Table of Contents

References

1. New England To New Brunswick Voltage-Reactive Limit Calculator Guide
2. OP 19 - Transmission Operations
3. OP 19 Appendix J - Contingency List and Criteria/Limits
4. VELCO Highgate Converter Export Guidelines
5. Boston Import Area Operations Planning Guide and Operations Guide
6. M/LCC15 Attachment H - Voltage SOL Identification Procedure
7. Connecticut Operating Guide
8. Connecticut Low Voltage Import Limit Operating Text Guide
9. M/LCC1 Attachment C Millstone Nuclear Power Station
10. M/LCC1 Attachment D Seabrook Nuclear Power Station

Procedure Background

- The following are the identified Double C areas and their shortened names used in this document:
  - Boston/NEMA Import: Boston
  - South West Connecticut Import: SWCT
  - Connecticut Import: CT
  - Norwalk Stamford Import: NRST
  - Western Connecticut Import: WCONN
  - New Hampshire-Maine: NH-ME
  - New England West-East: West-East
  - Rhode Island Import: RI Import (RI-IMP)
  - Lower SEMA Eastern RI Import: LS-ERI
  - Northeast New England: NENE
  - SEMA South of Boston: SEMA-SB

- Capacity Scarcity Condition (CSC)

- A Capacity Scarcity Condition will be triggered by the approval of any ONE UDS or CDSPD case that is violating any one or more of the reserve constraints identified below for (1) five- minute interval.
  - System Ten-Minute Non-Spinning Reserve (TMNSR) – RCPF of $1,500/MWh
  - System Thirty-Minute Operating Reserve (TMOR) – RCPF of $1,000/MWh
  - Local Reserve Zone TMOR – RCPF of $250/MWh. Local Reserve Zones are:
    - NEMA-Boston
    - CT
    - SWCT
- Management Expectation:
  - Upon experiencing a contingency of a transmission element or generator that affects a Double C area, it is expected that a new Double C limit should be calculated and implemented within 30 minutes of the event, following implementation of any necessary post contingent actions.
  - Upon indication of a UDS (or CDSPD) case that is violating the System TMNSR, System TMOR, or Local Reserve Zone TMOR requirement management expectation is that the Loader Operator communicates the condition to the Shift Supervisor and Senior System Operator for further discussion prior to approval. If the conditions forecasted by UDS (or CDSPD) are as expected and approval of the UDS (or CDSPD) case is required, then the case may be approved. If the conditions forecasted by UDS (or CDSPD) are not as expected, or if approval of the UDS (or CDSPD) case is not required, then adjustments should be made to the case and it should be re-executed as necessary
  - Upon indication that a Local Reserve Zone is approaching a Capacity Scarcity Condition, the Local Reserve constraint should be allowed to bind allowing any resources to be dispatched to a point where they are 30 minutes away from the EcoMax or Max Reduction. The Local Reserve Zone transfer limit should be re-evaluated using STE limits. When a deficiency occurs using the new transfer limit and while ensuring the resources dispatched remain at 30 minutes from the EcoMax or Max Reduction it is acceptable to allow violation of the Local Reserve Zone constraint if post 1st contingency load shed is required. If load shed is NOT required post 1st contingency, then violation of the Local Reserve Zone constraint should NOT be allowed.

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 Control Room Operator qualified at that position or higher can perform the step. The Primary Responsibility may be delegated to an Operator in a lower qualified position, but the responsibility for its completion remains with the identified individual.

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.

Procedure

Condition(s) to perform this section:

- **Performed at least once per shift for all Double C areas.**

Section 1 : Configure the Real-Time Double C Area display

Step 1.1 Primary Responsibility: Security Operator

Ensure the "Supress Alarms" force button is toggled as required for system conditions.

Notes

- Using the Suppress Alarms feature in Double C is **NOT** typically done.
- The "Supress Alarms" feature does **NOT** prevent the ILC IROL timer from operating.
- When the "Supress Alarms" force button is toggled to suppress alarms an entry in the System Activity Log is created for that Double C area stating the area name abbreviation and "DOUBLC CTG ALARMS SUPRESSED" in purple.
- When the "Supress Alarms" force button is toggled to no longer suppress alarms an entry in the System Activity Log is created for the Double C area stating the area name abbreviation and "DOUBLC CTG ALARMS ENABLED" in purple.

Step 1.2 Primary Responsibility: Security Operator

Ensure the Line & Gen Cont, Double Line Cont, or Double Gen Cont Manual thermal limits and Manual CT V/R limits are correct.

Instructions

- ❑ The Manual thermal limits used would come from either the Security Operator's nightly studies or the GRT.
- ❑ Ensure the Line & Gen Cont transfer limit value entered does **NOT** exceed the cap for the following areas:
  - ❑ Boston 4600
  - ❑ SWCT 2700
  - ❑ CT 3400
- ❑ The Manual CT V/R limits used would come from the GRT or guidance provided by the RTS Group.

Notes

The CT V/R limits are only applicable or provided when NE load is > 23,000MW.

Step 1.3 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **CT Import Double C display is being configured or verified.**

Ensure the Manual limits Force buttons are NOT toggled as forced.

Notes

Toggling the Manual limits Force button to the force position (depressed) will override the V/R 2nd Contingency limits and apply only the entered Manual limits.

Step 1.4 Primary Responsibility: Security Operator

Ensure the MW Relief entries in Load Relief Details are required for system conditions.

Notes

- To use Load Relief for Boston both NGrid and NSTAR must authorize the use in real time and it is only applicable for that operating day.
- To use emergency support (purchases) both the ISO-NE Operations Shift Supervisor and NYISO Operator must authorize the use in real time and it is only applicable for that operating day.
- The MW value associated with agreed upon post contingent actions, that can be completed within 30 minutes, can be entered into the MW Relief well and a description of the actions entered.
- Post contingent actions can be, but **NOT** limited to:
  - Using reactive shunt devices;
  - Using agreed upon emergency support (purchases) per the CT Operating guide;
  - Potential Load Shed for Line/Gen or Double Gen in Real Time.

Notes

Allow Generators in the area (**NOT** to include Fast Start Generators) to be dispatched within 30 minutes of Eco Max, prior to ramping in the load shed value in order to preserve Fast Start Generator capabilities.

Step 1.5 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **CT, SWCT, or NRST Import Double C display is being configured or verified.**

Ensure the Available Load Shed force button is toggled for manual entry.

Notes

- The "Available Load shed" force button should be selected for manual entry.
- Connecticut, South West Connecticut and Norwalk Stamford Double C displays have the ability to automatically apply a Load Shed amount based on the Load Shed percentage entered in the Area Load Adjustments section.
- Automatic load shed is **NOT** used in Real-Time.

Step 1.6 Primary Responsibility: Security Operator

Ensure the manual Available Load Shed MW amount is required for system conditions.

Instructions

- ❑ The required amount is entered for system conditions.
- ❑ Allow Generators in the area (**NOT** to include Fast Start Generators) to be dispatched within 30 minutes of Eco Max, prior to ramping in the load shed value in order to preserve Fast Start Generator capabilities.

Notes

Section 6 of this procedure is used to determine the Available Load Shed value which is post 2nd contingency load shed. The load shed value entered above the determined amount may require load shed post 1st contingency.

Step 1.7 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Area display being configured has a Tie-Line (SWCT, CT, NRST, WCONN, NH-ME, NENE or West-East).**

Ensure the Tie-Lines are set appropriately for 30 minute actions.

