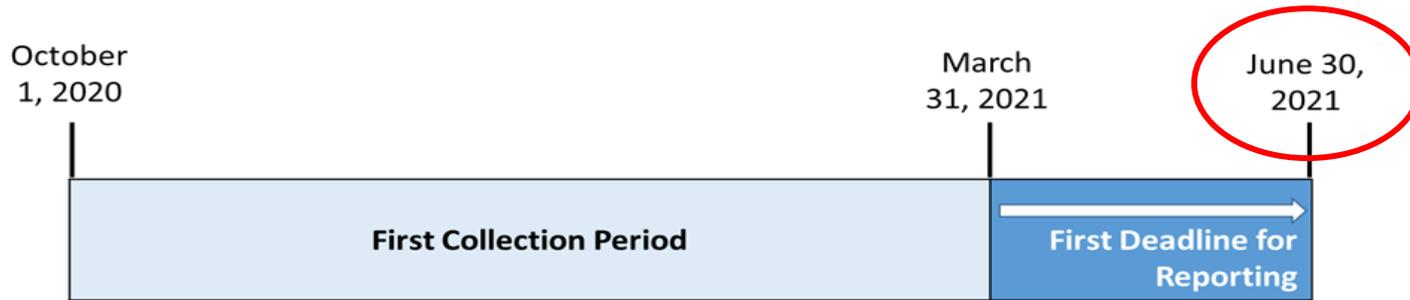
- Order No. 830 P 93

- Transmission Owners (TO) and Generator Owners (GO) must provide information and data as indicated in the data request
 - Registered entities without GMD equipment are required to confirm annually
 - See “Completing the Section 1600 Reporting Confirmation: No GMD Equipment” document available at:
<https://www.nerc.com/pa/RAPA/GMD/Pages/GMDHome.aspx>
- TOs and GOs that collect GIC data or magnetometer data are considered **Reporting Entities** for GMD events specified in the GMD Data Request
- The GMD data request applies to only U.S. registered entities
 - Registered entities in other NERC jurisdictions including Canada are encouraged to participate in order to obtain relevant GMD data for the North American Bulk-Power System.

- Reporting Entities will provide the following types of data for time periods during which GMD events $K_p=7$ or greater
 - GIC data for designated GMD events
 - Geomagnetic field data for designated GMD events
- Continuously-sampled GIC measurements (amps) (e.g., 10-second sample rate) throughout the GMD event
- NERC will designate GMD events of interest in collaboration with NOAA Space Weather Prediction Center (SWPC)
 - On average, 200 $K_p=7$ or greater GMD events occur in 11-year solar cycle

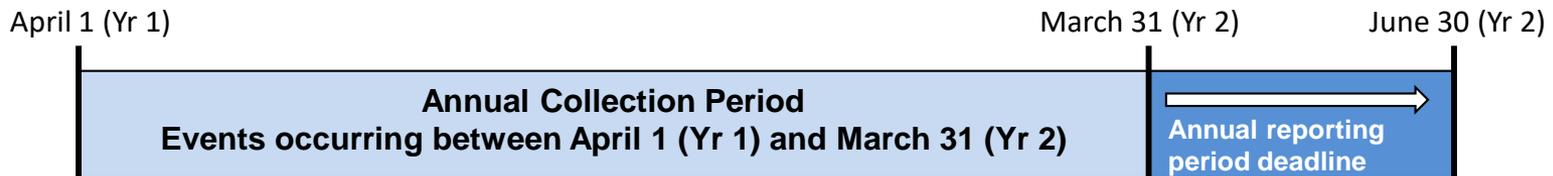
- Reporting for historical events and any 2021 events occurring through March 31 is due by June 30, 2021

First Mandatory Reporting Deadline



First GMD Data Collection Reporting Period and Timeline

- Reporting for GMD Events of Interest must be reported annually by June 30 of each reporting year



Annual GMD Data Collection Reporting Period and Timeline

- NERC's GMD Data web page has instructions and links
- Data Reporting Instruction (DRI) has been developed by NERC with GMDTF support
 - Assists NERC and reporting entities in fulfilling the GMD Data Request reporting requirements
 - Specifies processes, formats, and timelines for data collection
 - NERC Planning Committee (PC) reviewed in January and provided comments

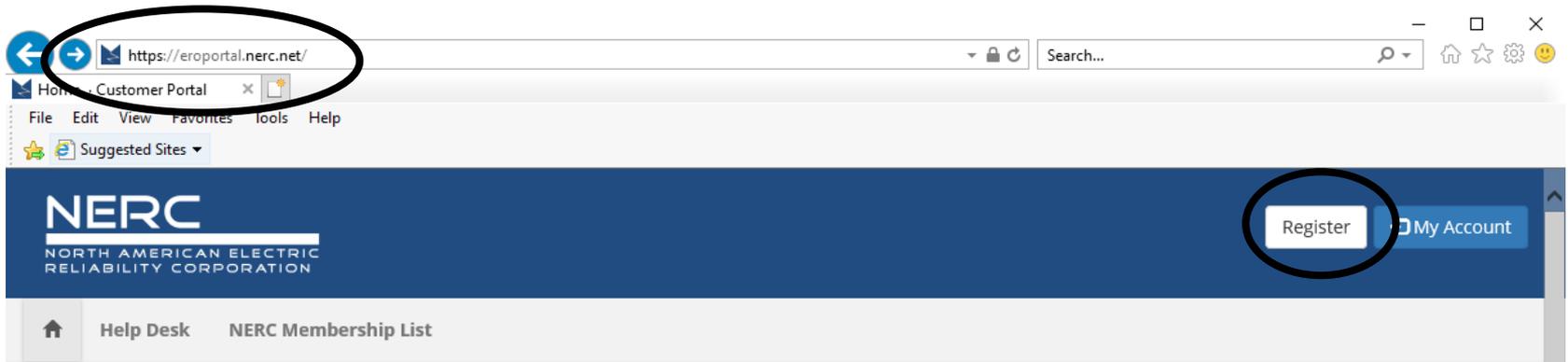
<https://www.nerc.com/pa/RAPA/GMD/Pages/GMDHome.aspx>

The screenshot shows the NERC website's navigation menu on the left, including sections like 'Reliability Assessments', 'Performance Analysis', and 'Geomagnetic Disturbance Data (GMD)'. The main content area displays the title 'Geomagnetic Disturbance Data System' and 'Data Reporting Instructions' for July 2020. A banner at the bottom of the page contains the slogan 'RELIABILITY | RESILIENCE | SECURITY' and four images representing different aspects of the power grid. The NERC logo and contact information are located in the bottom right corner of the page.

ERO Portal: Creating an Account

- Learn how to create an ERO Portal Account
- Learn how Entity Administrators complete the Section 1600 Reporting Confirmation
- Learn how to request access to the GMD Reporting Application

<https://eroportal.nerc.net/>



Welcome to the ERO Portal

The ERO Portal allows new users to register for an account and perform the following functions upon completion:



SELF SERVICE ACCOUNT

Change Password, Update Security
Questions



VIEW MAILING LISTS & RESOURCES

Access to Datastores and
Applications



REQUEST ACCESS

Get Access to Resources

*An ERO Portal account is required to access the GMD reporting application

ERO Portal: Section 1600 Reporting Confirmation

My Entity

Manage Entity User Permissions

This is the landing page for the Entity Administrator to manage the permissions of all users associated with his entity. From this page, the Entity Administrator can associate new users to his entity, add or remove permissions for users to access applications such as: MIDAS, CORES, Align, or give other users the ability to perform the Entity Administrator function.

CORES

The Centralized Organization Registration ERO System (CORES) is a new system in OATI - webCDMS, Guidance - CITS and CRATS into a single, consolidated system. CORES includes:

- A consistent Regional Entity and Registered Entity process
- More control of the future of the registration system
- The ability to capture additional data elements for Coordinated Organizations (MRREs)
- The ability to entities to manage their JROs, CFRs and other registrations
- The ability to capture data elements that need to be integrated with other systems

Entity Application Access Requests

This is the landing page for the Entity Administrator to manage access requests to applications such as MIDAS, CORES and Align. The Entity Administrator will see a list of requests not yet approved that includes the person making the request, the application and role requested and the date of the request. For each request, the Entity Administrator has the option to approve or reject the request.

