NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Geomagnetic Disturbance Data System

User Guide

January 2021

RELIABILITY | RESILIENCE | SECURITY

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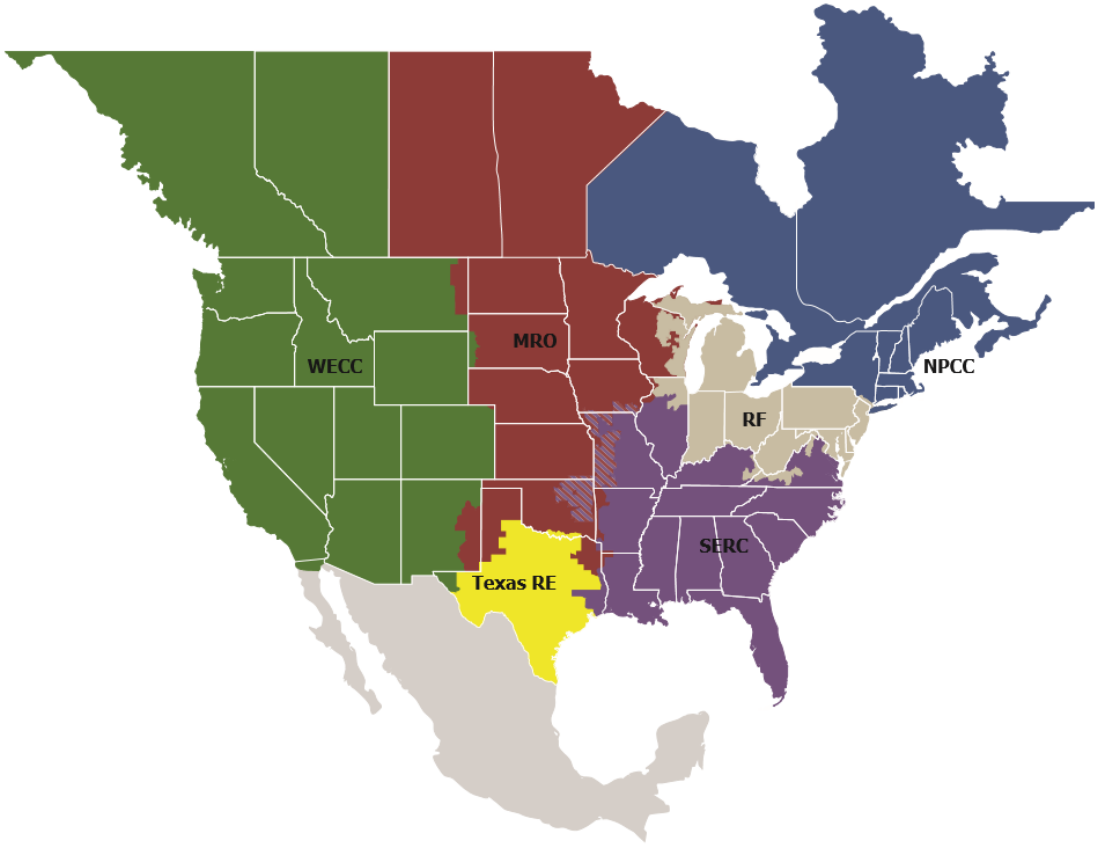
Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.

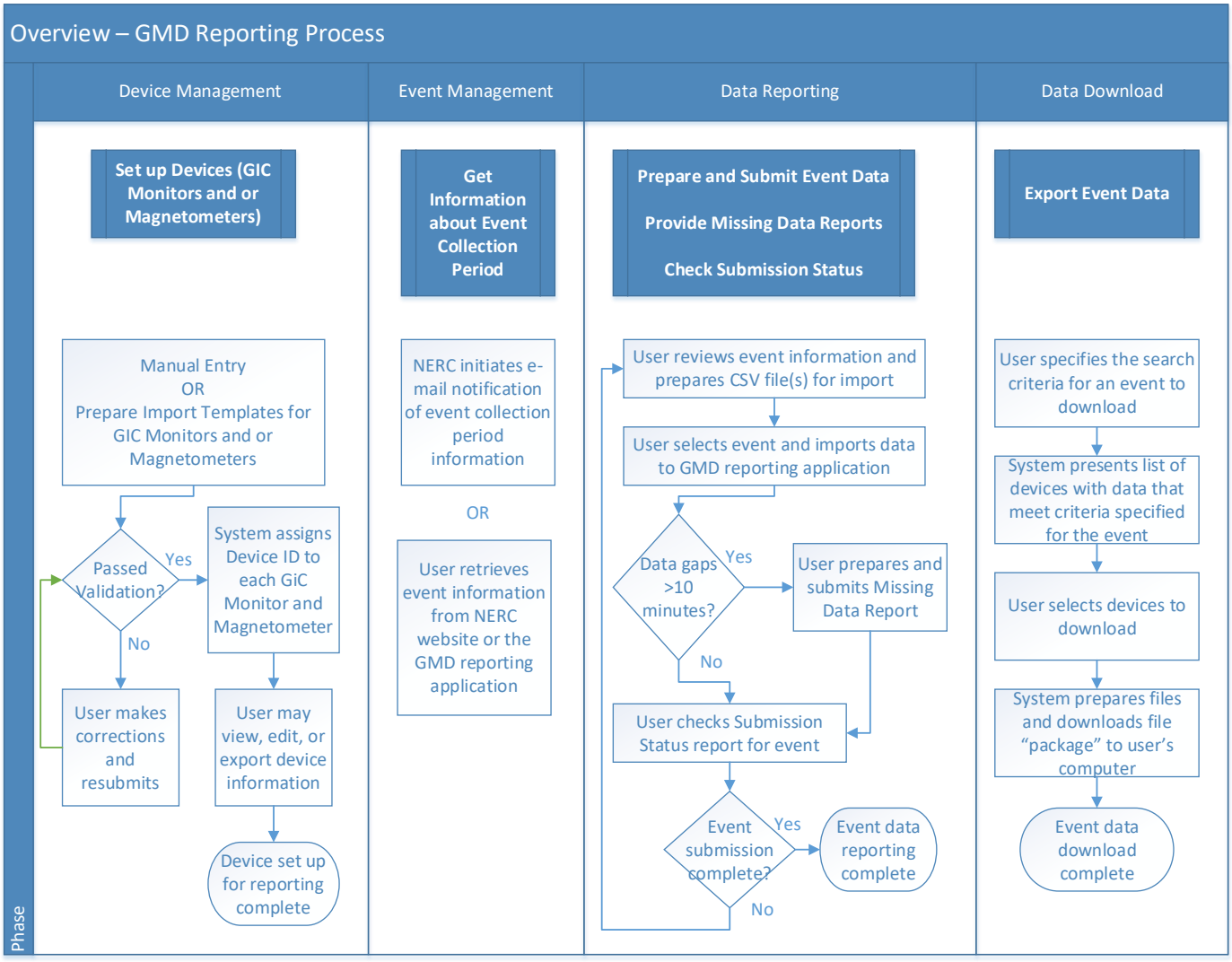


MRO	Midwest Reliability Organization
NPCC	Northeast Power Coordinating Council
RF	ReliabilityFirst
SERC	SERC Reliability Corporation
Texas RE	Texas Reliability Entity
WECC	WECC

Overview

This document is the Geomagnetic Disturbance (GMD) Portal's user guide and provides extensive instructions on the various functionality that is available. This document does not instruct users how to gather or document information relating to GMD events. For additional information on NERC's reporting requirements for GMD, refer to the GMD Data Reporting Instructions available on nerc.com

Please email GMD@nerc.net with any questions that you are unable to answer using this document or if any of the information within this document needs updating.



Please note: All information relating to any given entity or company shown within this document exists only within the staging environment of the GMD Portal. It does not reflect actual information of any entity or company.

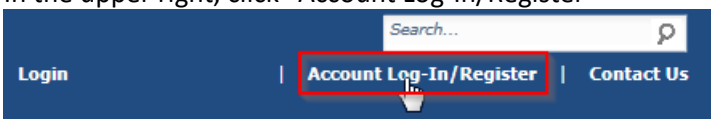
Chapter 1: User Setup

Creating an ERO Portal Account

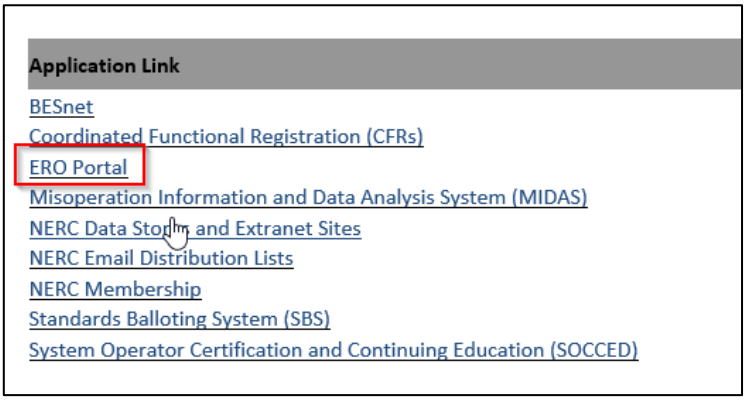
An ERO Portal account is required for access to the GMD reporting application.

1. Navigate to NERC.com

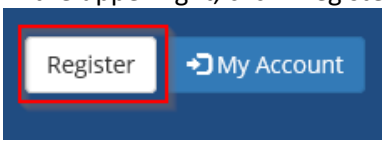
2. In the upper right, click “Account Log-In/Register”



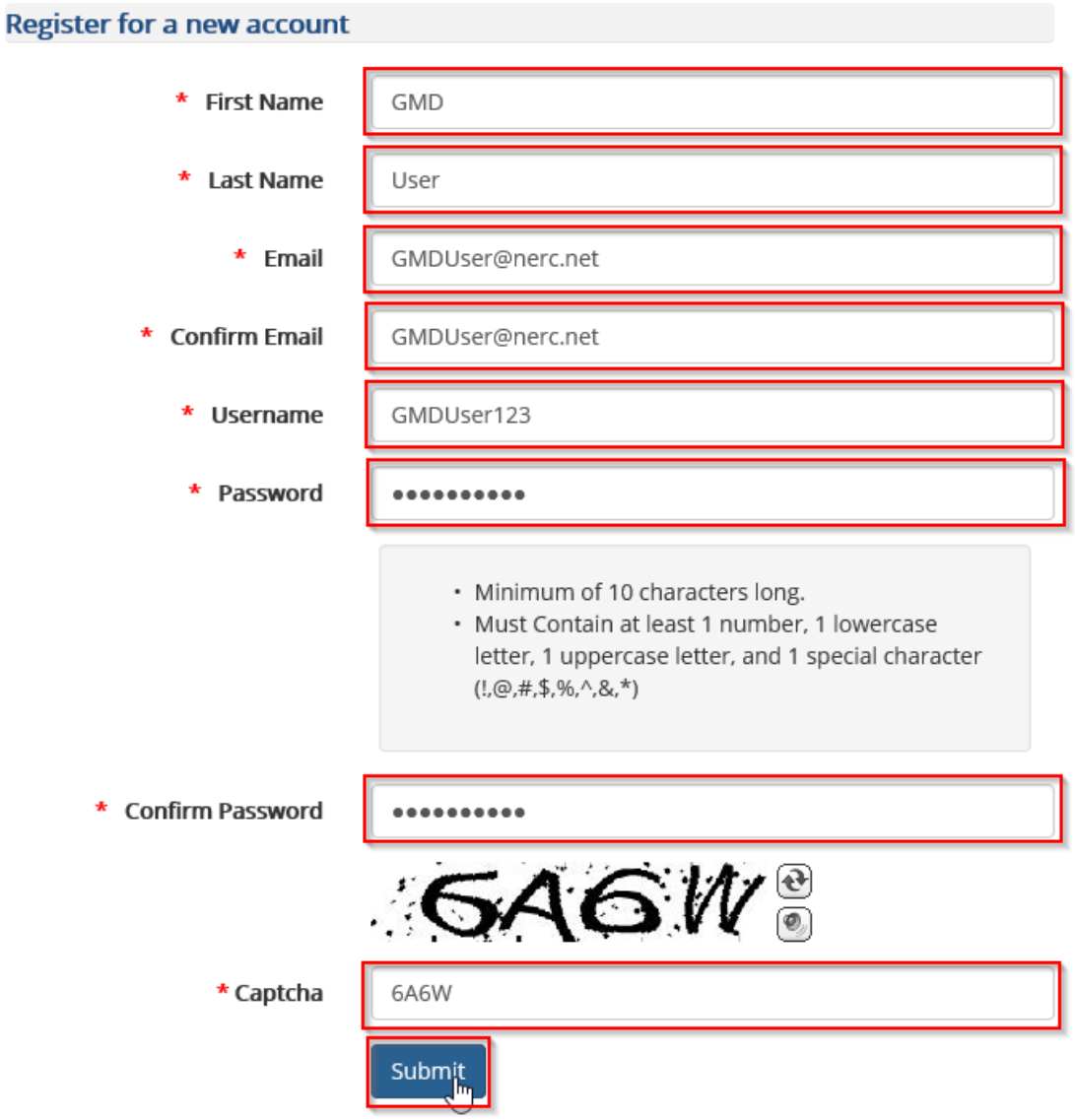
3. Under “Application Link”, Click “ERO Portal” (or go directly to https://eroportal.nerc.net)



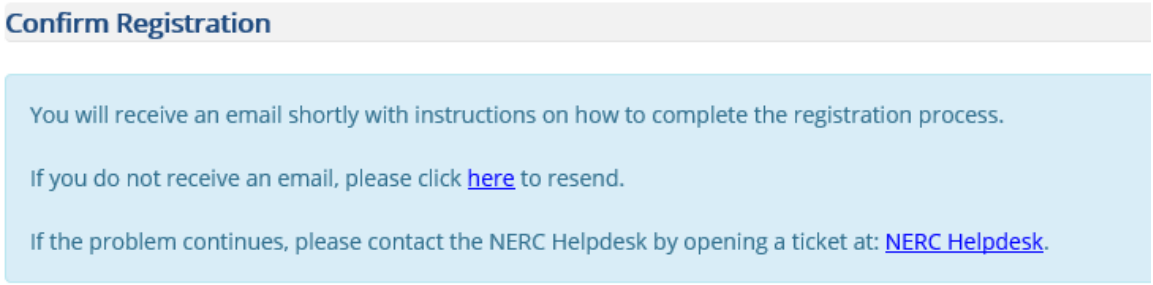
4. In the upper right, click “Register”



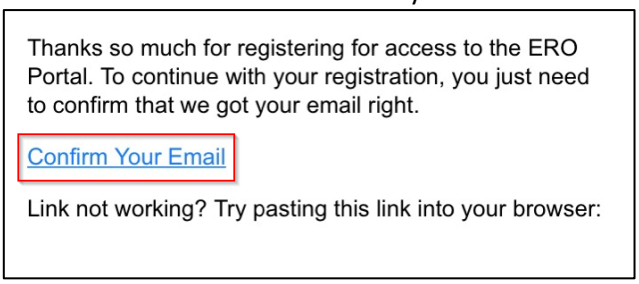
5. Complete the required fields and click “Register”



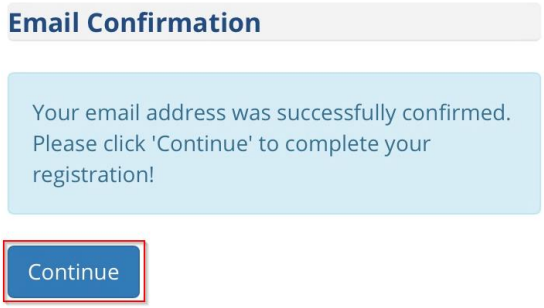
6. Look for the email that will come from NERC to confirm the account.



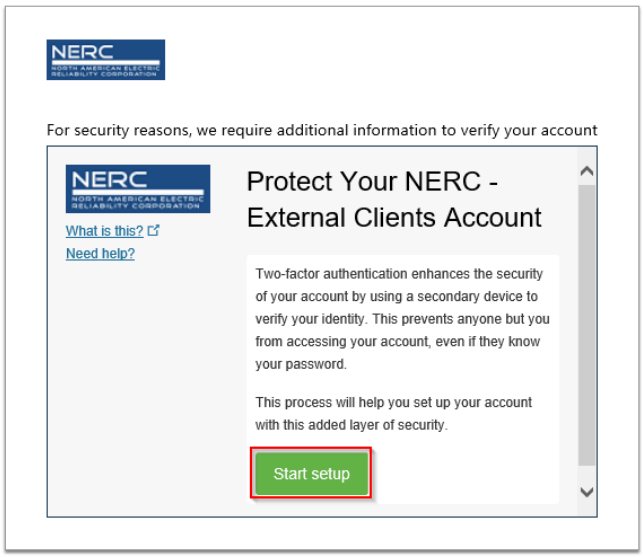
7. Click “Confirm Your Email” to verify the account.



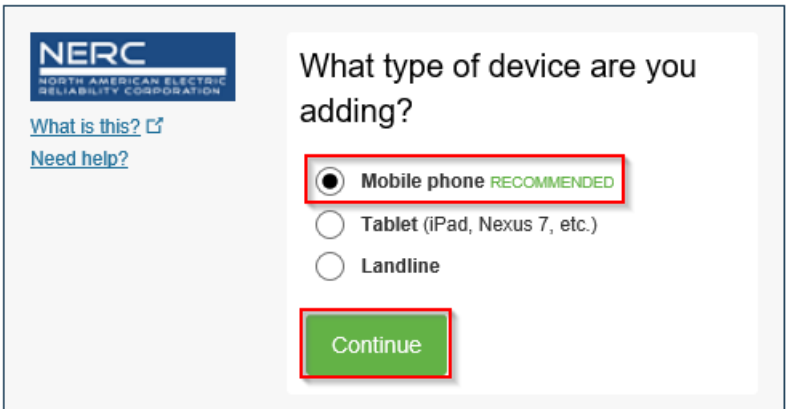
8. Click “Continue” once the window is open on the screen.



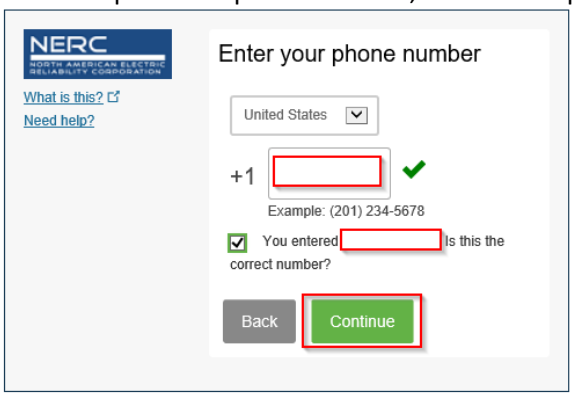
9. Click “Start setup” to setup the two-factor authentication.



10. Choose the preferred device type and click “Continue”.



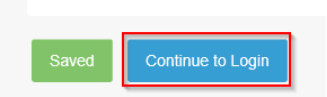
11. Enter the preferred phone number, confirm the phone number and click “Continue”. Choose the phone type.



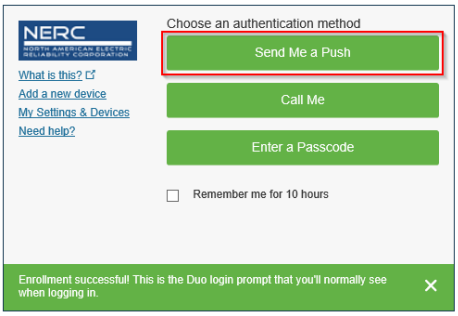
12. Install DUO Mobile, then click “I have Duo Mobile”.

13. Open the app and tap the "+" button and scan the barcode, then click "Continue".

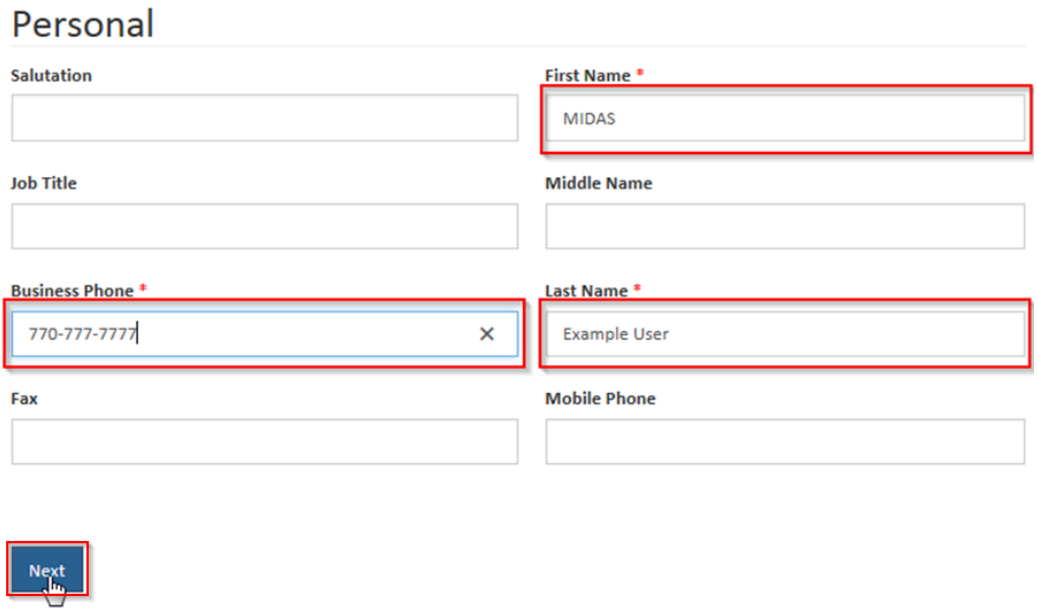
14. Click "Continue to Login".



15. Click "Send Me a Push" and follow the instructions that are sent to the phone to continue.

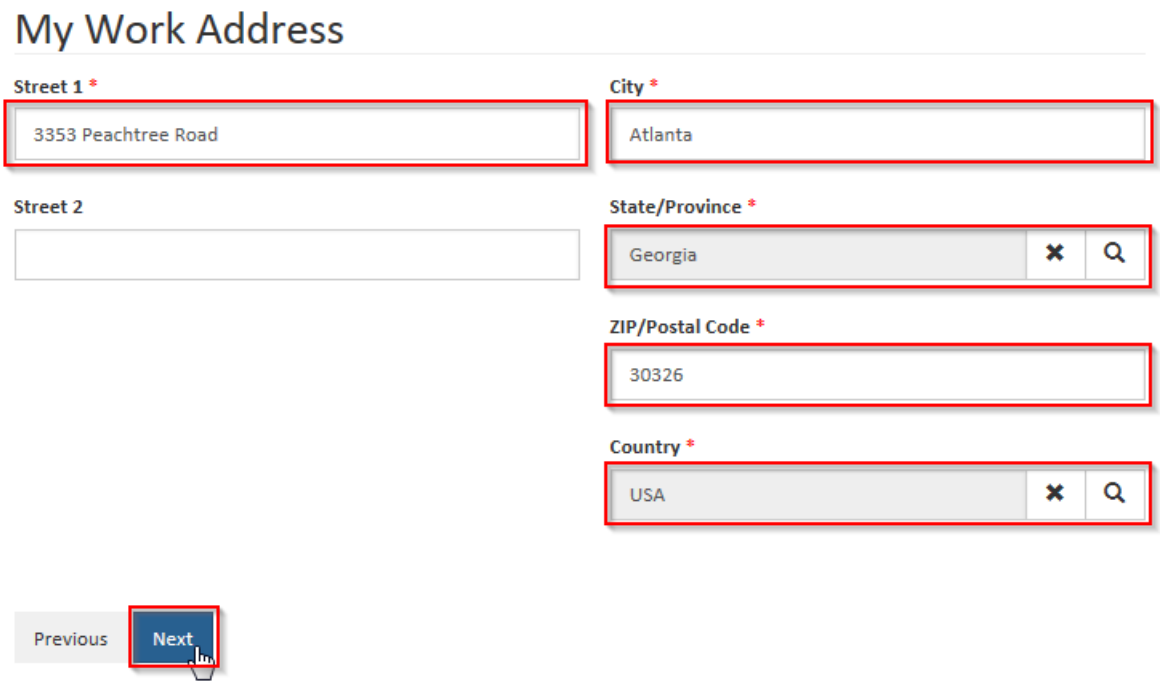


16. At a minimum, complete the required fields (First Name, Last Name, and Business Phone) for personal information.
17. Click "Next".

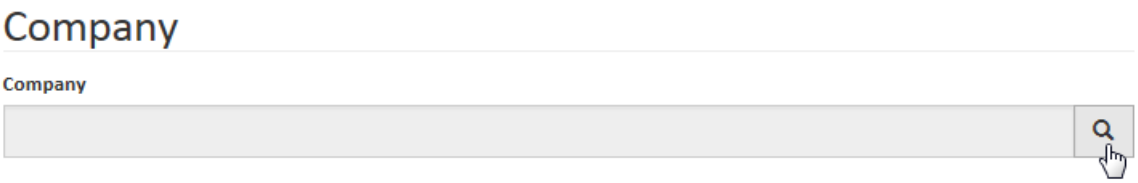


18. Complete at least the required fields (Street 1, City, State/Province, ZIP/Postal Code, Country) for work address information

19. Click “Next”.



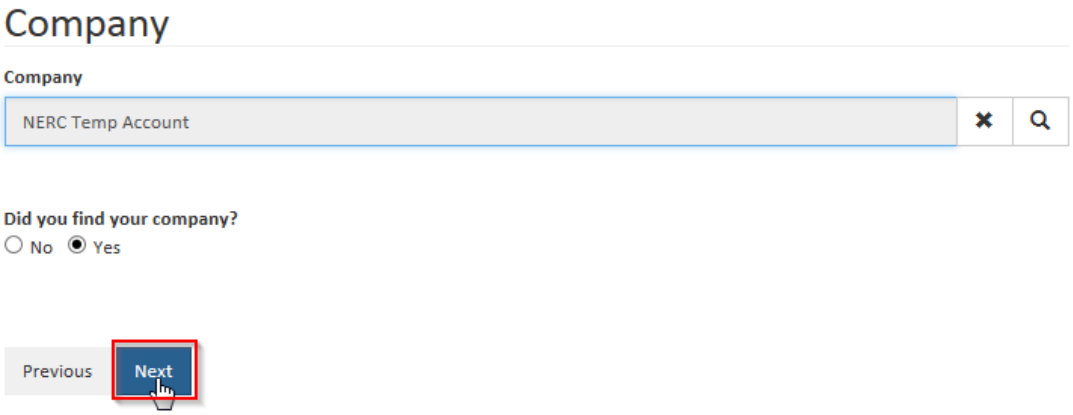
20. Click the magnifying icon.