Instructions

- ❑ The curtailment of Tie-Line external transactions is normally counted as a post first contingency 30 minute action.
- ❑ To set the Tie-Line to be included in the Area load calc and counted as a 30 minute action perform the following:
  - ❑ Toggle the Ignore button to an unselected (non-toggled) state in Area Surplus/Deficit Summary;
  - ❑ Click the Tie-Line button in Area Load Summary;
  - ❑ Select Include in Area load calc.
- ❑ To set the Tie-Line to be excluded from the Area load calc and, **NOT** counted as a 30 minute action perform the following:
  - ❑ Toggle the Ignore button to a selected (toggled) state in Area Surplus/Deficit Summary;
  - ❑ Click the Tie-Line button in Area Load Summary;
  - ❑ Select Exclude from Area load calc.

Step 1.8 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NH-ME, NENE or West-East Double C display is being configured or verified.**

Ensure the NE-NB TRANS is appropriate for system conditions.

Notes

During normal operations the NE-NB TRANS Ignore button is not toggled and transactions are being credited as a 30 minute action. When only a portion is desired to be credited then the "NE-NB TRANS" Ignore toggle must be enabled.

Step 1.9 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NH-ME, NENE or West-East Double C display is being configured or verified correct and the NB Credit is toggled for manual entry.**

Ensure the MW amount entered for NB Credit is required for system conditions.

Notes

- NB Credit would be used if the NB external transactions are being counted as a 30 minute action but only a portion of the external transactions are to be curtailed (i.e. they will **NOT** be taken to zero).
- During normal operations when exporting, the entire amount of NE-NB transaction curtailment is credited as a 30 minute action as long as the "Ignore" button for NE-NB TRANS is not enabled. When only a portion is desired to be curtailed then the "NE-NB TRANS" Ignore toggle must be enabled.
- To use NB Credit both the ISO-NE Operations Shift Supervisor and NB Operator must authorize the use in real time and it is only applicable for that operating day.

Step 1.10 Primary Responsibility: Security Operator

Ensure the proper Multi-Unit / Transmission Contingencies are enabled.

Notes

- Enabling a Multi-Unit / Transmission Contingency allows the Double C software to select the Largest Generation contingency (for Line & Gen limits) or Two Largest Generation contingencies (for Double Gen limits) for use in determining the Proxy Limit.
- NRST, LS-ERI and RI-IMP areas do **NOT** have any Multi-Unit / Transmission Contingencies.

Step 1.11 Primary Responsibility: Security Operator

Ensure the Area % in the "Fast Start Units" section is set to the approved value.

Standard(s) for completion:

- Only the value approved by the Manager, Control Room Operations is used.

Notes

- Current approved value is 80%.
- The value entered into the "Area %" well is used as a multiplier that is applied to the Eco Max value and the Claim 30 value. The lesser of the two calculated values is used as the 30 Minute Response value for that Fast Start non-hydro generator.

Step 1.12 Primary Responsibility: Security Operator

Ensure that only authorized Fast Start non-hydro generators have the "Unit %" button toggled and the entered value is required for system conditions.

Notes

When the "Unit %" force button is toggled, the value entered is used as a multiplier that is applied to the Eco Max value and the Claim 30 value. The lesser of the two calculated values is used as the 30 Minute Response value for that Fast Start non-hydro generator.

Step 1.13 Primary Responsibility: Security Operator

Ensure only required generators/DARD Pumps have the "Ignore" button toggled.

Notes

Having the Ignore button toggled will result in the following on the Real Time Double C display:

- Removes the 30-minute response and the available MW fields will **NOT** be used in the calculation of the 30 Min Response and Available Mw in the Area Generation/Reserve Summary section.
- Removes the Mw output from the Area Generation field.
- Real Time load % calculation will be offset by the Mw output/New England Load.

Step 1.14 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **LS-ERI Double C display is being configured or verified correct.**

Ensure the range selector is toggled correctly for generators that have operating ranges specified.

Notes

Selecting the incorrect range will impact the proxy limit calculation.

Step 1.15 Primary Responsibility: Security Operator

Ensure all generator/DARD Pumps have the "Bid" response rate toggled.

Notes

The value visible in the "bid" field is the MRR for the unit at the current output. Double C software will utilize multiple response rates as specified in the "MRR" tab of their associated RTGEN page to calculate their 30 minute response capability.

Step 1.16 Primary Responsibility: Security Operator

Click "Area DRR Details" button in the Area Generation/Reserve Summary area

Step 1.16.1 Primary Responsibility: Security Operator

Ensure only required DRRs have the "Ignore" button toggled.

Notes

Having the Ignore button toggled will remove the 30 minute response and the available MW fields will **NOT** be used in the calculation of the 30 Min Response and Available Mw in the Area Generation/Reserve Summary section.

Step 1.16.2 Primary Responsibility: Security Operator

Ensure the "Sys %" is set to the approved value.

Standard(s) for completion:

- Only the value approved by the Manager, Control Room Operations is used.

Notes

- Current approved value is 80%.
- The value entered into the "Sys %" well is used as a multiplier that is applied to the MaxRed value and the Claim 30 value. The lesser of the two calculated values is used as the 30 Minute Response value for the Fast Start DRR or DRR in a UCM 4.

Step 1.16.3 Primary Responsibility: Security Operator

Ensure that only authorized Fast Start DRRs have the "DRR %" button toggled and the entered value is required for system conditions.

Notes

When the "DRR %" force button is toggled, the value entered is used as a multiplier that is applied to the MaxRed value and the Claim30 value. The lesser of the two calculated values is used as the 30 Minute Response value for the Fast Start DRR or DRR in a UCM 4.

Step 1.16.4 Primary Responsibility: Security Operator

Ensure all DRRs have the "Bid" response rate toggled.

Notes

The value visible in the "Bid" field is the MRR for the DRR at the current output.

Condition(s) to perform this section:

- **Performed at least once per shift for NE-NB and Highgate Double C V/R displays.**

Section 2 : Configure the Real-Time Double C Voltage Reactive Display

Step 2.1

Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NE-NB V/R Double C display is being configured or verified.**

Ensure the Largest Source Contingency manual entry toggle button is set for system conditions.

Notes

Normally the toggle button is **NOT** toggled so that the Largest Single Contingency MW amount will automatically update for the changes in source size for NB.

Step 2.2

Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NE-NB V/R Double C display is being configured or verified.**

Ensure the Largest Source Contingency MW amount is correct for system conditions

Instructions

Verify that the NB LARGEST CTG MW amount is the Largest Source Contingency for NB based on system conditions.

Notes

- The NB CTG DESCRIPTOR will indicate the name of the largest contingency. The NB LARGEST CTG MW will show the MW amount that is associated with the NB CTG DESCRIPTOR
- NB is the source for the EMS point that automatically updates the "EEL RIVER/MADAWASKA" contingency indicator.
- The indicator has three possible indications: Single CTG (Madawaska and Eel River both trip as a single contingency), Single 80 (Madawaska trips and Eel River runs back to 80 MW), and Separate CTG (Madawaska and Eel River are independent contingencies). The Levis Breaker Failure Runback scheme, in NB, determines the Madawaska and Eel River contingency status.

Step 2.3

Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Highgate V/R Double C display is being configured or verified.**

Ensure the system information contained in the Highgate Exports "Details" display is correct for system conditions.

Instructions

Click the "Details" button.

Step 2.4 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NE - NB V/R Double C display is being configured or verified.**

Ensure the Status and SCADA AVR information in the RTGEN Unit Data section is correct for system conditions.

Notes

The Status, in the Unit Data section, is shown as Available when the generator is in a UCM > 2.

Step 2.5 Primary Responsibility: Security Operator

Ensure the Status information in the RTNET Line / Xf / CB Data section is correct for system conditions.

Step 2.6 Primary Responsibility: Security Operator

Ensure the Status of the reactive devices in the RTNET Capacitor Data section is correct for system conditions.

