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# Open PQ Dashboard Users Group Meeting TVA Update

April 21, 2022

# Agenda



OpenMIC

PQDigest

TrenDAP

System Event Browser

Email Subscriptions

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## OpenMIC - Device Data Handlers

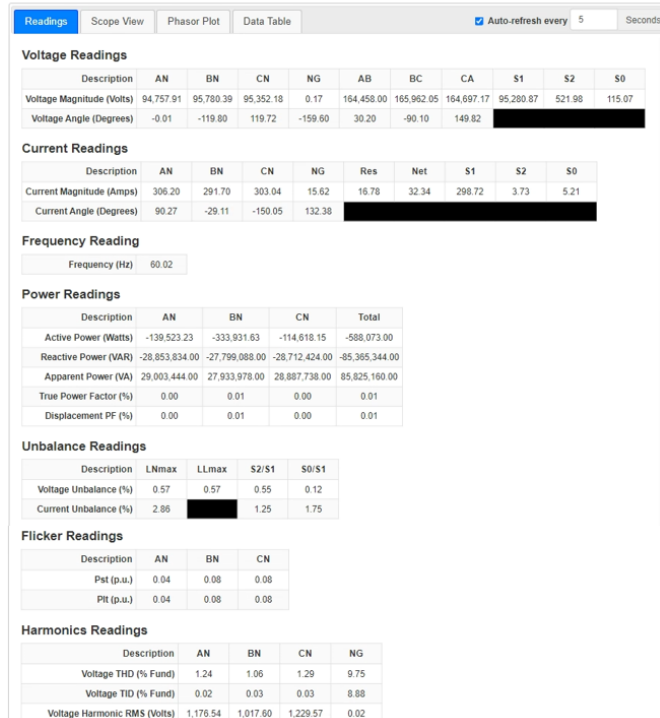
- Added additional support to OpenMIC for polling event and trending data, diagnostic files, and configuration files.
- SEL-735 Trending data (load profile reports)
- Schneider ION meters via vendor protocol
- Dranetz 61000 meters via vendor protocol



# OpenMIC - Real Time Displays

- OpenMIC shows real time displays for Dranetz 61000 meters
- Schneider ION, SEL-735, PSL PQube, & APP DFR RT displays are currently being developed
- Support commissioning of devices and DER resources

Charleston TN 161-B1028-Caps [0]: 61000 PQ DataNode



Charleston TN 161-B1028-Caps [0]: 61000 PQ DataNode



# OpenMIC - Device Configuration

- Configuration pages added for Dranetz 61000 meters
- Configuration pages for PSL PQube meters currently in development
- Allows Device configuration management in single place
- Better configuration control

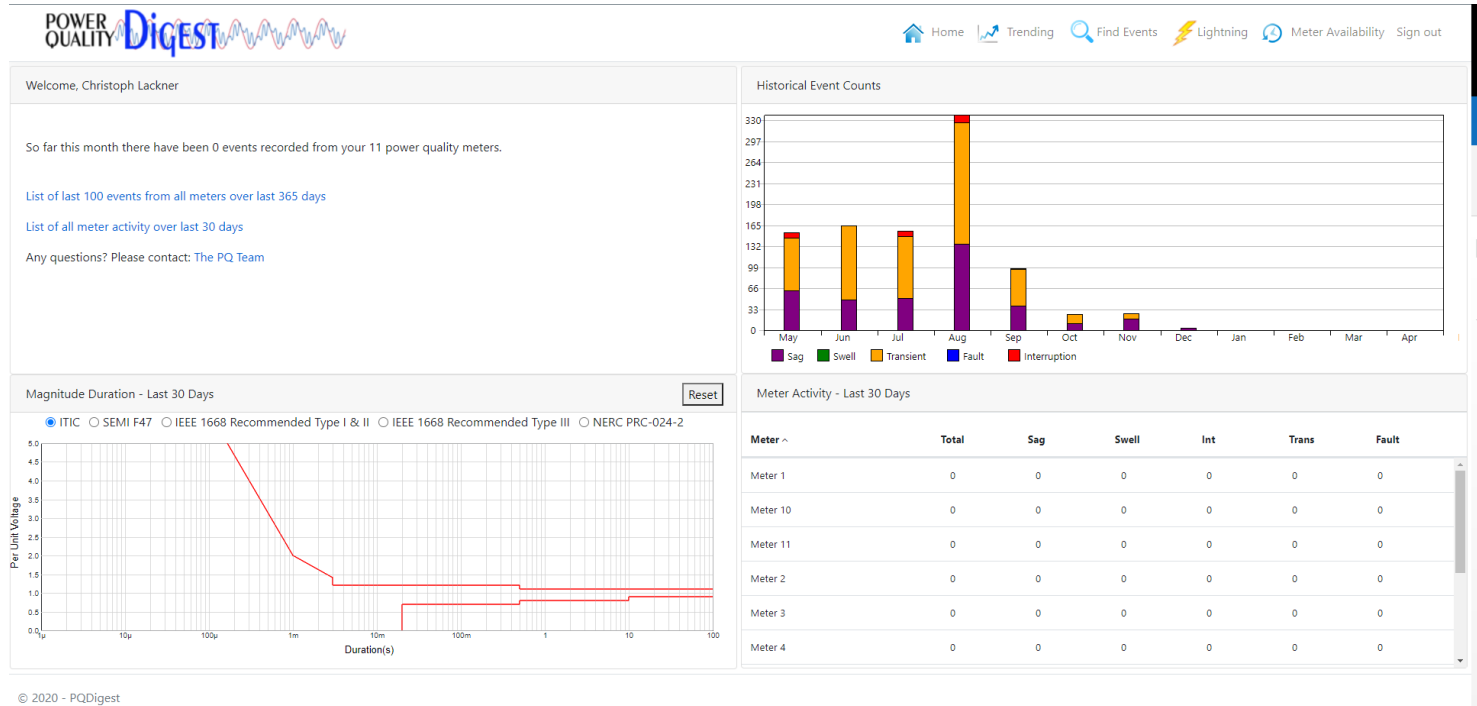
The screenshot displays the OpenMIC web interface for configuring a Dranetz 61000 meter. The top navigation bar includes 'openMIC', 'Home', 'Devices', 'Configuration', 'Monitoring', 'Settings', and 'Help', along with a 'Log Out' button. The main header shows 'Manage Dranetz Configuration' and 'Editing DRANETZ\_TEST Configuration'. The 'Analyzers' table is as follows:

Name	Type	Monitoring
GPATEST	[0]: 61000 PQ DataNode	On
V-only Analyzer-1	[1]: 61000 Voltage DataNode	On
I-only Analyzer-2	[2]: 61000 Current DataNode	On

Below the table are buttons for 'Save Changes', 'Export Config', and 'Import Config'. The 'RMS Variations' tab is active, showing sections for 'Sliding Voltage Reference for High and Low Limits' (with 'Enable threshold adjustment' unchecked, 'Sliding reference maximum value (%)' at 110.0, and 'Sliding reference minimum value (%)' at 90.0), 'RMS Magnitude Limits (select the channel(s) to change)' (with a list of channels and 'High (%)', 'Low (%)', and 'Very low (%)' all set to 0.0), and 'Rapid Voltage Change Limits' (with 'RMS magnitude change (%)' at 0.000000). An 'RMS Summary' section is at the bottom.

