

ISO newengland	CROP.34002 Verify the Configuration of Quadrant displays	
© 2024	Approved By: Director, Operations	Effective Date: 06/10/2024
Rev # 9	Procedure Owner: Manager, Control Room Operations	Valid Through: 06/10/2026

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Procedure Background

RTNET Quadrant display

- RTNET's default display when accessed is the Real Time Network Quadrant display for the Internal Network (Internal Network Quadrant). There are a total of four Quadrant displays in RTNET: Internal Network Quadrant, External Network Quadrant, Internal Save Mismatch Estimates and External Save Mismatch estimates.
- The Internal Network Quadrant was developed for Control Room Operators to monitor the health of the RTNET system and provides alarms to the System Activity alarm page. Key icons have been added to the display to provide the Control Room Operator with the details about that section of the Quadrant.
- The Internal Network Quadrant display has four sections: Solution Mismatch, Bus Flow Mismatch, Bus Measurement Mismatch and SCADA/RTNET MW Analog Deltas.
- Solution Mismatch is based off of the final solution of the State Estimator and will display mismatches that the State Estimator **cannot** figure a solution around.
- Bus Flow Mismatch is based off of the measured SCADA values, the RTNET State Estimator values and the load tree values (this is called scheduled value on the RTNET detail pop up) all being compared to display measurement, topology and/or model errors. The absolute value of the error is then used to determine if it should be shown or shown and alarmed on the display.
- Bus Measurement Mismatch is based off of the summing of the SCADA measurement values at a bus to display measurement and/or topology errors. The absolute value of the error is then used to determine if it should be shown or shown and alarmed on the display.
- SCADA/RTNET MW Analog Deltas is based off of comparing the SCADA and RTNET values for lines (LN), zero impedance branch (ZBR) and transformer (XF) MW values to display measurement and/or topology errors. The absolute value of the error is then used to determine if it should be shown or shown and alarmed on the display.
- The External Network Quadrant, Internal Save Mismatch Estimates and External Save Mismatch estimates were developed for the Power System Modeling Analysts to interact with to help determine what adjustments might need to be made to the State Estimator to provide a better solution.

CA Voltage Quadrant display

- The CA Voltage Quadrant display is an RTCA application that will display the top 12 voltage exceedances ordered by severity (% Rating). If a Contingent element has multiple voltage exceedances in RTCA or CAJR, only the most severe (by % Rating) will be displayed on the CA Voltage Quadrant.
- Exceedances of an emergency rating will **NOT** have a letter to the right of the "% Rating" number. Exceedances of a normal rating but less than the emergency rating will have an "N" to the right of the "% Rating" number. Exceedances of the emergency rating will be shown before exceedances of the normal rating.
- Clicking on a displayed exceedance will take you to the applicable application violation display.
- RTCA unsolved contingencies can be properly acknowledged from this display.

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Common Procedure Information

- A. Any ISO-NE qualified Control Room Operator has the authority to take actions required to comply with NERC Reliability Standards. A qualified ISO-NE Control Room Operator has met the following requirements:
 - 1. Have and maintain a NERC certification at the RC level (per R.1 of PER-003-2)
 - 2. Applicable Requirements of PER-005-2
 - 3. Approved to cover a Control Room Operator shift position by the Manager, Control Room Operations
 - 4. Is proficient at the current qualified level.
- B. Real time operation is defined as the current hour and the current hour plus one.
- C. Future hours are those beyond real time operation.
- D. All verbal communications with Local Control Centers (LCC), neighboring Reliability Coordinators/Balancing Authorities (RC/BA), Designated Entities (DE), Demand Designated Entities (DDE) and/or SCADA centers shall be made on recorded phone lines unless otherwise noted.
- E. For all communications:
 - 1. Use the Basic Protocol for All Operational Communications as prescribed in M/LCC 13
 - 2. Use 'ISO New England' or 'New England'. Refrain from using 'ISO'.
 - 3. Use Asset ID's when communicating with DE/DDEs.
 - 4. Use three-part communication in all situations where its use will enhance communications.
- F. Primary responsibilities are stated for each step within the procedure, but any ISO System Operator qualified at that position or higher can perform the step.
- G. The use of “ensure” within this document means that a verification has been performed and if the item is not correct, corrective actions will be performed.