Notes

- Reactive devices that have a Status of Available are actually switched into service in RTNET. For a capacitor or reactor to have an effect on the limit calculated by the Real-Time it must be switched into service (i.e. Status = Available).
- Reactive devices that have a Status of Unavailable are **NOT** switched into service in RTNET, it does **NOT** imply the reactor or capacitor is out-of-service.

Step 2.7 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Highgate V/R Double C display is being configured or verified.**

Ensure the Highgate Converter VREF Set For South Bus toggle button is set correctly for system conditions.

Notes

The Highgate Converter VREF Set For South Bus toggle button should only be toggled when the Vref for the Highgate Converter is set to the South Bus typically when exporting ≥ 150 MW.

Step 2.8 Primary Responsibility: Security Operator

Verify the V/R limits are appropriate for current system conditions.

Instructions

- ❑ On the NE-NB Voltage / Reactive Limit Details display:
  - ❑ Verify the "V/R Limit Status" "OK" with a "RT Limit:"; Or
  - ❑ The V/R Limit Status is "OK" with "RT Limit:" of either "-99999" or "99999" AND has a corresponding "Minimum NB-NE Requirement" value.
- ❑ On the Highgate Voltage / Reactive Limit Details display:
  - ❑ There is a "RT Limit:" of "-99999" with a corresponding "Highgate Exports allowed?" "No" message; Or
  - ❑ There is a "RT Limit:" based on the "VELCO Highgate Converter Exporting Limits (MW)" table with a corresponding "Highgate Exports allowed?" "Yes" message.

Notes

- Too many facilities out-of-service may inhibit the NENB voltage calculator from providing a limit and RTS guidance will be needed in order to provide a limit or directions to make the voltage calculator function properly.
- As a backup, there is an offline version of the NE-NB Voltage calculator in ODMS that may also be used as a backup or if the EMS version is not available.

Step 2.8.1 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NE-NB Voltage calculator V/R Limit Status says "ERROR"; Or**
- **NE-NB Voltage calculator V/R Limit Status says "OK" with a "RT Limit:" of either "-99999" or "99999" WITHOUT a corresponding indication of a "Minimum NB-NE Requirement:" value.**

Contact the RTS On-Call Engineer to provide a limit or course of action.

Condition(s) to perform this section:

- **Performed every night shift for SEMA-SB; Or**
- **Performed on the night shift when a transmission element is out-of-service or scheduled to be out-of-service for Boston, SWCT, CT, WCONN, LS-ERI, NH-ME, RI Import or West-East; Or**
- **Performed for an area when a transmission element goes out-of-service that would affect the transfer limit; Or**
- **Performed for an area when a generator goes out-of-service that would affect the transfer limit; Or**
- **Performed for an area when a transmission element outage is cancelled or returned to service that affects the transfer limit; Or**
- **Performed if it is determined that an increased transfer limit can be calculated in real time; Or**
- **Performed when a Local Reserve Zone will be violated using Line and Gen transfer limit that was developed to LTE.**

Section 3 : Perform a Line and Gen Contingency Transfer Limit Determination

Notes

- OP-19 Emergency System Condition Contingencies, identified in OP-19 Appendix J Table 2, are considered for Line and Gen Transfer limit determination.
- NENE is a Gen-Gen limited interface and a Line-Gen calculation is not required. However, due to software limitations the Line-Gen wells are still available in EMS and the Line-Gen limit will be 99999.

Step 3.1

Primary Responsibility: Security Operator

Retrieve the appropriate Powerflow case.

Step 3.2

Primary Responsibility: Security Operator

Adjust the Powerflow case for the area study being performed per Attachment 1 - Adjustments to the Powerflow Case.

Step 3.3

Primary Responsibility: Security Operator

Remove the study area's largest generation contingency from service.

Notes

If the generator being removed from service is a nuclear unit, ensure the NPIR safe shutdown station service loads are modeled (both MW and MVAR) using the applicable M/LCC1 document and ensure the station voltage is >345 kV.

Step 3.4

Primary Responsibility: Security Operator

Check the Powerflow base case for indications of RAS/ACS operation.

Step 3.5

Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Powerflow base case indicates the operation setpoint for an RAS/ACS has been reached.**

Model the RAS/ACS action in Powerflow.

Standard(s) for completion:

- The RAS/ACS action is modeled per the applicable RAS/ACS guide.

Step 3.6 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **CT, SWCT, WCONN, West-East, study is being performed.**

Return the interchange deviation with NYISO to zero by adjusting generation external to the study area.

Notes

For West-East studies returning to zero is **NOT** always possible. It is expected that available Fast Start generation is used to attempt to return to zero.

Step 3.7 Primary Responsibility: Security Operator

Utilize STCA, ILC Powerflow, or both to determine the most limiting contingency.

Step 3.7.1 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **If a limiting contingency could NOT be determined based on system configuration.**

Adjust generation, load internal to the study area, or tie line flow (NH-ME) to get STCA, ILC Powerflow, or both to indicate a limiting contingency.

Instructions

- ❑ If performing a study for CT, SWCT, WCONN, West-East, return to Step 3.6 to balance the interchange deviation with NYISO.
- ❑ If all generation has been removed from service, use the contingency identified in ILC Powerflow as the most limiting. Under normal conditions in ILC Powerflow an Import area needs to be importing for it to identify a "worst contingency".
- ❑ If STCA or ILC Powerflow does NOT indicate any contingencies, use the current transfer value and perform Step 3.13

Step 3.8 Primary Responsibility: Security Operator

Remove the most limiting contingency (element A) from service in the Powerflow case.

Step 3.9 Primary Responsibility: Security Operator

Check the Powerflow base case for indications of RAS/ACS operation.

Step 3.10 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Powerflow base case indicates the operation setpoint for an RAS/ACS has been reached.**

Model the RAS/ACS action in Powerflow.

Standard(s) for completion:

- The RAS/ACS action is modeled per the RAS/ACS guide.

Step 3.11 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **CT, SWCT, WCONN or West-East study is being performed.**

Return the interchange deviation with NYISO to zero by adjusting generation external to the study area.

Notes

For West-East studies returning to zero is **NOT** always possible. It is expected that available Fast Start generation is used to attempt to return to zero.

Step 3.12 Primary Responsibility: Security Operator

Adjust generation, phase shifters, line reactors, or load internal to the study area to determine the limiting element.

Standard(s) for completion:

- All elements are ≤ the LTE limit, **NOT** to exceed 5 MVA below the limit, this will prevent the transfer limit from being unnecessarily restrictive ; And
- Voltages are within MLCC15 Attachment H Critera; Or
- If developing this limit for a Local Reserve Zone that was violated at the LTE, then all elements are ≤ the STE limit or other more limiting OP 19 criteria.

Notes

For all study areas except Boston, NH-ME, RI Import, SEMA-SB and LS-ERI, dispersed generation external to the study area shall be adjusted to return the interchange deviation with NYISO to zero.

Step 3.13 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **On-line generation in the area is removed from service and a limiting element has NOT been identified or the maximum transfer limit has NOT been achieved.**

Determine if further generation reductions or raising load is required by configuring the Double C Area Study page and entering in the current transfer limit (Section 7 of this CROP).

Standard(s) for completion:

- The determination to stop adjusting generation or **NOT** raise load is made if surplus is equal to or greater than the area specific MW value.
- The determination to adjust generation or raise load is made if surplus is less than the area specific MW value.