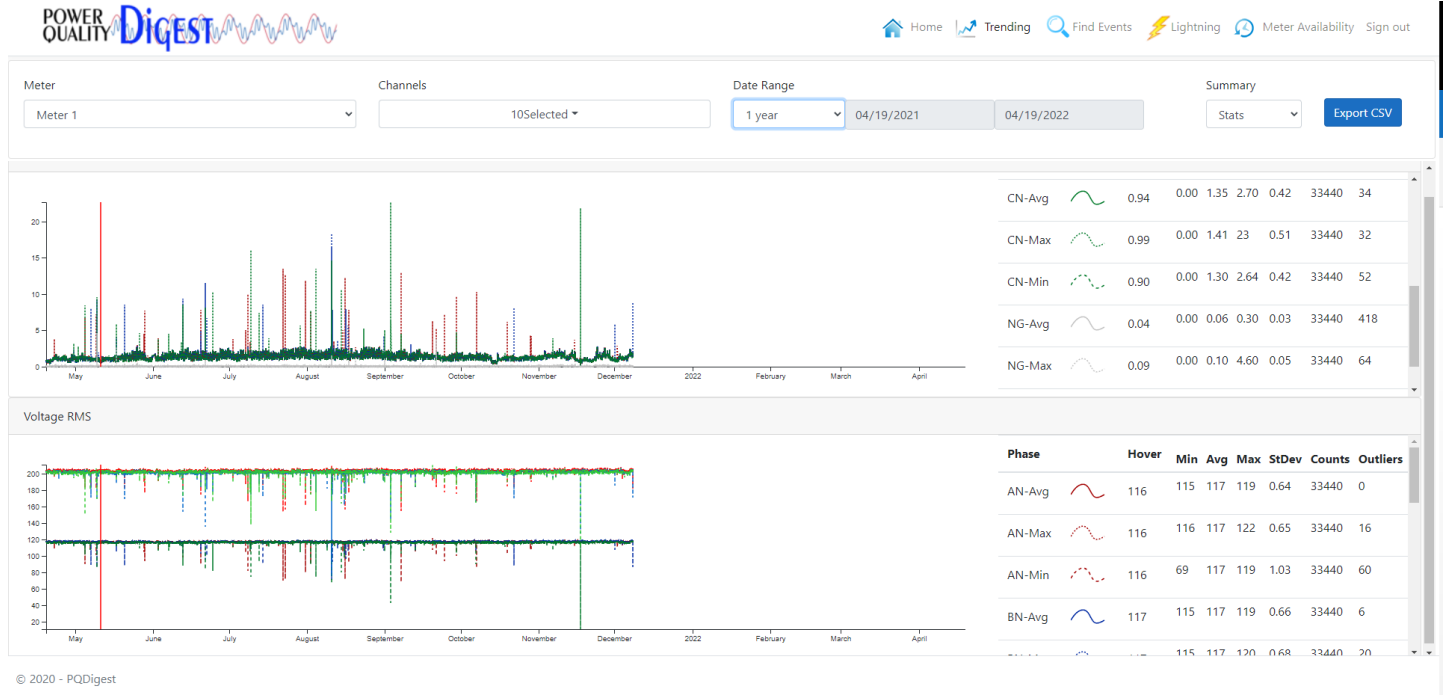
# PQDigest – Home Screen

- Intended for Customers
- Top Level View
- Mag / Dur Curve of Last 30 Days of Events
- Bar Chart by Event Type in Last Year
- Table of Most Active Meters in Last 30 Days



# PQDigest – Trend Screen

- Few Clicks to Visualize
- Select Meters
- Select Channels
- Select Time Range



# PQDigest – Events Screen

- Few Clicks to Visualize
- Select Meters
- Select Event Type
- Select Time Range

POWER QUALITY **Digest**

Home Trending Find Events Lightning Meter Availability Sign out

Return # 100 Meters All Selected Type All Selected Start Date 03/20/2021 End Date 04/19/2021

Events (Showing 100 of 344) View as Mag/Dur Export CSV

Date	Meter	Type	Phase	Mag (pu)	Dur (s)
03/25/2021 14:57:27	Meter 1	Sag	AN	0.88	0.11
03/25/2021 15:08:24	Meter 1	Sag	AN	0.88	0.06
03/25/2021 16:44:37	Meter 1	Sag	AN	0.75	0.11
03/23/2021 10:12:06	Meter 1	Transient	AN	0.77	0.00
03/22/2021 09:00:32	Meter 1	Transient	AN	0.65	0.00
03/27/2021 09:00:38	Meter 10	Sag	AN	0.77	0.05
03/30/2021 14:18:54	Meter 10	Interruption	BN	0.02	0.18
03/30/2021 14:18:55	Meter 10	Interruption	BN	0.00	0.22
03/30/2021 14:18:55	Meter 10	Interruption	BN	0.00	0.22
04/15/2021 03:22:09	Meter 2	Sag	AN	0.89	0.22
04/15/2021 03:22:09	Meter 2	Sag	AN	0.88	0.22
04/15/2021 03:22:19	Meter 2	Sag	AN	0.89	0.22
04/15/2021 03:22:19	Meter 2	Sag	AN	0.89	0.22