21. Choose the company:
    a. Type the company’s name[1] in the search bar
    b. Click the magnifying glass or enter
    c. Click the company[2],
    d. Click “Select”.

[1] If reporting for multiple companies, select the primary company. An account may be associated with additional companies later in the process.
[2] If the company is not found, click “Cancel” and select “No” under “Did you find your company?” Complete the form on the screen that appears and click “Next”.

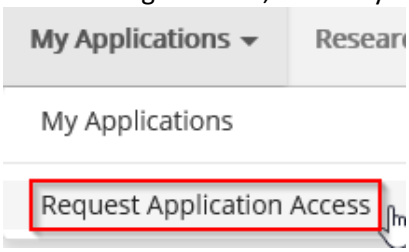
22. Click “Next”



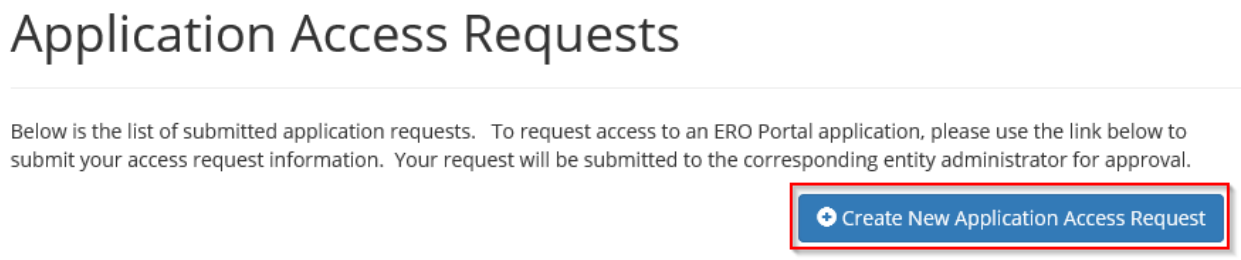
23. Create two security questions then click “Save”

Requesting Access to GMD Data System

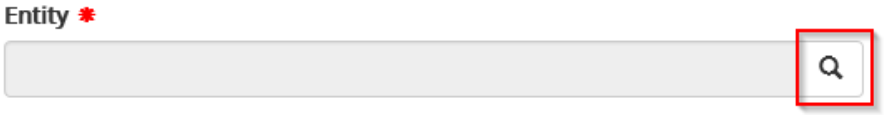
1. On the navigation bar, click “My Applications”, then click “Request Application Access”.



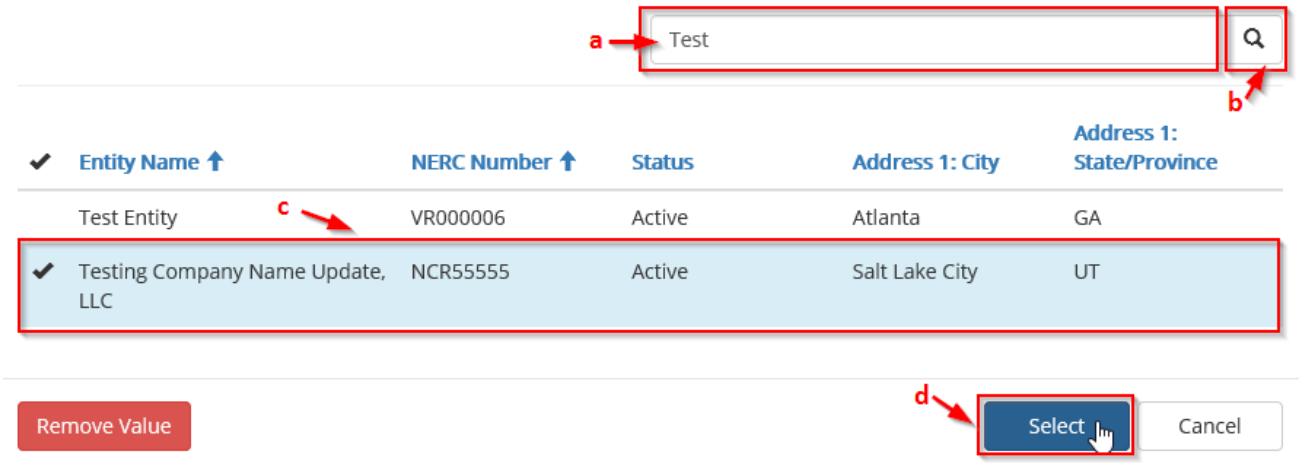
2. Click “Create New Application Access Request”.



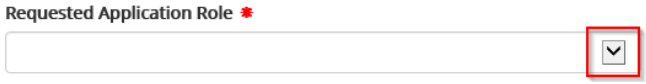
3. Click the search icon for the Entity field.



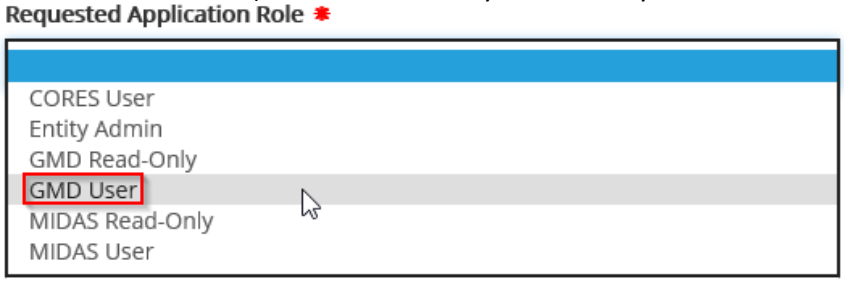
4. Choose the company:
   a. Type the company's name in the search bar
   b. Click the magnifying glass or enter
   c. Click the company,
   d. Click "Select".



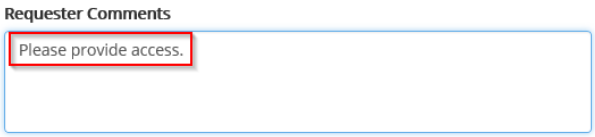
5. Click the arrow for the Requested Application Role field.



6. Choose "GMD User" (or "GMD Read-Only" if read-only access is what is needed) from the dropdown.



7. Add any comments that will be sent to the Entity Administrator (who will approve the request).



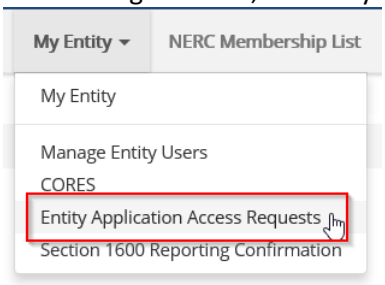
8. Confirm the information then click "Submit".

Chapter 2: Entity Administrators Only

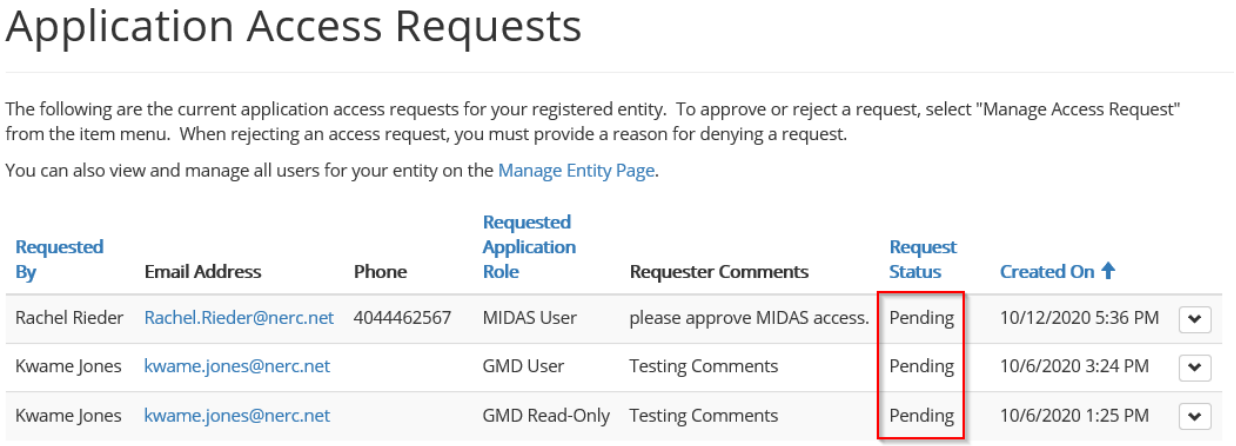
Review Access Requests and Manage User Permissions

Approve Access Requests

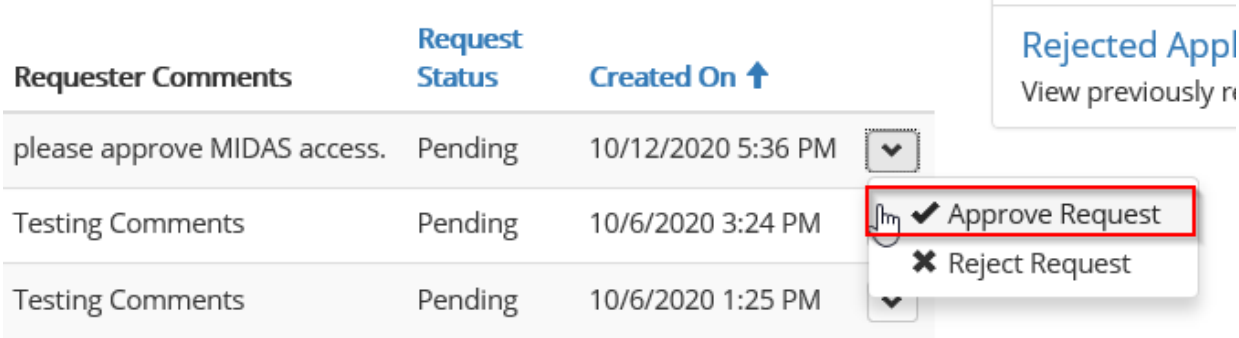
1. In the navigation bar, click “My Entity”, then click “Entity Application Access Requests”.



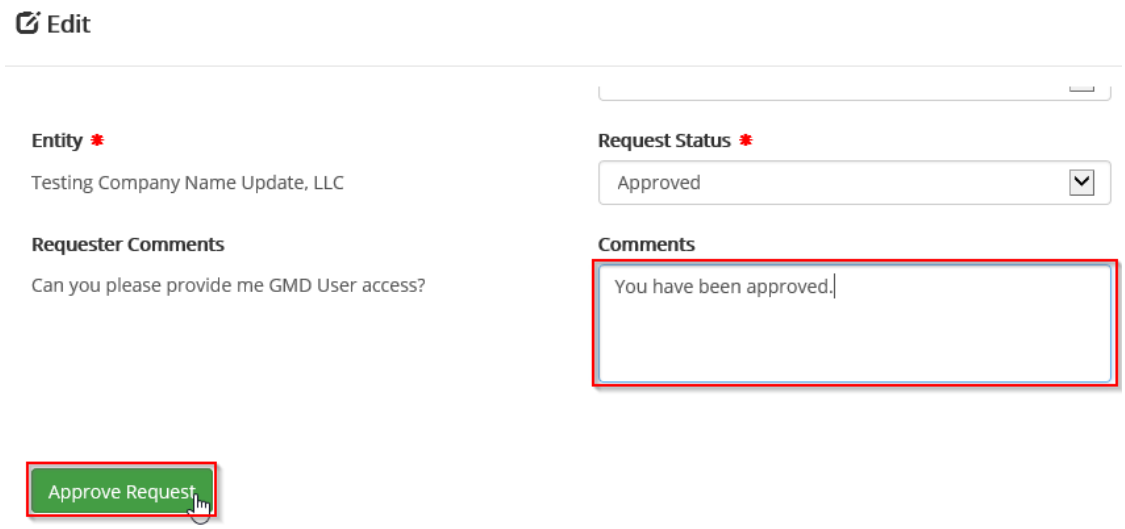
2. Review the pending Application Requests on the Application Access Requests home page.



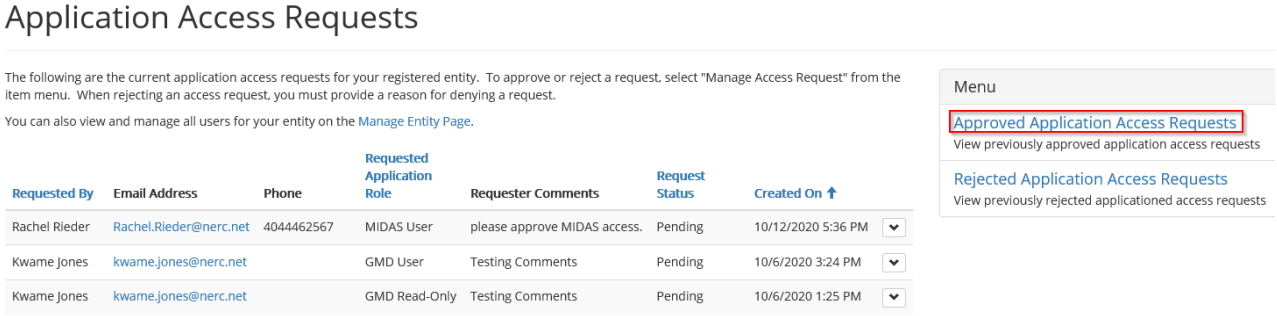
3. Click the dropdown arrow on the right side of any pending access request and click “Approve Request”.



4. Add any comments if needed, then click “Approve Request”. The user will immediately receive access to the selected entity for the requested application.

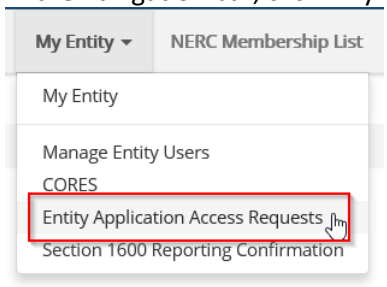


5. View any previously accepted requests by clicking “Approved Application Requests” in the Menu.

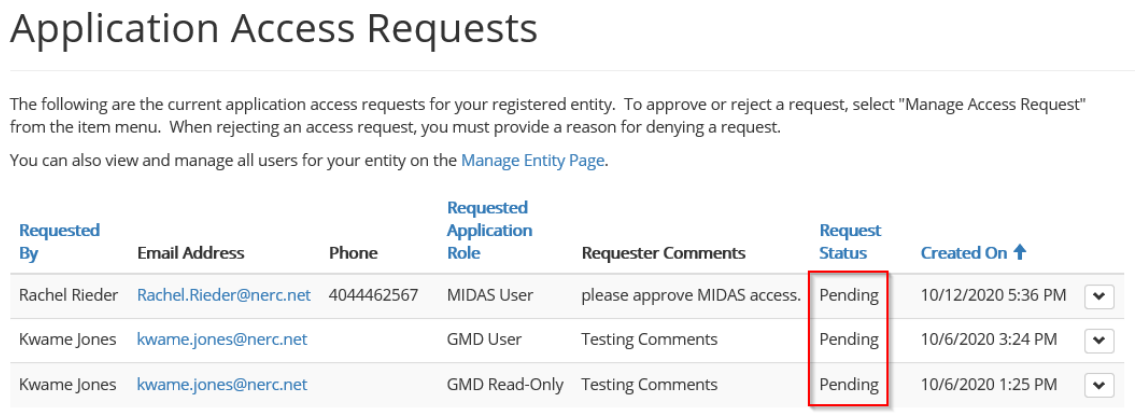


Reject Access Requests

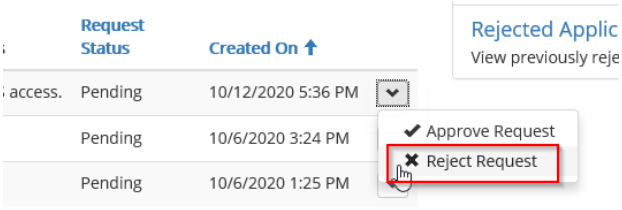
1. In the navigation bar, click “My Entity”, then click “Entity Application Access Requests”.



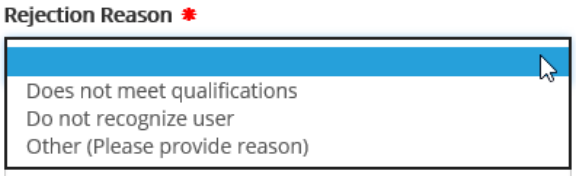
2. Review the pending Application Requests on the Application Access Requests home page.



3. Click the dropdown arrow on the right side of any pending access request and click “Reject Request”.



4. Click the dropdown arrow for “Rejection Reason” and select one of the three available options.

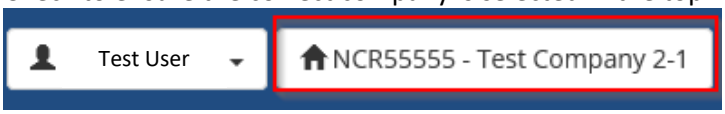


5. If the selected Rejection Reason is “Other”, additional details in the “Reasons for Rejecting Request” box are required.

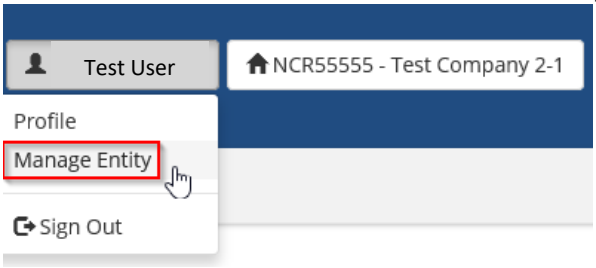
6. Once all applicable fields are filled in, click “Reject Request”.

Add Users

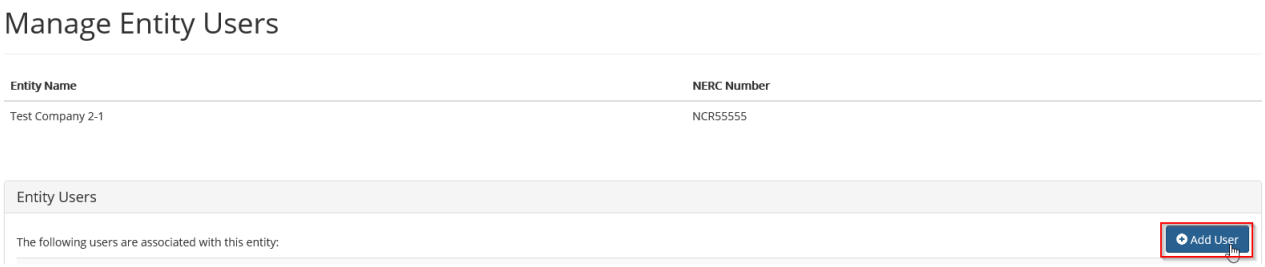
1. Check to ensure the correct company is selected in the top right corner.



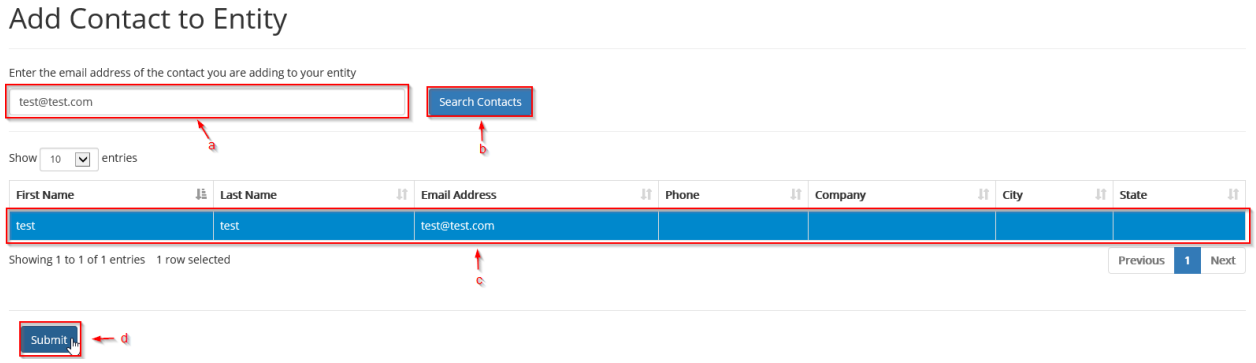
2. Click the user name button to the left of the entity, then click “Manage Entity”.



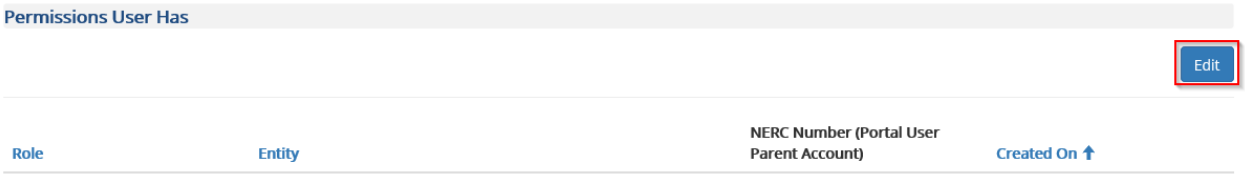
3. To add a **new** contact, click “Add User”.



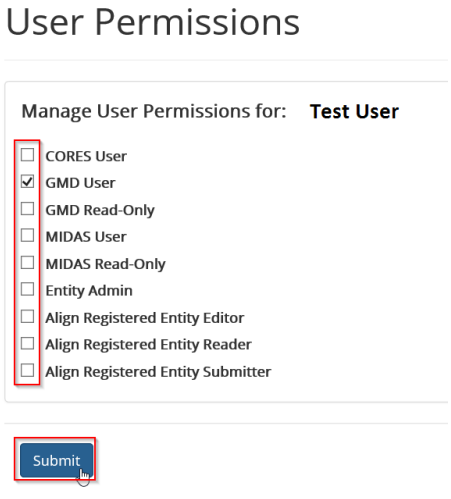
4. Select the user
   a. In the search bar, type the email address of the user to be vetted
   b. Click “Search Contacts”
   c. Click the user’s contact information
   d. Click “Submit”



5. Under “Permissions User Has”, click “Edit”.



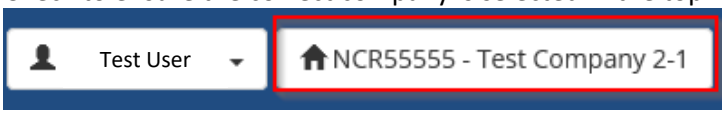
6. Select permissions the user should have then click “Submit”



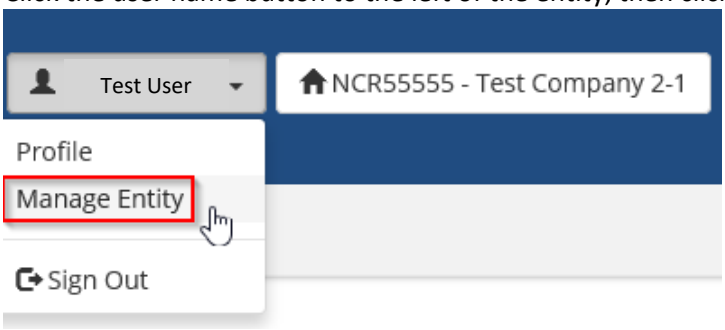
Note: GMD Read-Only only allows the user to view records and reports, it does not allow the user to create or modify records. GMD User allows the user to view, create, and edit records and reports.

Edit Existing Users

1. Check to ensure the correct company is selected in the top right corner.

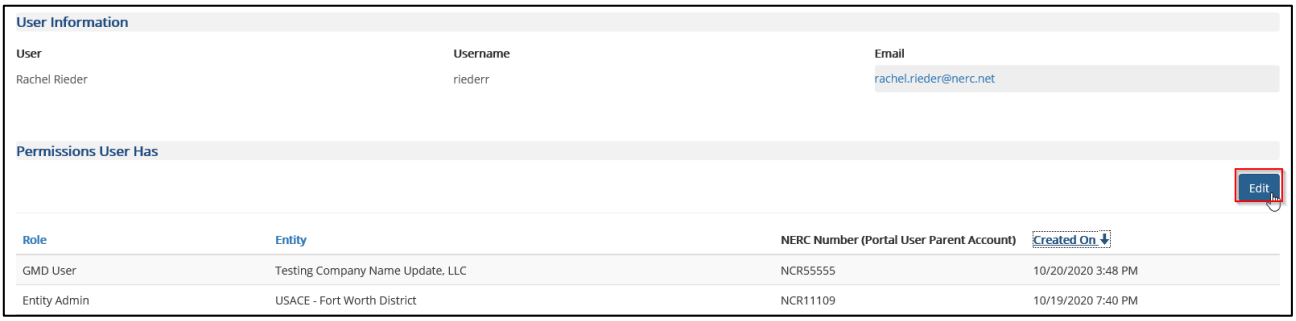


2. Click the user name button to the left of the entity, then click “Manage Entity”.

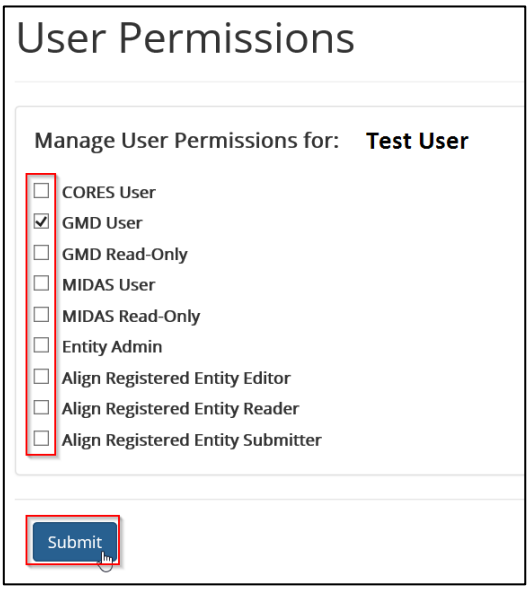


3. Click the name of the user to edit.

4. Click “Edit”.

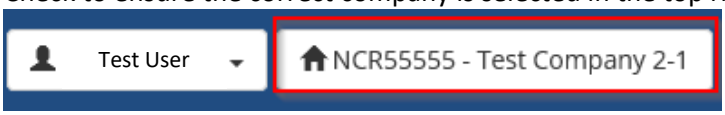


5. Check any new permissions to add and uncheck any permissions to remove. Click “Submit”.

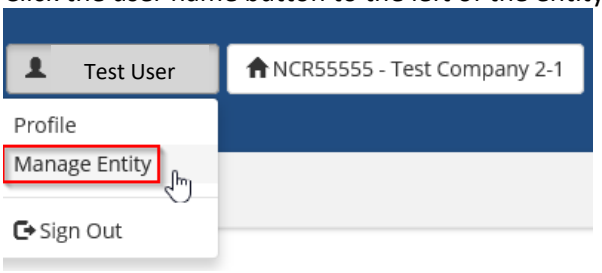


Remove Users

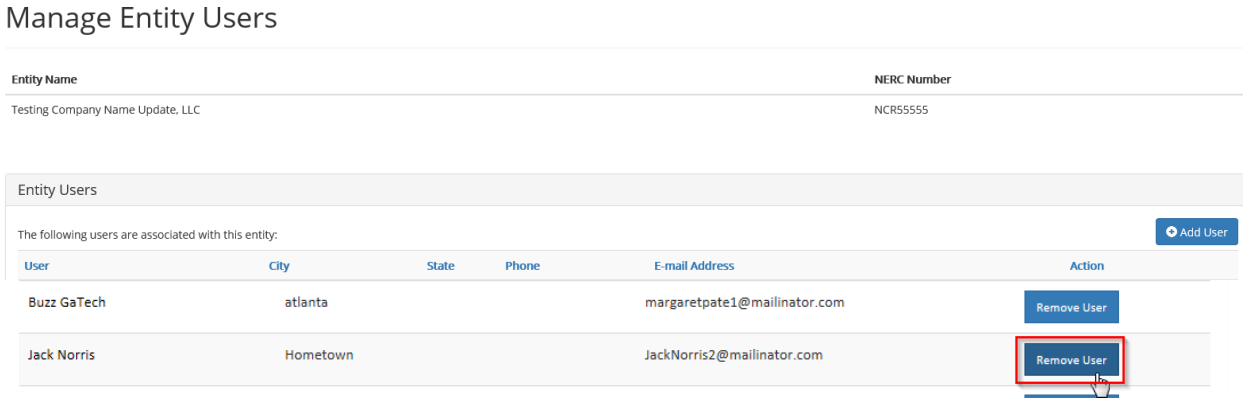
1. Check to ensure the correct company is selected in the top right corner.