Notes

- A specific surplus value must be achieved for a study area for it to be permissible to stop trying to achieve a maximum transfer limit. Below are the required transfer limit values, and the study areas to which those values are applicable.
- 500 MW of surplus is required for:
  - West-East
- 250 MW of surplus is required for:
  - Connecticut
  - Boston
- 100 MW of surplus is required for:
  - New Hampshire - Maine
  - Rhode Island Import
  - South West Connecticut
  - Western Connecticut
  - SEMA – South of Boston Import
  - Lower SEMA Eastern RI Import

Step 3.14 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Surplus is less than the required amount for the study area and the maximum transfer limit has NOT been achieved.**

Adjust generation, phase shifters, line reactors, or load internal to the study area to determine the limiting element.

Standard(s) for completion:

- The surplus is ≥ the required amount for the study area with online generation removed from service and no limiting element identified; Or
- The surplus is ≥ the required amount for the study area with all online area generation removed from service and a maximum transfer limit has **NOT** been achieved; Or
- All elements are ≤ the LTE limit, **NOT** to exceed 5 MVA below the limit, this will prevent the transfer limit from being unnecessarily restrictive; And
- Voltages are within MLCC15 Attachment H Criteria.

Instructions

For all study areas except Boston, NH-ME, RI Import, SEMA-SB and LS-ERI, dispersed generation external to the study area shall be adjusted to return the interchange deviation with NYISO to zero.

Step 3.15 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **The maximum transfer limit has been reached; Or**
- **The required surplus MW amount has been achieved.**

Place the most limiting contingency (element 'A') back in service.

Step 3.16 Primary Responsibility: Security Operator

Utilize STCA to determine the most limiting contingency.

Step 3.17 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **It was determined that there is a more limiting contingency than what was initially identified.**

Remove the new most limiting contingency (which will be referred to as element 'A') from service and restart at Step 3.9 of this Section.

Step 3.18 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **The largest generation contingency and most limiting contingency have been removed from service.**

Remove element A from service and determine the "Line & Gen Cont" transfer limit.

Step 3.19 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Transfer limit was recalculated due to an unplanned outage; Or**
- **Limit was recalculated in real time to increase the transfer limit.**

Log the new Double C limit for the applicable interface.

Instructions

Use log entry: > TRANSMISSION > GRT LIMIT CHANGES > Single Interface

Condition(s) to perform this section:

- **Performed every night shift for SEMA-SB; Or**
- **Performed on the night shift when a transmission element is out-of-service or scheduled to be out-of-service for Boston, SWCT, CT, West-East, WCONN, LS-ERI, NH-ME or RI Import; Or**
- **Performed for an area when a transmission element goes out-of-service that would affect the transfer limit; Or**
- **Performed for an area when a generator goes out-of-service that would affect the transfer limit; Or**
- **Performed for an area when a transmission element outage is cancelled or returned to service that affects the transfer limit; Or**
- **Performed if it is determined that an increased transfer limit can be calculated in real time; Or**
- **Performed when a Local Reserve Zone will be violated using Double Line transfer limit that was developed to LTE.**

Section 4 : Perform a Double Line Contingency Transfer Limit Determination

Notes

Only OP-19 Emergency System Condition Contingencies, identified in OP-19 Appendix J Table 2, are considered for Double Line Transfer limit determination.

Step 4.1 Primary Responsibility: Security Operator

Retrieve the appropriate Powerflow case.

Step 4.2 Primary Responsibility: Security Operator

Adjust the Powerflow case for the area study being performed per Attachment 1 - Adjustments to the Powerflow Case.

Step 4.3 Primary Responsibility: Security Operator

Utilize STCA, ILC Powerflow, or both to determine the most limiting contingency.

Step 4.3.1 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **If a limiting contingency could NOT be determined based on system configuration.**

Adjust generation or tie line flow (NH-ME) to get STCA, ILC Powerflow, or both to indicate a limiting contingency.

Notes

If performing a study for CT, SWCT, WCONN, West-East, balance the interchange deviation with NYISO to zero.

Step 4.4 Primary Responsibility: Security Operator

Remove the most limiting contingency (element 'A') from service in the Powerflow case.

Step 4.5 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **CT, SWCT, WCONN or West-East study is being performed.**

Return the interchange deviation with NYISO to zero by adjusting generation external to the study area.

Step 4.6 Primary Responsibility: Security Operator

Check the Powerflow base case for indications of RAS/ACS operation.

Step 4.7 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Powerflow base case indicates the operation setpoint for an RAS/ACS has been reached.**

Model the RAS/ACS action in Powerflow.

Standard(s) for completion:

- The RAS/ACS action is modeled per the applicable RAS/ACS guide.

Step 4.8 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **CT, SWCT, WCONN or West-East study is being performed.**

Return the interchange deviation with NYISO to zero by adjusting generation external to the study area.

Step 4.9 Primary Responsibility: Security Operator

Utilize STCA, ILC Powerflow, or both to determine the most limiting contingency.

Step 4.10 Primary Responsibility: Security Operator

Remove the most limiting contingency (element B) from service in the Powerflow case.

Step 4.11 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **CT, SWCT, WCONN or West-East study is being performed.**

Return the interchange deviation with NYISO to zero by adjusting generation external to the study area.

Step 4.12 Primary Responsibility: Security Operator

Check the Powerflow base case for indications of RAS/ACS operation.

Step 4.13 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Powerflow base case indicates the operation setpoint for an RAS/ACS has been reached.**

Model the RAS/ACS action in Powerflow.

Standard(s) for completion:

- The RAS/ACS action is modeled per the applicable RAS/ACS guide.

Step 4.14 Primary Responsibility: Security Operator

Adjust generation, phase shifters, line reactors, or load internal to the study area to determine the limiting element.

Standard(s) for completion:

- All elements are ≤ the LTE limit, **NOT** to exceed 5 MVA below the limit, this will prevent the transfer limit from being unnecessarily restrictive; And
- Voltages are within MLCC15 Attachment H Criteria; Or
- If developing this limit for a Local Reserve Zone that was violated at the LTE, then all elements are ≤ the STE limit or other more limiting OP 19 criteria.

Notes

For all study areas except Boston, NH-ME, RI Import, SEMA-SB and LS-ERI, dispersed generation external to the study area shall be adjusted to return the interchange deviation with NYISO to zero.

Step 4.15 Primary Responsibility: Security Operator

Place element 'A' in service in the Powerflow case.

Step 4.16 Primary Responsibility: Security Operator

Utilize STCA to determine if there is a more limiting contingent element than element 'A'.

Step 4.17 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **It was determined that there is a more limiting contingent element than what was initially identified for element 'A'.**

Remove the identified element from service in the Powerflow case, now refer to that element as element A and restart at Step 4.11 of this Section.

Step 4.18 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **A more limiting contingent element was NOT identified.**

Remove element 'A' from service in the Powerflow case.

Step 4.19 Primary Responsibility: Security Operator

Place element 'B' in service in the Powerflow case.

Step 4.20 Primary Responsibility: Security Operator

Utilize STCA to determine if there is a more limiting contingent element than element 'B'.

Step 4.21 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **It was determined that there is a more limiting contingent element than what was initially identified for element 'B'.**

Remove the identified element from service in the Powerflow case, now refer to that element as element B and restart at Step 4.11 of this Section.

Step 4.22 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **A more limiting contingent element was NOT identified.**

With element B in service, check the Powerflow base case for elements over the Normal limit.

Step 4.23 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is over the Normal limit in the Powerflow base case with element 'B' in service.**

Utilize STCA to determine if any contingency will cause the element over the Normal limit to be over the LTE limit post contingent.

Step 4.24 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is over the Normal limit in Powerflow and over the LTE limit in STCA with element 'B' in service.**

Adjust generation, phase shifters, line reactors, or load internal to the study area until the element is under the Normal limit in the Powerflow base case or under the LTE limit in STCA.