View Waveform

View Trending Data

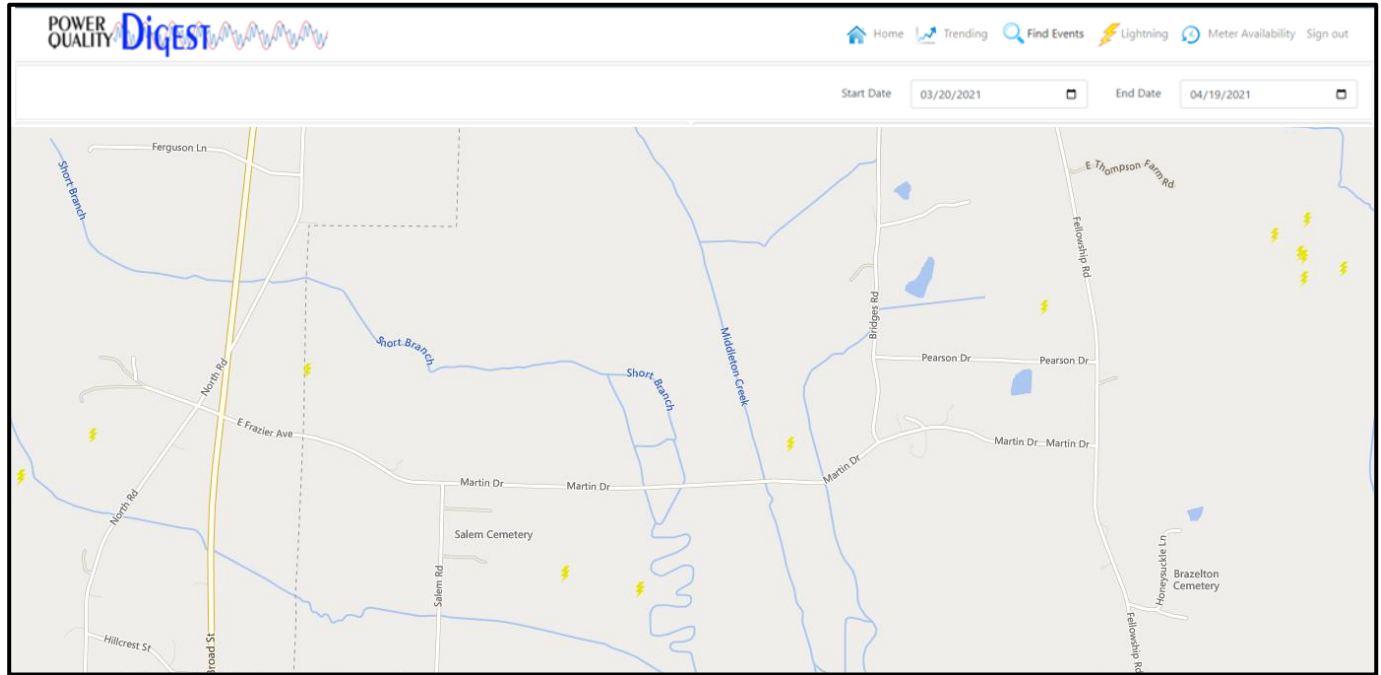
PQI - Ride-through Curves NERC PRC-024-2

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# PQDigest – Find Lightning Screen

- Map Centers to GPS Coord. of Meter
- Auto Sets Time Window Around Event Time
- User Custom Settings for Time and Location



# PQDigest – Meter Availability Screen

- Report of Any Data Gaps / Meter Outages

ID	Meter ^	First Data Logged (CST)	Last Data Logged (CST)	Difference/Status
1	Meter 1	11/03/20 13:50	12/08/21 11:30	18 Weeks - DGS
10	Meter 10	11/03/20 15:00	12/08/21 13:20	18 Weeks - DGS
11	Meter 11	06/13/21 16:40	12/08/21 11:20	18 Weeks - DGS
2	Meter 2	11/03/20 13:40	12/08/21 11:20	18 Weeks - DGS
3	Meter 3	11/03/20 13:40	12/08/21 10:50	18 Weeks - DGS
4	Meter 4	04/29/21 16:30	12/06/21 12:10	18 Weeks - DGS
5	Meter 5	02/20/21 07:00	10/11/21 16:10	27 Weeks - DGS
6	Meter 6	11/03/20 16:30	08/27/21 16:10	33 Weeks - DGS
7	Meter 7	11/03/20 13:40	08/30/21 15:10	33 Weeks - DGS
8	Meter 8	11/03/20 14:00	08/30/21 15:30	33 Weeks - DGS
9	Meter 9	09/21/20 13:50	12/08/21 06:50	16 Weeks - DGS

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# TrenDAP

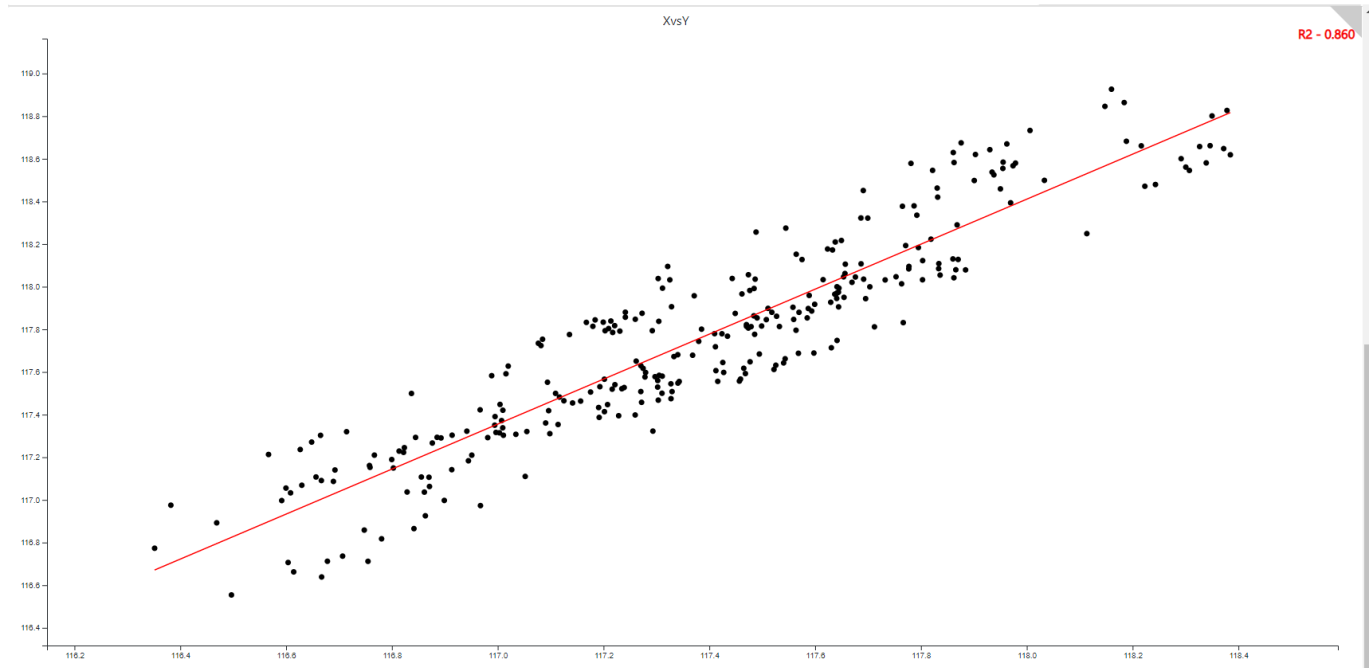
- Data Sources (InfluxDB, Historian, etc.)
- Data Sets (Time Range, Meters, Channels)
- Workspace (Charts and Widgets)

The screenshot displays the TrenDAP interface for a workspace titled "Thanksgiving 21". On the left sidebar, the "Data Sources" menu item is highlighted with a green box, "Data Sets" with a yellow box, and "Workspaces" with a red box. Arrows from the list on the left point to these respective menu items. The main content area features a line chart showing "Channel Output" over time (from Mar 22 to Mar 23) with a red line and black data points. Below the line chart is a histogram showing "Counts" for "Channel Output" values. On the right, a table displays data for "Meter 1 - V RMS A" with columns for "Timestamp", "Min", "Avg", "Max", and "Flagged".

