Table of Contents

References

[None]

Procedure Background

ILC has two views: SCADA and RTNET. SCADA view is the default.
In the SCADA view the Current Transfer field is based on data from SCADA. The color code for the Current Transfer value shown is based on the worst quality code from all the components of that interface. The source of the data is color-coded as follows:

- Green: SCADA
- White: Local Manual Replacement
- Magenta: Suspect Data
- Yellow: RTNET

In the RTNET View all Current Transfers are based on state estimated boundary line flows and are presented in yellow.

ILC has three displays that are selectable within the application: Transmission, Generation, and IROL.

The Interface Title will change colors based on the Current Transfer value and the Calculated Limit.

- When the Current Transfer for an interface is < 90% of the Calculated Limit the title will be green. An exception is the Orrington-South interface which is green at < 83%.
- When the Current Transfer for an interface is ≥ 90% but < 100% of the Calculated Limit the title will be yellow. This is typically referred to as warning. An exception is the Orrington-South interface which is yellow at ≥83% but < 100%.
- When the Current Transfer for an interface is ≥ 100% of the Calculated Limit the title will be red. A time will also appear and display how long the interface has been in an exceedance.
- There is a 1% deadband in the transition from yellow to green. This means that the color will transition at 89% (Orrington-South at 82%).

Violation types: IROL and SOL.

Limit types:

- Thermal Limits: ILC Thermal limits are the total MW that can flow across the interface up to STE. ILC recalculates distribution factors to calculate the limit based on new topology.
- Stability Limits: Limits that are derived from offline studies that if violated may cause system or unit instability.
- Override Limits: Limits that are imposed based on specific system conditions. These limits could come from Transmission Operating Guides (TOGs) or other sources. ILC will take the lower of all the limits.
- Forced Limits: Similar to the Override limits, when this type is used, ILC assumes that limit is the only limit to report, even if other limits are more restrictive.
- External Limits from other ISO-NE applications:
    - SSCM Limit: A limit that comes from ICM and is automatically substituted in the Calculated Limit field if they are more limiting.
    - Proxy Limit: A limit that comes from Double C and is automatically substituted in the Calculated Limit field if they are more limiting.

- External Area Limits: For NB-NE, NE-NB, NE-NY, and NY-NE interfaces the limits from the external area are used in the interfaces. It will compare the external area limit to the ISO-NE derived limit and use / alarm on the lower of the two. This change does **NOT** impact ILC Powerflow. Within the Interface Details display the Control room Operator can perform either of the following: ignore the limit or flip the value.

If the ILC Limit is < 1,000, operate with a margin of approximately 10% below the limit.
If the ILC Limit is ≥ 1,000, operate with a margin of approximately 100 MW below the limit.

- Orrington-South IROL Interface should be activated in CLOGGER at 200 MW of the limit.

Notes:

- Actual Operating Margin may depend on system conditions and the dynamics of the interface flow
- The GRT spreadsheet is hardcoded with the margin specifications above. If these values are changed, notify the Supervisor, Short Term Outage Coordination.

During day to day operations of the New England Bulk Electric System and its associated **internal and border** IROL interfaces and limits with New York, New Brunswick and Hydro Quebec, the expectation is that no IROL limits will be exceeded with the exception of contingency events. Contingency events for the purpose of this guidance is as defined by NERC and provided here. Note that this definition does not include load pickup or drops and generation or pumped storage dispatch which are not contingency events and should be planned and prepared for to avoid IROL exceedances.

- ❑ Contingency- The unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch or other electrical element.

Alarming:

- ❑ The "Suppress Alarming" button suppresses all alarming functions. This does **NOT** stop the timer; it removes the display for the operator. The timer still operates in the background.
- ❑ The "Suppress IROL/SOL Ext Lmt" button provides System Operators with the opportunity to bypass the IROL/SOL clock for an external limit. This allows dispatching of generation for second contingency while still allowing the IROL/SOL clock to work for other non-external limit alarming functions. The “Suppress IROL/SOL Ext Lmt” button will appear to the right of the Skip Active column when the Current Transfer exceeds the external limit.
  NOTE: The "Suppress IROL/SOL Ext Lmt" function is **NOT** applicable to External Area Limits.
- ❑ For an IROL interface: System Activity Log entry if exceedance exceeds 20 minutes; and management notification at 30 minutes
- ❑ For an SOL interface: System Activity Log entry if exceedance exceeds 110 minutes; and management notification at 120 minutes

Stability Limit Programming:

From the Summary display Right click on Stability Configuration and select Active. This will display all of the active stability configurations that are programmed into ILC.
Active Stability Configurations are listed with color codes showing which limits have been programmed to be calculated by ILC and limits that directly affect the interface/area but require the TOG be referenced when determining the actual limit. Right click on Stability Configuration and select "Not Programmed" to display stability configurations **NOT** programmed in ILC.
Left clicking on an item from either display will bring up the Interface Stability Configuration Details. In this display limit details are listed and can be verified against applicable operating guides to determine if the limit is being correctly calculated.