2. Click the user name button to the left of the entity, then click “Manage Entity”.



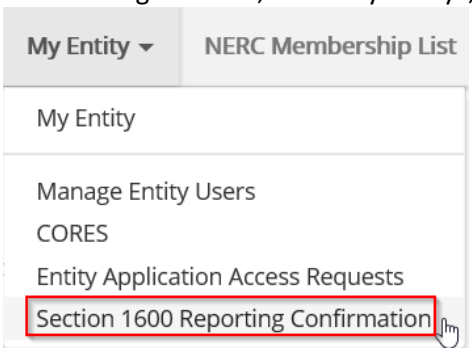
3. Find the user to remove.
4. Click “Remove User”.



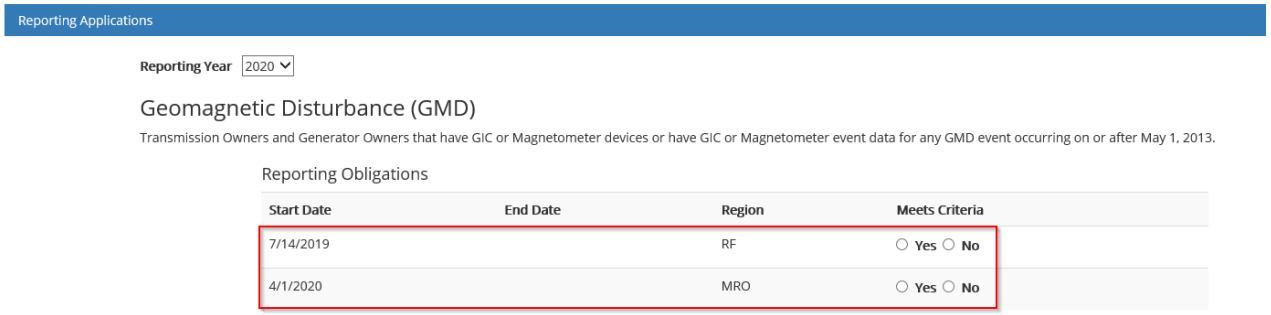
Section 1600 Reporting Confirmation

The Entity Administrator is responsible for filling out the Section 1600 Reporting Confirmation each year for all applicable Section 1600 applications.

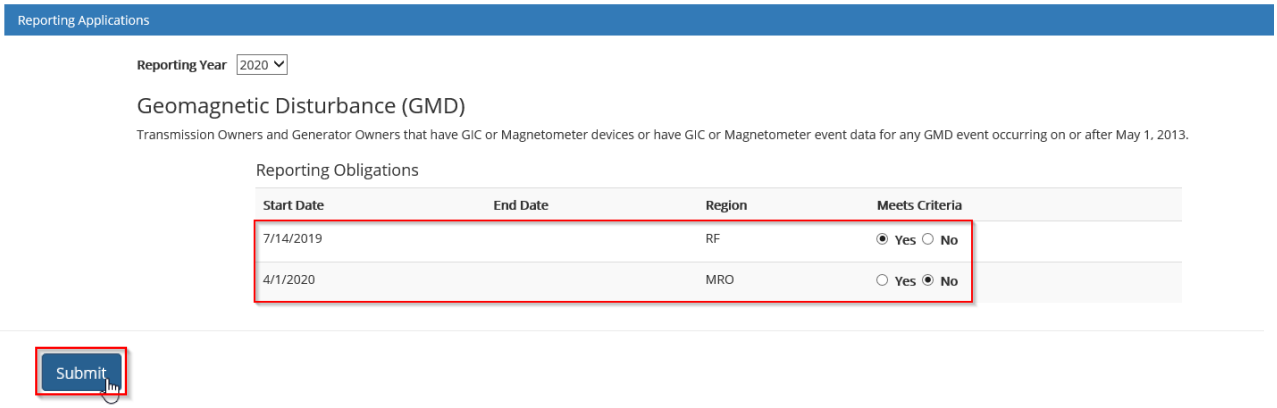
1. In the navigation bar, click “My Entity”, then click “Section 1600 Reporting Confirmation”.



2. Any Generator Owner or Transmission Owner scope for an entity will be listed in the Section 1600 Reporting Confirmation for GMD.



3. Select either “Yes” or “No” for each entity scope depending on the setup of the scope. Once all rows are completed, click “Submit”.

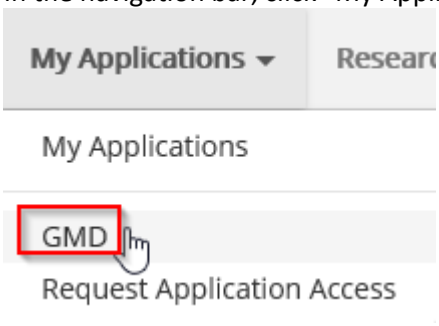


On December 1 of each year, the following year’s Reporting Obligation will be available to be completed.

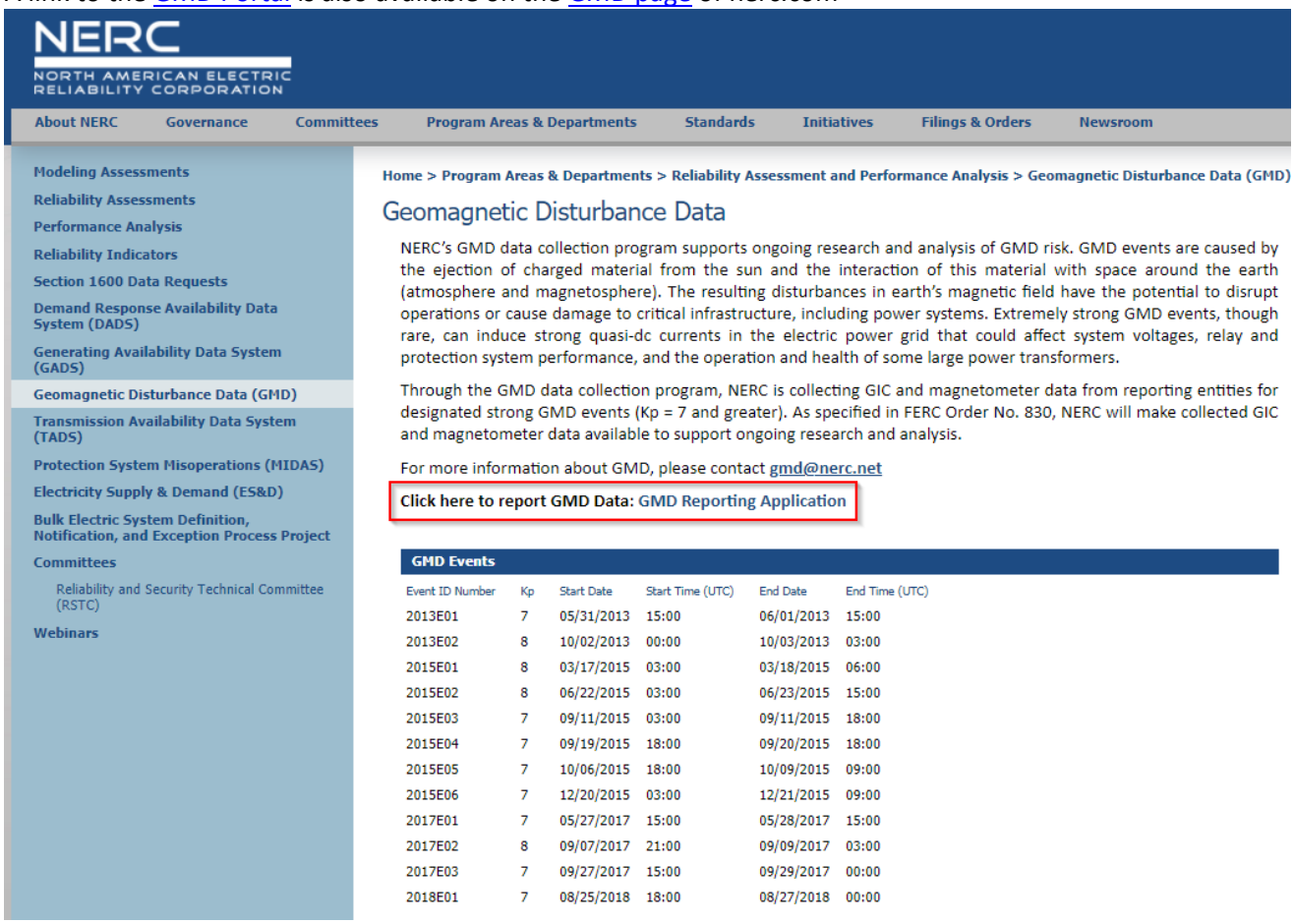
Note: The Section 1600 Reporting Confirmation may have more applications listed on the screen. All applications for which the entity has a qualifying scope are displayed. All rows must be completed before clicking the Submit button.

Chapter 3: Access the GMD Portal

1. Navigate to the NERC ERO Portal (https://eroportal.nerc.net/) and login.
2. In the navigation bar, click “My Applications”, then click “GMD”.



A link to the GMD Portal is also available on the GMD page of nerc.com



Chapter 4: Manual Device Entry

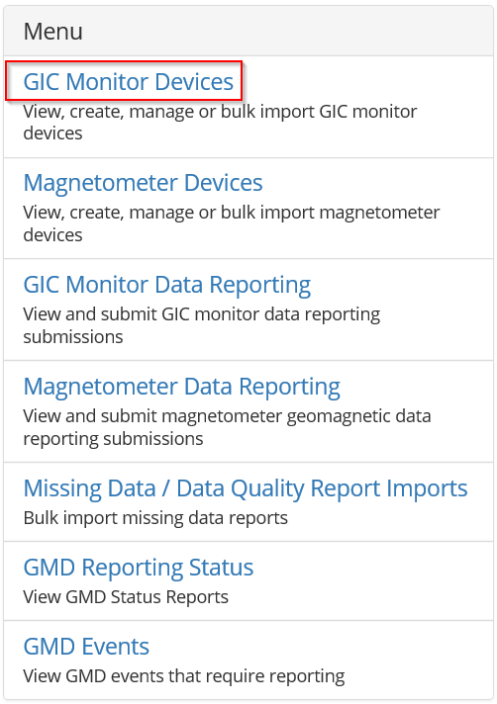
GIC Monitors

GIC Monitor device details may be entered manually or through an import using the templates available on the GMD page of nerc.com

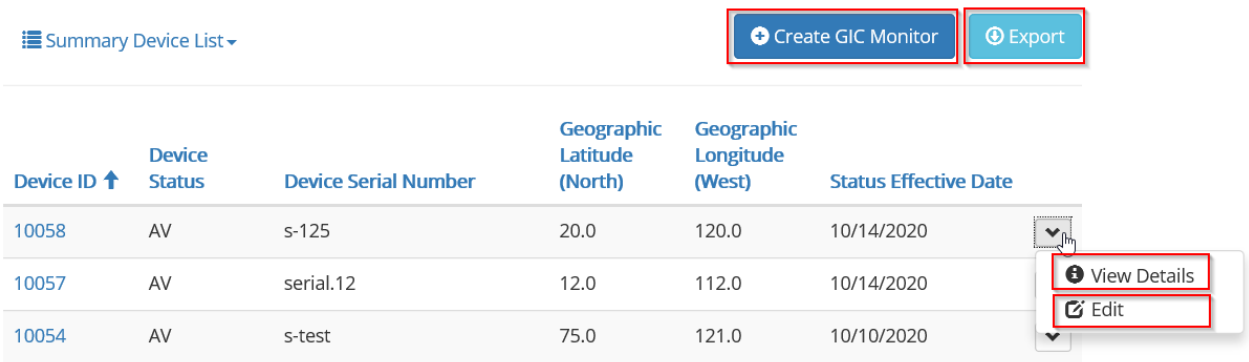
The GIC Monitor device details must be created in the GMD Portal before any GMD event data may be reported for the device.

View GIC Monitors

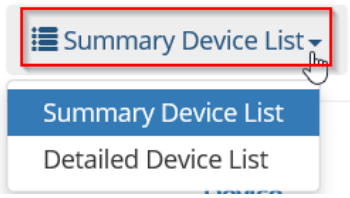
1. Under the "Menu", click "GIC Monitor Devices".



2. From this page, the user is able to create, view, edit or export any GIC Monitors associated with the selected registered entity.



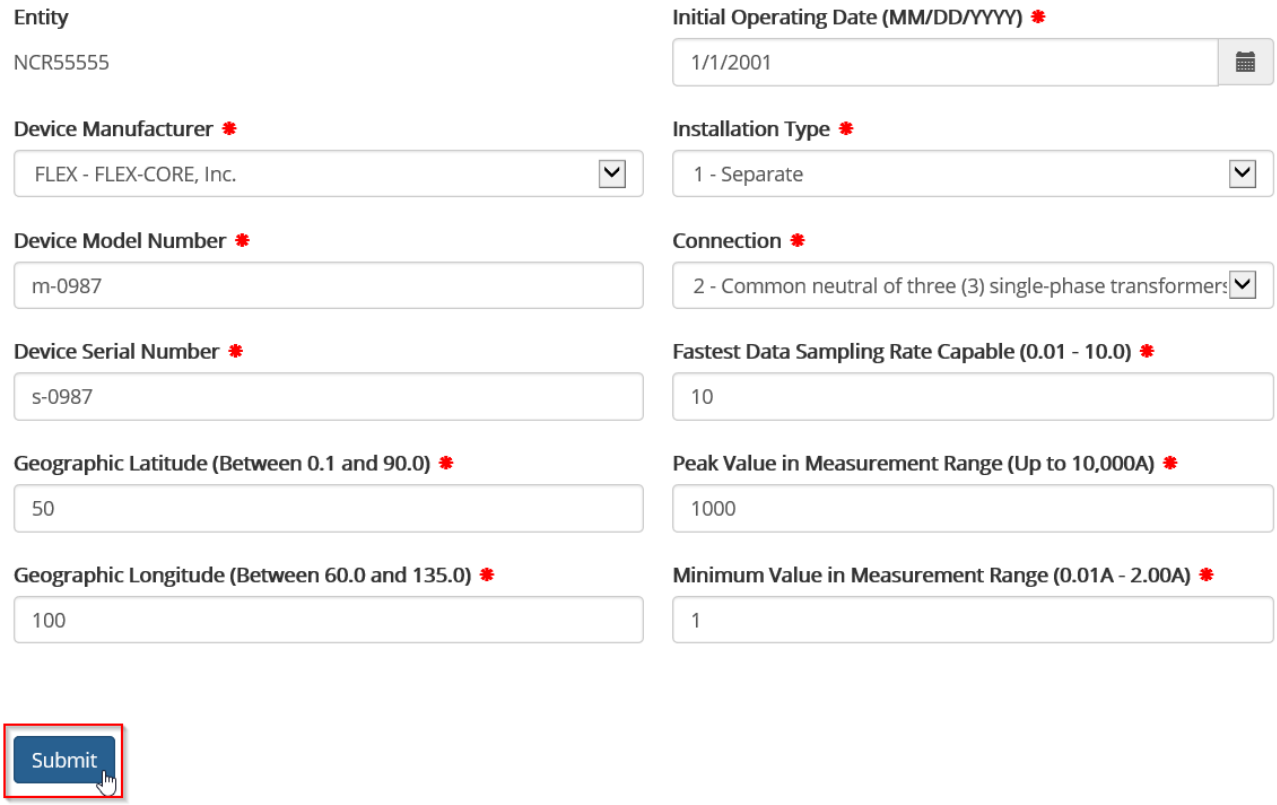
3. The user has the option to view the Summary Device List or Detailed Device List.



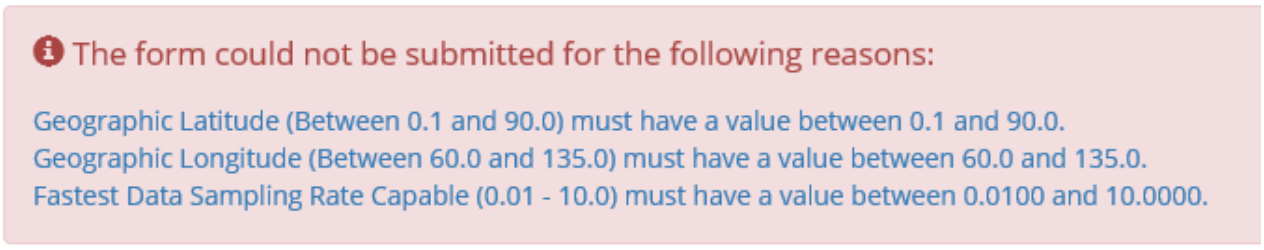
Create a GIC Monitor

1. Click the "Create GIC Monitor" button.

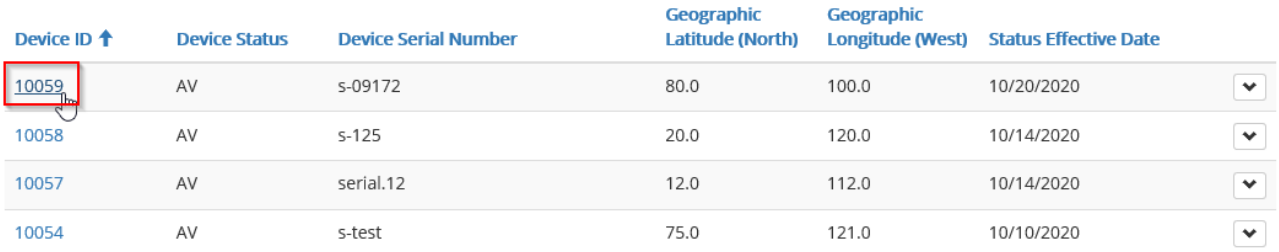
2. The user must fill in all fields marked with a red asterisk. Then, click "Submit".



3. If the new device contains any errors, the system will display them in a red box at the top of the page.



4. If the new device is valid, the system will add it to the list on the "GIC Monitor Devices" page with a system-generated Device ID.

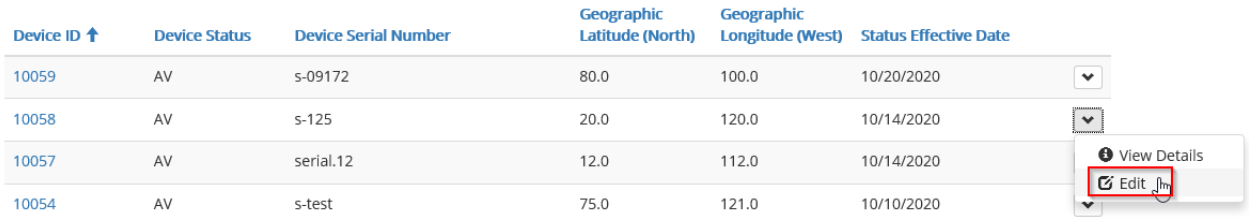


Device ID	Device Status	Device Serial Number	Geographic Latitude (North)	Geographic Longitude (West)	Status Effective Date
10059	AV	s-09172	80.0	100.0	10/20/2020
10058	AV	s-125	20.0	120.0	10/14/2020
10057	AV	serial.12	12.0	112.0	10/14/2020
10054	AV	s-test	75.0	121.0	10/10/2020

Edit a GIC Monitor

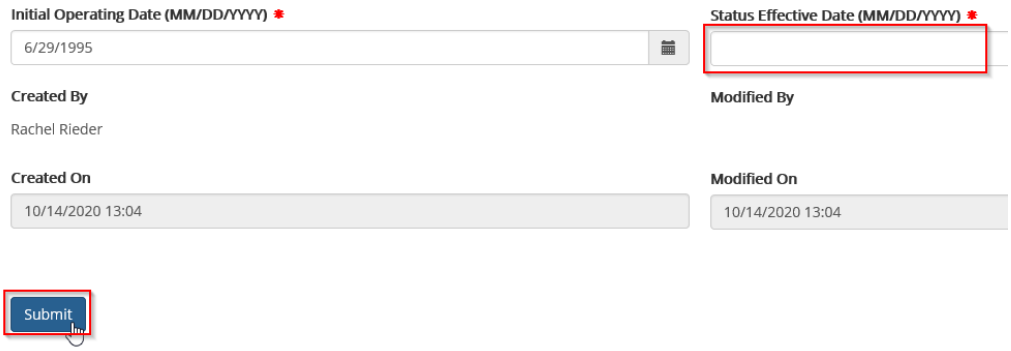
If the information provided has changed or was entered incorrectly, the GIC Monitor device record may be edited. Some fields may not be edited because they link the device to other data in the GMD Portal.

1. Click the dropdown arrow on the record and click "Edit".



Device ID	Device Status	Device Serial Number	Geographic Latitude (North)	Geographic Longitude (West)	Status Effective Date
10059	AV	s-09172	80.0	100.0	10/20/2020
10058	AV	s-125	20.0	120.0	10/14/2020
10057	AV	serial.12	12.0	112.0	10/14/2020
10054	AV	s-test	75.0	121.0	10/10/2020

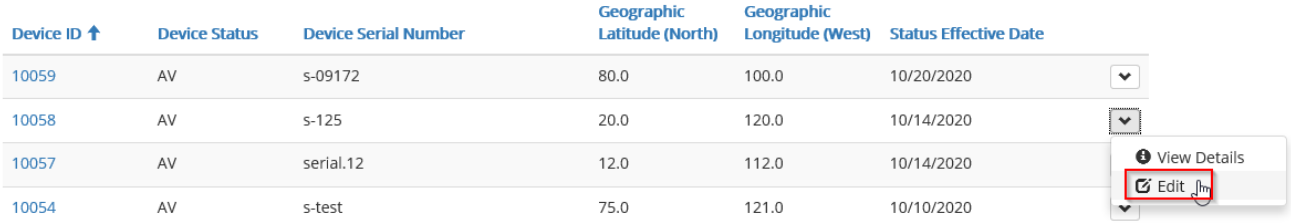
2. Edit the necessary fields. (If any non-editable fields need to be changed, please email gmd@nerc.net)
3. After editing all necessary fields, enter a new Status Effective Date and click "Submit".



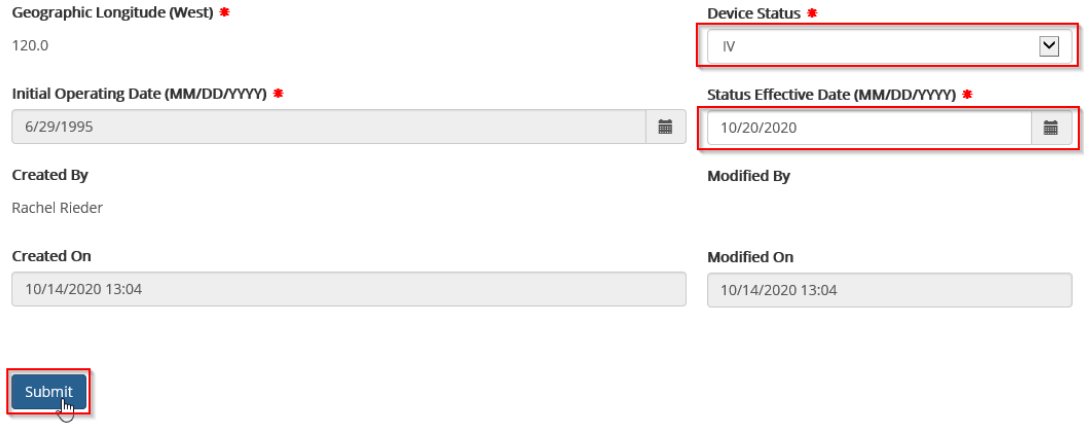
Deactivate a GIC Monitor

When a device is taken out of service for a period, retired, or replaced, the existing device must be deactivated. Two active devices of the same type may not have the same coordinates.

1. Click the dropdown arrow on the record and click “Edit”.



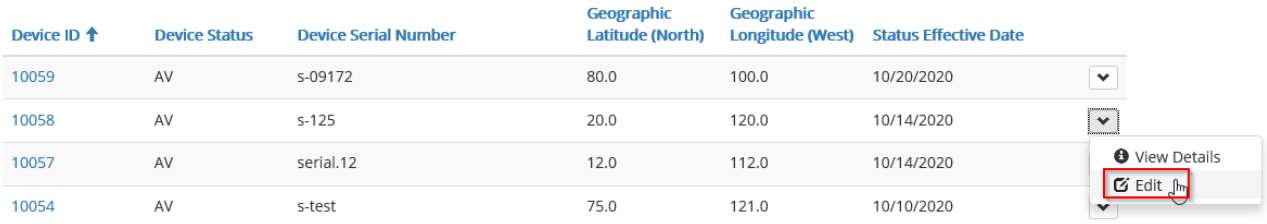
2. Change the Device Status value from “AV” (Active) to “IV” (Inactive) and enter a new Status Effective Date. Then, click “Submit”.