Section 1600 Reporting Confirmation

The Section 1600 Reporting Confirmation screen lists the data reporting obligations based on the entity's scope(s). An entity scope is defined as the combination of function, region, effective date of registration, regulatory jurisdiction (i.e. country) and inactive date. The Entity Administrator is required to annually confirm whether it meets the reporting criteria for each Section 1600 application listed.

The annual confirmation deadline is January 15; updates may be made to the annual confirmation when an entity's scope(s) changes.

Brief description about reporting confirmation and associated process for annual confirmation for each application and region

- The Section 1600 Reporting Confirmation view is only available to the Entity Administrator
- Process
 - Annual confirmation required by January 15
 - Description of reporting criteria provided for each application
 - Confirmation requested for each region in which the registered entity has a reporting obligation
 - Entity Administrators will be sent reminder e-mails for the next year's annual confirmation, at the beginning of December
 - If Reporting Confirmation is not completed by Jan. 15, reminder will be sent on Feb. 1
- All registered entities with TO and/or GO scope will be required to complete the 2020 Section 1600 Reporting Confirmation for GMD – by close of business on **November 15, 2020**



My Entity

My Entity

My Entity

Manage Entity Users

CORES

Entity Application Access Requests

Section 1600 Reporting Confirmation

Home / My Entity

My Entity

Manage Entity User Permissions

This is the landing page for the Entity Administrator to manage the permissions of all users associated with his entity. From this page, the Entity Administrator can associate new users to his entity, add or remove permissions for users to access applications such as: MIDAS, CORES, Align, or give other users the ability to perform the Entity Administrator function.

Annual Section 1600 Reporting Confirmation

One or more functions (scopes) assigned to this entity apply to data reporting requirements in accordance with Section 1600 of NERC's Rules of Procedure. For each reporting requirement listed below, indicate whether the entity meets the reporting criteria. For clarification of reporting requirements, please contact your regional entity.

⚠ You have not confirmed your section 1600 reporting for the current year. Please complete the form below.

Reporting Applications

Reporting Year

Geomagnetic Disturbance (GMD)

Transmission Owners and Generator Owners that have GIC or Magnetometer devices or have GIC or Magnetometer event data for any GMD event occurring on or after May 1, 2013.

Reporting Obligations

Start Date	End Date	Region	Meets Criteria
12/26/2017		WECC	<input type="radio"/> Yes <input type="radio"/> No

Misoperations Information Data Analysis System (MIDAS)

Transmission Owners, Generator Owners or Distribution Providers.

Reporting Obligations

Start Date	End Date	Region	Meets Criteria
10/24/2019		RF	<input type="radio"/> Yes <input type="radio"/> No
12/26/2017		WECC	<input type="radio"/> Yes <input type="radio"/> No

Submit

Annual Section 1600 Reporting Confirmation

One or more functions (scopes) assigned to this entity apply to data reporting requirements in accordance with Section 1600 of NERC's Rules of Procedure. For each reporting requirement listed reporting criteria. For clarification of reporting requirements, please contact your regional entity.

Your section 1600 reporting obligations have been confirmed for the reporting year.

Reporting Applications

Reporting Year

Geomagnetic Disturbance (GMD)

Transmission Owners and Generator Owners that have GIC or Magnetometer devices or have GIC or Magnetometer event data for any GMD event occurring on or after May 1, 2013.

Reporting Obligations

Start Date	End Date	Region	Meets Criteria
12/26/2017		WECC	<input checked="" type="radio"/> Yes <input type="radio"/> No

Misoperations Information Data Analysis System (MIDAS)

Transmission Owners, Generator Owners or Distribution Providers.

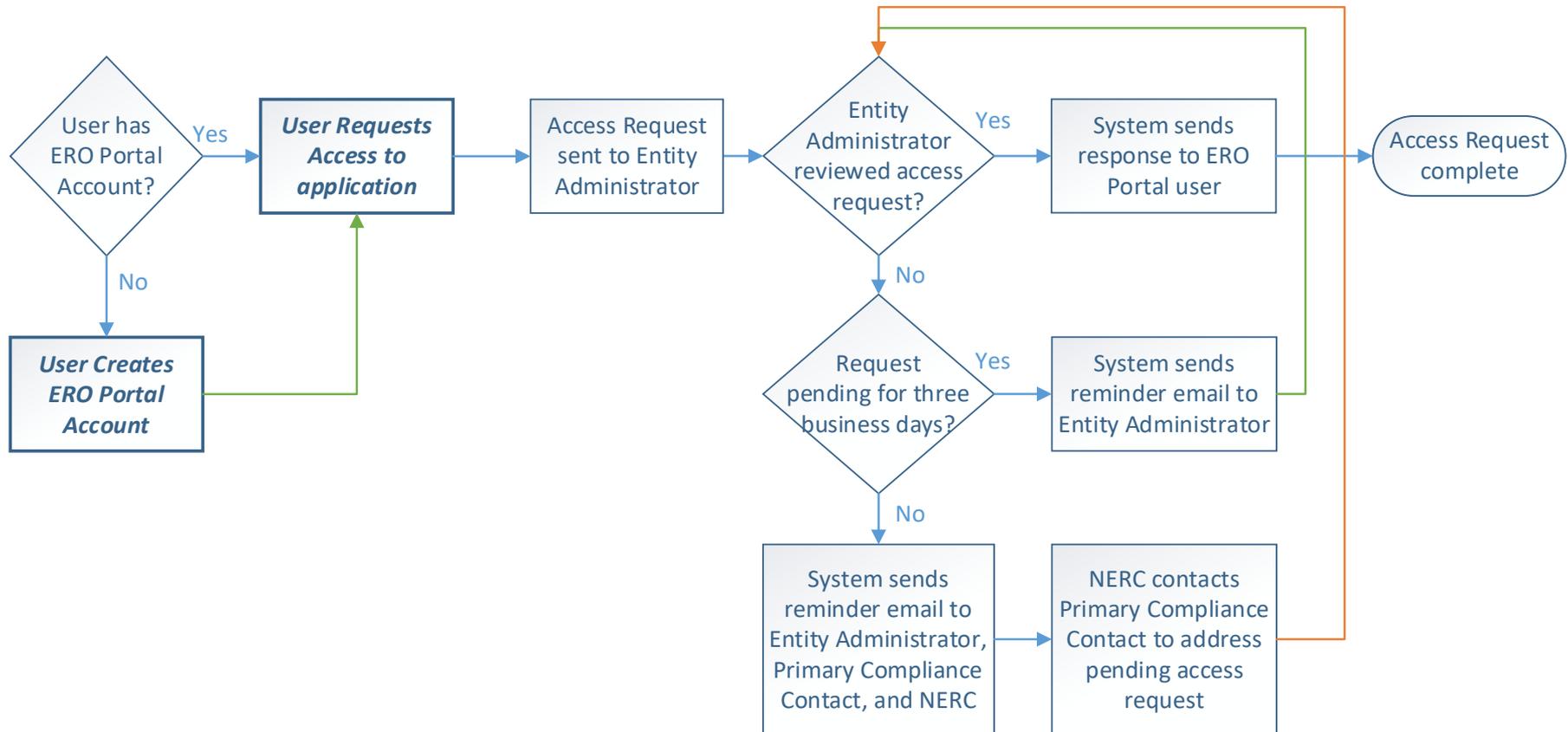
Reporting Obligations

Start Date	End Date	Region	Meets Criteria
10/24/2019		RF	<input type="radio"/> Yes <input checked="" type="radio"/> No
12/26/2017		WECC	<input checked="" type="radio"/> Yes <input type="radio"/> No