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Procedure

Condition(s) to perform this section:

- Performed once per shift by the Security Operator.

Section 1 : Verify the Configuration of the Real Time Network Quadrant display

Step 1.1 Primary Responsibility: Security Operator

Verify "Max Mismatch based on" is selected to Company.

Notes

Company is the default setting.

Step 1.2 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- If "Max Mismatch based on" is NOT selected to Company.

Determine why the "Max Mismatch based on" is NOT selected to Company and if the reason is still valid.

Step 1.3 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- Station is no longer required to be utilized.

Select Company for the "Max Mismatch based on".

Instructions

Right clicking on the gray triangle in front of the current selection will provide the selection menu for Company or Station.

Step 1.4 Primary Responsibility: Security Operator

Verify "Save Estimates" is enabled.

Notes


- Save Estimates is the default setting.
- When the lettering for Save Estimates is in green it is enabled.
- Save Estimates preserves the Solution Residuals that were applied to the internal busses, from the State Estimator Solution and applies them to the post RTNET applications / processes (RTCA, ILC, Powerflow and STCA) to maintain the Power Balance. Save Estimates helps provide a consistent solution between applications.
- CA Interchange Error applies the Solution Residuals to the Tie Lines.

Step 1.4.1 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- Save Estimates is NOT enabled.

Determine why "Save Estimates" is NOT enabled and if the reason is still valid.

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Step 1.4.2 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- CA Interchange Error is NO longer required to be utilized.

Enable "Save Estimates".

Instructions

To enable "Save Estimates" perform the following:

- ☐ Click "SEC" button;
- ☐ Click "SE Initial Conditions" button;
- ☐ Select "Save Bus Mismatch Estimates" by applying a check mark.

Step 1.5 Primary Responsibility: Security Operator

Determine if any Company or Station MW or MVAR tolerances have been modified.

Instructions

To determine if a Company Max MW or MVAR Mismatch tolerance has been adjusted perform the following:

- ☐ Access RTNET;
- ☐ Click the "Company Tolerances" button;
- ☐ Review the Internal Companies tolerance settings (normal settings are: 35 MW and 500 MVAR);
- ☐ Review the External Companies tolerances settings (normal settings are 750 MW and 999 MVAR).

To determine if a Station Max MW or MVAR Mismatch tolerance has been adjusted perform the following:

- ☐ Access RTNET;
- ☐ Click the "Station Tolerances" button;
- ☐ Click the "Exceptions" tab;
- ☐ Review the entries on the Exceptions tab.

Notes

The modification to the tolerance setting will allow RTNET to Solve with the Mismatch that exceeds the default setpoint.

Step 1.6 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- The value entered is no longer required for system conditions.

Modify or return to normal the MW or MVAR tolerance.

Instructions

To reset all Company and/or Station modifications to default by performing the following:

- ☐ Access RTNET;
- ☐ Click the "Reset Mismatch Tolerances to Defaults" button.

To modify a Company Max MW Mismatch tolerance perform the following:

- ☐ Access RTNET;
- ☐ Click the "Company Tolerances" button;
- ☐ Find the Company to be adjusted;
- ☐ Enter the new tolerance to be used that will allow RTNET to solve.

To modify a Station Max MW Mismatch tolerance perform the following:

- ☐ Access RTNET;
- ☐ Click the "Station Tolerances" button;
- ☐ Enter the EMS Station name in the box next to the Find Station button (if the station is **NOT** displayed on the first page);
- ☐ Click the "Find Station" button;
- ☐ Enter the new tolerance to be used that will allow RTNET to solve.

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Step 1.7 Primary Responsibility: Security Operator

Verify the Tolerance and associated Alarm values are set appropriately for system conditions on each RTNET Quadrant display.

Instructions

Tolerance and Alarm values may be configured by the System Operator based on system conditions, however typical values are:

- ☐ Bus Flow & Bus Measurement Mismatch Tolerance: 50MW, 75Mvar;
- ☐ Bus Flow & Bus Measurement Mismatch Alarm: 100MW, 150Mvar;
- ☐ SCADA/RTNET MW Analog Deltas: 50MW Tolerance, 100MW Alarm.