Standard(s) for completion:

- All elements are ≤ to the Normal limit in Powerflow or ≤ the LTE limit in STCA. For the rating that is the most limiting do **NOT** exceed 5 MVA less than the limit, this will prevent the transfer limit from being unnecessarily restrictive; And
- Voltages are within MLCC15 Attachment H Criteria.

Notes

For all study areas except Boston, NH-ME, RI Import, SEMA-SB and LS-ERI, dispersed generation external to the study area shall be adjusted to return the interchange deviation with NYISO to zero.

Step 4.25 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is NOT over the Normal limit in Powerflow and over the LTE limit in STCA with element 'B' in service; Or**
- **An element is NOT over the LTE limit in STCA with element 'B' in service.**

Remove element B from service.

Step 4.26 Primary Responsibility: Security Operator

Place element 'A' back in service in the Powerflow base case.

Step 4.27 Primary Responsibility: Security Operator

Check the Powerflow base case for elements over the Normal limit.

Step 4.28 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is over the Normal limit in the Powerflow base case with element 'A' in service.**

Utilize STCA to determine if any contingency will cause the element over the Normal limit to be over the LTE limit post contingent.

Step 4.29 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is over the Normal limit in Powerflow and over the LTE limit in STCA with element 'A' in service.**

Adjust generation, phase shifters, line reactors, or load internal to the study area until the element is under the Normal limit in the Powerflow base case or under the LTE limit in STCA.

Standard(s) for completion:

- All elements are ≤ to the Normal limit in Powerflow or ≤ the LTE limit in STCA. For the rating that is the most limiting do **NOT** exceed 5 MVA less than the limit, this will prevent the transfer limit from being unnecessarily restrictive; And
- Voltages are within MLCC15 Attachment H Criteria.

Notes

For all study areas except Boston, NH-ME, RI Import, SEMA-SB and LS-ERI, dispersed generation external to the study area shall be adjusted to return the interchange deviation with NYISO to zero.

Step 4.30 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is NOT over the Normal limit in Powerflow and over the LTE limit in STCA with element 'A' in service; Or**
- **An element is NOT over the LTE limit in STCA with element 'A' in service.**

Remove element A from service in the Powerflow case and determine the "Double Line Cont" transfer limit.

Step 4.31 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Transfer limit was recalculated due to an unplanned outage; Or**
- **Limit was recalculated in real time to increase the transfer limit.**

Log the new Double C limit for the applicable interface.

Instructions

Use log entry: > TRANSMISSION > GRT LIMIT CHANGES > Single Interface

Condition(s) to perform this section:

- **Performed every night shift for West-East or NENE when a transmission element is scheduled out-of-service; Or**
- **Performed for West-East or NENE when a transmission element goes out-of-service that would affect the transfer limit; Or**
- **Performed for West-East or NENE when a generator goes out-of-service that would affect the transfer limit; Or**
- **Performed if it is determined that an increased transfer limit can be calculated in real time.**

Section 5 : Perform a Double Gen Contingency Transfer Limit Determination

Step 5.1 Primary Responsibility: Security Operator

Retrieve the appropriate Powerflow case.

Step 5.2 Primary Responsibility: Security Operator

Adjust the Powerflow case for the area study being performed per Attachment 1 - Adjustments to the Powerflow Case.

Step 5.3 Primary Responsibility: Security Operator

Remove the study area's largest generation contingency from service.

Notes

If the generator being removed from service is a nuclear unit, ensure the NPIR safe shutdown station service loads are modeled (both MW and MVAR) using the applicable M/LCC1 document and ensure the station voltage is >345 kV.

Step 5.4 Primary Responsibility: Security Operator

Return the interchange deviation with NYISO to zero by adjusting generation external to the study area.

Notes

- For West-East and NENE studies returning to zero is **NOT** always possible. It is expected that available Fast Start generation is used to attempt to return to zero.
- If the reactive devices at Sandy Pond are available, utilize the available devices Mvar capability to maintain voltage at Sandy Pond between 353 – 358kV in accordance with the Boston Import Area Operations Planning Guide and Operations Guide. The reactive devices cannot be utilized if Phase II is the contingency.
- The Sandy Pond shunt devices are not modeled in Powerflow. Adjust the Mvar output for the HQP2 Unit in order to represent the utilization of the shunt devices available.

Step 5.5 Primary Responsibility: Security Operator

Utilize STCA to check for any exceedances due to the next largest generation contingency.

Step 5.6 Primary Responsibility: Security Operator

Remove the study area's next largest generation contingency from service.

Notes

If the generator being removed from service is a nuclear unit, utilize the applicable MLCC1 Attachment and ensure the NPIR safe shutdown station service loads are modeled (both MW and MVAR) and ensure the station voltage is >345 kV.

Step 5.7 Primary Responsibility: Security Operator

Return the interchange deviation with NYISO to zero by adjusting generation external to the study area.

Notes

- For West – East, East – West and NENE studies returning to zero is **NOT** always possible it is expected that available Fast Start generation is used to attempt to return to zero.
- If the reactive devices at Sandy Pond are available, utilize the available devices Mvar capability to maintain voltage at Sandy Pond between 353 – 358kV in accordance with the Boston Import Area Operations Planning Guide and Operations Guide. The reactive devices cannot be utilized if Phase II is the contingency.
- The Sandy Pond shunt devices are not modeled in Powerflow. Adjust the Mvar output for the HQP2 Unit in order to represent the utilization of the shunt devices available.

Step 5.8 Primary Responsibility: Security Operator

Adjust generation, phase shifters, line reactors, or load internal to the study area to determine the limiting element.

Standard(s) for completion:

- All elements are ≤ the LTE limit, **NOT** to exceed 5 MVA below the limit, this will prevent the transfer limit from being unnecessarily restrictive; And
- Voltages are within MLCC15 Attachment H Criteria.

Notes

Dispersed generation external to the study area shall be adjusted to return the interchange deviation with NYISO to zero, when possible.

Step 5.9 Primary Responsibility: Security Operator

Determine the "Double Gen Cont" transfer limit.

Step 5.10 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Transfer limit was recalculated due to an unplanned outage; Or**
- **Limit was recalculated in real time to increase the transfer limit.**

Log the new Double C limit for the applicable interface.

Instructions

Use log entry: > TRANSMISSION > GRT LIMIT CHANGES > Single Interface

Condition(s) to perform this section:

- **If there is a different limiting element than the one used by the GRT and load shed is required to be relied upon; Or**
- **If a different contingency pair than the one used by the GRT is used and load shed is required to be relied upon; Or**
- **A Double C area is deficient and the double line transfer limit is the limiting value.**

Section 6 : Perform a Double Line Load Shed Value determination

Notes

- When performing this section for a real time determination, simulate load shed by reducing generation as needed.
- When performing this section for a future hour, simulate load shed by reducing generation in 100 MW blocks.
- If a DAL is not available, use the STE limit when calculating the available load shed.

Step 6.1

Primary Responsibility: Security Operator

Retrieve the appropriate Powerflow case.

Step 6.2

Primary Responsibility: Security Operator

Adjust the Powerflow case to match the conditions at the point when the Double Line Cont transfer limit was determined (limiting element at LTE).

Step 6.3

Primary Responsibility: Security Operator

Simulate load shed by backing down generation internal to the study area to find the limiting element.

Standard(s) for completion:

- All elements are ≤ DAL, not to exceed 5 MVA below the limit, this will prevent the transfer limit from being unnecessarily restrictive; Or
- If DAL is not available, all elements are ≤ the STE Limit, not to exceed 5 MVA below the limit, this will prevent the transfer limit from being unnecessarily restrictive; And
- Voltages are within MLCC 15 Attachment H Criteria.