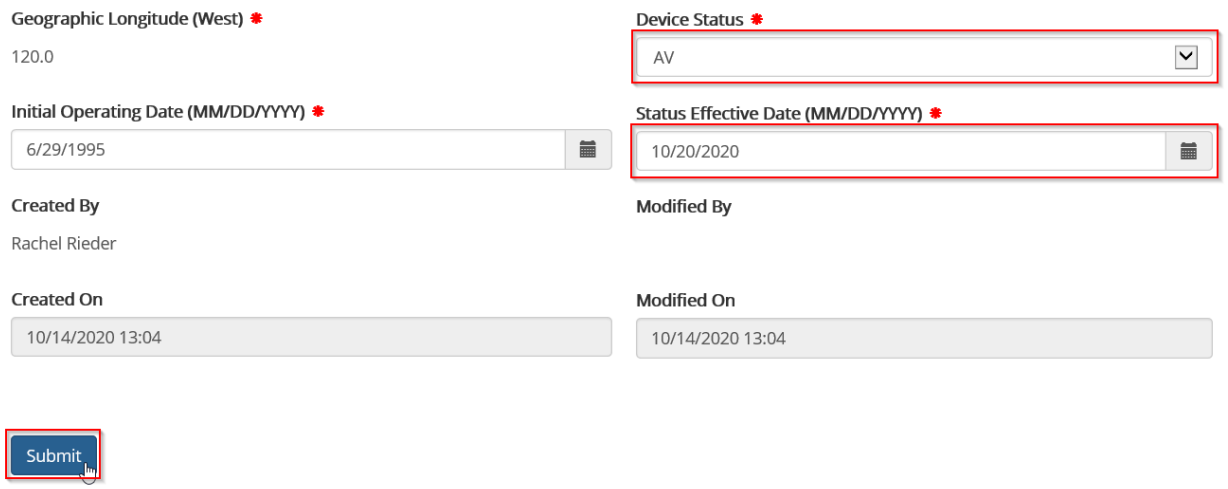
Reactivate a GIC Monitor

If a device has been taken out of service and deactivated, it may be reactivated, provided another device has not been installed to replace it.

1. Click the dropdown arrow on the record and click “Edit”.



2. Change the Device Status value from “IV” (Inactive) to “AV” (Active) and enter a new Status Effective Date. Then, click “Submit”.



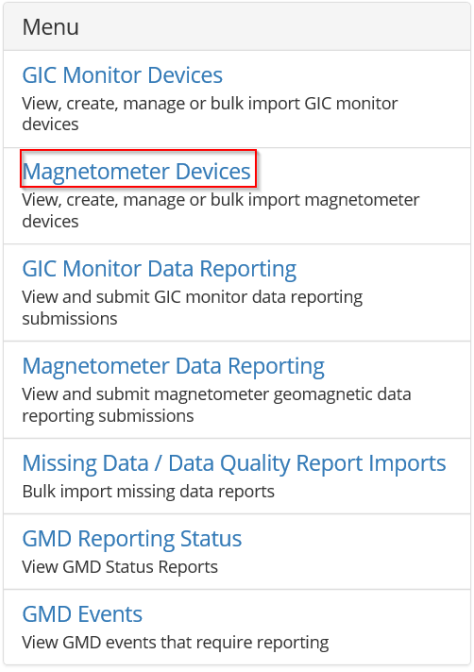
Magnetometers

Magnetometer device details may be entered manually or through an import using the templates available on the GMD page of nerc.com

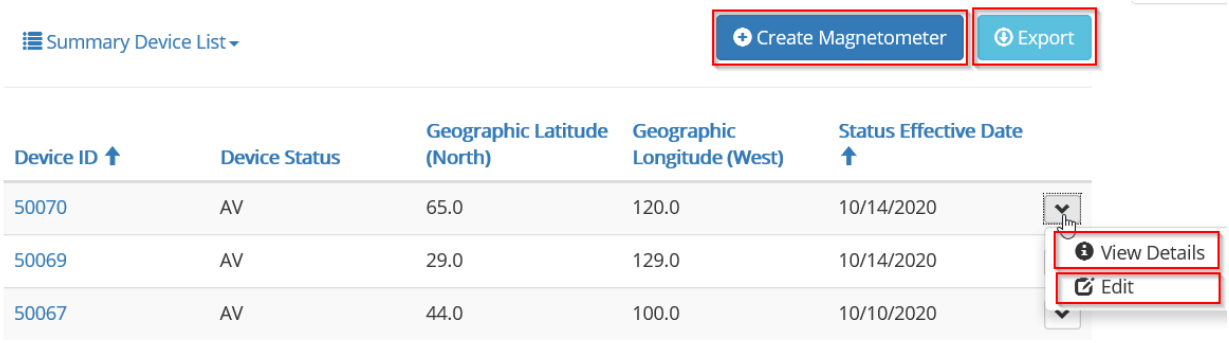
The Magnetometer device details must be created in the GMD Portal before any GMD event data may be reported for the device.

View Magnetometers

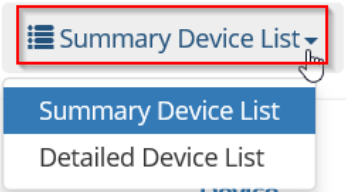
1. Under the "Menu", click "Magnetometer Devices".



2. From this page, the user is able to create, view, edit or export any Magnetometers associated with the selected registered entity.



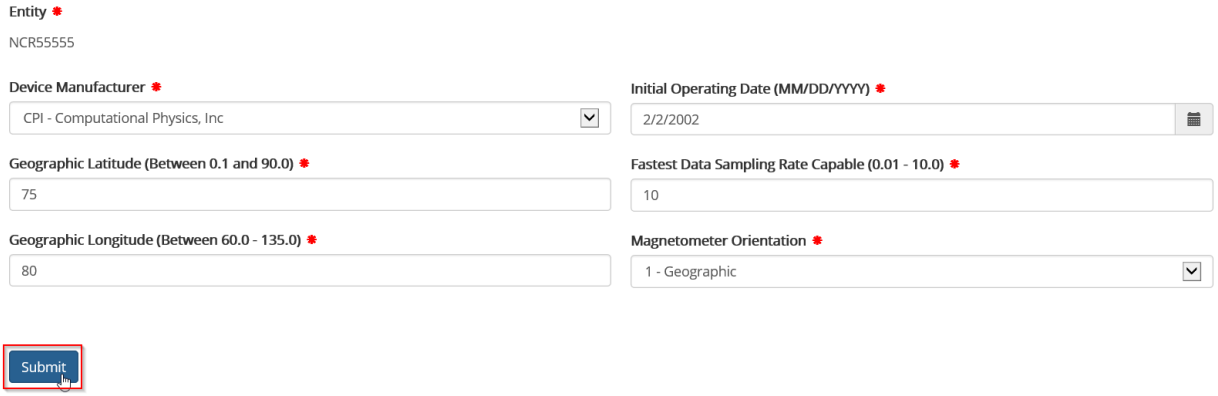
3. The user has the option to view the Summary Device List or Detailed Device List.



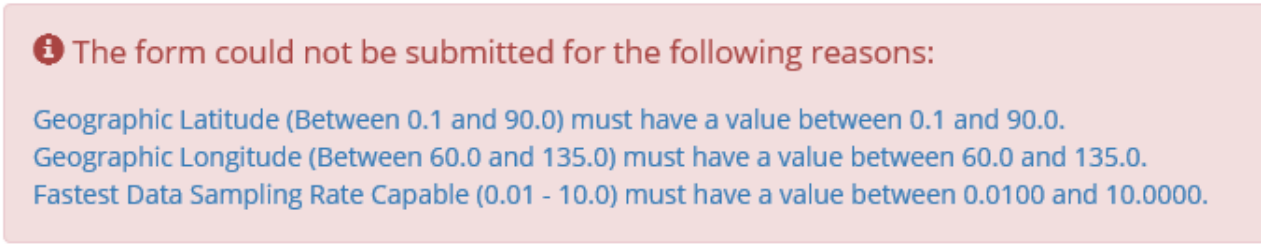
Create a Magnetometer

1. Click the "Create Magnetometer" button.

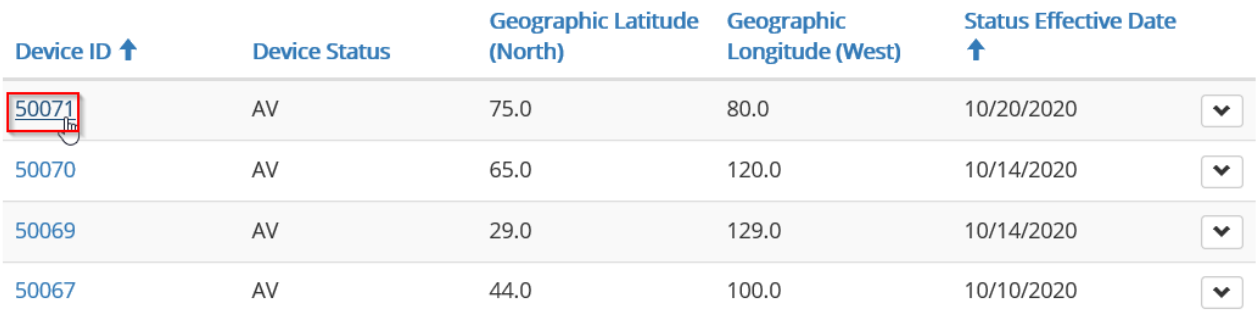
2. The user must fill in all fields marked with a red asterisk. Then, click "Submit".



3. If the new device contains any errors, the system will display them in a red box at the top of the page.



4. If the new device is valid, the system will add it to the list on the "Magnetometer Devices" page with a system-generated Device ID.

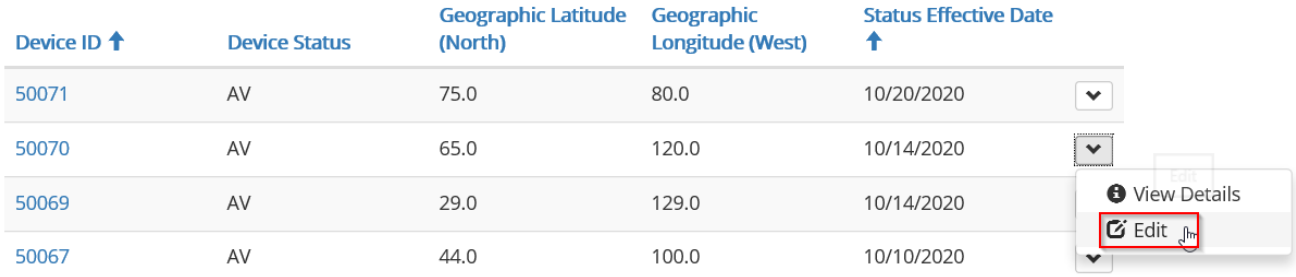


Device ID	Device Status	Geographic Latitude (North)	Geographic Longitude (West)	Status Effective Date
50071	AV	75.0	80.0	10/20/2020
50070	AV	65.0	120.0	10/14/2020
50069	AV	29.0	129.0	10/14/2020
50067	AV	44.0	100.0	10/10/2020

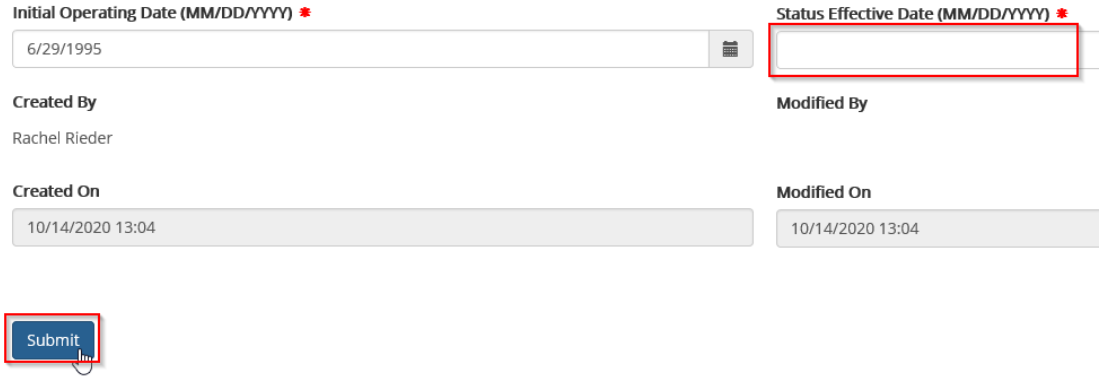
Edit a Magnetometer

If the information provided has changed or was entered incorrectly, the Magnetometer device record may be edited. Some fields may not be edited because they link the device to other data in the GMD Portal.

1. Click the dropdown arrow on the record and click "Edit".



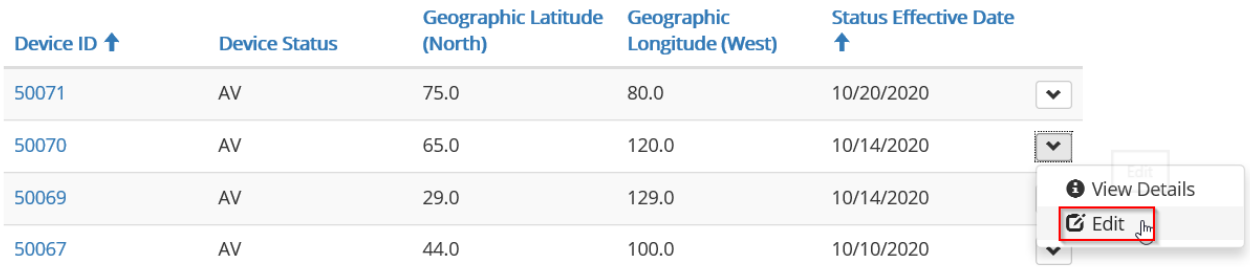
2. Edit the necessary fields. (If any non-editable fields need changed, please email gmd@nerc.net)
3. After editing all necessary fields, enter a new Status Effective Date and click "Submit".



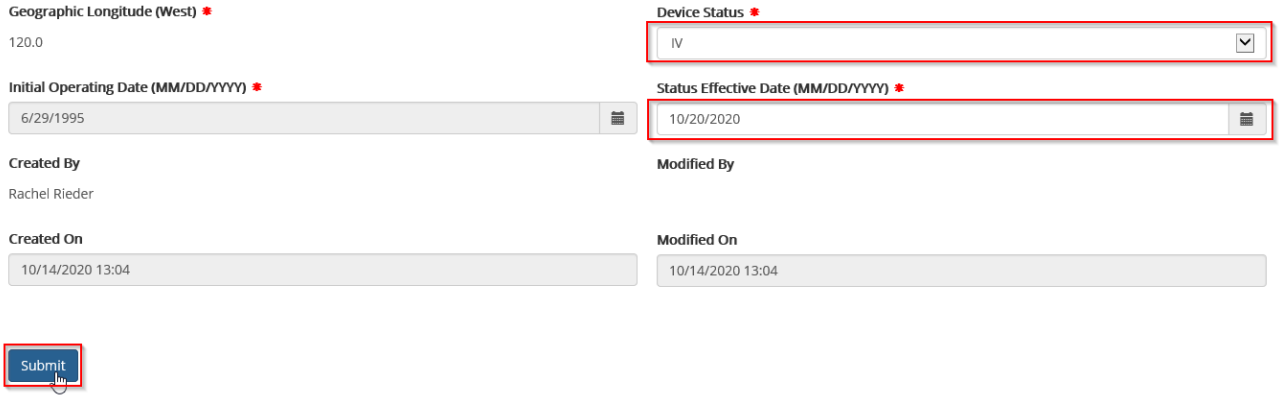
Deactivate a Magnetometer

When a device is taken out of service for a period, retired, or replaced, the existing device must be deactivated. Two active devices of the same type may not have the same coordinates.

1. Click the dropdown arrow on the record and click "Edit".



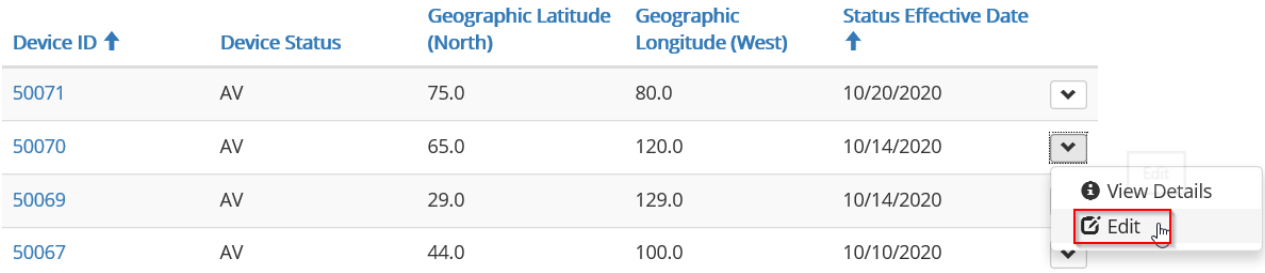
2. Change the Device Status value to "IV" ("Inactive") and enter a new Status Effective Date. Then, click "Submit".



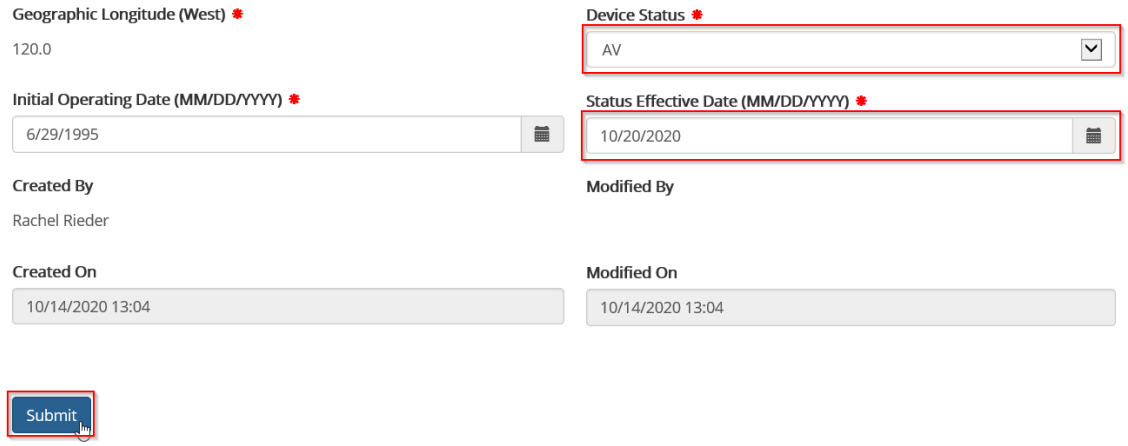
Reactivate a Magnetometer

If a device has been taken out of service and deactivated, it may be reactivated, provided another device has not been installed to replace it.

1. Click the dropdown arrow on the record and click "Edit".



2. Change the Device Status value from "IV" (Inactive) to "AV" (Active) and enter a new Status Effective Date. Then, click "Submit".



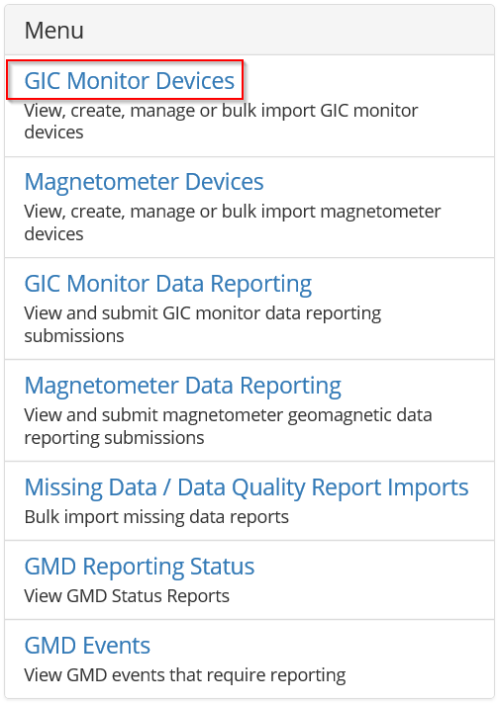
Chapter 5: Device Bulk Import

GIC Monitors

The bulk import feature allows multiple devices to be imported at one time. Import templates are available on the GMD page of nerc.com Multiple NCR IDs may be included on the same device import templates, provided the user has permission to report for those NCR IDs.

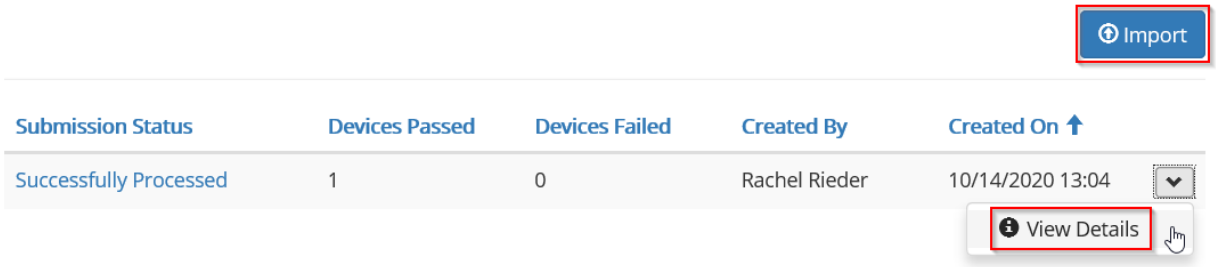
View GIC Monitor Bulk Imports

1. Under the "Menu", click "GIC Monitor Devices".



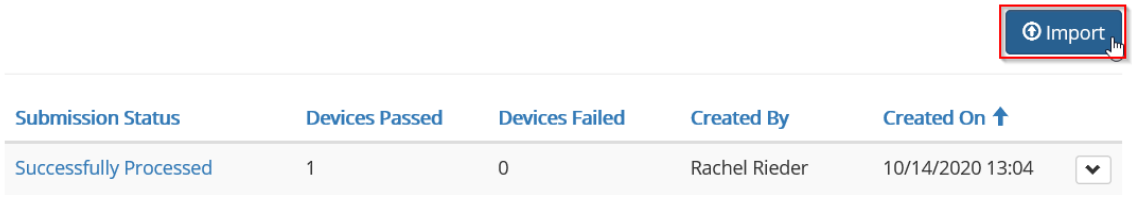
2. From the sub-menu, click "GIC Monitor Device Imports".

3. From this page, the user is able to view previous bulk submission details or import new GIC Monitors.



Import GIC Monitors

1. From the "GIC Monitor Device Imports" page, click "Import".



2. Download the GIC Monitor Device template from nerc.com or by clicking the hyperlink labeled "here" on the Bulk Import GIC Monitor Devices page.

3. Fill out all required fields within the GIC Monitor Device template and save it to the computer/drive.
   a. To create a new device, the Device ID and Status Effective Date must be blank and the Device Status must be "ID".

A	B	C	M	N	O
NCRID	**GICDeviceID**	**DeviceManufacturer**	**MinValueRange**	**DeviceStatus**	**StatusEffectiveDate**
NCR55555		EPRI	1	ID	

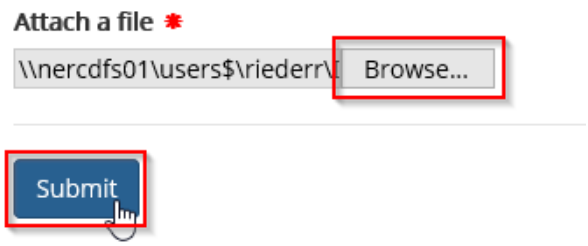
   b. To edit a device, the Device ID must have the correct system-generated Device ID, the Device Status must be "AV" and the Status Effective Date must not be blank.

A	B	C	M	N	O
NCRID	**GICDeviceID**	**DeviceManufacturer**	**MinValueRange**	**DeviceStatus**	**StatusEffectiveDate**
NCR55555	10001	EPRI	1	AV	11/1/2020

   c. To deactivate a device, the Device ID must have the correct system-generated Device ID, the Device Status must be "IV" and the Status Effective Date must not be blank.