Timestamp	Min	Avg	Max	Flagged
2021-11-22T00:00:00Z	117.10	117.27	117.40	
2021-11-22T00:10:00Z	117.24	117.42	117.56	
2021-11-22T00:20:00Z	117.29	117.47	117.62	
2021-11-22T00:30:00Z	117.32	117.48	117.61	
2021-11-22T00:40:00Z	117.23	117.47	117.62	
2021-11-22T00:50:00Z	117.38	117.56	117.72	
2021-11-22T01:00:00Z	117.44	117.63	117.79	
2021-11-22T01:10:00Z	117.42	117.59	117.76	
2021-11-22T01:20:00Z	117.41	117.58	117.73	
2021-11-22T01:30:00Z	117.37	117.56	117.74	

# TrenDAP

- Data Sources (InfluxDB, Historian, etc.)
- Data Sets (Time Range, Meters, Channels)
- Workspace (Charts and Widgets)
- **Workflow**



# SE Browser – Enhanced Filtering

- Date / Time Quick Picks

The screenshot displays the System Event Browser interface with the following sections:

- System Event Browser** (Logo)
- Event Search** (Left sidebar menu)
- Time Window:** Date: 01/12/2022, 12:00:00.000; Time Window(+/-): 10, Week
- Event Types:**  Faults,  Sags,  Swells,  Interruptions,  Breaker Ops,  Transients,  Breaker TCE,  Others,  Select All
- Event Characteristics:** Duration (cycle): 0 to 0; Mag-Dur: ITIC; Sags (p.u.): 0 to 0; Swells (p.u.): 0 to 0; Transients (p.u.): 0 to 0; Phase:  Select All,  A,  B,  C;  Inside,  Outside
- Other Filters:** Meter, Asset, AssetGroup, Station, Hide Filters, Reset Filters
- Time Window Quick Picks:** This Hour, Today, This Week, This Month, Last Hour, Yesterday, Last Week, Last Month, Last 60 Minutes, Last 24 Hours, Last 7 Days, Last 30 Days, This Quarter, This Year, Last Quarter, Last Year, Last 90 Days, Last 365 Days
- Search:** Search... View As Mag/Dur, Add Notes
- Event List:**

Time	Event Type
11/03/2021 16:59:35.8305750	Sag
11/03/2021 16:59:35.8305750	Interruption
11/03/2021 16:59:35.8305750	Transient
11/03/2021 22:51:30.5886980	Swell
11/03/2021 22:51:30.5886980	Transient
11/09/2021 23:13:53.3055300	Swell
11/09/2021 23:13:53.3055300	Transient
11/03/2021	Sag
- Waveform Analysis:** View in OpenSEE; Voltage Disturbance in Waveform: 38.000 to 37.200

# SE Browser – Enhanced Filtering

- Date / Time Quick Picks
- Duration Filter

The screenshot displays the System Event Browser interface. On the left is a navigation sidebar with options like 'Event Search', 'Meter Activity', 'Custom Reports', 'Breaker Report', 'TripCoil Report', and 'CapBank Report'. The main area is divided into several sections: 'Time Window' with date and time pickers; 'Event Types' with checkboxes for Faults, Sags, Swells, Interruptions, Breaker Ops, Transients, Breaker TCE, and Others; 'Event Characteristics' with filters for Duration (cycle), Phase (A, B, C), Mag-Dur, Transients (p.u.), Swells (p.u.), and Inside/Outside status; and 'Other Filters' for Meter, Asset, AssetGroup, and Station. A red box highlights the 'Duration (cycle)' filter, which is set to 0 to 0. A red arrow points from the 'Duration Filter' bullet point in the list to this box. Below the filters is a search bar and buttons for 'View As Mag/Dur' and 'Add Notes'. A table lists event entries with columns for 'Time' and 'Event Type'. The first three entries are highlighted in yellow: Sag, Interruption, and Transient. On the right, a 'Waveform Analysis' window is open, showing a plot of 'Voltage Disturbance in Waveform' with a time axis from 36,000 to 37,200. The plot shows a high-frequency oscillation with a sharp dip, corresponding to the event listed in the table.

Time	Event Type
11/03/2021 16:59:35.8305750	Sag
11/03/2021 16:59:35.8305750	Interruption
11/03/2021 16:59:35.8305750	Transient
11/03/2021 22:51:30.5886980	Swell
11/03/2021 22:51:30.5886980	Transient
11/03/2021 23:13:53.3055300	Swell
11/03/2021 23:13:53.3055300	Transient
11/03/2021	Sag

# SE Browser – Enhanced Filtering

- Date / Time Quick Picks
- Duration Filter
- Phase Filter

The screenshot displays the System Event Browser interface. On the left is a sidebar with navigation options: Event Search, Meter Activity, Custom Reports, Breaker Report, TripCoil Report, and CapBank Report. The main area is divided into several sections:

- Time Window:** Includes Date (01/12/2022), Time (12:00:00.000), and Time Window (+/-) (10, Week).
- Event Types:** A list of event types with checkboxes: Faults, Sags, Swells, Interruptions, Breaker Ops, Transients, Breaker TCE, and Others. A "Select All" checkbox is also present.
- Event Characteristics:** Includes Duration (cycle), Mag-Dur, Sags (p.u.), Transients (p.u.), and Swells (p.u.).
- Other Filters:** Includes Meter, Asset, AssetGroup, and Station buttons, along with Hide Filters and Reset Filters buttons.
- Phase Filter:** A red box highlights the "Phase:" section with "Select All" and checkboxes for A, B, and C. A red arrow points from this box to the "Phase Filter" bullet point in the list on the left.