Notes

- When performing this section for a real time determination, simulate load shed by reducing generation as needed.
- For future hour load shed determinations reduce generation in 100 MW blocks.
- For all study areas except Boston, NH-ME, RI Import, SEMA-SB and LS-ERI, dispersed generation external to the study area shall be adjusted to return the interchange deviation with NYISO to zero.

Step 6.4

Primary Responsibility: Security Operator

Place element 'A' back in service in the Powerflow case.

Step 6.5

Primary Responsibility: Security Operator

Check the Powerflow base case for elements over the Normal limit.

Step 6.6 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is over Normal limit in Powerflow.**

Utilize STCA to determine if any contingency will cause the element over the Normal limit to be over the LTE limit post contingent.

Step 6.7 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is over the Normal limit in Powerflow and over the LTE limit in STCA with element 'A' in service.**

Adjust generation, phase shifters, line reactors, or load internal to the study area until the element is under the Normal limit in the Powerflow base case or under the LTE limit in STCA.

Standard(s) for completion:

- All elements are ≤ to the Normal limit in Powerflow or ≤ the LTE limit in STCA. For the rating that is the most limiting do not exceed 5 MVA less than the limit, this will prevent the transfer limit from being unnecessarily restrictive; And
- Voltages are within MLCC15 Attachment H Criteria

Notes

For all study areas except Boston, NH-ME, RI Import, SEMA-SB and LS-ERI, dispersed generation external to the study area shall be adjusted to return the interchange deviation with NYISO to zero.

Step 6.8 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is not over the Normal limit in Powerflow and over the LTE limit in STCA with element 'A' in service; Or**
- **An element is not over the LTE limit in STCA with element 'A' in service.**

Remove element 'A' from service in the Powerflow case.

Step 6.9 Primary Responsibility: Security Operator

Place element B back in service in the Powerflow case.

Step 6.10 Primary Responsibility: Security Operator

Check the Powerflow base case for elements over the Normal limit.

Step 6.11 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is over the Normal limit in Powerflow.**

Utilize STCA to determine if any contingency will cause the element over the Normal limit to be over the LTE limit post contingent.

Step 6.12 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is over the Normal limit in Powerflow and over the LTE limit in STCA with element 'B' in service.**

Adjust generation, phase shifters, line reactors, or load internal to the study area until the element is under the Normal limit in the Powerflow base case or under the LTE limit in STCA.

Standard(s) for completion:

- All elements are ≤ to the Normal limit in Powerflow or ≤ the LTE limit in STCA. For the rating that is the most limiting, do not exceed 5 MVA less than the limit, this will prevent the transfer limit from being unnecessarily restrictive, And
- Voltages are within MLCC15 Attachment H Criteria

Notes

For all study areas except Boston, NH-ME, RI Import, SEMA-SB and LS-ERI, dispersed generation external to the study area shall be adjusted to return the interchange deviation with NYISO to zero.

Step 6.13 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An element is not over the Normal limit in Powerflow and over the LTE limit in STCA with element 'B' in service.**

Remove element 'B' from service in the Powerflow case and determine the Double Line Load Shed value.

Standard(s) for completion:

- All elements are ≤ DAL, not to exceed 5 MVA below the limit, this will prevent the transfer limit from being unnecessarily restrictive; Or
- If DAL is not available, all elements are ≤ the STE Limit, not to exceed 5 MVA below the limit, this will prevent the transfer limit from being unnecessarily restrictive; And
- Voltages are within MLCC15 Attachment H Criteria

Step 6.14 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Double Line Load Shed value was determined on the night shift.**

Enter the determined Double Line Load Shed value in the study areas Available Load shed well on the Double C Study Summary page.

Step 6.15 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **A Double Line Load Shed value was entered into the Double C Study Summary display for the study area.**

Run the Double C Study page by clicking the Execute button.

Condition(s) to perform this section:

- **Performed every night shift for all Double C areas.**

Section 7 : Configure the Double C Area Study Display to determine the Proxy Limit

Step 7.1 Primary Responsibility: Security Operator

Ensure the UCM is appropriate for all Fast Start Units and DRR fast starts.

Notes

When the "Get RCS and Bid Data" button is selected, a software routine is run that sets/resets the qualifying fast start flags for the study day and hour selected. The flags are always set to false if the unit is in UCM1.

Step 7.2 Primary Responsibility: Security Operator

Import the RCS Data.

Instructions

- ❑ Perform the following to Import the RCS Data into Double C:
  - ❑ Click the "Get RCS and Bid Data" button;
  - ❑ Select Day, Today or Tomorrow;
  - ❑ Enter the Study Hour;
  - ❑ Click the "Import RCS and Bid Data" button.

Notes

- Discrepancies that occur during the import are noted in the pop up window.
- This does **NOT** import any DRR information.

Step 7.3 Primary Responsibility: Security Operator

Enter the ISO-NE Load for the study hour in the New England Load w/o pumping entry well.

Step 7.4 Primary Responsibility: Security Operator

Ensure the Area Load % value is correct.

Step 7.5 Primary Responsibility: Security Operator

Enter the most restrictive Line & Gen Cont, Double Line Cont or Double Gen Cont Transfer limit into the respective 2nd Contingency limits well.

Notes

For Connecticut Import, when Loads are forecasted > 23,000MW, the Connecticut V/R 2nd Contingency limits are provided by the Real-Time Studies Group and are available via the GRT or Connecticut Low Voltage Import Limit Operating Guide.

Step 7.6 Primary Responsibility: Security Operator

Ensure zero MW's are entered in Load Relief details.

Step 7.7 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **SWCT, CT, or NRST Double C Study page is being configured.**

Ensure the Available Load Shed force button is toggled for manual entry.

Step 7.8 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Area display being configured has a Tie-Line (SWCT, CT, NRST, WCONN, NH-ME, NENE or West-East).**

Enter the Tie-Line external transaction MW amounts, for the study hour, into their respective wells.

Step 7.9 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Area display being configured has a Tie-Line (SWCT, CT, NRST, WCONN, NH-ME, NENE or West-East).**

Ensure the Tie-Lines are set appropriately for 30 minute actions.

Instructions

- ❑ The curtailment of Tie-Line external transactions is normally counted as a post first contingency 30 minute action.
- ❑ To set the Tie-Line to be included in the Area load calc, and counted as a 30 minute action perform the following:
  - ❑ Toggle the Ignore button to an unselected (non-toggled) state in Area Surplus/Deficit Summary;
  - ❑ Click the Tie-Line button in Area Load Summary;
  - ❑ Select Include in Area load calc.
- ❑ To set the Tie-Line to be excluded from the Area load calc **and NOT** counted as a 30 minute action perform the following:
  - ❑ Toggle the Ignore button to a selected (toggled) state in Area Surplus/Deficit Summary;
  - ❑ Click the Tie-Line button in Area Load Summary;
  - ❑ Select Exclude from Area load calc.

Step 7.10 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NH-ME, NENE or West-East Double C display is being configured or verified.**

Ensure the NE-NB TRANS is appropriate for system conditions.

Notes

During normal operations the NE-NB TRANS Ignore button is not toggled and transactions are being credited as a 30 minute action. When only a portion is desired to be credited then the "NE-NB TRANS" Ignore toggle must be enabled.

Step 7.11 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NH-ME, NENE or West-East Double C Study page is being configured and NB Credit is toggled for manual entry.**

Ensure zero MW's are entered for NB Credit.