Access the Contingency Review display by clicking on a contingency that is listed under configuration ("Conf:").
Extra information about a few of the **NOT** obvious items displayed:

- ❑ Interface Limit: limit value due to the particular limiting element.
- ❑ All Armed Limit: limit value including the particular limiting element, ATD, and runbacks.
- ❑ Automatic Trip Device (ATD) Flows - If there is a line with an SPS, the flow, the STE rating, and Pre and Post contingency flow is shown.

Distribution factors display – provides the adjustment factors and distribution factors for the contingency onto the limiting elements.

Access the distribution Factors display by clicking on the (green) contingency ID on the Contingency Review display.
Extra information about a few of the **NOT** obvious items displayed:

- LIMELE: name of the limiting element
- ADJ: adjustment factors (if ATD does **NOT** trip). Adjustment factors are the amount of generation that must be increased on one side of an interface to increase the flow on the limiting element by one MW. This is based on homogeneous generation on one side of the interface and individual generators may have a much different effect.
- TADJ: adjustment factors if ATD trips
- ADF: distribution factor for ATD onto the limiting element if the contingency does **NOT** have an ATD defined, the ADF column will be populated with 0.000; if the contingency does have an ATD, applicable values will be presented and an ATD DF button will be presented.
- CNTGEL: the name of contingent elements
- DF: distribution factor from the correspondent contingent element (if ATD does **NOT** trip)
- TDF: distribution factor from the correspondent contingent element if ATD trips
- RBU: the name of the runback unit
- DF RUN: runback factor for the unit if ATD does **NOT** trip
- TDF TRUN: runback factor for the unit if ATD trips
- ATD DF: only present if the contingency has an ATD defined; displays the distribution factor of the contingent element onto the ATD device

A row of asterisks "*******": **NOT** applicable element

When system topology changes, and is in a state where specified transmission operating limits are specified and built into ILC, a VLT or MVR badge appears in ILC. Clicking on the VLT or MVR badge will take you to the corresponding active stability configuration.

All stability configurations can be found by right clicking on the Stability Configurations button in ILCT or ILCG, and then choosing “VLT/MVR directory” from the drop down. From here, each specific Stability configuration can be clicked to see the configuration details.

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 communication.

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.

Procedure

Condition(s) to perform this section:

- **Performed each shift**

Section 1 : Verify the configuration of the ILC displays.

Step 1.1 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **A Current Transfer value is not of good quality (green) and the reason is not known.**

Determine the reason the Current Transfer value is not of good quality.

Instructions

Use CROP.27002 Telemetry and Topology Problems to correct identified issues.

Step 1.2 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **A "Skip Active" indicator is displayed for an Interface.**

Ensure skipped items are required for system conditions.

Step 1.3 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **A "Suppress Alarming" flag is set for an Interface; Or**
- **A "Suppress IROL/SOL Alarm Ext Lmt" flag is set for an Interface.**

Ensure the alarming suppression flag is required for system conditions.

Step 1.4 Primary Responsibility: Security Operator

Ensure the "Calculated Limit" is correct for system conditions.

Notes

If the "Calculated Limit" value is not correct, use Section 3 of this CROP to determine a value.

Step 1.5 Primary Responsibility: Security Operator

Compare the “Ext Area Limit” to the “Calculated Limit” for the applicable external IROL interfaces.

Instructions

If the two limits do not match, contact the applicable neighboring RC and determine the reason.

Step 1.6 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An "Ignore" indicator is displayed for an Interface.**

Ensure the "Ignore" flag is required for system conditions.

Step 1.7 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **An "Override" limit is entered for an Interface.**

Ensure the "Override" limit is required for system conditions.

Instructions

If the "Override" limit is required, ensure the "comment" provides a proper explanation for the override limit.

Step 1.8 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **A "Forced" limit is entered for an Interface.**

Ensure the "Forced" limit is required for system conditions.

Notes

The force button causes ILC to use the Override limit regardless of all other thermal, stability, or external limits even if they are more limiting.

Step 1.9 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **Identified a contingency is disabled on an "Interface Details" page.**

Ensure disabled contingencies on each Interface Details page are required for system conditions.

Step 1.10 Primary Responsibility: Security Operator

Ensure the "Do not allow interface limit to go negative" flag is required for system conditions.

Notes

- When the flag is set it will prevent the calculated limit from going to -99999 when the interface flow becomes negative. When the interface flow becomes negative the calculated limit will be set to an IT configurable value that is greater than zero.
- IT configurable values will be written to RTNET and RTCA so valid constraint information can be presented in Clogger and passed to APF-MOI so it will not incorrectly bind on a constraint.
- The “Do not allow interface limit to go negative” is not designed to keep a resource less than its limit, it is to prevent a -9999 value being sent to APF-MOI which would then create a Generic Constraint Violation in the APF-MOI software.

Step 1.11 Primary Responsibility: Security Operator

Verify Active Configurations for each interface are applicable to current system conditions.

Instructions

If configurations are Skipped, identify the reason and current applicability.