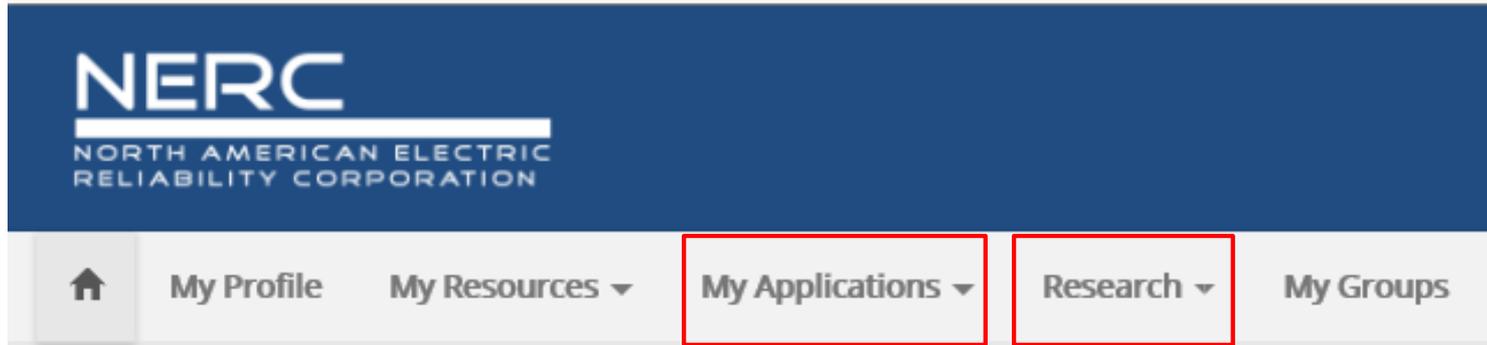
Submit

ERO Portal: Requesting Access to GMD Reporting

Updated Access Request Process



- A user with an ERO Portal account must request permission to access the GMD Reporting application
 - This request is for registered entities who have confirmed that they meet the reporting requirements for GMD
- Process:
 - User logs into the ERO Portal
 - User selects “My Applications” > “Request Application Access”
 - User selects “Create New Application Access Request”
 - User indicates the NCR ID of the entity
 - User selects the permissions level:
 - For submitting data: GMD User
 - For read-only access: GMD Read-Only
 - The request will be sent to the Entity Administrator of the registered entity
 - NERC will not grant a user access to a registered entity’s data, only the Entity Administrator may do so



- Separate menus for requesting access to Resources and Applications
 - Resources – Request access to distribution lists
 - Applications (New) – Request access to an ERO Portal application as a user for a specific entity
- New “Research” menu
 - Will be available to GMD application users (October 2020) and ERO Portal users not associated with a registered entity (mid-2021) to access data download functions of GMD

My Applications

Below is a list of your currently available applications and assigned roles. You may use the the [application access request form](#) to request access to an application or a new role.

Application Role

- Entity Admin
- Align Registered Entity Editor
- Align Registered Entity Reader
- Align Registered Entity Submitter
- CORES User
- GMD Read-Only
- GMD User
- MIDAS Read-Only
- MIDAS User

Less ▾

NCR ↑	Entity	Application Role	Created On ↑	
NCR55585	Align Integration Test Entity 1	GMD User	9/21/2020 7:31 PM	▾
NCR55585	Align Integration Test Entity 1	MIDAS User	9/21/2020 7:31 PM	▾
NCR44444	Align Integration Test 2	GMD User	9/21/2020 7:28 PM	▾
NCR44444	Align Integration Test 2	MIDAS Read-Only	9/21/2020 7:28 PM	▾
NCR55555	Test Company 2-1	Entity Admin	9/21/2020 3:28 PM	▾

Menu

[Application Access Requests](#)

View your past or pending application access requests.

- Displays list of all roles for the user, ability to filter by role type, and menu item to create/check the status of application access requests
- Hyperlink to access request form at the top

My Applications

Below is a list of your currently available applications and assigned roles. You may use the [application access request form](#) to request access to an application or a new role.

Application Role

- Entity Admin
- Align Registered Entity Editor
- Align Registered Entity Reader
- Align Registered Entity Submitter
- CORES User
- GMD Read-Only
- GMD User
- MIDAS Read-Only
- MIDAS User

[Less](#) ▼

Apply

NCR ↑	Entity	Application Role	Created On ↑	
NCR55585	Align Integration Test Entity 1	GMD User	9/21/2020 7:31 PM	▼
NCR44444	Align Integration Test 2	GMD User	9/21/2020 7:28 PM	▼

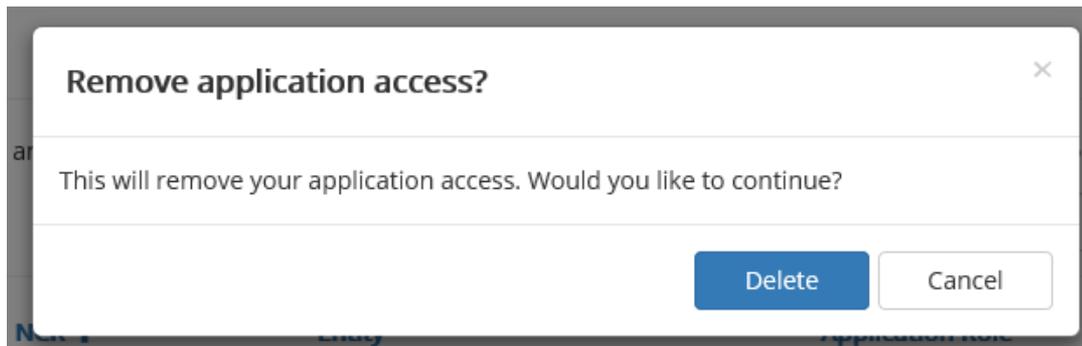
Menu

[Application Access Requests](#)

View your past or pending application access requests.

Ability for User to Remove Access to Application

NCR ↑	Entity	Application Role	Created On ↑	
NCR55585	Align Integration Test Entity 1	GMD User	9/21/2020 7:31 PM	▼
NCR55585	Align Integration Test Entity 1	MIDAS User	9/21/2020 7:31 PM	▼
NCR44444	Align Integration Test 2	GMD User	9/21/2020 7:28 PM	✕ Remove Application Access
NCR44444	Align Integration Test 2	MIDAS Read-Only	9/21/2020 7:28 PM	▼
NCR55555	Test Company 2-1	Entity Admin	9/21/2020 3:28 PM	▼



Selecting “Delete” will remove application access

Selecting “Cancel” will not cancel the action and will not remove application access

Your application access has been successfully removed. Your changes will take effect after logging out.

Request Application Access

[Back to Application Access Requests](#)

Request access to an ERO Portal application by using the form below. Here is a list of applications you may request access to:

Application	Role	Role Description
All Applications	Entity Administrator	This person has read and write access to Align data, GMD data, MIDAS data, and CORES data. In addition this person can make others the Entity Administrator and give others access to Align, GMD, MIDAS and CORES or remove access to those system from others.
ALIGN	Align Registered Entity Editor	This person can create and edit a self-log in Align for the Entity he/she is associated with.
ALIGN	Align Registered Entity Reader	This person can read a self-log in Align for the Entity he/she is associated with.
ALIGN	Align Registered Entity Submitter	This person can create/edit and submit a self-log in Align for the Entity he/she is associated with.
CORES	CORES User	This person can create/edit registration information (including CFRs/JROs) and run registration reports for the entity he/she is associated with
GMD	GMD User	This person can view and submit GMD data and run GMD reports for the entity he/she is associated with.
GMD	GMD Read-Only	This person can view GMD data and run GMD reports for the entity he/she is associated with.
MIDAS Portal	MIDAS User	This person can create/edit and submit MIDAS data and run MIDAS reports for the entity he/she is associated with.
MIDAS Portal	MIDAS Read-Only	This person can view MIDAS data and run MIDAS reports for the entity he/she is associated with.

Entity ■

Requested Application Role ■

Requester Comments

Submit

Entity *

Requested Application Role *

- CORES User
- Entity Admin
- GMD Read-Only
- GMD User
- MIDAS Read-Only
- MIDAS User

Requester Comments

- User selects Entity using search capability
- User selects Application Role
- User may add a comment

Detail – Entity Search and Completed Access Request Form

Lookup Records ✕

Use asterisk (*) wildcard character to search on partial text

NCR5555 ✕ 🔍

✓ Entity Name ↑	NERC Number ↑	Status	Address 1: City	Address 1: State/Province
Test Company 2-1	NCR55555	Active	Atlanta	Georgia

Remove Value Select Cancel

Entity *

Test Company 2-1 ✕ 🔍

Requested Application Role *

GMD User ▼

Requester Comments

Example of GMD User access request

Application Access Requests

Below is the list of submitted application requests. To request access to an ERO Portal application, please use the link below to submit your access request information. Your request will be submitted to the corresponding entity administrator for approval.