Below the filters is a search bar and buttons for "View As Mag/Dur" and "Add Notes". A table lists event details:

Time	Event Type
11/03/2021 16:59:35.8305750	Sag
11/03/2021 16:59:35.8305750	Interruption
11/03/2021 16:59:35.8305750	Transient
11/03/2021 22:51:30.5886980	Swell
11/03/2021 22:51:30.5886980	Transient
11/09/2021 23:13:53.3055300	Swell
11/09/2021 23:13:53.3055300	Transient
11/03/2021	Sag

At the bottom right, a "Waveform Analysis" window is open, showing a graph of "Voltage Disturbance in Waveform" with a time axis from 36,000 to 37,200. The graph displays a high-frequency oscillation (red and blue) and a sharp green spike.

# SE Browser – Enhanced Filtering

- Date / Time Quick Picks
- Duration Filter
- Phase Filter
- Curve Filter

The screenshot displays the System Event Browser interface. On the left is a navigation sidebar with 'Event Search' selected. The main area is divided into several filter sections: 'Time Window' (Date: 01/12/2022, 12:00:00.000; Time Window +/-: 10, Week), 'Event Types' (checked: Faults, Sags, Swells, Interruptions, Breaker Ops, Transients, Breaker TCE, Others; Select All), 'Event Characteristics' (Duration (cycle): 0 to 0; Phase: Select All; A, B, C; Mag-Dur: ITIC, Inside, Outside; Transients (p.u.): LN/LL; Swells (p.u.): LN/LL), and 'Other Filters' (Meter, Asset, AssetGroup, Station). A red box highlights the 'Mag-Dur' dropdown menu, and a red arrow points from the 'Curve Filter' bullet point to it. Below the filters is a search bar and buttons for 'View As Mag/Dur' and 'Add Notes'. A table lists event entries with columns for 'Time' and 'Event Type'. The first three entries are highlighted in yellow: Sag, Interruption, and Transient. On the right, a 'Waveform Analysis' window shows a graph of 'Voltage Disturbance in Waveform' with a time axis from 36,000 to 37,200. The graph displays a high-frequency oscillation (red and blue) and a sharp green spike.

Time	Event Type
11/03/2021 16:59:35.8305750	Sag
11/03/2021 16:59:35.8305750	Interruption
11/03/2021 16:59:35.8305750	Transient
11/03/2021 22:51:30.5886980	Swell
11/03/2021 22:51:30.5886980	Transient
11/09/2021 23:13:53.3055300	Swell
11/09/2021 23:13:53.3055300	Transient
11/03/2021	Sag



# SE Browser – Enhanced Filtering

- Date / Time Quick Picks
- Duration Filter
- Phase Filter
- Curve Filter
- Magnitude Filter

The screenshot displays the System Event Browser interface. On the left is a navigation sidebar with 'Event Search' and 'Custom Reports' sections. The main area is divided into several filter panels: 'Time Window' (Date: 01/12/2022, 12:00:00.000; Time Window +/-: 10, Week), 'Event Types' (checked: Faults, Sags, Swells, Interruptions, Breaker Ops, Transients, Breaker TCE, Others; Select All), 'Event Characteristics' (Duration (cycle): 0 to 0; Mag-Dur: ITIC; Inside/Outside; Phase: Select All, A, B, C; Transients (p.u.): 0 to 0; Swells (p.u.): 0 to 0; Sags (p.u.): 0 to 0; LN/LL), and 'Other Filters' (Meter, Asset, AssetGroup, Station). A red box highlights the 'Transients (p.u.)' and 'Sags (p.u.)' settings. A red arrow points from the 'Magnitude Filter' bullet point to this box. Below the filters is a search bar and a table of events. The table has columns for 'Time' and 'Event Type'. The first three rows are highlighted in yellow: Sag (11/03/2021 16:59:35.8305750), Interruption (11/03/2021 16:59:35.8305750), and Transient (11/03/2021 16:59:35.8305750). Below the table is a 'View As: Mag/Dur' button and an 'Add Notes' button. On the right, a 'Waveform Analysis' window is open, showing a plot of 'Voltage Disturbance in Waveform' with a time axis from 36,000 to 37,200. The plot shows a high-frequency oscillation with a sharp peak at approximately 36,400.

Time	Event Type
11/03/2021 16:59:35.8305750	Sag
11/03/2021 16:59:35.8305750	Interruption
11/03/2021 16:59:35.8305750	Transient
11/03/2021 22:51:30.5886980	Swell
11/03/2021 22:51:30.5886980	Transient
11/09/2021 23:13:53.3055300	Swell
11/09/2021 23:13:53.3055300	Transient
11/03/2021	Sag

# SE Browser – Enhanced Filtering

- Date / Time Quick Picks
- Duration Filter
- Phase Filter
- Curve Filter
- Magnitude Filter
- Other Filters

The screenshot displays the System Event Browser interface. On the left is a navigation sidebar with 'Event Search' selected. The main area is divided into several filter sections: 'Time Window' with date and time pickers; 'Event Types' with checkboxes for Faults, Sags, Swells, Interruptions, Breaker Ops, Transients, Breaker TCE, and Others; 'Event Characteristics' with settings for Duration, Phase, Mag-Dur, Transients, Swells, and Sags; and 'Other Filters' with buttons for Meter, Asset, AssetGroup, and Station. A red box highlights the 'Other Filters' section, with a red arrow pointing from the 'Other Filters' bullet point in the list to it. Below the filters is a search bar and buttons for 'View As Mag/Dur' and 'Add Notes'. A table lists event entries with columns for Time and Event Type. The bottom right shows a 'Waveform Analysis' window with a plot of voltage disturbance over time.

Time	Event Type
11/03/2021 16:59:35.8305750	Sag
11/03/2021 16:59:35.8305750	Interruption
11/03/2021 16:59:35.8305750	Transient
11/03/2021 22:51:30.5886980	Swell
11/03/2021 22:51:30.5886980	Transient
11/09/2021 23:13:53.3055300	Swell
11/09/2021 23:13:53.3055300	Transient
11/03/2021	Sag