Step 1.12 Primary Responsibility: Security Operator

Ensure the “Armed/Not Armed” status and MW value on the “Interface Limits Related Devices” display is correct for system conditions.

Step 1.13 Primary Responsibility: Security Operator

Ensure NSTAR Cable limits and active configurations are correct for real time conditions.

Instructions

- ❑ Verify the proper Season is ENABLED;
- ❑ Verify the proper "In Use Ratings" are ARMED or DISARMED appropriately based on real time conditions.

Condition(s) to perform this section:

- **Performed as required each shift.**

Section 2 : Verify the configuration of the ILC Pre-Contingency kV and Mvar Monitoring displays.

Step 2.1 Primary Responsibility: Security Operator

Ensure the "Suppress all kV/Mvar Alarm Messages for this Configuration" button is NOT selected.

Step 2.2 Primary Responsibility: Security Operator

Ensure that “Use Default” is selected for “kV Range” and “Mvar Range” in the “kV and Mvar Monitoring Status”.

Step 2.3 Primary Responsibility: Security Operator

Ensure each Monitored Station is accurately “Enabled” or “Inactive” based on current configuration.

Step 2.4 Primary Responsibility: Security Operator

Ensure the "Pref” source data point is appropriate and “In Use” for each Monitored Station.

Step 2.5 Primary Responsibility: Security Operator

Ensure the "Range 1” is appropriate and “In Use”” for each Monitored Station.

Condition(s) to perform this section:

- **An ILC Interface Limit is NOT appropriate for system conditions.**

Section 3 : Manual Determination of an ILC Limit.

Notes

If ILC detects a transmission element out of service that is associated with an ILC defined interface then ILC may present an informational TOG flag on the ILC main page. TOG flags indicate that there is no stability limits programmed for the ILC limit being presented and that further investigation is required to verify the ILC limit being calculated is accurate.
There are some instances where the ILC limit being calculated may have to be adjusted to adhere to the requirements stated in the TOG documents.

Step 3.1 Primary Responsibility: Security Operator

Inform the Operations Shift Supervisor and Senior System Operator of the Interface that has a Calculated Limit that is not appropriate.

Step 3.2 Primary Responsibility: Security Operator

Determine a new interface limit.

Instructions

A new Interface limit may be determined using:

- ❑ Powerflow
- ❑ STCA
- ❑ Powerflow ILC
- ❑ Applicable Guides

Step 3.3 Primary Responsibility: Security Operator

Determine when the new interface limit is to be used.

Step 3.4 Primary Responsibility: Security Operator

Perform the required notifications.

Instructions

Applicable parties:

- ❑ All Control Room Operators
- ❑ Applicable LCC
- ❑ Applicable RC/BA

Step 3.5 Primary Responsibility: Security Operator

Enter the determined Override limit into ILC.

Step 3.5.1 Primary Responsibility: Security Operator

Access the applicable Interface Details display.

Step 3.5.2 Primary Responsibility: Security Operator

Click the Override limit "suspend" button.

Notes

The suspend button populates an enterable well for the operator to type the manual limit. With only the suspend button selected, ILC will continue to use the most restrictive of the thermal, stability, external, or override limits.

Step 3.5.3 Primary Responsibility: Security Operator

Enter the determined Override limit.

Step 3.5.4 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- **If system conditions require that only the entered Override limit be used for the applicable Interface.**

Click the Override limit "force" button.

Notes

The force button causes ILC to use the Override limit regardless of all other thermal, stability, or external limits even if they are more limiting.

Step 3.5.5 Primary Responsibility: Security Operator

Enter a comment in ILC explaining the override limit and if being used why the limit is being forced.

Step 3.6 Primary Responsibility: Security Operator

Log the ILC Interface Limit change.

Instructions

Use log entry: > TRANSMISSION > ILC Interface Limit Change

Revision History

Rev. No.	Date (MM/DD/YY)	Reason	Contact
0	07/15/16	Initial Draft of this Procedure This CROP replaces Section 5.4 and Section 5.5 of SOP-RTMKTS.0060.0020 Revision 67	Steven Gould
1	09/06/16	Update 90 to 110 minutes	Steven Gould
2	04/25/17	Remove Section for Margin Limits Added a Step to Section 1 for new flag added	Steven Gould
3	08/09/17	Changes to ILC logic used by other applications	Steven Gould
4	03/20/18	Changes based on enhancements to ILC	Steven Gould
5	06/11/18	Editorial changes of revision numbers	Steven Gould
6	08/29/18	Added management's expectation for operating within IROLs in background section.	Steven Gould
7	12/10/18	Step 1.4, removed condition to perform Step 2.6, provided clarification Section 4 notes, deleted <14,000	Steven Gould
8	09/17/20	Added new Step 1.5	Steven Gould
9	10/30/20	Added Step 1.11 to validate active configurations.	Steven Gould
10	12/07/21	Updated background information regarding operating margin to calculated limits to align with current management expectations. Added note to background.	Steven Gould
11	11/14/22	Added Note to Step 1.10; Modified Step 3.4; Deleted Section 4	Jonathan Gravelin