[+ Create New Application Access Request](#)

Menu

[Request Application Access](#)

Request access to an ERO Portal application (GMD, CFR Portal or MIDAS)

NERC Number (Entity)	Entity	Requested Application Role	Request Status	Approved By	Rejected By	Created On ↑	Modified On
NCR55555	Test Company 2-1	GMD User	Pending			9/16/2020 5:38 PM	9/16/2020 5:38 PM

- Includes option to Create a New Application Access Request and Request Application Access from the menu on this screen

Receipt of Access Request

Dear Donna Pratt,

This email is to inform you that your application request, as shown below is currently being reviewed and you will be informed via email of the decision.

Name: Donna Pratt
Email Address: donna.pratt@nerc.net
Access Request Date: 09/16/2020
Role Requested: GMD User

Request Status: Pending
Comments: Example of GMD User access request

If you would like to view your access request via the ERO Portal, please click [here](#).

Once you sign on to the ERO Portal, click the drop down arrow to the right of My Applications and choose Request Application Access. After the page loads you will see the pending application requests and you will be able to withdraw this request. If your request does not appear on this page it means the request has been approved or rejected.

Approval e-mail

Dear Donna Pratt,

Your ERO Portal Application Access Request has been approved.

Role Granted: GMD User
Request Status: Approved
Comments: None

You may access the ERO Portal by clicking [here](#)

Link not working? Try pasting this link into your browser:

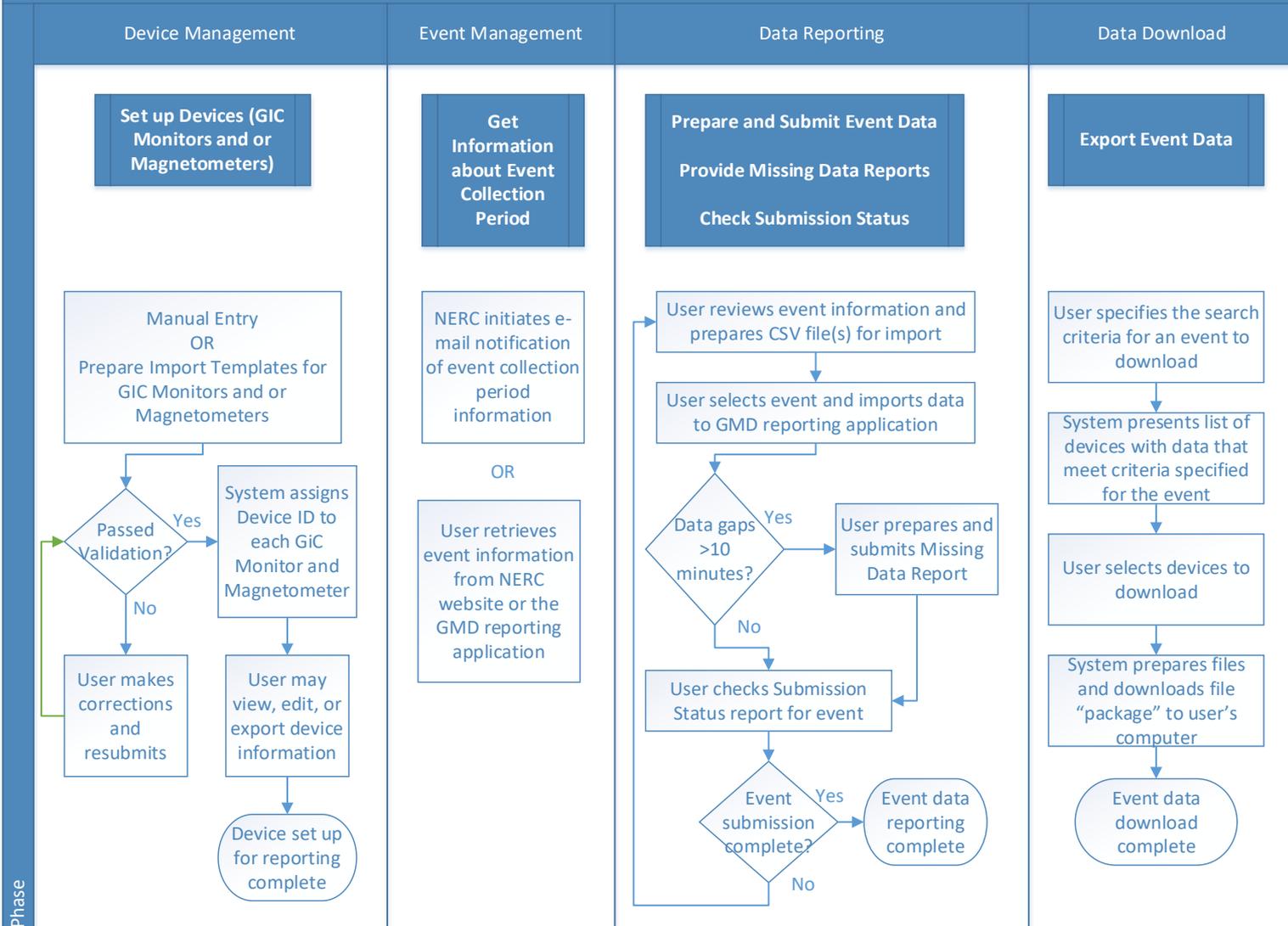
<https://eroportalstg.nerc.net>

The GMD Reporting Process

- There are three types of data to be reported :
 - GMD monitoring equipment (GIC Monitor, Magnetometer)
 - GIC measurement data for designated GMD events
 - Geomagnetic field measurement data for designated GMD events
- Data Reporting Instruction (DRI) chapters describe data fields (format, units, narrative description, etc.) and provide example data

- Event information will be displayed in the data collection application and will be posted on the NERC website on the [GMD page](#)
- Templates for device and data uploads will be available on the [GMD page](#) on nerc.com and on the individual pages in the portal
- Training information will be available on the [GMD Training page](#) on nerc.com
- GMD@nerc.net has been created to allow all GMD questions to be routed to the proper NERC staff

Overview – GMD Reporting Process



<https://www.nerc.com/pa/RAPA/GMD/Pages/GMDHome.aspx>

Geomagnetic Disturbance Data

NERC's GMD data collection program supports ongoing research and analysis of GMD risk. GMD events are caused by the ejection of charged material from the sun and the interaction of this material with space around the earth (atmosphere and magnetosphere). The resulting disturbances in earth's magnetic field have the potential to disrupt operations or cause damage to critical infrastructure, including power systems. Extremely strong GMD events, though rare, can induce strong quasi-dc currents in the electric power grid that could affect system voltages, relay and protection system performance, and the operation and health of some large power transformers.

Through the GMD data collection program, NERC is collection GIC and magnetometer data from reporting entities for designated strong GMD events (Kp = 7 and greater). As specified in FERC Order No. 830, NERC will make collected GIC and magnetometer data available to support ongoing research and analysis.

For more information about GMD, please contact gmd@nerc.net

Click here to report GMD Data: [GMD Reporting Application](#) 

GMD Events

Event ID Number	Kp	Start Date	Start Time (UTC)	End Date	End Time (UTC)
2013E01	7	05/31/2013	15:00	06/01/2013	15:00
2013E02	8	10/02/2013	00:00	10/03/2013	03:00
2015E01	8	03/17/2015	03:00	03/18/2015	06:00
2015E02	8	06/22/2015	03:00	06/23/2015	15:00
2015E03	7	09/11/2015	03:00	09/11/2015	18:00
2015E04	7	09/19/2015	18:00	09/20/2015	18:00
2015E05	7	10/06/2015	18:00	10/09/2015	09:00
2015E06	7	12/20/2015	03:00	12/21/2015	09:00
2017E01	7	05/27/2017	15:00	05/28/2017	15:00
2017E02	8	09/07/2017	21:00	09/09/2017	03:00
2017E03	7	09/27/2017	15:00	09/29/2017	00:00
2018E01	7	08/25/2018	18:00	08/27/2018	00:00

GMD News

On October 1, 2020, the GMD Reporting Application was released and is available for reporting.

To register for one of the four GMD Training sessions, [click here](#). **The same material will be covered in each session.