Notes

- NB Credit would be used if the NB external transactions are being counted as a 30 minute action but only a portion of the external transactions are to be curtailed (i.e. they will not be taken to zero).
- During normal operations when exporting, the entire amount of NE-NB transaction curtailment is credited as a 30 minute action as long as the "Ignore" button for NE-NB TRANS is not enabled. When only a portion is desired to be curtailed then the "NE-NB TRANS" Ignore toggle must be enabled.
- To use the NB Credit, both the ISO-NE Operations Shift Supervisor and NBP-SO must authorize the use in real time and it is only applicable for that operating day.

Step 7.12 Primary Responsibility: Security Operator

Ensure the proper Multi-Unit / Transmission Contingencies are enabled.

Notes

- Enabling a Multi-Unit / Transmission Contingency allows the Double C software to select the Largest Generation contingency (for Line & Gen Ctgy) or Two Largest Generation contingencies (for Double Gen Ctgy) for use in determining the Proxy Limit.
- NRST, LS-ERI and RI-IMP areas do **NOT** have any Multi-Unit / Transmission Contingencies.

Step 7.13 Primary Responsibility: Security Operator

Ensure the Area % in the "Fast Start Units" section is set to the approved value.

Standard(s) for completion:

- Only the value approved by the Manager, Control Room Operations is used.

Notes

- Current approved value is 80%.
- The value entered into the "Area %" well is used as a multiplier that is applied to the Eco Max value and the Claim 30 value. The lesser of the two calculated values is used as the 30 Minute Response value for that Fast Start non-hydro generator.

Step 7.14 Primary Responsibility: Security Operator

Ensure that only authorized Fast Start non-hydro generators have the "Unit %" button toggled and the entered value is required for expected system conditions for the study hour.

Notes

When the "Unit %" force button is toggled, the value entered in the well is used as a multiplier that is applied to the Eco Max value and the Claim 30 value. The lesser of the two calculated values is used as the 30 Minute Response value for that Fast Start non-hydro generator.

Step 7.15 Primary Responsibility: Security Operator

Ensure only required generators/DARD Pumps have the "Ignore" button toggled.

Notes

Having the Ignore button toggled will result in the following on the Double C Study display:

- Removes the 30-minute response and the available MW fields will **NOT** be used in the calculation of the 30 Min Response and Available Mw in the Area Generation/Reserve Summary section.
- Removes Mw output of the Resource from the Area Generation field.

Step 7.16 Primary Responsibility: Security Operator

Ensure all generator/DARD Pumps have the "Bid" response rate toggled.

Step 7.17 Primary Responsibility: Security Operator

Ensure only required generators have the No Reserve button toggled.

Notes

No Reserve feature would be used for generators that cannot reach the Eco Max value due to being constrained.

Step 7.18 Primary Responsibility: Security Operator

Ensure the generator/DARD Pump UCM is appropriate and the MW output matches the SCRA/COP MW output.

Step 7.19 Primary Responsibility: Security Operator

Ensure the generator/DARD Pump limits match the limits for the study hour.

Step 7.20 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **LS-ERI Double C Study page is being configured.**

Ensure the range selector is toggled correctly for generators that have operating ranges specified based on the MW output value.

Notes

Selecting the incorrect range will impact the proxy limit calculation.

Step 7.21 Primary Responsibility: Security Operator

Ensure the Wind Area % in the Non Fast Start Units section is set to the approved value.

Notes

Current approved value is 50%

Step 7.22 Primary Responsibility: Security Operator

Click "Area DRR Details" button in the Area Generation/Reserve Summary area

Step 7.22.1 Primary Responsibility: Security Operator

Ensure only required DRRs have the "Ignore" button toggled.

Notes

Having the Ignore button toggled will remove the 30 minute response and the available MW fields will **NOT** be used in the calculation of the 30 Min Response and Available Mw in the Area Generation/Reserve Summary section.

Step 7.22.2 Primary Responsibility: Security Operator

Ensure only required DRRs have the "No Reserve" button toggled.

Notes

No Reserve feature would be used for DRRs that cannot reach the MaxRed value due to being constrained.

Step 7.22.3 Primary Responsibility: Security Operator

Ensure the DRR UCM is appropriate and the RC DDP matches the SCRA/COP MW level.

Notes

Only UCM 1, 2, and 4 are used with DRRs.

Step 7.22.4 Primary Responsibility: Security Operator

Ensure the DRR limits match the limits for the study hour.

Instructions

- ❑ Applicable limits:
  - ❑ Min Red
  - ❑ Max Red
  - ❑ MRR
  - ❑ Claim 10
  - ❑ Claim 30

Step 7.22.5 Primary Responsibility: Security Operator

Ensure the "Sys %" is set to the approved value.

Standard(s) for completion:

- Only the value approved by the Manager, Control Room Operations is used.

Notes

- Current approved value is 80%.
- The value entered into the "Sys %" well is used as a multiplier that is applied to the Max Red value and the Claim 30 value. The lesser of the two calculated values is used as the 30 Minute Response value for the Fast Start DRR or DRR in a UCM 4.

Step 7.22.6 Primary Responsibility: Security Operator

Ensure that only authorized Fast Start DRRs have the "DRR %" button toggled and the entered value is required for system conditions.

Notes

When the DRR % force button is toggled, the value entered into the well is used as a multiplier that is applied to the Max Red value and the Claim 30 value. The lesser of the two calculated values is used as the 30 Minute Response value for the Fast Start DRR or DRR in a UCM 4.

Step 7.22.7 Primary Responsibility: Security Operator

Ensure all DRRs have the "Bid" response rate toggled.

Notes

The value visible in the "Bid" field is the MRR for the DRR at the current output. These will be set by default to what is in Real-Time Double C if the Import from Real-Time function is used.

Step 7.22.8 Primary Responsibility: Security Operator

Ensure only applicable DRRs have the Fast Start button toggled.

Instructions

- ❑ To determine eligibility for a DRR:
  - ❑ Click "RTG"
  - ❑ Click "FS"
  - ❑ Select "DRR Daily Eligible"
  - ❑ Locate the DRR
  - ❑ Determine if it is Fast Start Eligible during the study hour.

Step 7.23 Primary Responsibility: Security Operator

Run the Double C Study page by clicking the "Execute" button.

Step 7.24 Primary Responsibility: Security Operator

Correct any discrepancies that are highlighted in orange and re-run the Double C Study page.

Step 7.25 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **The West-East Double Line proxy limit is being evaluated to determine if it is more limiting than the Line/Gen proxy limit.**

Enter the Line-Line value as follows:

Instructions

- ❑ Record the Line/Gen Proxy Limit;
- ❑ Perform the following to determine the West-East Double Line proxy limit:
  - ❑ Start with the Line/Line limit found in the GRT OR calculated from Section 4;
  - ❑ Add the East Largest Ctg value to the Line/Line limit;
  - ❑ Enter this value into the "Line & Gen Cont" Manual Limit well;
  - ❑ Run the Double C Study page by clicking the "Execute" button;
  - ❑ Determine which proxy limit Double Line or Line & Gen proxy is more limiting and use that value.

Step 7.26 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **The "Required increase in resources" is positive and there is "Avail Mw" to use.**

Adjust resource output to utilize "Avail Mw".

Instructions

When this is done notify the Senior System Operator and Operations Shift Supervisor of the required adjustments and the resultant "Required increase in resources".

Step 7.27 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **The areas applicable limit has been determined.**

Enter the applicable manual limits for the Double C areas in the Real-Time Double C display.

Notes

- Ensure the Line & Gen Cont transfer limit value entered does not exceed the cap for the following areas:
  - Boston 4600
  - SWCT 2700
  - CT 3400
- If loads are forecasted < 23,000MW, 9999 will be used for the CT Import V/R 2nd Contingency Line & Gen and Double Line wells.