Step 1.7.1 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- Modifications to the RTNET Quadrant Tolerance and Alarm values outside the typical values in the previous step are going to be made.

Coordinate with the Operations Shift Supervisor and Senior System Operator to determine what the appropriate Tolerance and associated Alarm values will be for the current and expected system conditions.

Step 1.7.2 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- A Tolerance value requires updating for the current system conditions; Or
- An Alarm value requires updating for the current system conditions.

Adjust the applicable value.

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Condition(s) to perform this section:

- Performed once per shift by the Security Operator.

Section 2 : Verify the configuration of the CA Voltage Quadrant display

Step 2.1 Primary Responsibility: Security Operator

Verify the RTCA Analysis Control settings flags are set correctly using the Voltage Quadrant display in RTCA.

Instructions

The following flags **are** set for RTCA:

- ☐ Unit MVar
- ☐ Xf Tap Changing
- ☐ Capacitor Switching

The following flag **is NOT** set for RTCA

- ☐ Phase Shifter Tap Changing.

Notess

The above flag selections represent the default setting for ISO-NE RTCA

Step 2.2 Primary Responsibility: Security Operator

Verify the CAJR Analysis Control settings flags are set correctly using the Voltage Quadrant display in RTCA.

Instructions

The following flag **is** set for CAJR:


- ☐ Unit MVar

The following flags **are NOT** set for CAJR:

- ☐ Xf Tap Changing
- ☐ Phase Shifter Tap Changing
- ☐ Capacitor Switching

Notes

The above flag selections represent the default setting for ISO-NE CAJR.

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Step 2.3 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- RTCA Analysis Control flags are NOT correct; Or
- CAJR Analysis Control flags are NOT correct.

Modify the CTG flag(s) for RTCA or CAJR.

Instructions

DO NOT modify the Basecase flags. You should only modify the CTG flags as required.

To access the RTCA Analysis Control:

- ☐ Access RTCA
- ☐ Open "Analyst Displays" menu
- ☐ Hover over the "Contingency Analysis Displays" selection (it will open another menu)
- ☐ Select "Contingency Analysis Control"
- ☐ Select "Process Controls" tabs
- ☐ Set the applicable CTG flag.

To access the CAJR Analysis Control:

- ☐ Access CAJR
- ☐ Open "Analyst Displays" menu
- ☐ Hover over the "Contingency Analysis Displays" selection (it will open another menu)
- ☐ Select "Contingency Analysis Control"
- ☐ Select "Process Controls" tabs
- ☐ Set the applicable CTG flag.

Step 2.4 Primary Responsibility: Security Operator


Condition(s) to perform this step:

- An Analysis Control flag was modified.

Notify the IT On Call Technician that an Analysis Control flag has been modified.

Instructions

Provide the IT On Call Technician with the Application name and incorrect flag setting.

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Revision History

Rev. No.	Date (MM/DD/YY)	Reason	Contact
0	12/12/12	Initial revision of this Procedure	Steven Gould
1	09/17/13	Update the External Company normal MW setting to 750 MW from 500 MW in step 7.	Steven Gould
2	12/16/13	Title of procedure changed. Added a new section for the CA Voltage Quadrant	Steven Gould
3	04/14/15	Update language used in steps 1.7 and 1.8	Steven Gould
4	09/23/16	Correct typo in Step 2.2 and align terms	Steven Gould
5	10/11/17	Administrative Format change	Steven Gould
6	08/27/18	Biennial Review	Steven Gould
7	07/21/20	Biennial Review	Steven Gould
8	06/21/22	Biennial Review; Updated Common Procedure Information; changed Step 1.5 & 1.6 to substeps of Step 1.4	Jonathan Gravelin
9	06/07/24	Biennial Review; Added Instructions to new Step 1.7, modified the conditions to enter in Step 1.9. Converted Step 1.8 and 1.9 to 1.7and substeps 1.7.1 and 1.7.2	Jonathan Gravelin