# SE Browser – Enhanced Filtering

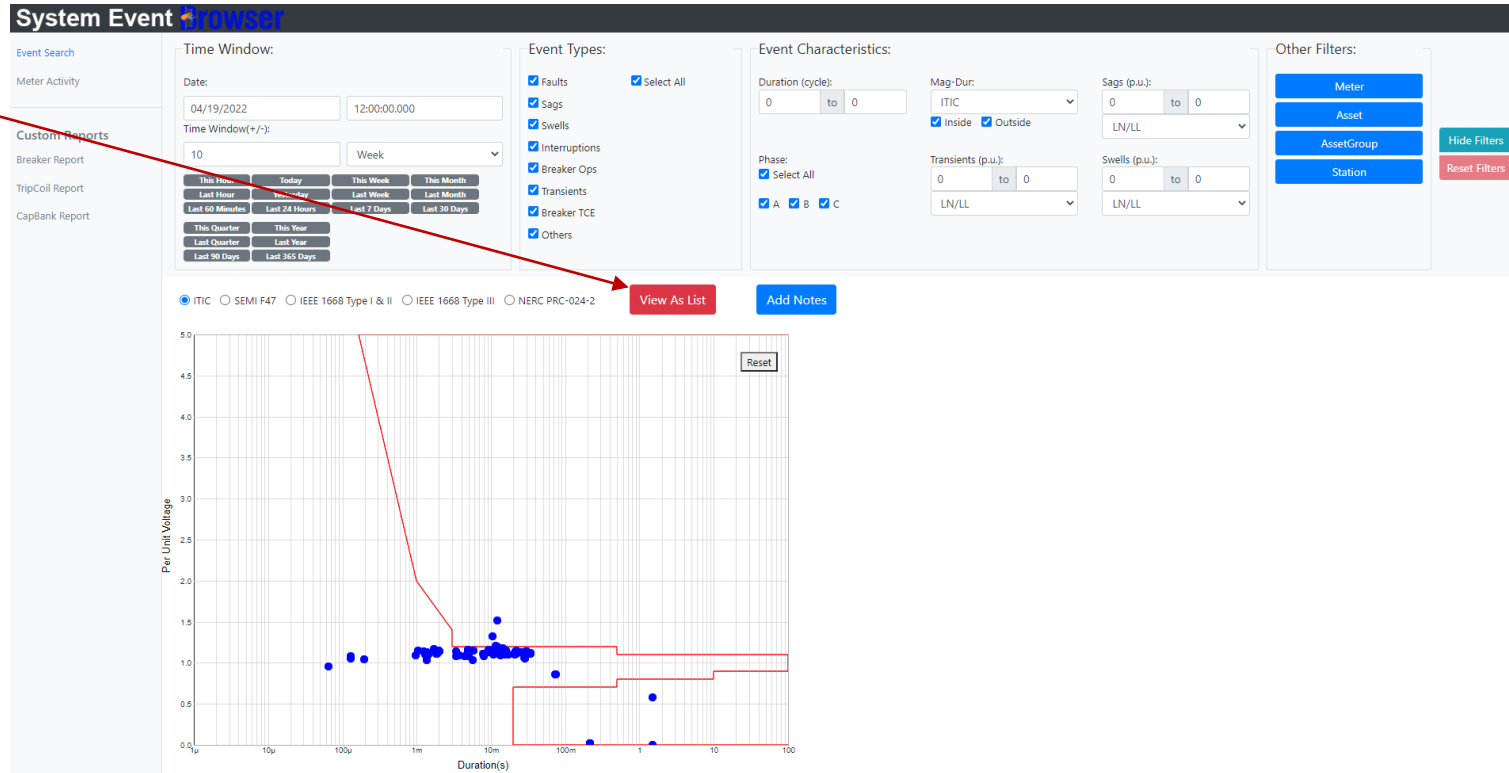
- Date / Time Quick Picks
- Duration Filter
- Phase Filter
- Curve Filter
- Magnitude Filter
- Other Filters
- Show / Hide & Reset Filters

The screenshot displays the System Event Browser interface. On the left is a navigation sidebar with sections for 'Event Search', 'Meter Activity', 'Custom Reports', and 'Breaker Report'. The main area is divided into several filter panels: 'Time Window' (with date and time pickers), 'Event Types' (checkboxes for Faults, Sags, Swells, Interruptions, Breaker Ops, Transients, Breaker TCE, and Others), 'Event Characteristics' (Duration, Phase, Mag-Dur, Swells, Transients), and 'Other Filters' (Meter, Asset, AssetGroup, Station). A red box highlights 'Hide Filters' and 'Reset Filters' buttons. Below the filters is a search bar and buttons for 'View As Mag/Dur' and 'Add Notes'. A table lists event records with columns for 'Time' and 'Event Type'. A red arrow points from the 'Show / Hide & Reset Filters' list item to the 'Hide Filters' button. On the right, a 'Waveform Analysis' window is open, showing a plot of 'Voltage Disturbance in Waveform' with a time axis from 36,000 to 37,200.

Time	Event Type
11/03/2021 16:59:35.8305750	Sag
11/03/2021 16:59:35.8305750	Interruption
11/03/2021 16:59:35.8305750	Transient
11/03/2021 22:51:30.5886980	Swell
11/03/2021 22:51:30.5886980	Transient
11/09/2021 23:13:53.3055300	Swell
11/09/2021 23:13:53.3055300	Transient
11/03/2021	Sag

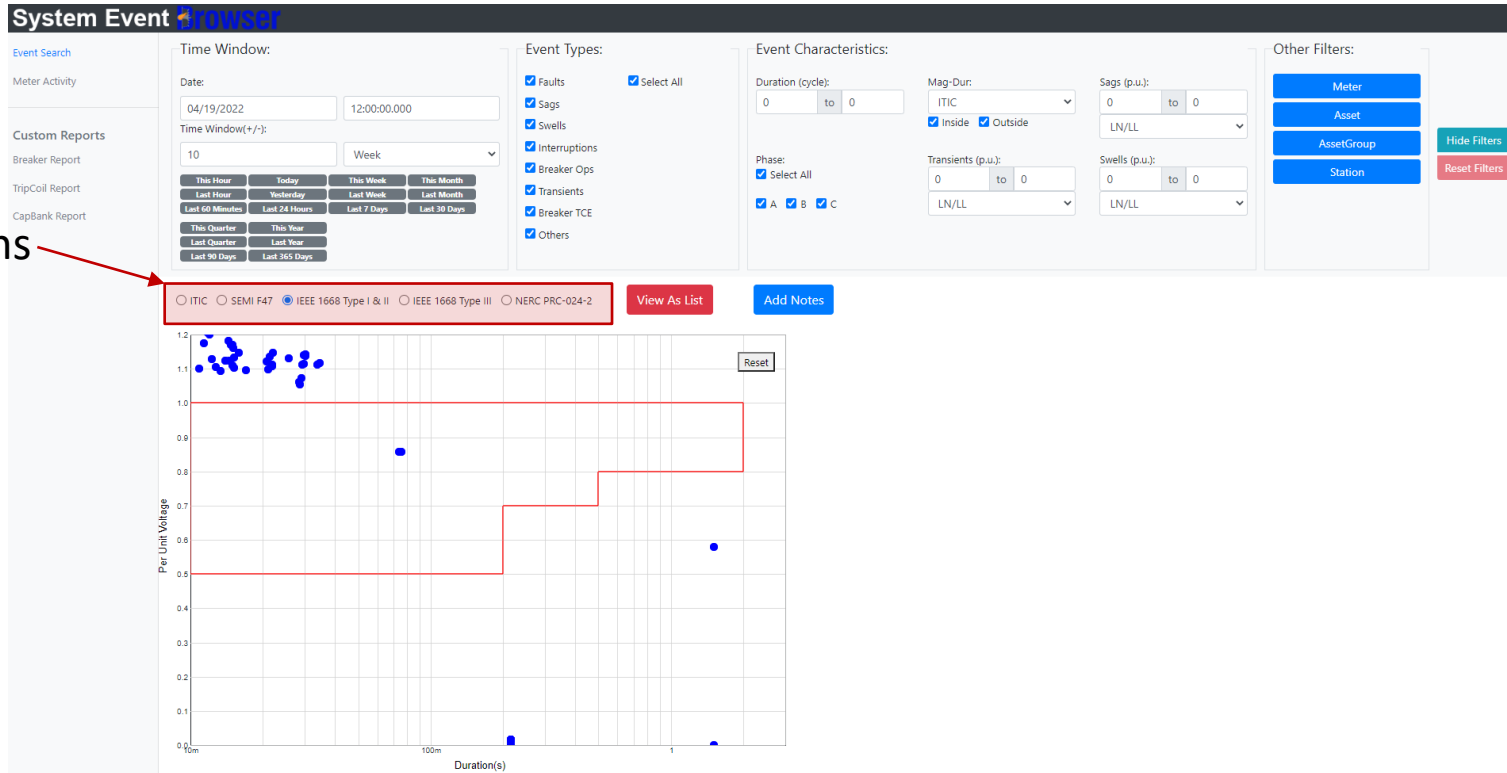
# SE Browser – Results Viewed as List or Plotted on Mag / Dur Curves