Key Links

GMD Training

[GMD - Section 1600 Data Request](#)

GMD Reference Documents

Type	Title
Key GMD Documents (1)	
	Section 1600 Confirmation for No GMD Equipment
Reporting Instructions (1)	
	GMD Data Reporting Instructions
Reporting Templates (7)	
	GIC Monitor Data Template
	GIC Monitor Device Template
	GMD Confidential Information Designation Request Form
	Magnetometer Data Template
	Magnetometer Device Template
	Missing Data Report Template
	Process for Requesting Confidential Treatment of GMD Data

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RELIABILITY CORPORATION

Home My Profile My Resources **My Applications** Research My Groups Entity Registration Requests My Entity NERC Membership List

My Applications

- Align
- CFR Portal
- GMD**
- MIDAS Portal
- Request Application Access

Welcome to the ERO Portal

The ERO Portal allows you to create an account and perform the following functions upon completion:



SELF SERVICE ACCOUNT
Change Password, Update Security Questions



VIEW MAILING LISTS & RESOURCES
Access to Datastores and Applications

Geomagnetic Disturbance Data System

Welcome to the NERC Geomagnetic Disturbance (GMD) Data System. Users may submit, view, and manage device information and GMD Event data. GMD System Reports provide information on data reported for individual GIC Monitors and Magnetometers. Below is a list of entities for which you have permission to view or submit data. If an entity is not listed, go to the [Application Access Requests](#) page to request access.

The User Guide for the GMD Data System is available [here](#) or on the NERC website by navigating to Program Areas & Departments > Reliability Assessment & Performance Analysis > Geomagnetic Disturbance (GMD) > GMD User Guide for Entities.

For assistance with the functionality of the GMD Data System, please email GMD@nerc.net.

The annual reporting collection period for GMD data is from April 1 – March 31. The reporting deadline for each annual reporting collection period is June 30.

NCR ↑	Entity Name	GMD Role
NCR22222	Test Company 2	GMD Read-Only
NCR33333	Test Company 3	GMD Read-Only
NCR44444	Test Company 4	GMD Submitter
NCR55555	Test Company 5	GMD Submitter

Menu

[GIC Monitor Devices](#)

View, create, manage or bulk import GIC monitor devices

[Magnetometer Devices](#)

View, create, manage or bulk import magnetometer devices

[GIC Monitor Data Reporting](#)

View and submit GIC monitor data reporting submissions

[Magnetometer Data Reporting](#)

View and submit magnetometer geomagnetic data reporting submissions

[Missing Data Report Imports](#)

Bulk import missing data reports

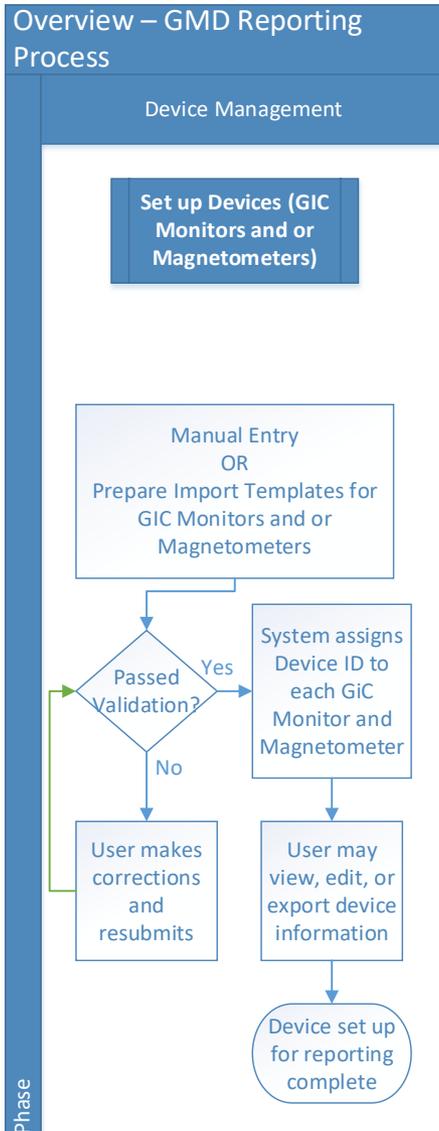
[GMD Reporting Status](#)

View GMD Status Reports

[GMD Events](#)

View GMD events that require reporting

Device Management



- GIC Monitor and Magnetometers are set up in the GMD system through manual entry or bulk import
 - After device information passes validation, the GMD system will assign a Device ID to the device
 - The Device ID will be used for reporting event data and Missing Data Reports
- GIC Monitor and Magnetometer information may be updated at any time
 - Changes to location or ownership of a device must be done by contacting NERC
- Device information may be exported

GIC Monitor Devices

[← GMD Home Page](#)

From this page, create, view, modify or export any GIC Monitors associated with the selected registered entity.

This is a list of the registered GIC Monitor devices for the currently selected registered entity. To view GIC Monitors from a different entity, choose an entity from the selection box located in the top right-hand corner of the page.

5

Menu

GIC Monitor Device Imports
View and manage GIC monitor bulk device imports

3

Summary Device List

4

Create GIC Monitor

6

Export

Device ID	Device Status	Device Serial Number	Geographic Latitude (North)	Geographic Longitude (West)	Status Effective Date	
10094	AV	s-123	11.0	111.0	8/14/2020	
1 10095	AV	s-456	60.0	65.0	8/14/2020	<p>2</p> <ul style="list-style-type: none"> View Details Edit
10096	AV	s-987	50.0	120.0	8/14/2020	

Magnetometer Devices

[← GMD Home Page](#)

From this page, create, view, modify or export any Magnetometers associated with the selected registered entity. This is a list of the registered Magnetometer devices for the currently selected registered entity. To view Magnetometers from a different entity, choose an entity from the selection box located in the top right-hand corner of the page.

3 [☰ Summary Device List](#)

4 [+ Create Magnetometer](#) [⬇ Export](#)

5 Menu

6 [Magnetometer Device Imports](#)
View and manage magnetometer bulk device imports

Device ID ↑	Device Status	Geographic Latitude (North)	Geographic Longitude (West)	Status Effective Date ↑	
50100	IV	67.0	97.0	8/14/2020	▼
50099	AV	50.0	61.0	8/14/2020	▼
1 50098	AV	60.0	120.0	8/14/2020	2 ⓘ View Details ✎ Edit
50097	AV	77.0	77.0	8/14/2020	▼

1. A list of devices is displayed for which the user has permission to access
2. For each device, there are options to view details and edit (for users with submit permission)
3. The Summary Device List view is the default; the Device Detail view is also available
4. The Create Device button is used to manually enter a device (for users with submit permission)
5. The Import option allows for bulk import of multiple devices using the device templates
6. The Export button allows the user to export the Summary Device List or Device Detail List

- Two ways to upload Device Information
 - Manual Entry
 - Helpful when an user is entering or updating one to two devices
 - Real-time validations provided
 - Bulk Device Import
 - Helpful when an user is adding or updating multiple devices
 - Real-time validations provided

Create New Magnetometer

[← Back to Magnetometer Devices](#)

This page is used for manual entry of a Magnetometer for the selected registered entity. All fields marked with a red asterisk (*) are required. The Magnetometer will be assigned a Device ID after the required information is submitted.

Entity *

NCR55555

Device Manufacturer *

EPRI - Electric Power Research Institute



Initial Operating Date (MM/DD/YYYY) *

1/1/2000



Geographic Latitude (Between 0.1 and 90.0) *

15

Fastest Data Sampling Rate Capable (0.01A - 10.0A) *

10

Geographic Longitude (Between 60.0 - 135.0) *

105

Magnetometer Orientation *

1 - Geographic



Submit

- **Manually Creating a New Device**
 - The user must submit all fields marked with a red asterisk(*)
 - The GIC Monitor/Magnetometer will be assigned a Device ID after the required information is submitted
- **Manually Editing a Device**
 - The user must update the device configuration data
 - The user must update the Status Effective Date
- **Manually Deactivating a Device**
 - The user must change the Device Status from AV to IV
 - The user must update the Status Effective Date

A	B	C	D	E	F	G	H	I	J
NCRID	MagnetometerDeviceID	DeviceManufacturer	Latitude	Longitude	InitialOperatingDate	SamplingRateCapable	MagnetometerOrientation	DeviceStatus	StatusEffectiveDate
NCR55555		EPRI	50	100	1/1/2000	10		1 ID	
NCR55555		CPI	40	120	12/1/1990	1		2 ID	

Bulk Import Magnetometers

[← Back to Magnetometer Bulk Imports](#)

Import the Magnetometer Device Template with one or more Magnetometer devices. The template may contain devices for multiple entities.

The Magnetometer Device Template is available here.