A	B	C	M	N	O
NCRID	**GICDeviceID**	**DeviceManufacturer**	**MinValueRange**	**DeviceStatus**	**StatusEffectiveDate**
NCR55555	10202	OTH	1	IV	11/1/2020

4. Once the template is complete, click "Browse…" and select the correct file. Then, click "Submit".



5. The following table displays the possible submission and outcome combinations.

Data Record Submittals	Submission Status	Outcome Export Files	Outcome Action Buttons
Only successful devices	"Successful Processed"	Original Submission	View Devices
Some successful devices, some failed devices	"Processing Complete with Errors"	Original Submission Successful Rows Failed Rows	View Devices Re-import Devices
Only failed devices	"Processing Complete with Errors"	Original Submission Failed Rows	Re-import Devices
Unable to process file	"Processing Failed"	Original Submission	Re-import Devices

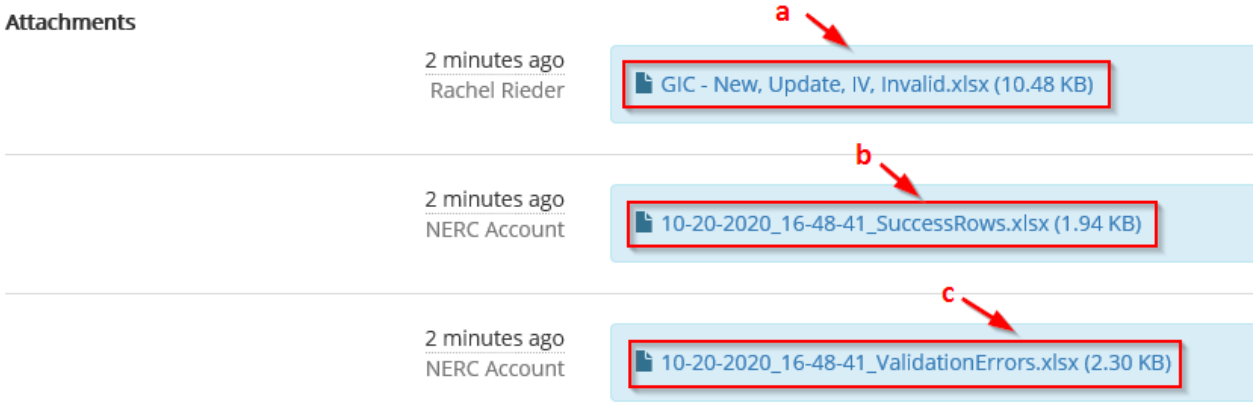
6. Depending on the GIC Monitor Device Submission Detail status, the user would see one or all of the following items:
   a. "View Devices" – shortcut to the GIC Monitor Devices page

      View Devices

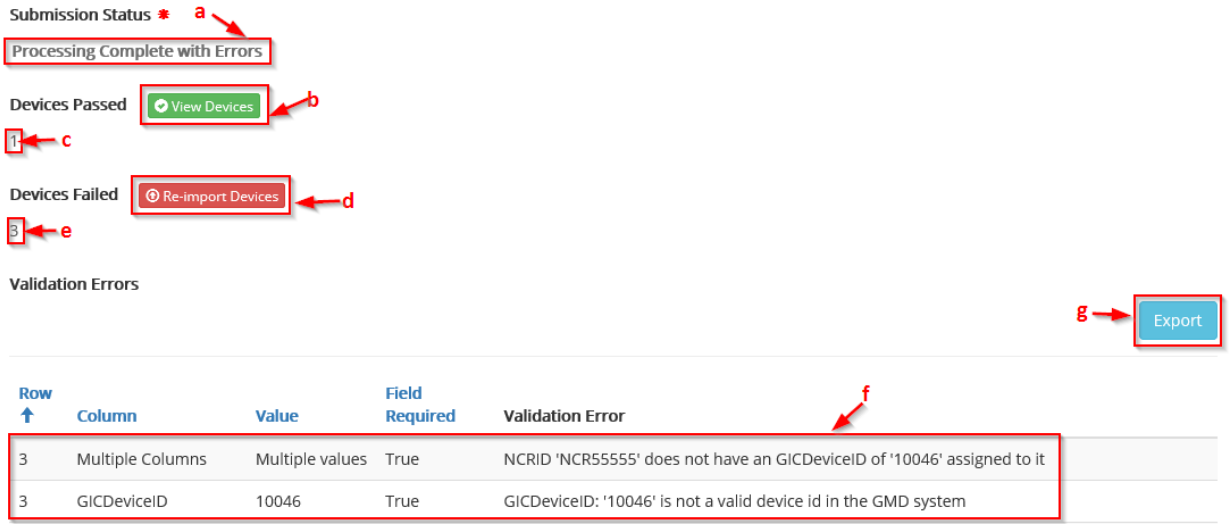
   b. "Re-import Data File" – shortcut to Upload GIC Monitor Device Submission page

      Re-import Devices

7. Depending on the submission status, the user would see some or all of the following files:
   a. The original submission file
   b. A file containing the successful rows
   c. A file containing the validation errors



8. Depending on the submission status, the user would see all or all of the following items:
   a. Submission Status
   b. "View Devices" button – shortcut to the GIC Monitor Device list
   c. Devices Passed – count of devices that passed validation and are written to the system
   d. "Re-import Devices" button – shortcut to Import GIC Monitor Device page
   e. Devices Failed – count of devices that failed validation and are not written to the system
   f. Validation Errors – same errors as displayed in the file above
   g. "Export" button – ability to export the Validation Errors

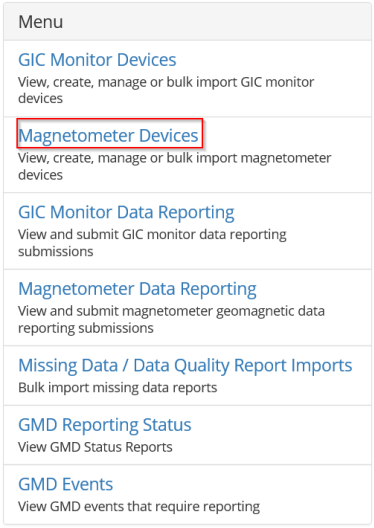


Magnetometers

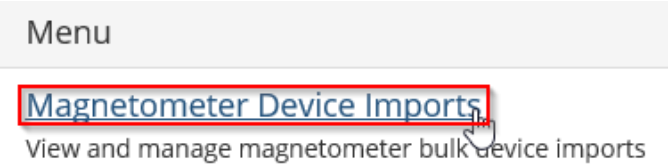
The bulk import feature allows multiple devices to be imported at one time. Import templates are available on the GMD page of nerc.com Multiple NCR IDs may be included on the same device import templates, provided the user has permission to report for those NCR IDs.

View Magnetometer Bulk Imports

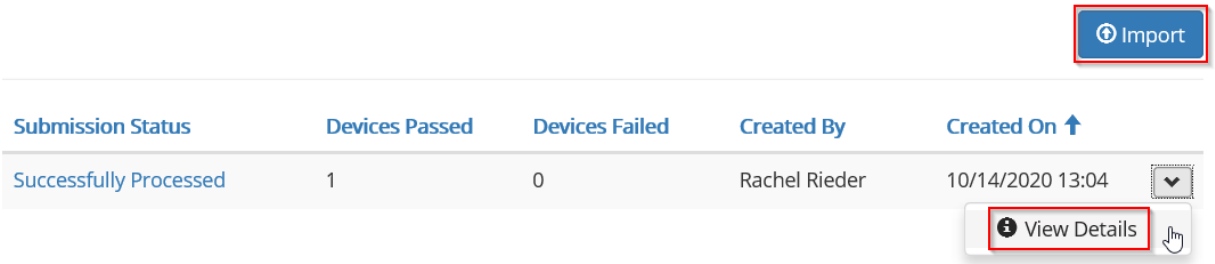
1. Under the "Menu", click "Magnetometer Devices".



2. From the sub-menu, click “Magnetometer Device Imports”.

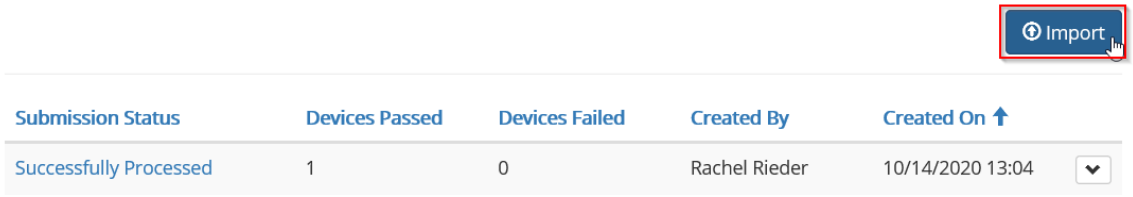


3. From this page, the user is able to view previous bulk submission details or import new Magnetometers.

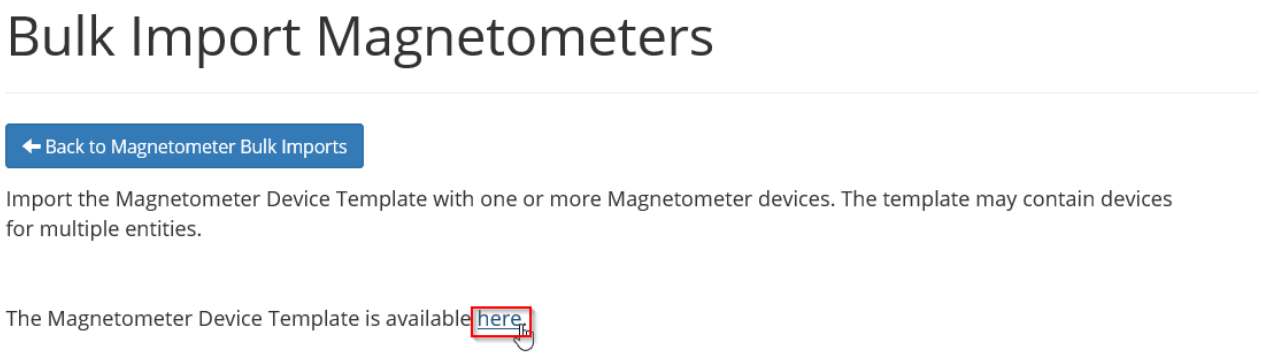


Import Magnetometers

1. From the “Magnetometer Device Imports” page, click “Import”.



2. Download the Magnetometer Device template from nerc.com or by clicking the hyperlink labeled “here” on the Bulk Import Magnetometer page.



3. Fill out all required fields within the Magnetometer Device template and save it to the computer/drive.

   a. To create a new device, the Device ID and Status Effective Date must be blank and the Device Status must be “ID”.

A	B	C	H	I	J
NCRID	**MagnetometerDeviceID**	**DeviceManufacturer**	**MagnetometerOrientation**	**DeviceStatus**	**StatusEffectiveDate**
NCR55555		EPRI	1	ID	

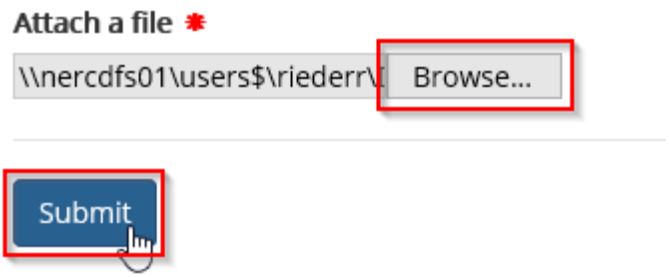
   b. To edit a device, the Device ID must have the correct system-generated Device ID, the Device Status must be “AV” and the Status Effective Date must not be blank.

A	B	C	H	I	J
NCRID	**MagnetometerDeviceID**	**DeviceManufacturer**	**MagnetometerOrientation**	**DeviceStatus**	**StatusEffectiveDate**
NCR55555	50001	EPRI	1	AV	11/1/2020

c. To deactivate a device, the Device ID must have the correct system-generated Device ID, the Device Status must be "IV" and the Status Effective Date must not be blank.

	A	B	C	H	I	J
	NCRID	MagnetometerDeviceID	DeviceManufacturer	MagnetometerOrientation	DeviceStatus	StatusEffectiveDate
	NCR55555	50202	OTH	1	IV	11/15/2020

4. Once the template is complete, click "Browse…" and select the correct file. Then, click "Submit".



5. The following table displays the possible submission and outcome combinations.

Data Record Submittals	Submission Status	Outcome Export Files	Outcome Action Buttons
Only successful devices	"Successful Processed"	Original Submission	View Devices
Some successful devices, some failed devices	"Processing Complete with Errors"	Original Submission Successful Rows Failed Rows	View Devices Re-import Devices
Only failed devices	"Processing Complete with Errors"	Original Submission Failed Rows	Re-import Devices
Unable to process file	"Processing Failed"	Original Submission	Re-import Devices

6. Depending on the GIC Monitor Device Submission Detail status, the user would see one or all of the following items:

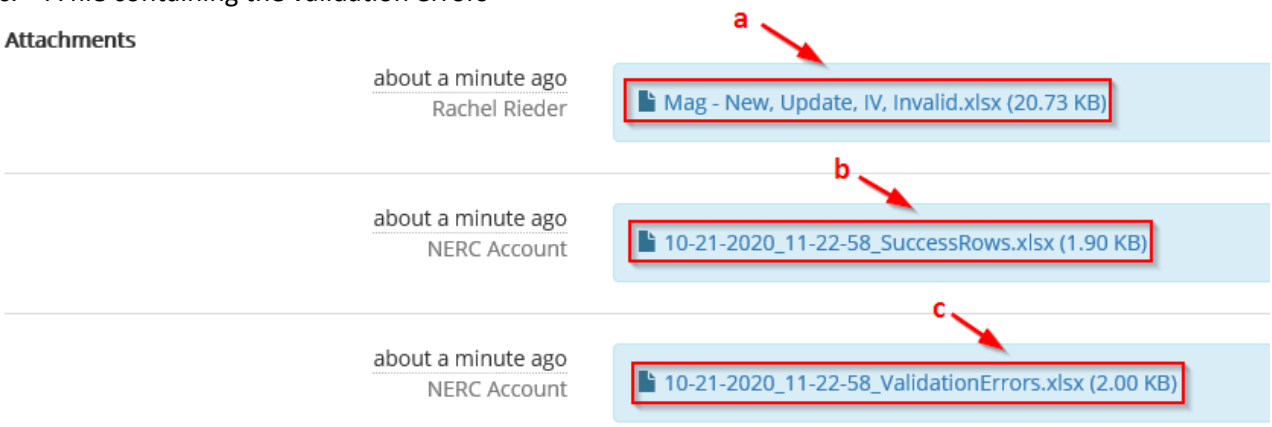
a. "View Devices" – shortcut to the GIC Monitor Devices page

View Devices

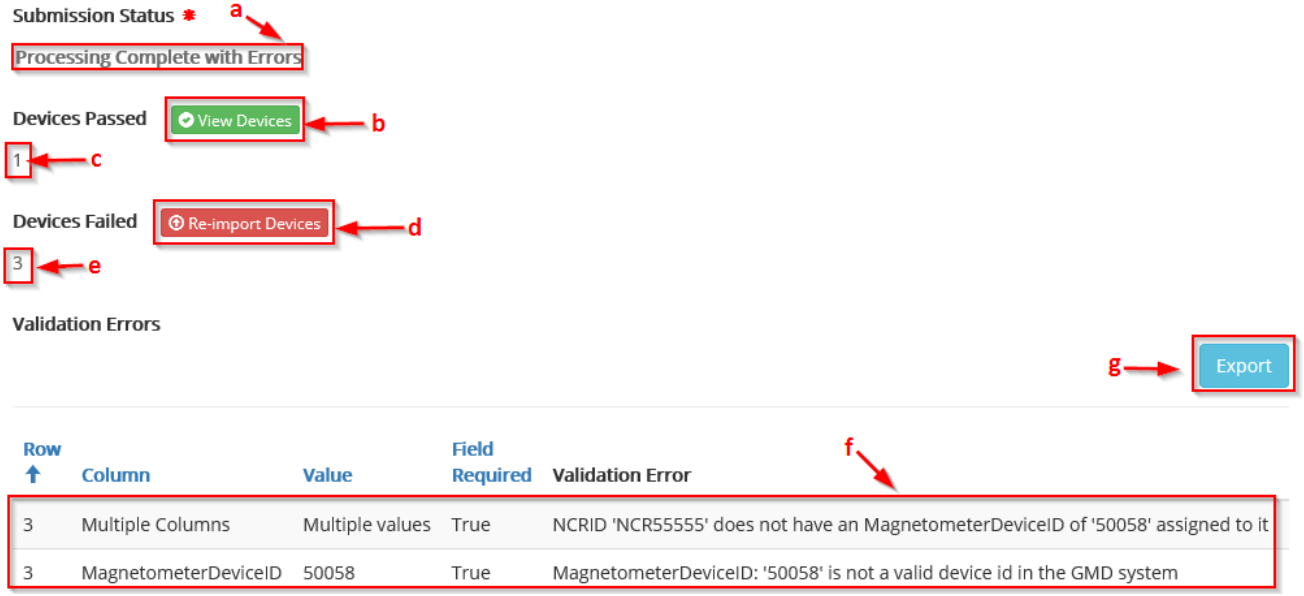
b. "Re-import Data File" – shortcut to Upload GIC Monitor Device Submission page

Re-import Devices

7. Depending on the submission status, the user would see some or all of the following files:
   a. The original submission file
   b. A file containing the successful rows
   c. A file containing the validation errors



8. Depending on the submission status, the user would see all or all of the following items:
   a. Submission Status
   b. "View Devices" button – shortcut to the Magnetometer Device list
   c. Devices Passed – count of devices that passed validation and are written to the system
   d. "Re-import Devices" button – shortcut to Import Magnetometer Device page
   e. Devices Failed – count of devices that failed validation and are not written to the system
   f. Validation Errors – same errors as displayed in the file above
   g. "Export" button – ability to export the Validation Errors

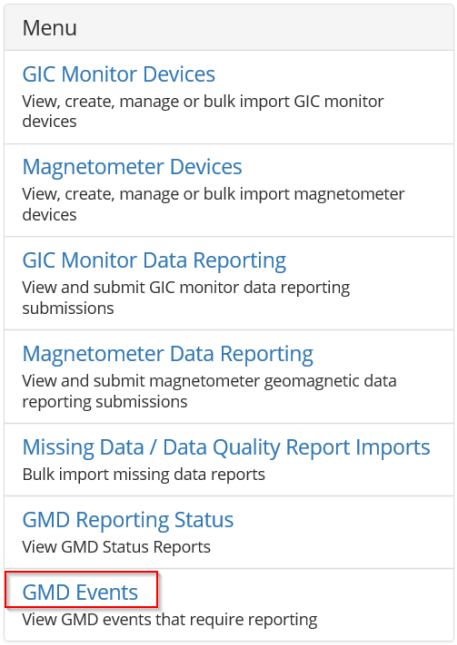


Row	Column	Value	Field Required	Validation Error
3	Multiple Columns	Multiple values	True	NCRID 'NCR55555' does not have an MagnetometerDeviceID of '50058' assigned to it
3	MagnetometerDeviceID	50058	True	MagnetometerDeviceID: '50058' is not a valid device id in the GMD system

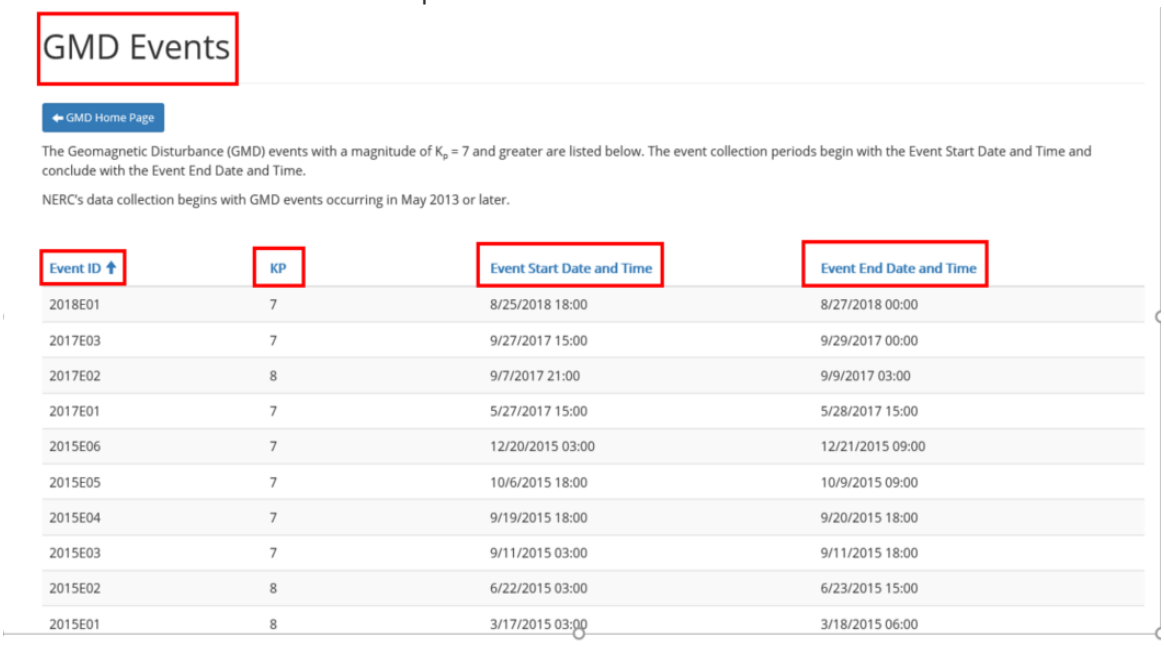
Chapter 6: Event Management

NERC will send notifications as GMD data collection events occur. NERC's notifications are for data collection purposes and are not operator alerts. To view the full GMD Data Event Notional Timeline, reference Figure I.1 in the GMD Data Reporting Instructions (DRI).

1. Under the "Menu", click "GMD Events".
2. From this page, the user is able to view GMD Events that require reporting.



3. From this page, the user is able to view the GMD Event ID, the magnitude of K_p = 7 and/or greater of the event and the event collection periods.



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

4. A user can also view GMD Events on the GMD Page[3] on nerc.com.

[3] https://www.nerc.com/pa/RAPA/GMD/Pages/GMDHome.aspx

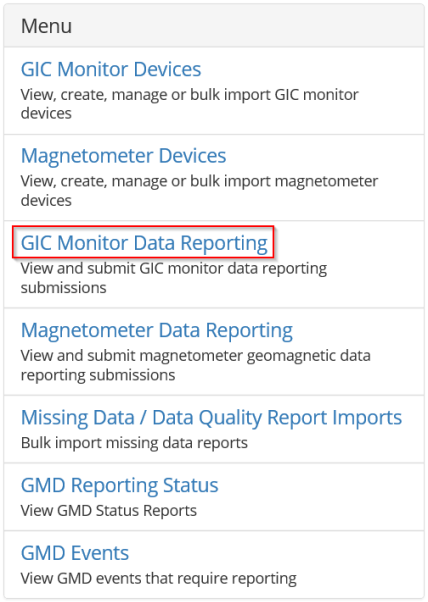
Chapter 7: Event Data Bulk Import

Event data may only be reported through a bulk import. The data must be in Comma-Separated Variable (CSV) format. Event data is reported separately for each event, and may include event measurements from multiple devices of the same type (e.g., GIC Monitors) in the import file.

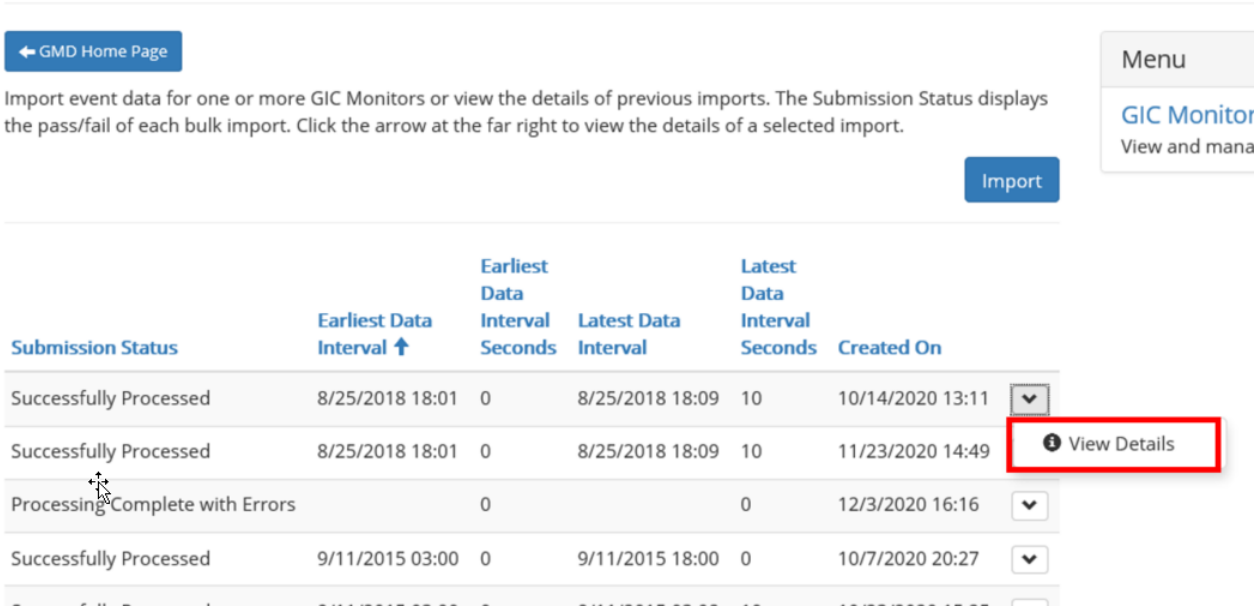
GIC Monitors

View GIC Monitor Event Data Imports

1. Under the "Menu", click "GIC Monitor Data Reporting".

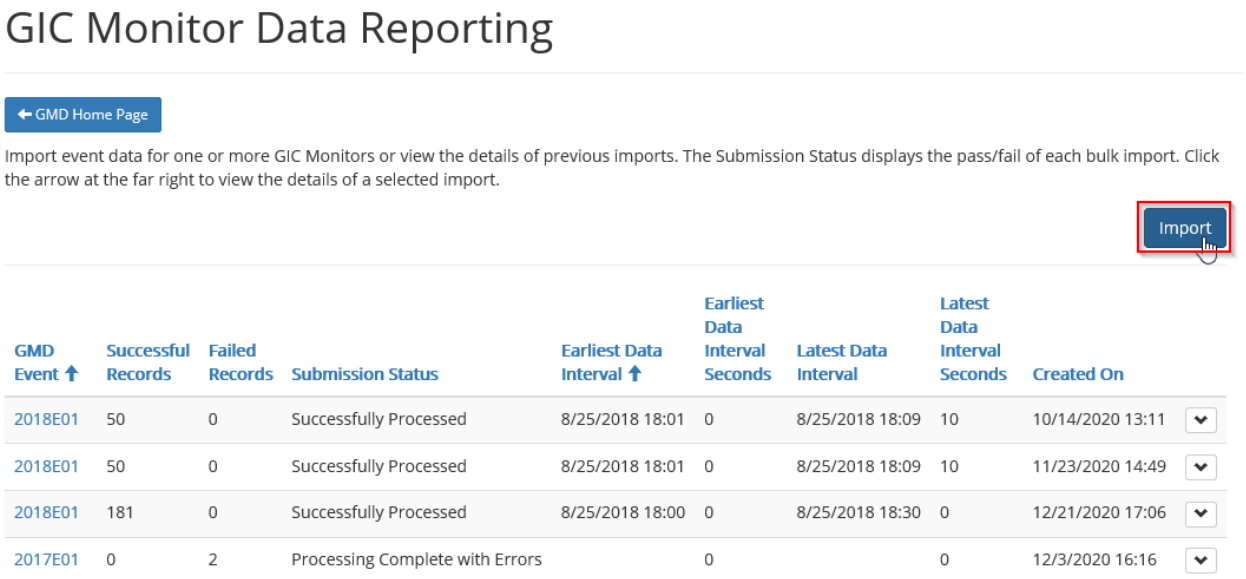


2. From this page, the user is able to view the details of previous imports of event data. Scroll to the right and select arrow drop-down and click on "view details

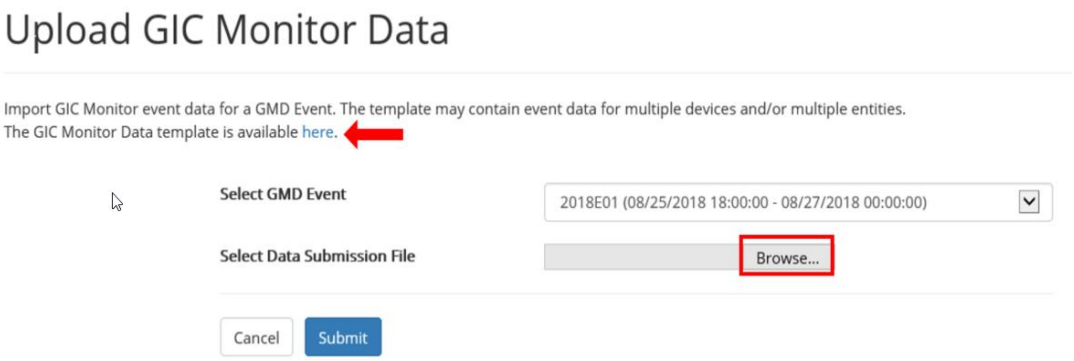


Import GIC Monitor Event Data

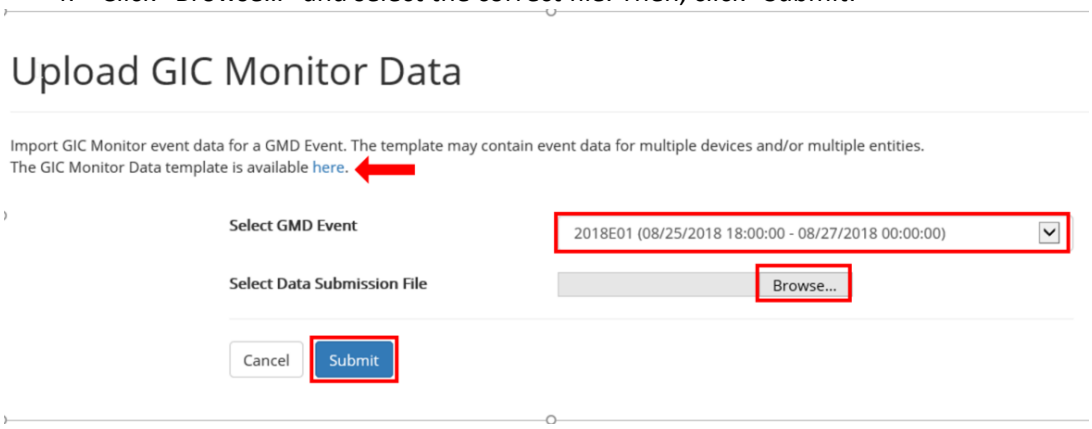
From this page, the user is able to view the details of previous imports of event data. Scroll to the right and click on "Import"



1. If event measurement data is not already in CSV format, download the GIC Monitor Data template from nerc.com or by clicking "here" on the Upload GIC Monitor Data page.