- List / Curve



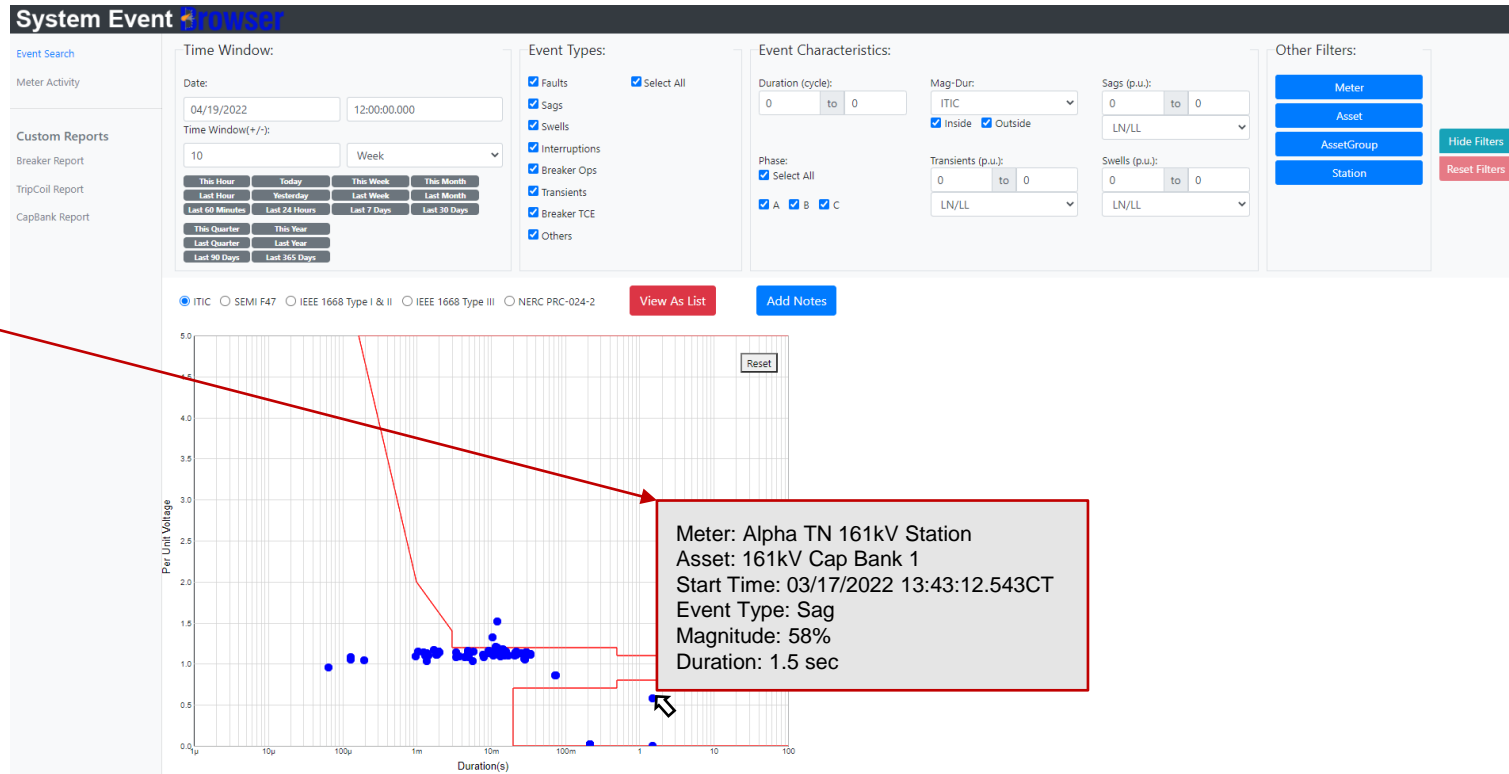
# SE Browser – Results Viewed as List or Plotted on Mag / Dur Curves

- List / Curve
- 5 Mag / Dur Curve Options



# SE Browser – Results Viewed as List or Plotted on Mag / Dur Curves

- List / Curve
- 5 Mag / Dur Curves
- Hover Over & Select



# SE Browser – Customize & Sortable List View

- Field Selection

**System Event Browser**

Event Search  
Meter Activity

Custom Reports  
Breaker Report  
TripCoil Report  
CapBank Report

Time Window:  
Date: 01/01/2022 12:00:00.000  
Time Window(+/-): 10 Week

Event Types:  
 Faults  Select All  
 Sags  
 Swells  
 Interruptions  
 Breaker Ops  
 Transients  
 Breaker TCE  
 Others