Attach a file *

- **Creating a New Device using Bulk Import**
 - The user can import GIC Monitor/Magnetometer device information for one or more GIC Monitor/Magnetometer devices. The template can also include multiple entities.
 - The Device ID and Status Effective Date must remain blank. The device will be assigned a Device ID after the required information is submitted.
 - The Device Status of “**ID**” must be entered on the template.
- **Editing a Device using Bulk Import**
 - The user must update the desired device information
 - The Device Status of “**AV**” must be entered on the template.
 - The user must update the Status Effective Date
- **Deactivating a Device using Bulk Import**
 - The user must change the Device Status from “**AV**” to “**IV**” on the template
 - The user must update the Status Effective Date

Magnetometer Bulk Import Details

[← Back to Magnetometer Bulk Submissions](#)

[Refresh Status](#)

Created By

CRMAppAccount CRMAppAccount

Created On

9/10/2020 18:59

Attachments

3 minutes ago
Rachel Rieder

Magnetometer Device Import2.xlsx (20.56 KB)

4

3 minutes ago
CRMAppAccount CRMAppAccount

09-10-2020_14-59-48_SuccessRows.xlsx (1.90 KB)

3 minutes ago
CRMAppAccount CRMAppAccount

09-10-2020_14-59-48_ValidationErrors.xlsx (1.86 KB)

Submission Status

Processing Complete with Errors

1

Devices Passed [View Devices](#)

1

Devices Failed [Re-import Devices](#)

1

2

Validation Errors

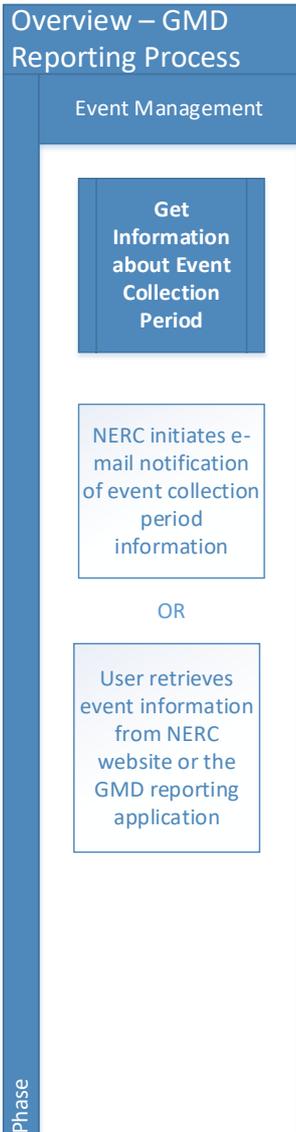
3

[Export](#)

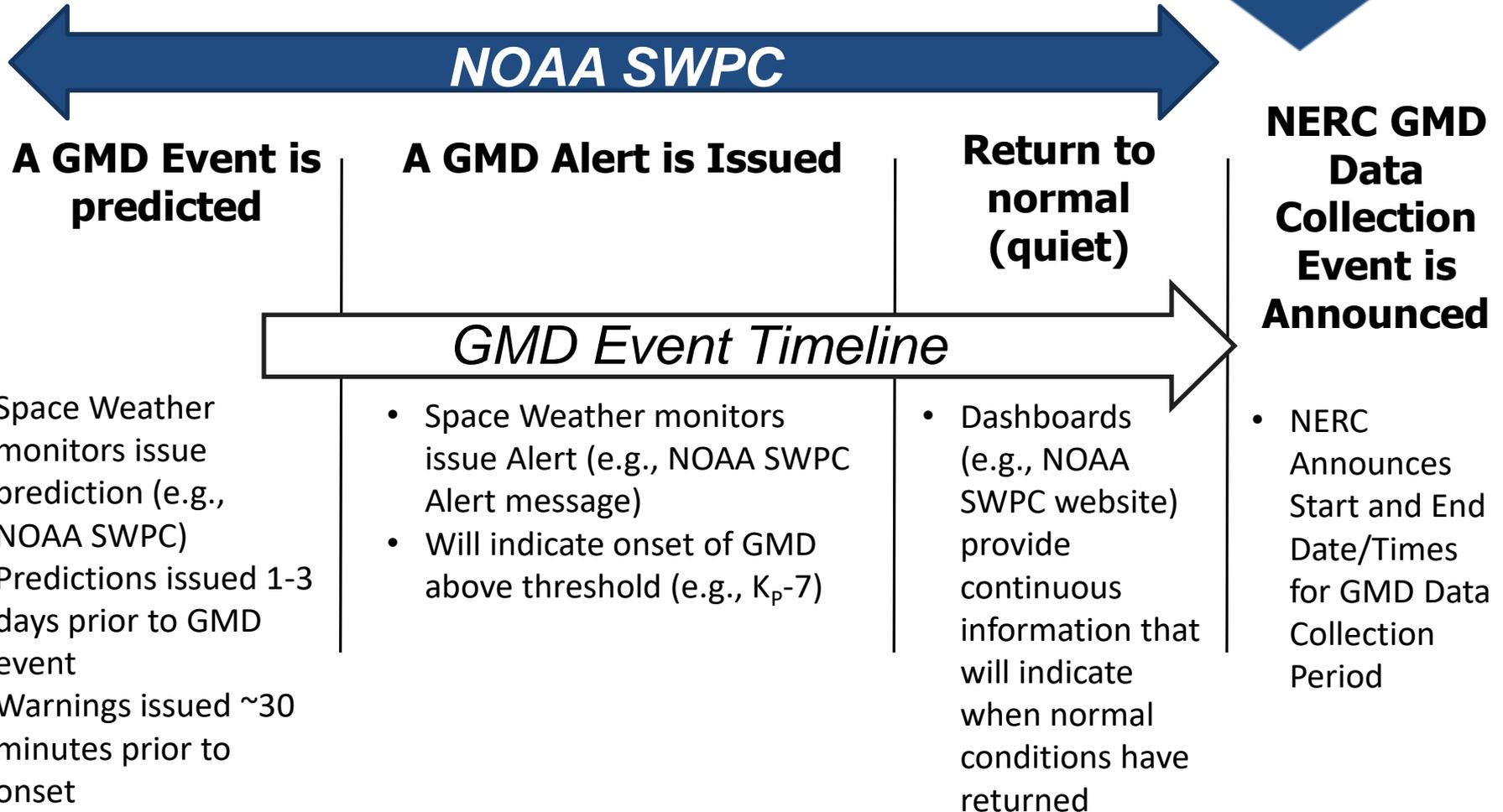
Row ↑	Column	Value	Field Required	Validation Error
3	Longitude	160	True	Geographic Longitude (Between 60 and 135) must have a value between 60 and 135

1. After submitting GIC Monitor/Magnetometer device(s) through bulk import, the user will be able to view the bulk import details
2. Button Options are available to the user to view devices or re-import devices due to invalid submissions
3. Validation Errors Descriptions are displayed at the bottom of the Bulk Import Details Page, along with a file containing the errors
4. All valid devices will be written to the system, while invalid devices will not be written to the system

Event Management



- Device information is posted on NERC’s GMD page and is available under the “GMD Events” menu in the GMD application
- Any new events will be added to the existing list once the event has been announced
- NERC will send an e-mail to GMD users to notify them that the collection period for a GMD event of K_p-7 or greater has been established



Overview – GMD Reporting Process

Event Management

Get
Information
about Event
Collection
Period

NERC initiates e-mail notification of event collection period information

OR

User retrieves event information from NERC website or the GMD reporting application

Phase

GMD Events

[← GMD Home Page](#)

The Geomagnetic Disturbance (GMD) events with a magnitude of $K_p = 7$ and greater are listed below. The event collection periods begin with the Event Start Date and Time and conclude with the Event End Date and Time.

NERC's data collection begins with GMD events occurring in May 2013 or later.

Event ID ↑	KP	Event Start Date and Time	Event End Date and Time
2018E01	7	8/25/2018 18:00	8/27/2018 00:00
2017E03	7	9/27/2017 15:00	9/29/2017 00:00
2017E02	8	9/7/2017 21:00	9/9/2017 03:00
2017E01	7	5/27/2017 15:00	5/28/2017 15:00
2015E06	7	12/20/2015 03:00	12/21/2015 09:00
2015E05	7	10/6/2015 18:00	10/9/2015 09:00
2015E04	7	9/19/2015 18:00	9/20/2015 18:00
2015E03	7	9/11/2015 03:00	9/11/2015 18:00
2015E02	8	6/22/2015 03:00	6/23/2015 15:00
2015E01	8	3/17/2015 03:00	3/18/2015 06:00
2013E02	8	10/2/2013 00:00	10/3/2013 03:00
2013E01	7	5/31/2013 15:00	6/1/2013 15:00

Data Reporting

Overview – GMD Reporting Process

Data Reporting

Prepare and Submit Event Data

Provide Missing Data Reports

Check Submission Status

User reviews event information and prepares CSV file(s) for import

User selects event and imports data to GMD reporting application

Data gaps >10 minutes?