2. If using the template, fill out the three required fields for each measurement to be reported and save it to the computer/drive in CSV format.
3. Use the drop down list to select the GMD Event for which event data will be imported
4. Click "Browse…" and select the correct file. Then, click "Submit.



5. The following table displays the possible submission and outcome combinations.

Data Record Submittals	Submission Status	Outcome Export Buttons	Outcome Action Buttons
Successful data records only	"Successful Processed"	Download Submission File Export Successful Records	
Partial Successful data records and Partial Failed data records	"Processing Complete with Errors"	Download Submission File Export Successful Records Export Failed Records	Re-import Data File
Failed data records only	"Processing Complete with Errors"	Download Submission File Export Failed Records	Re-import Data File
Unable to process file	"Processing Complete with Errors"	Download Submission File Export Failed Records	Re-import Data File

6. Depending on the GIC Monitor Data Submission Detail status, the user would see one or all of the following items:
   a. "Download Submission Status" – Export the data submission that was uploaded

   b. "Export Successful Records" – Export the records that successfully passed validation

   c. "Export Failed Records" – Export the records that failed validation and their associated validation errors

   d. "Re-import Data File" – shortcut to Upload GIC Monitor Event Data Submission page

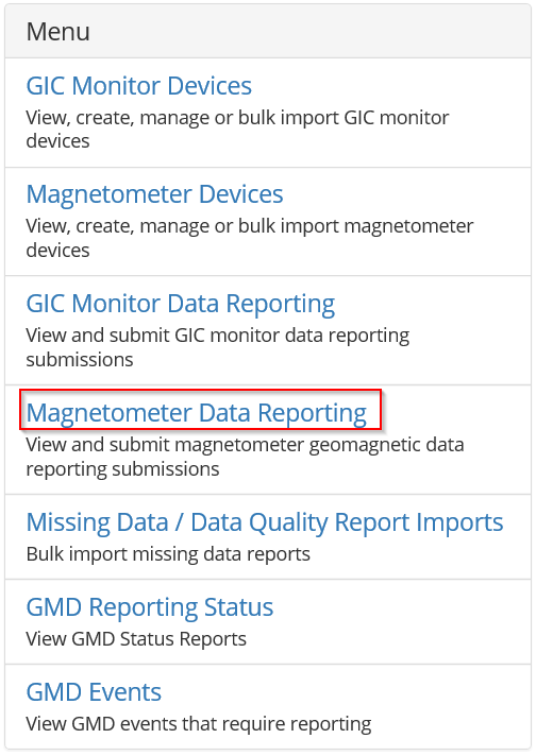
Magnetometers

Due to the volume of data that will reported, event data may only be reported through a bulk import. The data must be in Comma-Separated Variable (CSV) format.

Event data is reported separately for each event and may include event measurements from multiple devices in the import file.

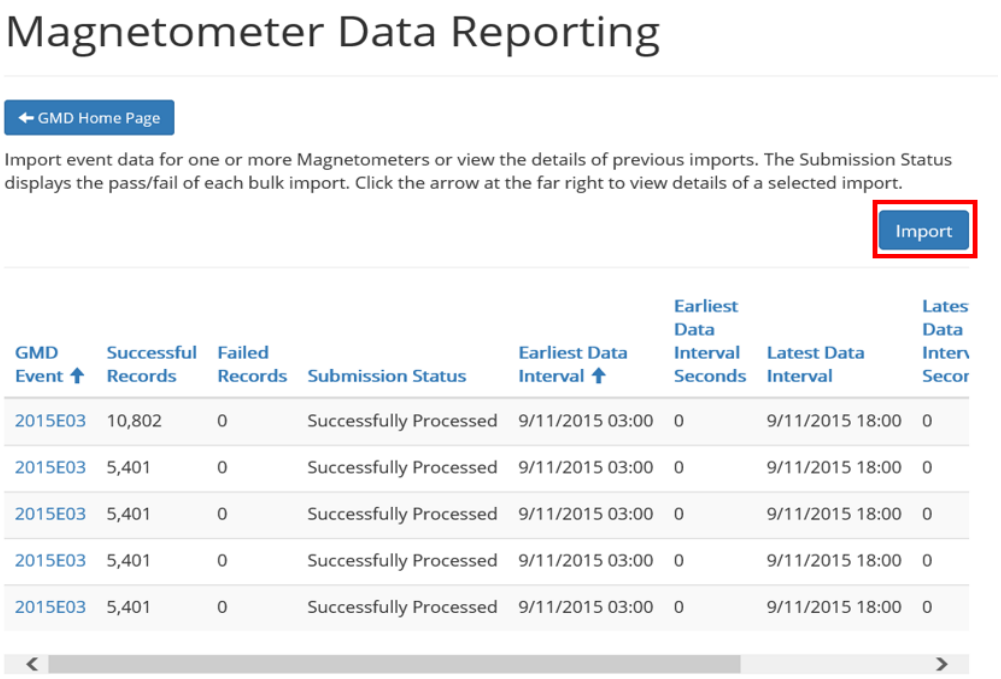
View Magnetometer Event Data Imports

1. Under the "Menu", click "Magnetometer Data Reporting".

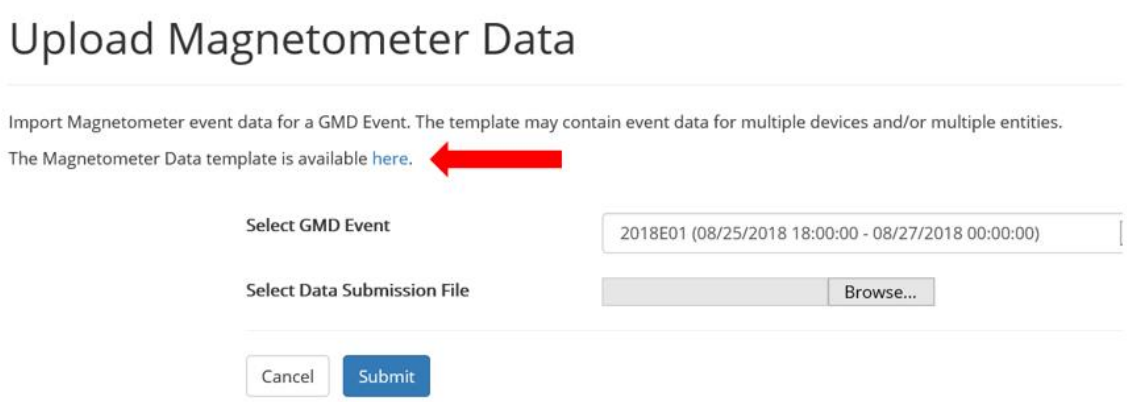


Import Magnetometer Event Data

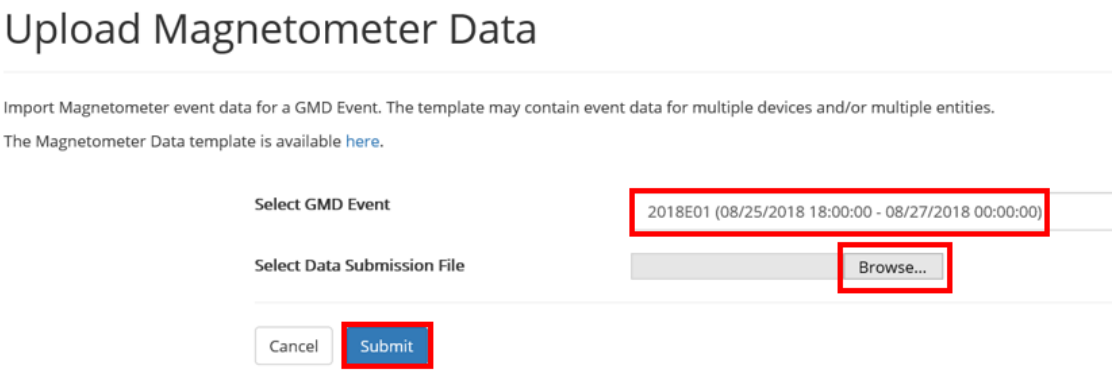
From this page, the user is able to view the details of previous imports of event data. Scroll to the right and click "Import".



1. If event measurement data is not in CSV format, download the Magnetometer Data template from nerc.com or by clicking "here" on the Upload Magnetometer Data page.



2. If using the template, fill out the three required fields for each measurement to be reported and save it to the computer/drive in CSV format.
3. Use the drop down list; select the GMD Event for which event data will be imported.
4. Click “Browse…” and select the correct file. Then, click “Submit



5. The following table displays the possible submission and outcome combinations.

Data Record Submittals	Submission Status	Outcome Export Buttons	Outcome Action Buttons
Successful data records only	"Successful Processed"	Download Submission File Export Successful Records	
Partial Successful data records and Partial Failed data records	"Processing Complete with Errors"	Download Submission File Export Successful Records Export Failed Records	Re-import Data File
Failed data records only	"Processing Complete with Errors"	Download Submission File Export Failed Records	Re-import Data File
Unable to process file	"Processing Complete with Errors"	Download Submission File Export Failed Records	Re-import Data File

6. Depending on the Magnetometer Data Submission Detail status, the user would see one or all of the following items:

   a. "Download Submission Status" – Export the data submission that was uploaded

   b. "Export Successful Records" – Export the records that successfully passed validation

   c. "Export Failed Records" – Export the records that failed validation and their associated validation errors

   d. "Re-import Data File" – shortcut to Upload Magnetometer Event Data Submission page

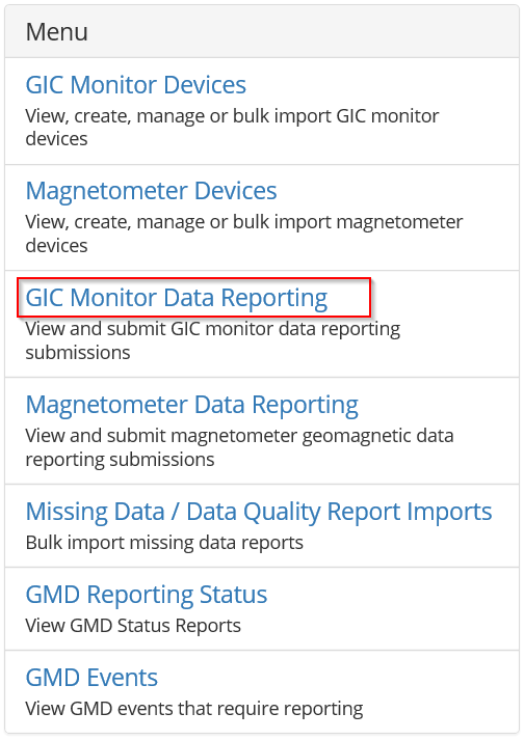
Chapter 8: Manual Entry of a Missing Data/Data Quality Report

GIC Monitor Missing Data/Data Quality Reports

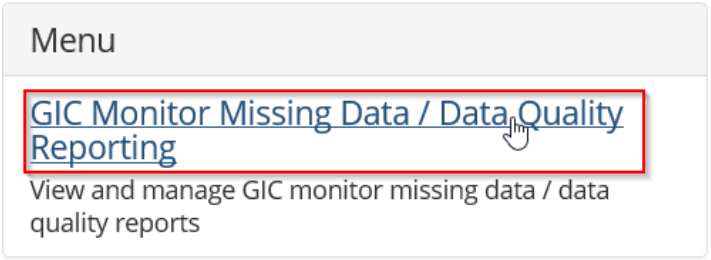
Reports for missing data are required when a gap of more than ten (10) minutes occurs during an event. They can also be submitted by an entity to indicate when a measuring device is providing suspect or spurious measurements during an event. These reports may be entered manually or through an import using the templates available on the GMD page of nerc.com.

View GIC Monitor Missing Data/Data Quality Reports

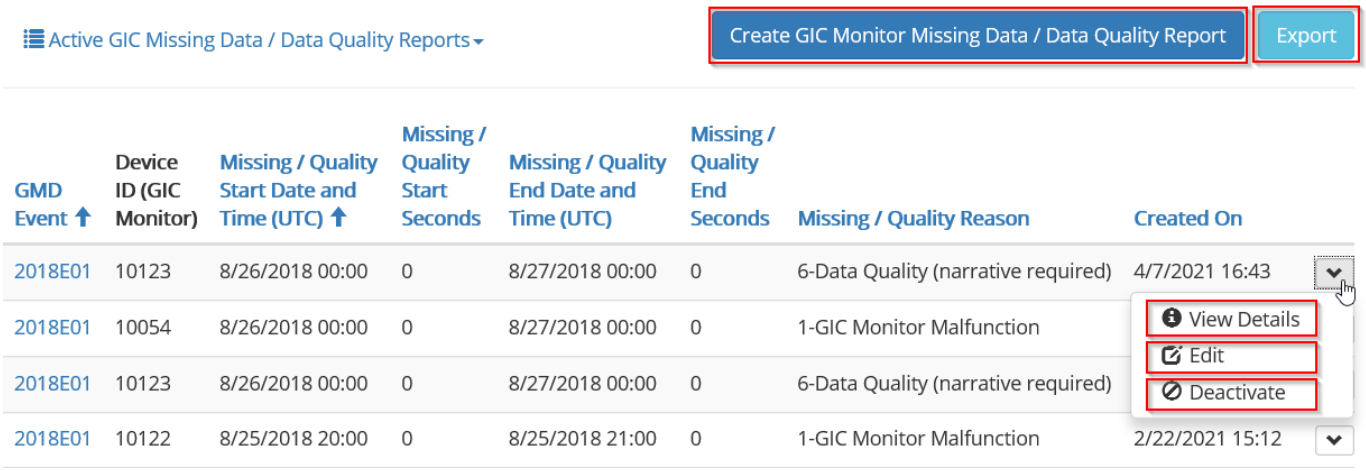
1. Under the "Menu", click "GIC Monitor Data Reporting".



2. From the sub-menu, click "GIC Monitor Missing Data/Data Quality Reporting".



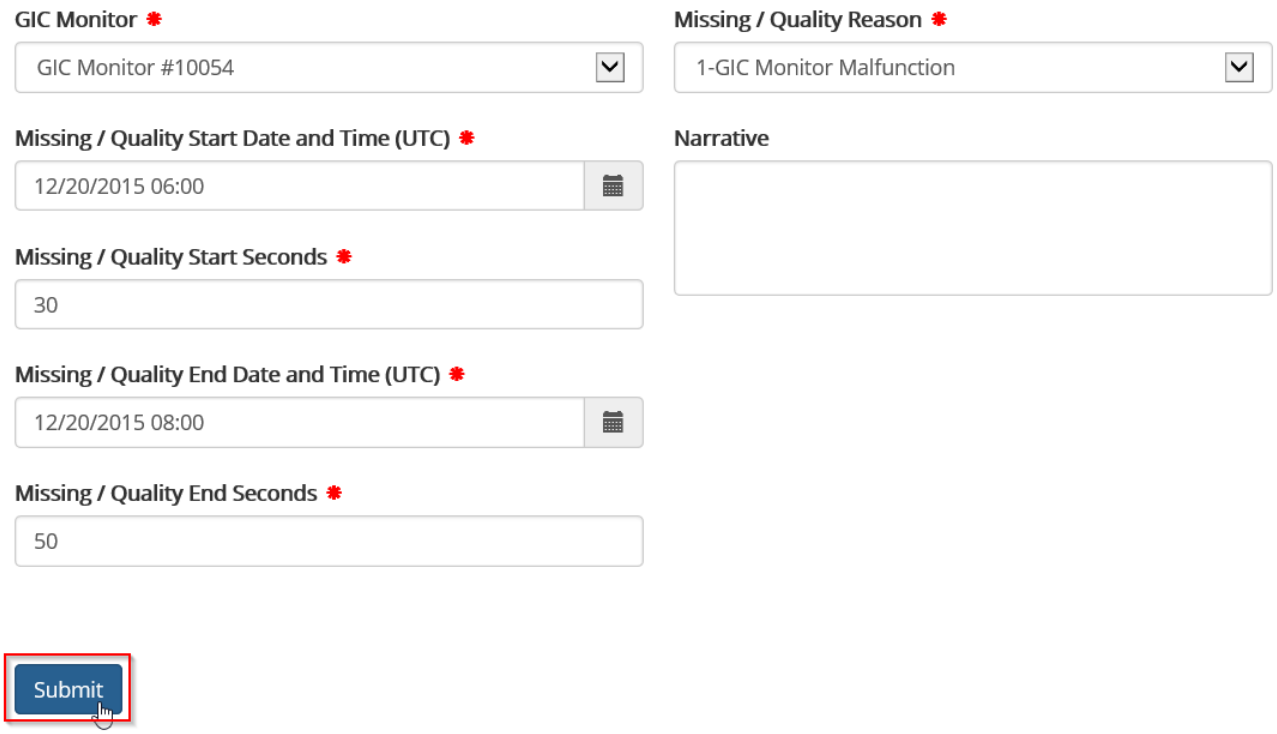
3. From this page, the user is able to create, view, edit, deactivate or export any GIC Monitor Missing Data/Data Quality Reports associated with the selected registered entity.



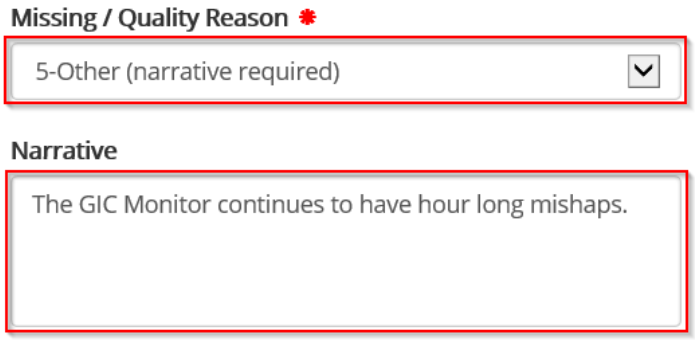
Create GIC Monitor Missing Data/Data Quality Report

1. Click the "Create GIC Monitor Missing Data/Data Quality Report" button.

2. The user must fill in all fields marked with a red asterisk then click "Submit". All GIC Monitor devices associated with the selected entity will be available in the "GIC Monitor" dropdown list. The Missing/Quality Start/End Times must contain a leading "0" if the hour is a single digit.



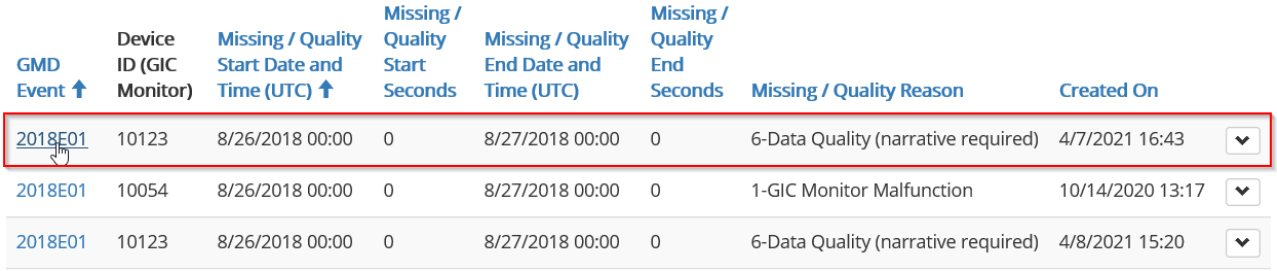
3. If the user selects "5-Other" as the Missing/Quality Reason, the user must also enter an explanation in the Narrative field.



4. If the user selects "6-Data Quality" as the Missing/Quality Reason, the user must also enter an explanation in the Narrative field.

5. If the new missing data/data quality report contains any errors, the system will display them in a red box at the top of the page.

6. If the new missing data/data quality report passes validation, the system will add it to the list on the "GIC Monitor Missing Data/Data Quality Reports".

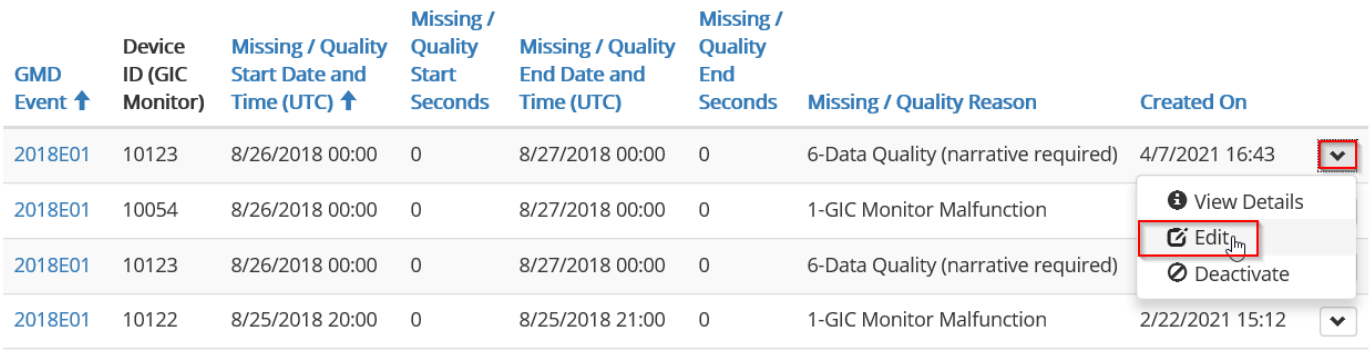


GMD Event	Device ID (GIC Monitor)	Missing / Quality Start Date and Time (UTC)	Missing / Quality Start Seconds	Missing / Quality End Date and Time (UTC)	Missing / Quality End Seconds	Missing / Quality Reason	Created On
2018E01	10123	8/26/2018 00:00	0	8/27/2018 00:00	0	6-Data Quality (narrative required)	4/7/2021 16:43
2018E01	10054	8/26/2018 00:00	0	8/27/2018 00:00	0	1-GIC Monitor Malfunction	10/14/2020 13:17
2018E01	10123	8/26/2018 00:00	0	8/27/2018 00:00	0	6-Data Quality (narrative required)	4/8/2021 15:20

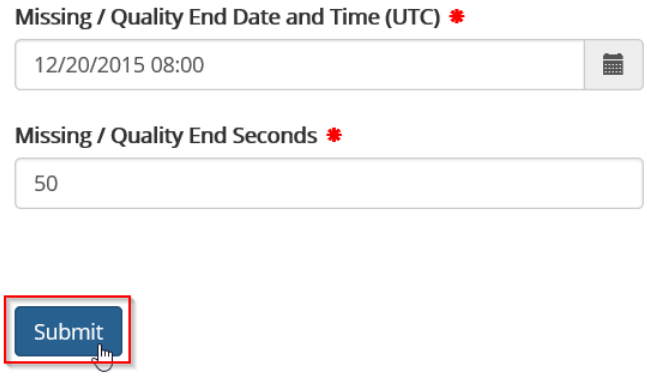
Edit GIC Monitor Missing Data/Data Quality Report

If the information provided has changed or was entered incorrectly, a Missing Data/Data Quality Report may be edited.

1. Click the dropdown arrow on the Missing Data/Data Quality Report record for the specific GIC monitor and click "Edit".



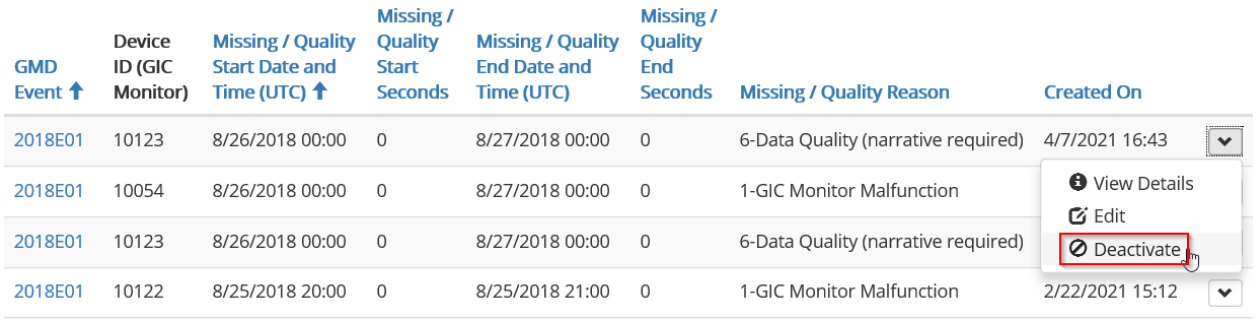
2. Edit the necessary fields and click "Submit".