Condition(s) to perform this section:

- **To determine the export TTC for New Brunswick scheduling interface; Or**
- **To determine the export TTC for the Highgate scheduling interface**

Section 8 : Configure the Double C Voltage Reactive Study Display to determine the limit

Step 8.1

Primary Responsibility: Security Operator

Enter the expected System Load value for the study hour.

Instructions

- ❑ Enter ISO-NE System load in the NE-NB Voltage/Reactive Limit Study page.
- ❑ Enter Vermont load in the Highgate Export Voltage Reactive Limit Study page. (The Vermont load can be determined by considering the current Area Load % and the expected ISO-NE System Load and by consulting the VELCO Operator and having the VELCO Operator determine what the expected Vermont Load will be.)

Notes

The Vermont load can be determined by considering the current Area Load % and the expected ISO-NE System Load, by consulting the VELCO Operator and having the VELCO Operator determine what the expected Vermont Load will be, or by using the VT Area Load Zone % on the GRT and multiplying it by the expected ISO-NE Load.

Step 8.2

Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Highgate Double C Voltage / Reactive Limit study is being performed.**

Update the system information contained in the Highgate Exports "Details" display.

Step 8.3

Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NE-NB Double C Voltage / Reactive Limit study is being performed.**

Enter the Largest Source Contingency MW amount expected for the study hour.

Step 8.4

Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NE-NB Double C Voltage / Reactive Limit study is being performed.**

Select the status of the Chester SVC and the status of the specific SVC components.

Instructions

- ❑ Update the status of the following points:
  - ❑ "1 TSC"
  - ❑ "2 TSC"
  - ❑ "3 TSC"
  - ❑ "Chester SVC from ICM".

Step 8.5 Primary Responsibility: Security Operator

Enter the Tie-Line or Internal transmission MW flow amount for the study hour into their respective wells.

Standard(s) for completion:

- Or for NE-NB Voltage / Reactive Limit Studies the Internal transmission MW flow amount is entered.
- Or for Highgate Voltage / Reactive Limit studies the Tie-Line external transaction and the internal transmission MW flow amounts are entered.

Step 8.6 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NE-NB Double C Voltage / Reactive Limit study is being performed**

Ensure the Status of the generators in the Unit Data section reflects the status for the study hour.

Step 8.7 Primary Responsibility: Security Operator

Ensure the Status information in the Line / Xf / CB Data section reflects the status for the study hour.

Notes

- A Status of Available indicates that the transmission equipment is in service for the study hour.
- A Status of Unavailable indicates that the transmission equipment is not in service for the study hour.

Step 8.8 Primary Responsibility: Security Operator

Ensure the Status of the reactive devices in the Capacitor Data section reflects the status for the study hour.

Notes

- Reactive devices that have a status of Available are expected to be switched into service for the study hour.
- Reactive devices that have a status of Unavailable are not expected to be switched into service for the study hour.

Step 8.9 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Highgate Double C Voltage / Reactive Limit study is being performed.**

Ensure the Highgate Converter VREF Set For South Bus toggle button is set correctly for the expected system conditions.

Notes

The correct operation of the Highgate Converter VREF Set For South Bus toggle can be found in the VELCO Highgate Converter Export Guidelines TOG.

Step 8.10 Primary Responsibility: Security Operator

Run the Double C Voltage / Reactive Limit Study display by clicking the Execute button.

Step 8.10.1 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **NE-NB Voltage calculator "V/R Limit Status" says "ERROR"; Or**
- **NE-NB Voltage calculator "V/R Limit Status" says "OK" with a "RT Limit" of either "-99999" or "99999" WITHOUT a corresponding "Minimum NB-NE Requirement" message and limit value; Or**
- **The results of the Double C Voltage Reactive Limit Study display are questionable.**

Contact the RTS On-Call Engineer to provide a limit or course of action.

Notes

- Too many facilities out-of-service may inhibit the voltage calculator from providing a limit and RTS guidance will be needed in order to provide a limit or directions to make the voltage calculator function properly.
- As a backup, there is an offline version of the NE-NB Voltage calculator in ODMS as an excel file titled "NE-NB VR Calculator" that may also be used as a backup or if the EMS version is not available.

Step 8.11 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **The Double C Voltage Reactive Limit Study display is not operating/accessible; Or**
- **The results of the Double C Voltage Reactive Limit Study display are questionable.**

Notify the IT On Call Technician of the Double C Voltage Reactive Limit Study display problems.

Step 8.12 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **The Double C Voltage Reactive Study Limit display will not be fixed.**

Access, update and execute the Offline VR Limit Calculator

Notes

The previous steps can be used as a guide to update the Offline VR Limit Calculator.

Step 8.12.1 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Offline NENB VR Calculator is being used and is displaying "Too many facilities are out-of-service. Needs voltage / reactive special study.".**

Contact the RTS On-Call Engineer to provide a limit or course of action.

Notes

Too many facilities out-of-service may inhibit the voltage calculator from providing a limit and RTS guidance will be needed in order to provide a limit or directions to make the voltage calculator function properly.

Step 8.13 Primary Responsibility: Security Operator

Print the completed Double C Voltage / Reactive Limit Study display or Offline VR Limit Calculator page.

Step 8.14 Primary Responsibility: Security Operator

Return to Step 7.5 and enter the most restrictive limit Voltage or Thermal into the Line & Gen Cont or Double Line Cont Manual Limits wells to determine the proxy limit.

Revision History

Rev. No.	Date (MM/DD/YY)	Reason	Contact
--	06/05/19	For previous revision history, refer to Rev 18 available through Ask ISO	Steven Gould
19	09/10/19	Added note to step 1.2 for clarification; Reviewed Notes and Instructions	Steven Gould
20	11/06/19	Added new management expectation to Procedure Background regarding calculation of new limits within 30min; Updated step 7.1 to align with software change	Steven Gould
21	06/23/20	Removed Steps 1.8 and 7.9, Removed SWCT VR instruction, Adjusted load level for VSAT to 22,000MW	Steven Gould
22	07/29/20	Added note to Step 9.8 to clarify Double C use of a VSAT limit	Steven Gould
23	01/08/21	Added guidance to Step 7.1 to verify UCM of Fast Start units.	Steven Gould
24	06/15/21	Updated references, Added new Step 5.5, Added standard of completion to Sections 3, 4, 5 & 6.	Steven Gould
25	01/12/22	Updated common procedure information. Minor formatting changes. Added condition to enter section 3 and section 5 for calculation of West – East.	Steven Gould
26	05/06/22	Updated References, Added condition to enter in Sections 3, 4 & 5, Added Steps 3.19, 4.31 & 5.10, Added new Step 1.8 and 7.10, Added Notes in Step 1.9 & 7.11, Updated Step 7.20, Corrected referenced step number in Step 8.14, Updated Step 8.1, Added an Instruction to Step 7.2, Corrected note in Step 9.1	Jonathan Gravelin
27	09/25/23	Updated References; Added NENE Interface where needed; Replaced SPS with RAS/ACS; Removed NH Seacoast where applicable, no longer a required DOUBLC study area; Deleted Section 9 with VSAT no longer being a real time monitoring requirement; Removed Note from Step 7.5; Added Steps 2.8, 2.8.1, 7.25, 8.10.1 & 8.12.1; Updated Conditions to enter in Step 2.4 and Sections: 2, 3, 4 and 5. Updated Standards for completion in Steps: 3.12, 3.14, 6.7, 6.12, 6.13	Jonathan Gravelin
28	09/09/24	Added SEMA-SB Interface where needed, updated Attachment 1, Added Note to Section 3; Updated the Conditions to Enter for Sections 3 & 4	Jonathan Gravelin

Attachment 1 - Powerflow Case Adjustments (Protected Information)

Information redacted for public release