Yes

No

User prepares and submits Missing Data Report

User checks Submission Status report for event

Event submission complete?

Yes

No

Event data reporting complete

Phase

- Prepare and submit event data for each device (GIC Monitors & Magnetometers)
- Prepare and submit Missing Data Reports
- Check Submission Status of data reporting for each device

MagnetometerDeviceID	SampleDateTime	GeoBfieldMeasureNorth	GeoBfieldMeasureEast	GeoBfieldMeasureVertical
50001	2018-08-25 18:00:00	10000	-10000	20000
50001	2018-08-25 18:00:10	10001	-10001	20001
50001	2018-08-25 18:00:20	10002	-10002	20002
50001	2018-08-25 18:00:30	10000	-10000	20000
50001	2018-08-25 18:00:40	10000	-10000	20000
50001	2018-08-25 18:00:50	10000	-10000	20000

GICDeviceID	SampleDateTime	GICMeasured
10033	2018-08-25 18:00:00	-0.11
10033	2018-08-25 18:00:01	-0.09
10033	2018-08-25 18:00:02	-0.07
10033	2018-08-25 18:00:03	-0.08

Upload Magnetometer Data

Import Magnetometer event data for a GMD Event. The template may contain event data for multiple devices and/or multiple entities.

The Magnetometer Data template is available [here](#)

Select GMD Event

2018E01 (08/25/2018 18:00:00 - 08/27/2018 00:00:00) ▼

Select Data Submission File

Browse...

Cancel

Submit

- The user must select the GMD Event for which data will be uploaded
- The user must upload GIC Monitor/Magnetometer event data that is within the bounds of the start and end times of the selected GMD Event
- The template may contain event data for multiple devices and/or multiple entities, but only for the selected event
- The GIC Monitor/Magnetometer data template must be submitted as a comma-separated value (CSV) file and the SampleDateTime field must be submitted as YYYY-MM-DD HH:MM:SS format
- All rows of event data must be valid to complete a successful submission

Magnetometer Data Submission Details

[← Back to Magnetometer Data Submissions](#)

[Refresh Status](#)

[🔍 Magnetometer Missing Data Reports](#)

Created By

Rachel Rieder

Earliest Data Interval

8/25/2018 18:00

Event *

2018E01

Earliest Data Interval Seconds

0

Submission Status *

[📄 Download Submission File](#)

Successfully Processed

Latest Data Interval

8/27/2018 00:00

Successful Records

[📄 Export Successful Records](#)

10801

Latest Data Interval Seconds

0

Failed Records

0

Created On

9/10/2020 19:56

Magnetometer Data Submission Details

[← Back to Magnetometer Data Submissions](#)

[Refresh Status](#)

[Magnetometer Missing Data Reports](#)

Created By

Rachel Rieder

Earliest Data Interval

8/25/2018 18:00

Event *

2018E01

Earliest Data Interval Seconds

0

Submission Status *

[Download Submission File](#)

Processing Complete with Errors

Latest Data Interval

8/27/2018 00:00

Successful Records

[Export Successful Records](#)

10799

Latest Data Interval Seconds

0

Failed Records

[Export Failed Records](#)

[Re-import Data File](#)

2

Created On

9/10/2020 20:05

- After importing event data, the user will be able to view the GIC Monitor/Magnetometer data submissions details
- Button options are available in the data submissions details, which allow the user to download their data submission file, export successful and/or failed data records and re-import corrected event data from a failed submission

- Gaps of data of more than 10 minutes from one or more devices for all or portions of a GMD Event are required to be reported on a Missing Data Report for the event
 - Examples that may lead to missing data include data measuring device or data recording system malfunction
- Missing Data Reports may be entered manually or through a bulk import
 - The Missing Data Report template is available on the GMD page
- The user has the ability to deactivate a Missing Data Report for a device if event data later becomes available

Create Magnetometer Missing Data Report

[← Back to Magnetometer Missing Data Reports](#)

Manually enter a Magnetometer Missing Data Report for an event for the selected registered entity. All fields marked with a red asterisk (*) are required to create a missing data report.

To create a Magnetometer Missing Data Report for a different entity, choose an entity from the selection box located in the top right-hand corner of the page.

Magnetometer

Magnetometer #50001



Missing Data Reason *

2-Magnetometer Malfunction



Missing Data Start Date and Time (UTC) *

3/17/2015 03:00



Missing Data Start Seconds *

0

Missing Data End Date and Time (UTC) *

3/17/2015 10:00



Missing Data End Seconds *

0

Narrative

The Magnetometer did not start right away.

Submit

- A user can manually create a GIC Monitor/Magnetometer Missing Data Report for an event, for the selected registered entity
- The user must submit all fields marked with a red asterisk(*) to create a Missing Data Report
 - If the user selects “5. Other” for the Missing Data Reason, a text description is required in the Narrative field
- To manually create a GIC Monitor/Magnetometer Missing Data Report for a different entity, choose an entity from the selection box located in the top right-hand corner of the page

DeviceID	StartDateTimeMissing	EndDateTimeMissing	Reason	DataNarrative
10015	2018-08-25 18:00:00	2018-08-25 21:00:00		1
50023	2015-10-06 18:00:00	2015-10-06 20:00:00		5 The machine did not turn on right away.

Bulk Import Missing Data Reports

[← Back to Missing Data Report Imports](#)

Import Missing Data Reports for one or more GIC Monitors and/or Magnetometers.

The Missing Data Report template is available [here](#).

Attach a file *

 Browse...

Submit

- The user may include missing data for multiple devices (GIC Monitors & Magnetometers) and events within the same template
- The user is required to complete all fields on the template
 - The list of reason codes is provided in the GMD Data Reporting Instructions available on the GMD page of NERC.com
 - When the Reason Code “5” is used, a text description is required in the Data Narrative cell
 - A validation error will occur if the Data Narrative field is left blank with a Reason code of “5”
- Missing Data Reports may be submitted as a comma-separated value (CSV) or Excel (xlxs, xls)

GMD Missing Data Report Import Submission Status

[← Back to Missing Data Report Imports](#)

[Refresh Status](#)

Created By Portal User

Rachel Rieder

Created On

9/10/2020 20:28

Attachments

about a minute ago
Rachel Rieder

Missing Data Report Import.xlsx (21.09 KB)

4

less than a minute ago
CRMAppAccount CRMAppAccount

09-10-2020_16-28-25_SuccessRows.xlsx (1.86 KB)

less than a minute ago
CRMAppAccount CRMAppAccount

09-10-2020_16-28-25_ValidationErrors.xlsx (1.92 KB)

Submission Status

1

Processing Complete with Errors

GIC Missing Data Reports Created

0

GIC Missing Data Reports Failed

0

Magnetometer Missing Data Reports Created

[View Magnetometer Missing Data Reports](#)

1

Magnetometer Missing Data Reports Failed

[Re-import Missing Data Report File](#)

1

2

Validation Errors

3

Row ↑	Column	Value	Field Required	Validation Error
2	DeviceID	50022	True	A Data Submission exists for this device '50022' for a portion of the time period submitted. Please review the existing Data Submission and edit the Missing Data Rep...

1. After submitting Missing Data Reports through bulk import, the user will be able to view the bulk import details
2. Button Options are available to the user to view devices or re-import devices due to invalid submissions
3. Validation Error Descriptions are displayed at the bottom of the Bulk Import Details Page, along with a file containing the errors
4. All valid Missing Data Reports will be written to the system, while invalid devices will not be written to the system

GMD Reporting Status

The GMD Submission Status Report provides information about whether data was reported for each device by Event, Calendar Year, or Reporting Collection Period (April - March).