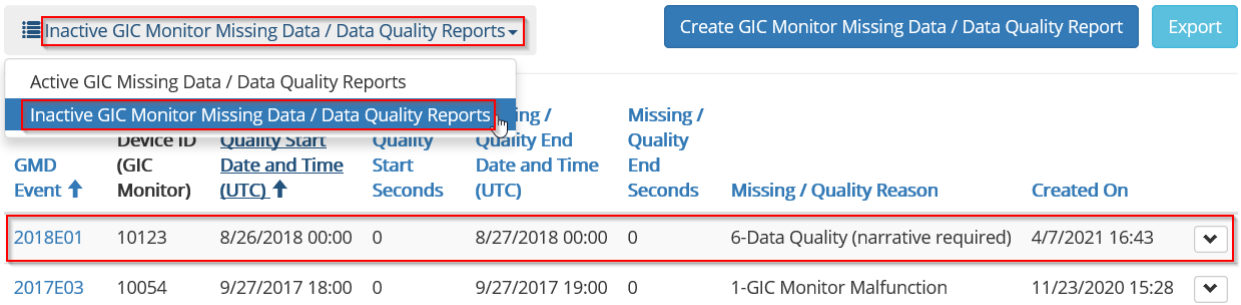
Deactivate GIC Monitor Missing Data/Data Quality Report

A user can deactivate a Missing Data/Data Quality Report if event data later becomes available or if a Missing Data/Data Quality Report was created erroneously.

1. Click the dropdown arrow on the record and click "Deactivate".



2. To view the Inactive Missing Data/Data Quality Report, switch the view to "Inactive GIC Monitor Missing Data/Data Quality Reports".

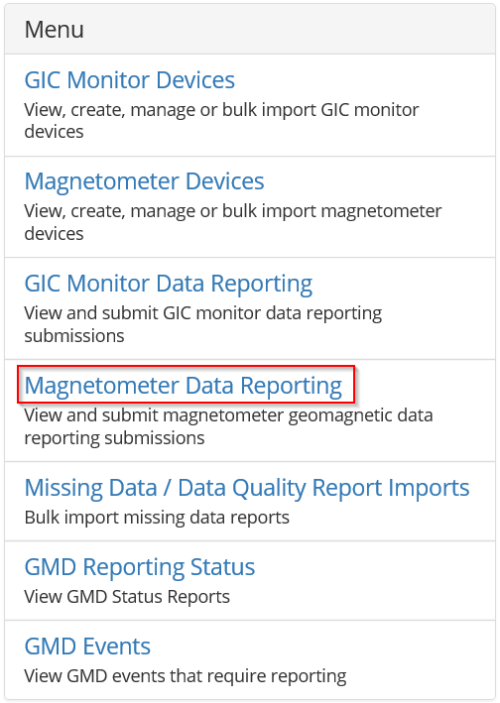


Magnetometer Missing Data/Data Quality Reports

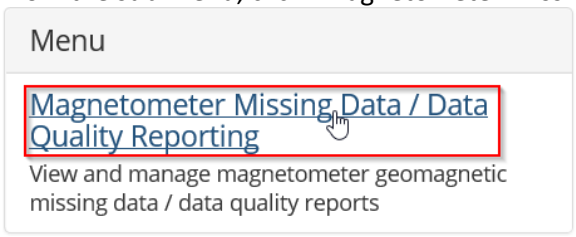
Reports for missing data are required when a gap of more than ten (10) minutes occurs during an event. They can also be submitted by an entity to indicate when a measuring device is providing suspect or spurious measurements during an event. These reports may be entered manually or through an import using the templates available on the GMD page of nerc.com.

View Magnetometer Missing Data/Data Quality Reports

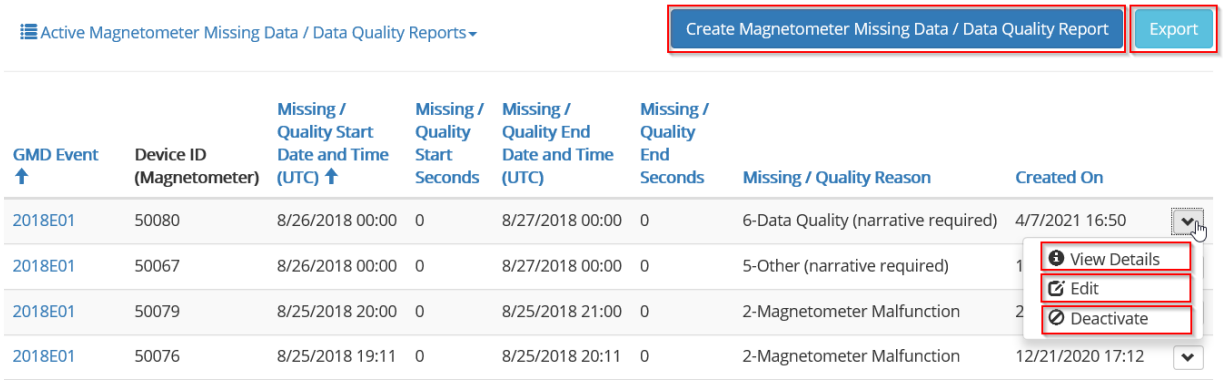
1. Under the "Menu", click "Magnetometer Data Reporting".



2. From the sub-menu, click "Magnetometer Missing Data/Data Quality Reporting".



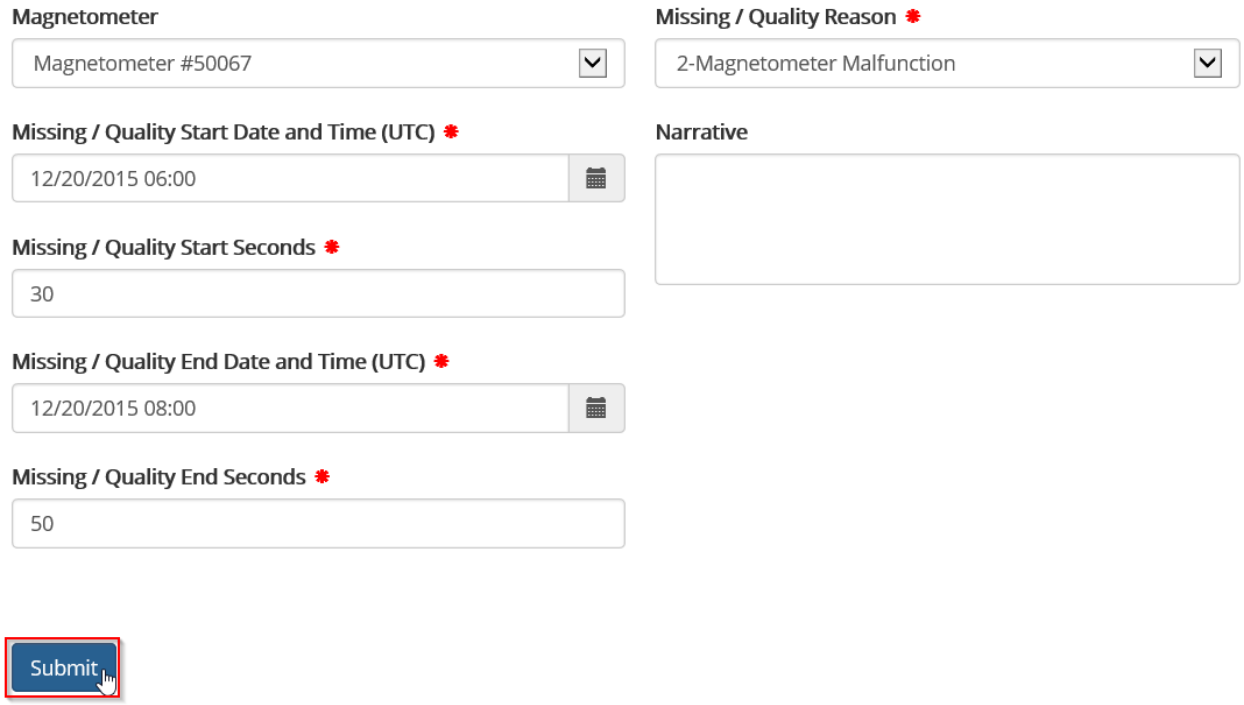
3. From this page, the user is able to create, view, edit, deactivate or export any Magnetometer Missing Data/Data Quality Reports associated with the selected registered entity.



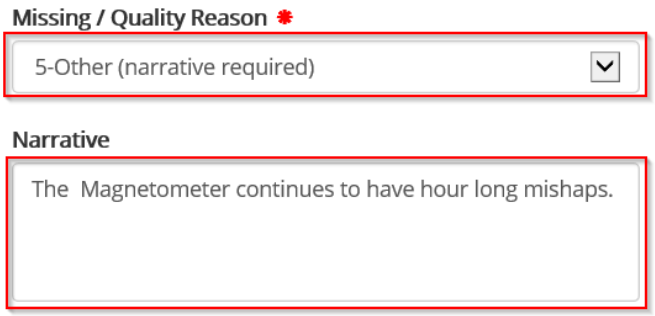
Create Magnetometer Missing Data/Data Quality Report

1. Click the "Create Magnetometer Missing Data/Data Quality Report" button.

2. The user must fill in all fields marked with a red asterisk then click "Submit". All Magnetometer devices associated with the selected entity will be available in the "Magnetometer" dropdown list. The Missing/Quality Start/End Times must contain a leading "0" if the hour is a single digit.

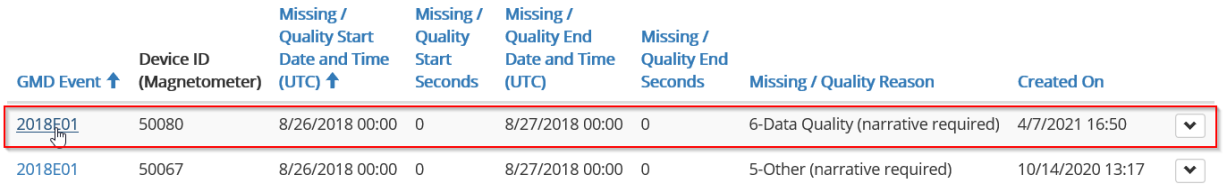


3. If the user selects "5-Other" as the Missing/Quality Reason, the user must also enter an explanation in the Narrative field.



4. If the new missing data/data quality report contains any errors, the system will display them in a red box at the top of the page.

5. If the new missing data report passes validation, the system will add it to the list on the "Magnetometer Missing Data/Data Quality Reports".

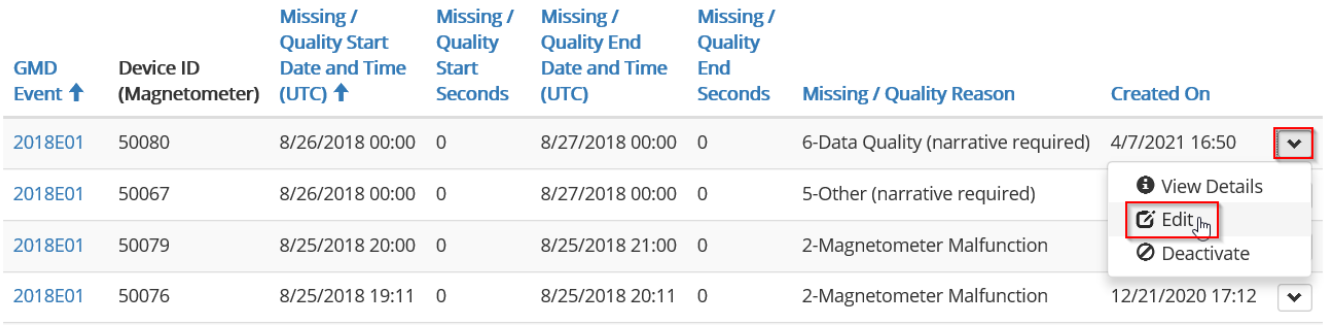


GMD Event	Device ID (Magnetometer)	Missing / Quality Start Date and Time (UTC)	Missing / Quality Start Seconds	Missing / Quality End Date and Time (UTC)	Missing / Quality End Seconds	Missing / Quality Reason	Created On
2018E01	50080	8/26/2018 00:00	0	8/27/2018 00:00	0	6-Data Quality (narrative required)	4/7/2021 16:50
2018E01	50067	8/26/2018 00:00	0	8/27/2018 00:00	0	5-Other (narrative required)	10/14/2020 13:17

Edit Magnetometer Missing Data/Data Quality Report

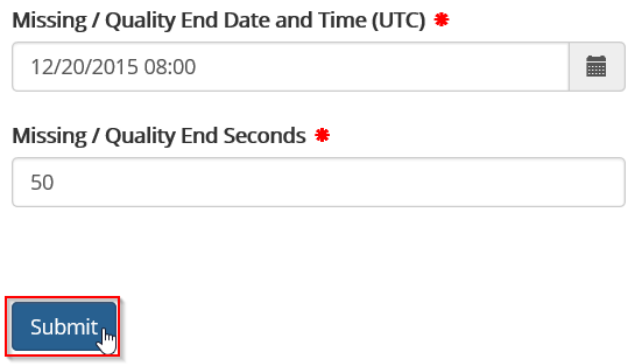
If the information provided has changed or was entered incorrectly, a Missing Data/Data Quality Report may be edited.

1. Click the dropdown arrow on the record and click "Edit".



GMD Event	Device ID (Magnetometer)	Missing / Quality Start Date and Time (UTC)	Missing / Quality Start Seconds	Missing / Quality End Date and Time (UTC)	Missing / Quality End Seconds	Missing / Quality Reason	Created On
2018E01	50080	8/26/2018 00:00	0	8/27/2018 00:00	0	6-Data Quality (narrative required)	4/7/2021 16:50
2018E01	50067	8/26/2018 00:00	0	8/27/2018 00:00	0	5-Other (narrative required)	
2018E01	50079	8/25/2018 20:00	0	8/25/2018 21:00	0	2-Magnetometer Malfunction	
2018E01	50076	8/25/2018 19:11	0	8/25/2018 20:11	0	2-Magnetometer Malfunction	12/21/2020 17:12

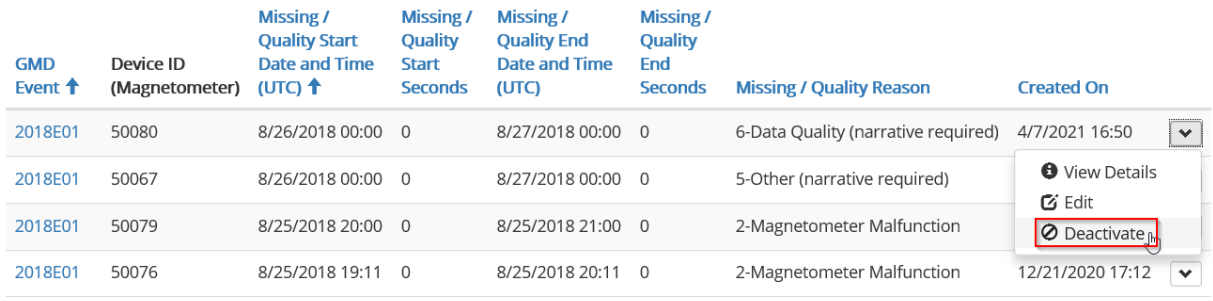
2. Edit the necessary fields and click "Submit".



Deactivate Magnetometer Missing Data/Data Quality Report

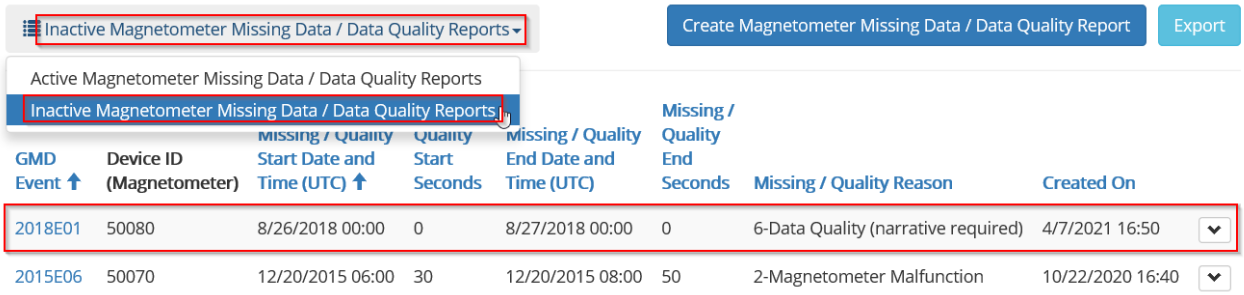
A user can deactivate a Missing Data/Data Quality Report if event data later becomes available or if a Missing Data/Data Quality Report was created erroneously.

1. Click the dropdown arrow on the record and click "Deactivate".



GMD Event	Device ID (Magnetometer)	Missing / Quality Start Date and Time (UTC)	Missing / Quality Start Seconds	Missing / Quality End Date and Time (UTC)	Missing / Quality End Seconds	Missing / Quality Reason	Created On
2018E01	50080	8/26/2018 00:00	0	8/27/2018 00:00	0	6-Data Quality (narrative required)	4/7/2021 16:50
2018E01	50067	8/26/2018 00:00	0	8/27/2018 00:00	0	5-Other (narrative required)	
2018E01	50079	8/25/2018 20:00	0	8/25/2018 21:00	0	2-Magnetometer Malfunction	
2018E01	50076	8/25/2018 19:11	0	8/25/2018 20:11	0	2-Magnetometer Malfunction	12/21/2020 17:12

2. To view the Inactive Missing Data/Data Quality Report, switch the view to “Inactive GIC Monitor Missing Data/Data Quality Reports”.

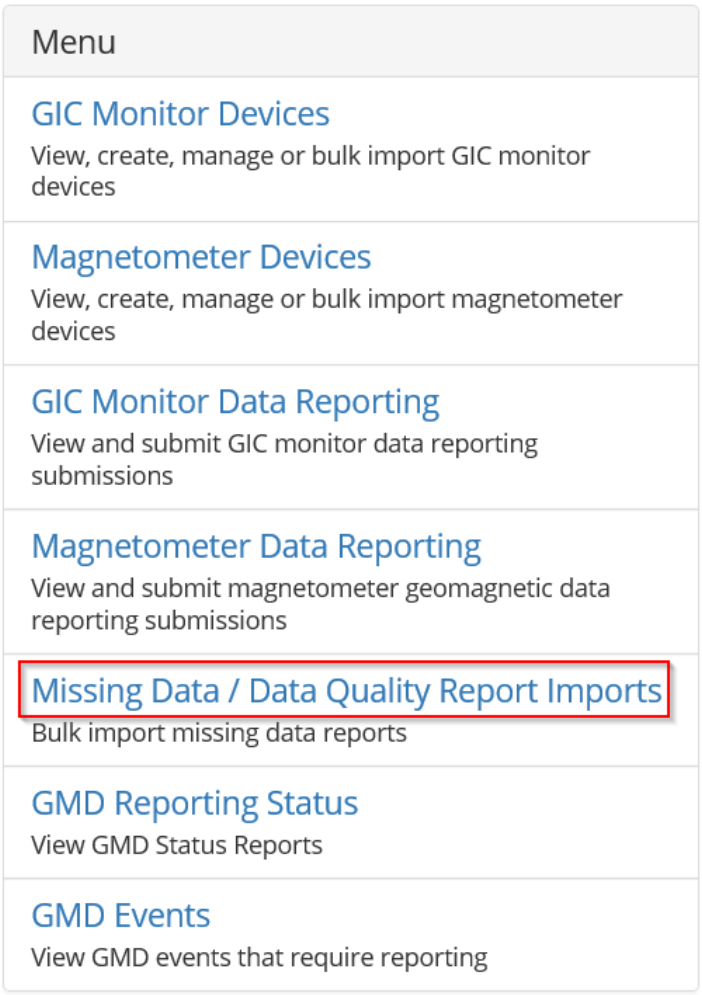


Chapter 9: Missing Data/Data Quality Report Bulk Import

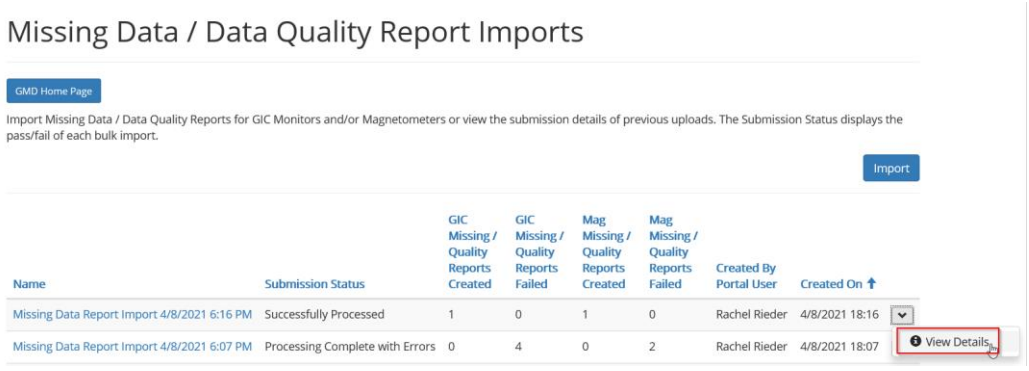
The bulk import feature allows missing data/data quality reports for multiple devices to be imported at one time. Import templates are available on the GMD page of nerc.com Multiple NCR IDs may be included on the import template, provided the user has permission to report for those NCR IDs.

View Missing Data/Data Quality Report Bulk Imports

1. Under the menu, click “Missing Data/Data Quality Report Imports”.

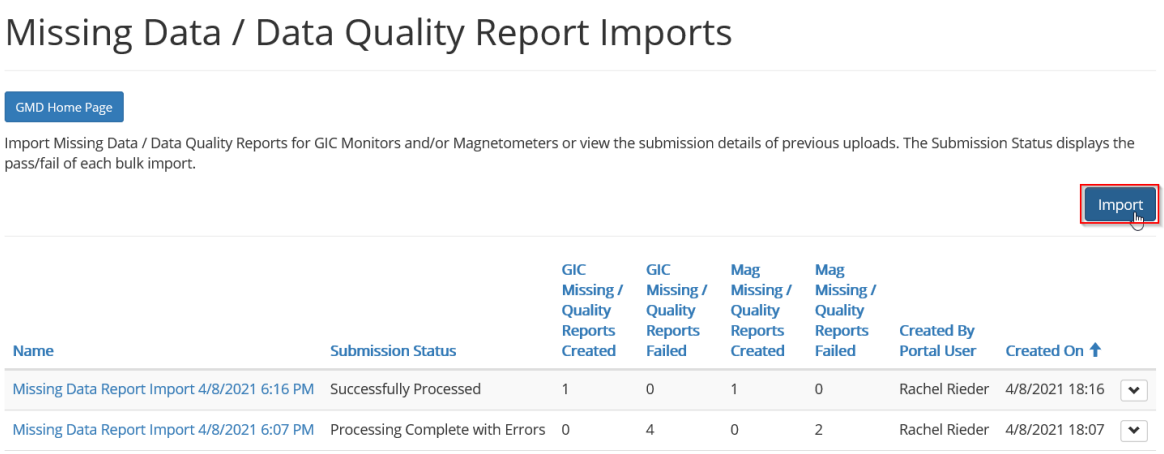


2. From this page, the user is able to view the submission details of previous uploads. Scroll to the right and select arrow drop-down and click on “view details”

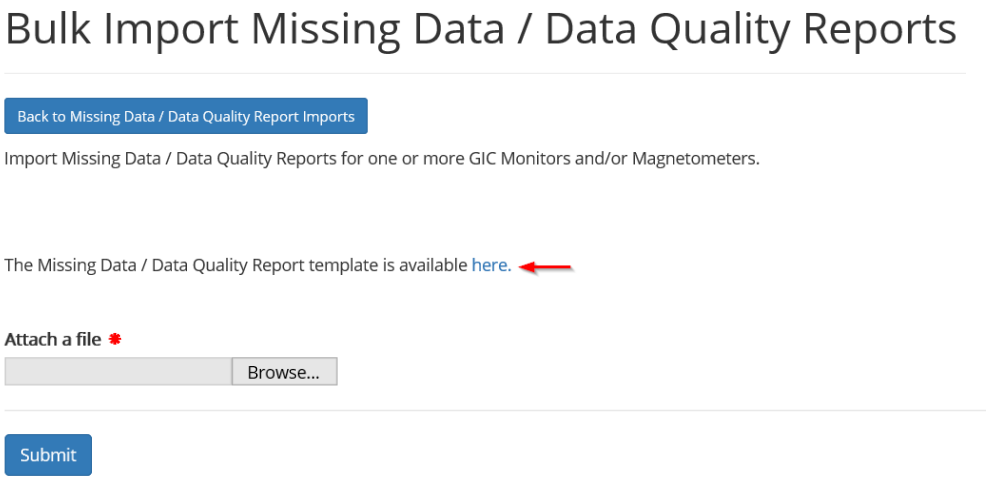


Import Missing Data/Data Quality Report

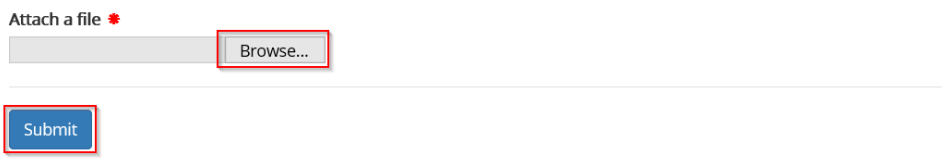
From this page, the user is able to view the details of previous imports of missing data/data quality reports for GIC Monitors and/or Magnetometers. Scroll to the right and click on "Import"



1. Download the Missing Data/Data Quality Report template from nerc.com or by clicking "here".



2. Fill out the four required fields within the Missing Data/Data Quality Report template and save it to the computer/drive in CSV format.
3. Click "Browse…" and select the correct file. Then, click "Submit"



4. The following table displays the possible submission and outcome combinations.

Data Record Submittals	Submission Status	Outcome Export Files	Possible Outcome Buttons
Only successful reports	"Successfully Processed"	Original Submission	View GIC Missing Data Reports View Magnetometer Missing Data Reports
Some successful reports, some failed reports	"Processing Complete with Errors"	Original Submission Successful Rows Failed Rows	View GIC Missing Data Reports View Magnetometer Missing Data Reports Re-import Missing Data Report File
Only failed reports	"Processing Complete with Errors"	Original Submission Failed Rows	Re-import Missing Data Report File
Unable to process file	"Processing Failed"	Original Submission	Re-import Missing Data Report File

5. Depending on the Missing Data/Data Quality Submission Detail status, the user would see one or all of the following items:
   a. "View GIC Missing Data Reports" – shortcut to the GIC Monitor Missing Data/Data Quality Reports page

      View GIC Missing Data Reports

   b. "View Magnetometer Missing Data Reports" – shortcut to the Magnetometer Missing Data/Data Quality Reports page

      View Magnetometer Missing Data Reports

   c. "Re-import Missing Data Report File" – shortcut to Import Missing Data/Data Quality Report page

      Re-import Missing Data Report File

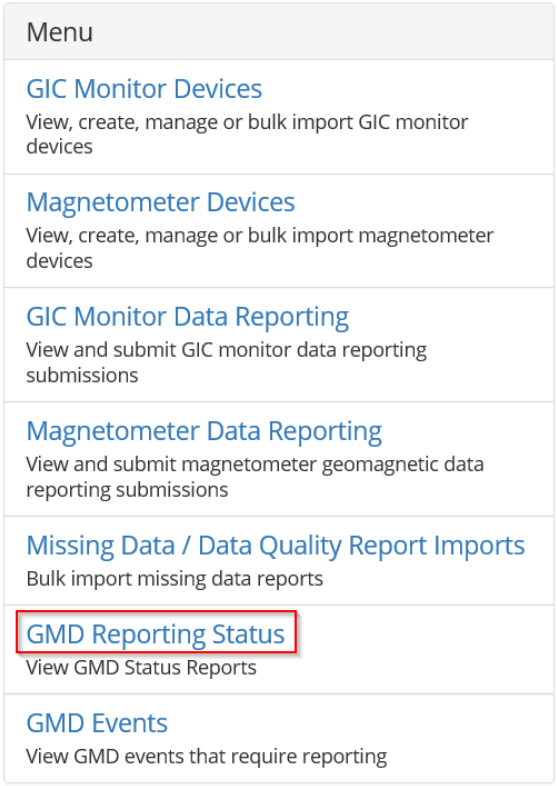
6. Depending on the submission status, the user would see some or all of the following files:
   a. The original submission file
   b. A file containing the successful rows
   c. A file containing the validation errors

a.
Missing Data Report - 12_9_2020.xlsx (21.11 KB)
b.
12-09-2020_01-40-46_SuccessRows.xlsx (1.88 KB)
c.
12-09-2020_01-40-47_ValidationErrors.xlsx (1.88 KB)

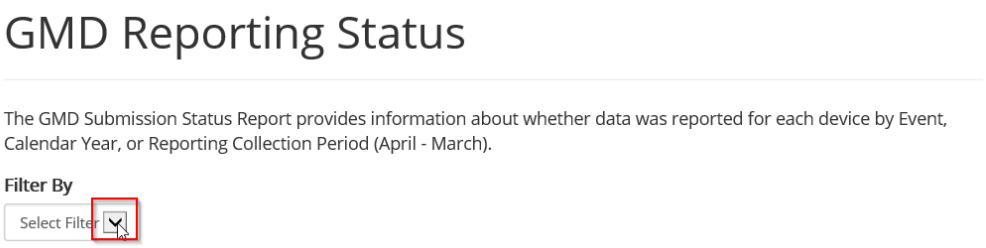
Chapter 10: Submission Status Report

The Submission Status Report provides a list of all devices and the reporting status of each device for the selected event (or timeframe). The user may enter or select criteria to filter the results displayed in the report.