Event Character:  
Duration (cycle): 0 to  
Phase:  Select All  A  B  C

Buttons: As Mag/Dur, Add Notes

Time	Asset	Duration (cycles)	Event Type	Worst LN Magnitude (%nominal)
01/13/2022 16:00:16.0911920	Alcoa TN 161kV Cap Banks 1-2	91.48	Interruption	0.35
01/13/2022 16:00:16.0911920	Alcoa TN 161kV Cap Banks 1-2	2.45	Transient	119.40
01/13/2022 13:07:55.1550280	Alcoa TN 161kV Cap Bank 1 Relay	89.27	Interruption	1.54
01/15/2022 15:09:25.9411979	Alcoa TN 161kV Cap Banks 1-2	91.02	Sag	N/A
01/15/2022 15:09:25.9411979	Alcoa TN 161kV Cap Banks 1-2	91.02	Interruption	0.00
01/15/2022 15:09:25.9411979	Alcoa TN 161kV Cap Banks 1-2	0.05	Transient	108.45
01/13/2022 16:00:16.0982070	Alcoa TN 161kV Cap Bank 1 Relay	89.77	Interruption	2.73

**Table Columns**

- Asset
- Asset Desc
- Asset Manuf
- Asset Model
- Asset Type
- Duration (cycles)
- Duration (sec)
- Event Type
- EventID1
- Fault Current Mag
- Fault Dist
- Fault Dist Alg
- Fault Inception
- FaultID
- Meter
- Meter Alias
- Meter Con Type
- Meter Desc
- Meter Firmware
- Meter Key
- Meter Make
- Meter Model
- Meter Sector
- Meter ShortName
- Meter TSC
- Meter TimeZone
- Nom Voltage (kV)
- Phase
- Station
- Station Alias
- Station Desc
- Station Key
- Station ShortName
- Worst LL Magnitude (%nominal)
- Worst LN Magnitude (%nominal)

Other Filters:

- Meter
- Asset
- AssetGroup
- Station (1)

Buttons: Hide Filters, Reset Filters

# SE Browser – Customize & Sortable List View

- Field Selection
- Sort by Headers

**System Event Browser**

Event Search

Meter Activity

Custom Reports

Breaker Report

TripCoil Report

CapBank Report

Time Window:

Date: 01/01/2022 12:00:00.000

Time Window(+/-): 10 Week

Event Types:

Faults  Select All

Sags  Swells

Interruptions  Breaker Ops

Transients  Breaker TCE

Others

Event Characteristics:

Duration (cycle): 0 to 0

Mag-Dur: ITIC

Sags (p.u.): 0 to 0

Swells (p.u.): 0 to 0

Transients (p.u.): 0 to 0

Phase:  Select All  A  B  C

Other Filters:

Meter

Asset

AssetGroup

Station (1)

Hide Filters

Reset Filters

View As Mag/Dur Add Notes

Waveform Analysis Fault Correlating Events Configuration All

View in OpenSEE

Time	Asset	Duration (cycles)	Event Type	Worst LN Magnitude (Nominal)
02/07/2022 13:44:29.2275210	Alcoa TN 161kV Cap Banks 1-2	0.56	Swell	111.19
01/06/2022 16:43:59.3550730	Alcoa TN 161kV Cap Banks 1-2	0.67	Transient	103.81
02/07/2022 13:44:29.2275210	Alcoa TN 161kV Cap Banks 1-2	109.01	Sag	N/A
02/07/2022 13:44:29.2275210	Alcoa TN 161kV Cap Banks 1-2	109.01	Interruption	0.34
02/07/2022 13:55:20.6343070	Alcoa TN 161kV Cap Banks 1-2	161.46	Sag	N/A
02/07/2022 13:55:20.6343070	Alcoa TN 161kV Cap Banks 1-2	161.46	Interruption	0.34
01/13/2022 16:00:16.0911920	Alcoa TN 161kV Cap Banks 1-2	2.45	Transient	119.40



# SE Browser – Custom Reports

- Asset Health
- KPIs
- Compliance (like 1547)

System Event Browser

Event Search

Meter Activity

Custom Reports

Breaker Report

TripCoil Report

CapBank Report

Capacitor Bank:

Substation: ALAMO TN

Cap Bank Group: Alamo TN 161kV Cap Banks 1-4

Bank: System

Time Window:

Date: 04/18/2022 21:37:53.956

Time Window(+/-): 10 Minute

Additional Filter:

[Edit Filter](#)

CapBank Analytic Event Overview

Time	Phase	Analysis Status	CapBank Operation	Resonance	CapBank Health	Restrike	PreinsertionSwitching Condition
03/02/22 04:51:01	AØ	The longest time between two closings or opening poles is more than 2 cycles	Closing operation: first closing. Initially there is no cap bank in service. After the operation, the number of cap banks in service is one.	No	Normal	No	Normal

Short Circuit Power Trend

Date	AØ (MVA)	BØ (MVA)	CØ (MVA)
07/22/20	540	535	533
07/23/20	532	530	527
07/24/20	543	528	525
07/25/20	538	531	525
07/26/20	535	528	523
07/27/20	530	525	521

# SE Browser – Custom Reports

- Asset Health
- KPIs
- Compliance (like 1547)
- Trend View

**System Event Browser**

Event Search  
 Meter Activity  
**Trend Viewer**  
 Custom Reports  
 Breaker Report  
 Trip Coil Report  
 CapBank Report

Capacitor Bank:  
 Substation: ALAMO TN  
 Cap Bank Group: Alamo TN 161kV Cap Banks 1-4  
 Bank: System

Time Window:  
 Date: 04/18/2022 21:37:53.956  
 Time Window(+/-): 10 Minute

Additional Filter:  
 Edit Filter

CapBank Analytic Event Overview

Time	Phase	Analysis Status	CapBank Operation	Resonance	CapBank Health	Restrike	PreinsertionSwitching Condition
03/02/22 04:51:01	AØ	The longest time between two closings or opening poles is more than 2 cycles	Closing operation: first closing. Initially there is no cap bank in service. After the operation, the number of cap banks in service is one.	No	Normal	No	Normal

Short Circuit Power Trend

System SCC (MVA)

Legend: AØ (red), BØ (blue), CØ (green)

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## Email Subscriptions

- Organization Based (Transmission, Generation, Customer Service, etc.)
- Role Based (Operator, Engineer, Lineman, Account Manager, etc.)
- Area Based (Nashville, Memphis, Chattanooga, etc.)
- Email and/or Text
- Event Types (Faults, Asset Health, Lightning, etc.)
- On Demand (Faults, Incipient Failures, Lightning Warning, etc.)
- On Schedule (Asset Health Reports, Metrics, Compliance Reports, etc.)
- User Self Manages, Administrator Approves
- Authentication via Azure Active Directory; Cell Verification via Text Code

**TVA**

**TENNESSEE  
VALLEY  
AUTHORITY**