Filter By **Event** **Devices**

1 1a-c 2a 2

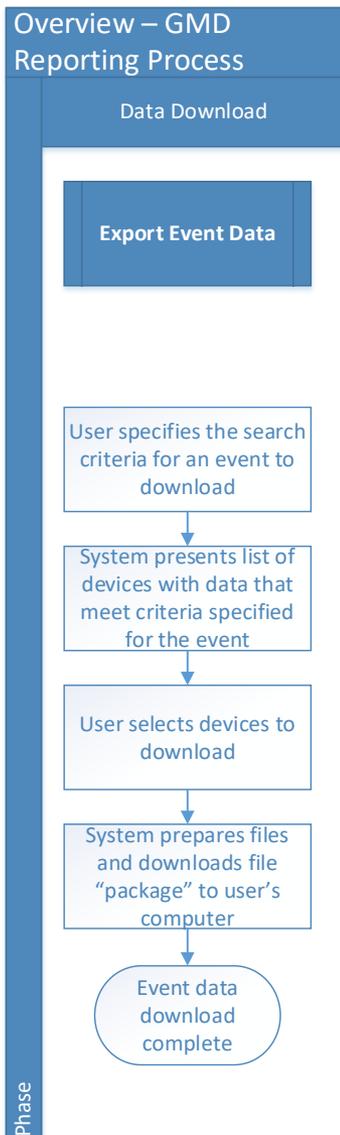
Selected Devices

10105	Remove
50103	Remove
10098	Remove
50105	Remove

Device ID	Event ID	Data Start Date and Time	Data End Date and Time	Has Missing Data Report?	NCR	Is Data Complete?
10098	2013E01			No	NCR01055	No
10105	2013E01	05/31/2013 16:00:00	06/01/2013 15:00:00	No	NCR11826	No
50103	2013E01	05/31/2013 16:00:00	06/01/2013 15:00:00	Yes	NCR11826	No
50105	2013E01			No	NCR55555	No

- The Submission Status Report displays the reporting status for all devices to which the user has access
 1. The user must select the timeframe for the Submission Status Report:
 - a. Event ID – choose from a list of events
 - b. Calendar Year – choose the year to see data reported for events in a calendar year (Jan-Dec)
 - c. Reporting Year - choose the time period to see data reported for events during a reporting year (April 1 [Yr 1] – March 31 [Yr 2])
 2. The user may specify devices using the “Add Device” button
 - a. If no devices are specified, all devices that are required to report for the selected time period will be displayed
 3. When the Start/End Dates/Times are blank next to a device ID in the report, no event data has been reported for the device
 4. Submission is incomplete if data is not reported for the entire collection period of the event

Data Download



- Export event data
 - Specify criteria such as location parameters and device IDs
 - For GMD reporters: ability to specify by NCR ID
- Data package includes:
 - Compressed event data fields by device ID
 - List of devices included in the data package
 - Missing data reports for devices in the data package

GMD Magnetometers and GIC Monitors

The list of available GIC Monitor and Magnetometer devices provided below may be exported.

GIC Monitors **Magnetometers** 1

2

[Export](#)

DeviceID	Status	Manufacturer	Latitude North	Longitude West	Installation Type	Connection	Minimum Value In Measurement Range
10094	AV	EPRI - Electric Power Research Institute	11.00	111.00	2 - Combined	1 - Common neutral of a 3-phase transformer	2.00
10096	AV	FLEX - FLEX-CORE, Inc.	50.00	120.00	2 - Combined	2 - Common neutral of three (3) single-phase transformers	1.50
10097	IV	FLEX - FLEX-CORE, Inc.	14.00	114.00	2 - Combined	1 - Common neutral of a 3-phase transformer	1.00
10098	AV	CTH - CTH Controls, Inc.	47.00	98.00	2 - Combined	2 - Common neutral of three (3) single-phase transformers	1.00
10099	AV	APT - Advanced Power Technologies	48.00	128.00	2 - Combined	4 - Phase Conductor	1.00
10100	AV	AAC - American Aerospace Controls	29.00	129.00	2 - Combined	5 - N/A	1.00
10101	AV	FLEX - FLEX-CORE, Inc.	75.00	125.00	1 - Separate	2 - Common neutral of three (3) single-phase transformers	1.00
10102	AV	OS - Ohio Semitronics	52.00	102.00	2 - Combined	2 - Common neutral of three (3) single-phase transformers	2.00
10103	IV	FLEX - FLEX-CORE, Inc.	40.00	110.00	1 - Separate	2 - Common neutral of three (3) single-phase transformers	1.00
10104	AV	OS - Ohio Semitronics	50.00	100.00	2 - Combined	2 - Common neutral of three (3) single-phase transformers	2.00
10105	AV	CTH - CTH Controls, Inc.	54.00	75.00	1 - Separate	1 - Common neutral of a 3-phase transformer	1.50
10106	IV	OTH - Other	11.00	112.00	2 - Combined	2 - Common neutral of three (3) single-phase transformers	2.00

- The Complete Device List displays all GIC Monitors and Magnetometers within the GMD Portal
 1. The user can toggle back and forth between the GIC Monitors and Magnetometers
 - a. The Device Lists contain limited characteristics
 2. The user has the ability to export all GIC Monitors and/or Magnetometers from each view

Event 1

Min Latitude 2
Max Latitude

Min Longitude
Max Longitude

Device Type 3
 Magnetometers GIC Monitors

Device ID 4a

NCR ID 5
 NCR5555

Selected Devices 4b
No devices selected

Device ID 4a

Selected Devices 4b

10105	Remove
50103	Remove

1. The user must specify an event for the data download
2. The user may enter a location range using the latitude and longitude filters
3. The user may specify device type (GIC Monitor and/or Magnetometer)
4. The user may enter specific Device IDs
 - a. The user may specify GIC Monitors and/or Magnetometers
 - b. If the user specifies any Device IDs, they will be added to the “Selected Devices” list
 - If no Device IDs are selected, all devices that meet any other specified criteria will be included in the data download package
5. Available to GMD entity users: Ability to download by NCR ID for which the user has permission to access the data

4

1

2

3

<input type="checkbox"/>	Event Name	NCR	Device Type	Device ID	Number of Data Records	Latitude	Longitude	Data Sample Start Date and Time	Data Sample End Date and Time	Missing Data Report	Created On	Modified On
<input type="checkbox"/>	2018E01	NCR44444	Magnetometer	50026	10801	50.00	105.00	08/25/2018 18:00:00	08/27/2018 00:00:00	No	09/15/2020 15:55:04	
<input type="checkbox"/>	2018E01	NCR44444	Magnetometer	50027	181	70.00	135.00	08/25/2018 18:00:00	08/25/2018 18:30:00	Yes	09/15/2020 16:00:02	
<input type="checkbox"/>	2018E01	NCR44444	GIC Monitor	10030	181	80.00	111.00	08/25/2018 18:00:00	08/25/2018 18:30:00	No	09/15/2020 15:50:02	
<input type="checkbox"/>	2018E01	NCR44444	GIC Monitor	10029	10801	44.00	114.00	08/25/2018 18:00:00	08/27/2018 00:00:00	No	09/15/2020 15:55:03	

Download Selected Files

5

- Once the search is implemented, all results will be displayed below the search criteria:
 1. The number of records for each device that meets the specified criteria
 2. The start/end date/time for each device included
 3. Whether a Missing Data Report is included for each device
 4. The results allow the user to check the box of any/all device data files to download
 5. When the user clicks “Download Selected Files,” the download for all of the selected data packages begins

Name	Type
1 2013E01_10105_05312013_160000_06012013_150000	Compressed (zipped) Fol...
2013E01_50103_05312013_160000_06012013_150000	Compressed (zipped) Fol...
3a gic_monitor_missing_data_reports_2013E01 2a	Microsoft Excel Comma S...
gic_monitors	Microsoft Excel Comma S...
3b magnetometer_missing_data_reports_2013E01 2b	Microsoft Excel Comma S...
magnetometers	Microsoft Excel Comma S...

	A	B	C
1	GICDeviceID	SampleDateTime	GICMeasured
2	10105	5/31/2013 16:00	1
3	10105	5/31/2013 20:00	2
4	10105	6/1/2013 2:00	3
5	10105	6/1/2013 10:00	4
6	10105	6/1/2013 12:00	5
7	10105	6/1/2013 15:00	6

- The system will provide the user with a zip file with the following information:
 1. All event device data files associated with all selected GIC Monitors and Magnetometers
 2. Any GIC Monitor and Magnetometer Missing Data Reports associated with the selected device data files
 3. Device characteristic lists of GIC Monitors and Magnetometers that were selected



Questions and Answers