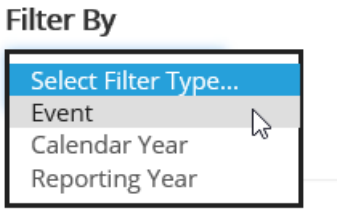
1. From the "Menu", click "GMD Reporting Status".



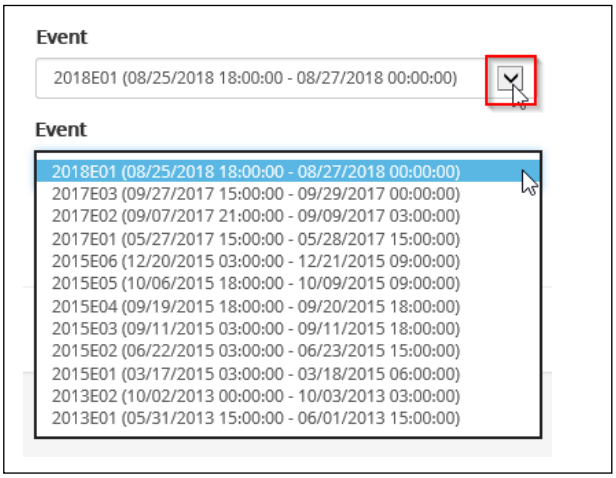
2. The user must select a filter in order to create a Submission Status Report.

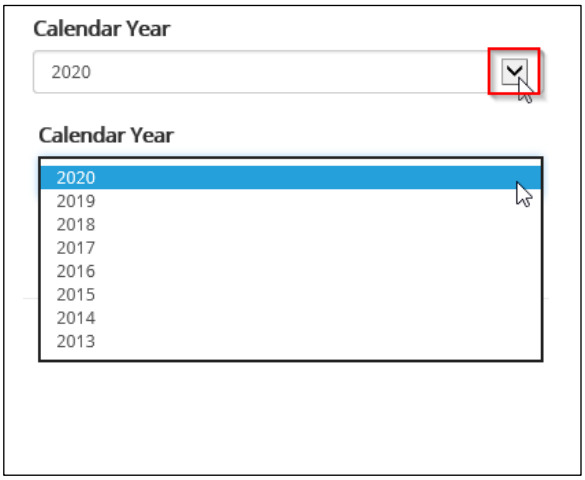


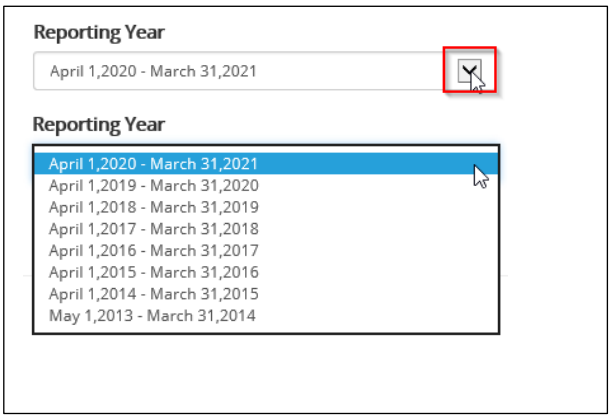
3. Select one of the filter options:
   a. Event – one of the GMD Events for which reporting was required
      i. This selection will provide results for a single GMD event.
   b. Calendar Year – Any year from 2013 to the current year
      i. This selection will provide results for all events within the selected calendar year.
   c. Reporting Year – April 1, 20XX through March 31, 20XX
      i. This selection will provide results for all events within a reporting year, from the beginning of the reporting year, April 1, through the end of the reporting year, March 31.



4. Depending on the selected filter type, a dropdown of Events, Calendar Years or Reporting Years will appear.







5. The user has the option to specify Device IDs to show in the results. The IDs of GIC Monitors and Magnetometers may be entered into this field. To obtain a list of available device IDs, see Chapter 4 of this user guide.

   If no Device IDs are specified, the Submission Status Report will display all devices to which the user has access.

6. How to read the Submission Status Report:

   a. Filled in Start/End Dates/Times – shows the start and end times for which data has been reported for the specified device

   b. Empty Start/End Dates/Times – no data is in the system for the specified device and time period

c. Has Missing Data/Data Quality Report?

   i. "Yes" – a Missing Data/Data Quality Report exists for the specified device and time period

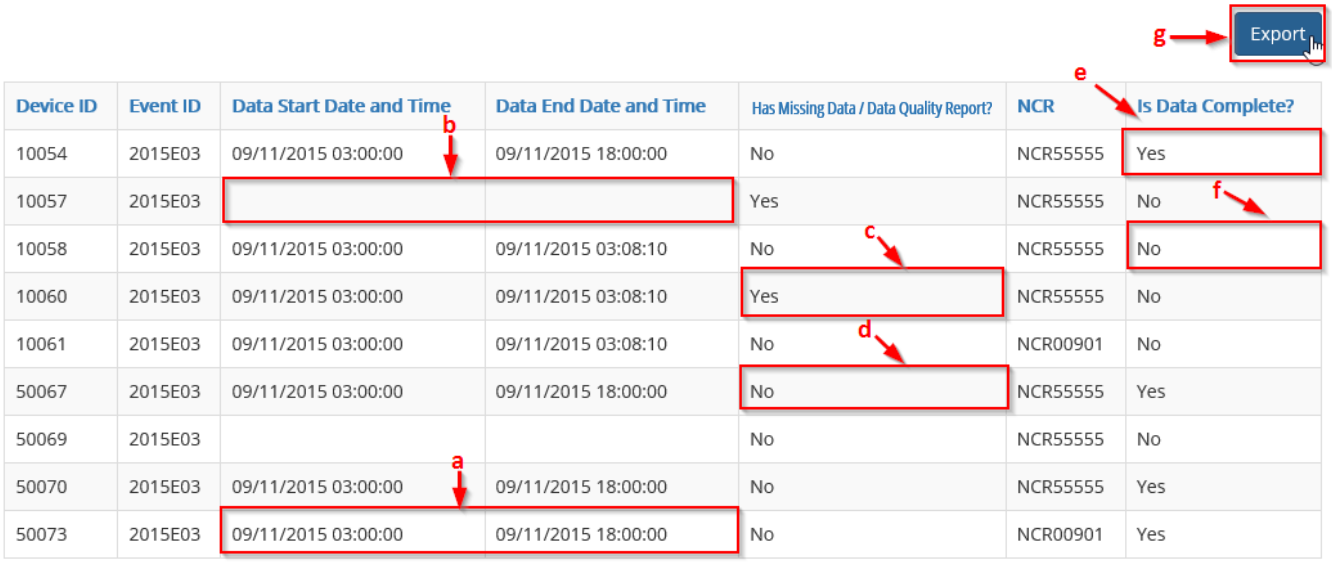
   ii. "No" – a Missing Data/Data Quality Report does not exist for the specified device and time period

d. Is Data Complete?

   i. "Yes" – data exists for the first interval through the last interval for the specified device and time period; any gaps would be indicated by the status of the Missing Data/Data Quality Report field

   ii. "No" – data exists for portion of the event for the specified device and time period; any gaps would be indicated by the status of the Missing Data/Data Quality Report field

e. Export Button – ability to export all rows in the current Submission Status Report



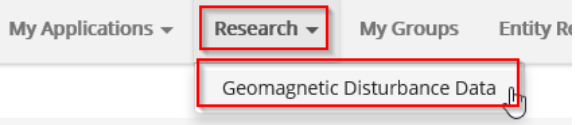
Device ID	Event ID	Data Start Date and Time	Data End Date and Time	Has Missing Data / Data Quality Report?	NCR	Is Data Complete?
10054	2015E03	09/11/2015 03:00:00	09/11/2015 18:00:00	No	NCR55555	Yes
10057	2015E03			Yes	NCR55555	No
10058	2015E03	09/11/2015 03:00:00	09/11/2015 03:08:10	No	NCR55555	No
10060	2015E03	09/11/2015 03:00:00	09/11/2015 03:08:10	Yes	NCR55555	No
10061	2015E03	09/11/2015 03:00:00	09/11/2015 03:08:10	No	NCR00901	No
50067	2015E03	09/11/2015 03:00:00	09/11/2015 18:00:00	No	NCR55555	Yes
50069	2015E03			No	NCR55555	No
50070	2015E03	09/11/2015 03:00:00	09/11/2015 18:00:00	No	NCR55555	Yes
50073	2015E03	09/11/2015 03:00:00	09/11/2015 18:00:00	No	NCR00901	Yes

Chapter 11: Data Search and Download

Event and device data reported to the GMD Portal may be exported for research and analysis.

Access the Data Search & Download Portal

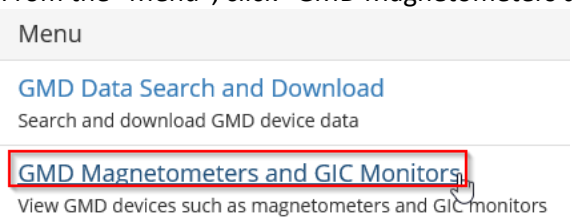
1. Navigate to the NERC ERO Portal (https://eroportal.nerc.net/) and login.
2. In the navigation bar, click “Research”, then click “Geomagnetic Disturbance Data”.



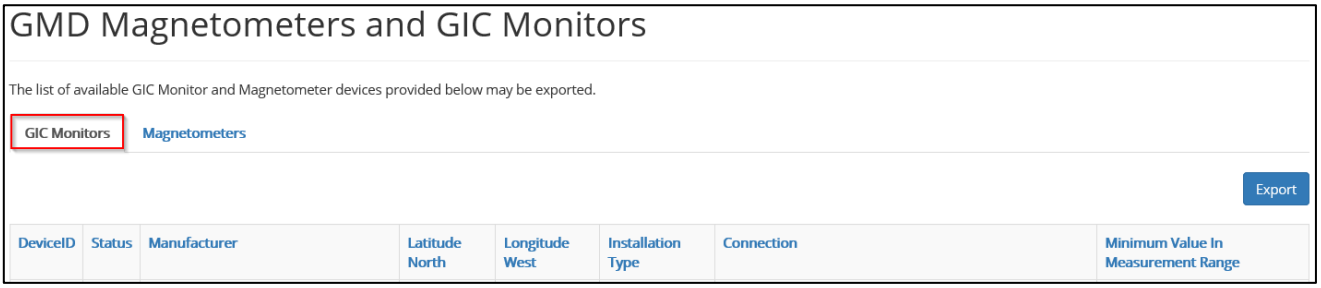
Device Lists

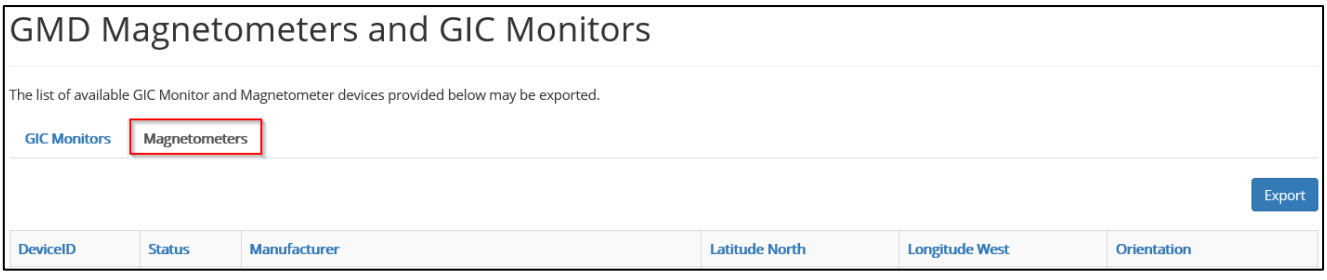
For a list of devices and their characteristics, the device lists may be viewed or exported.

1. From the “Menu”, click “GMD Magnetometers and GIC Monitors”.



2. Use the tabs at the top of the page to toggle back and forth between the lists of GIC Monitors and Magnetometers.





3. Click “Export” on each of the views to export the GIC Monitor and Magnetometer lists.

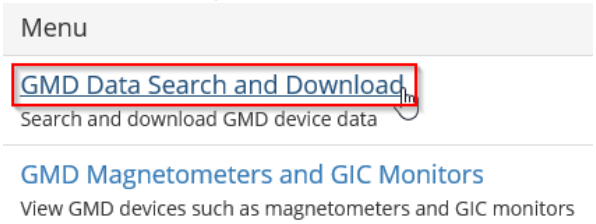
Data Search and Download

To obtain GMD event data, the user may enter or select criteria to filter the results of the event data to export.

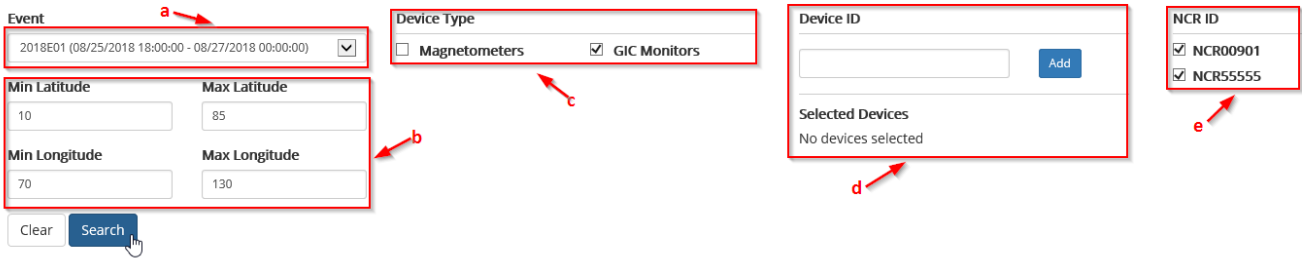
The data search is event-specific. The results of the search are presented to the user in summarized form. The user may download all results or further refine selection from the search results.

The selected search results of the Data Search and Download are compiled into a data package that includes compressed data files, lists of devices with installation and location characteristics, and missing data/data quality reports, if applicable.

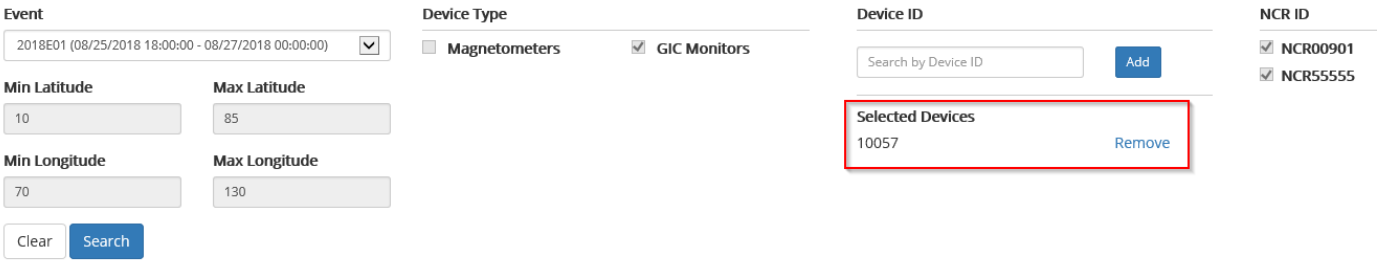
1. From the "Menu", click "GMD Data Search and Download".



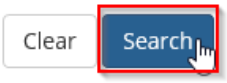
2. The user has the ability to use any of the following filters:
   a. Event ID – required – user must select from the list of events in the dropdown
   b. Location – optional – user may specify latitude and longitude ranges
      i. A user may select a minimum and/or maximum value for latitude or longitude. Any entries for location will limit the devices and data provided.
   c. Device Type – optional – user may specify Magnetometers or GIC Monitors
      i. When left unchecked, both device types will display in results
   d. Device ID – optional – user may specify Device IDs
      i. When specific Device IDs are entered, other filters are disabled.
   e. NCR ID – default for GMD Users is set to select all associated NCR IDs
      i. When unchecked, all Devices will be displayed regardless of NCR ID. Only NCR IDs for which the user has permission to access will include the NCR ID.



3. If the user specifies a Device ID(s), all other filters will be disabled.



4. Once the user has specified all desired criteria, click "Search".



5. Data Package Search Results

   The results of the search are provided in tabular form as shown below. Based on the information provided, the user may further refine the data that will be included in the download package by checking the box in the first column of each row. To select all rows, click the box in the first column of the first row.

   a. NCR ID – if NCR ID is blank, then the user does not have permission to view the entity information for that device

   b. Number of Records – Total number of rows that exist for the device for the selected event

   c. Start/End Dates/Times – The first and last date/time of the first and last interval of data available for the device for the selected event

   d. Missing Data/Data Quality Report – If "Yes", then the device has one or more Missing Data/Data Quality Reports for the event

   e. Modified On – If filled in, then the event data has been modified since creation

☐	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 / Data Quality Report	Created On	Modified On
☐	2015E03	NCR55555	Magnetometer	50067	5401	44.00	100.00	09/11/2015 03:00:00	09/11/2015 18:00:00	No	10/07/2020 16:35:05	
☐	2015E03		Magnetometer	50068	5401	55.00	65.00	09/11/2015 03:00:00	09/11/2015 18:00:00	No	10/07/2020 16:35:06	
☐	2015E03	NCR55555	Magnetometer	50070	5401	65.00	120.00	09/11/2015 03:00:00	09/11/2015 18:00:00	No	10/14/2020 09:20:08	
☐	2015E03	NCR00901	Magnetometer	50073	5401	11.00	111.00	09/11/2015 03:00:00	09/11/2015 18:00:00	No	10/23/2020 11:30:06	
☐	2015E03	NCR55555	Magnetometer	50075	5401	10.00	101.00	09/11/2015 03:00:00	09/11/2015 18:00:00	No	10/26/2020 12:10:03	
☐	2015E03	NCR55555	GIC Monitor	10054	5401	75.00	121.00	09/11/2015 03:00:00	09/11/2015 18:00:00	No	10/07/2020 16:30:04	
☐	2015E03		GIC Monitor	10055	5401	33.00	133.00	09/11/2015 03:00:00	09/11/2015 18:00:00	No	10/07/2020 16:30:05	
☐	2015E03	NCR55555	GIC Monitor	10058	50	20.00	120.00	09/11/2015 03:00:00	09/11/2015 03:08:10	No	10/23/2020 11:30:04	10/23/2020 12:40:02
☐	2015E03	NCR55555	GIC Monitor	10060	50	60.00	121.00	09/11/2015 03:00:00	09/11/2015 03:08:10	Yes	10/23/2020 11:30:05	10/23/2020 12:40:02
☐	2015E03	NCR00901	GIC Monitor	10061	50	55.00	125.00	09/11/2015 03:00:00	09/11/2015 03:08:10	No	10/23/2020 11:30:05	10/23/2020 12:40:03

6. Check desired data packages and click "Download Selected Files".

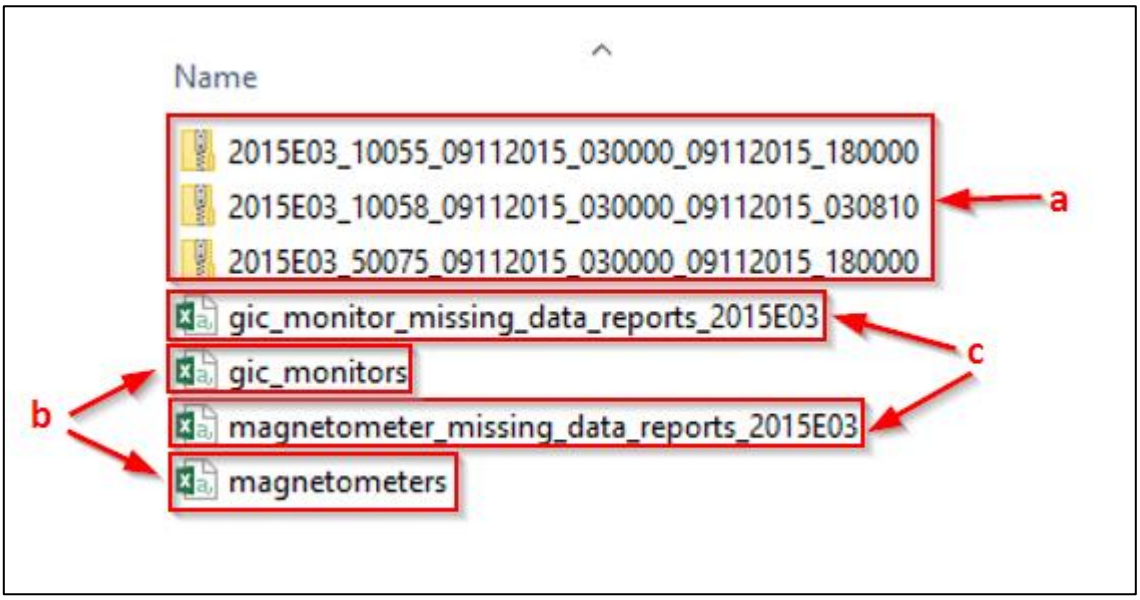
☑	2015E03	NCR55555	Magnetometer	50075	5401	10.00	101.00	09/11/2015 03:00:00	09/11/2015 18:00:00	No	10/26/2020 12:10:03	
☐	2015E03	NCR55555	GIC Monitor	10054	5401	75.00	121.00	09/11/2015 03:00:00	09/11/2015 18:00:00	No	10/07/2020 16:30:04	
☑	2015E03		GIC Monitor	10055	5401	33.00	133.00	09/11/2015 03:00:00	09/11/2015 18:00:00	No	10/07/2020 16:30:05	
☑	2015E03	NCR55555	GIC Monitor	10058	50	20.00	120.00	09/11/2015 03:00:00	09/11/2015 03:08:10	No	10/23/2020 11:30:04	10/23/2020 12:40:02
☐	2015E03	NCR55555	GIC Monitor	10060	50	60.00	121.00	09/11/2015 03:00:00	09/11/2015 03:08:10	Yes	10/23/2020 11:30:05	10/23/2020 12:40:02
☐	2015E03	NCR00901	GIC Monitor	10061	50	55.00	125.00	09/11/2015 03:00:00	09/11/2015 03:08:10	No	10/23/2020 11:30:05	10/23/2020 12:40:03

7. Data Download Details

   a. Event Data – a data package for each device will be in a separate compressed file

   b. GIC Monitor and Magnetometer lists –all selected devices included in the requested download

   c. Missing Data/Data Quality Reports – any existing Missing Data/Data Quality Reports associated with selected devices in the requested download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2015E03_10058_09112015_030000_09112015_030810
2015E03_50075_09112015_030000_09112015_180000
gic_monitor_missing_data_reports_2015E03
gic_monitors
magnetometer_missing_data_reports_2015E03
magnetometers
a
b
c