

February 11, 2005

Mr. Bob Singh
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Dear Mr. Singh

*Installation of New Breaker for Ferroresonance Control at Riverdale TS –
Notification of Approval of Connection Proposal - CAA ID Number: 2005-EX212*

Thank you for the detailed information provided on the project to install a new 115 kV breaker at Riverdale TS to provide ferroresonance protection for the Riverdale T3 transformer when the A3RM cable section to Slater TS is out of service (see attached report for details).

We have reviewed your proposal and concluded that the proposed upgrade does not have a material impact on the IESO-controlled grid. Based on the information you provided, we concluded that:

- The operating characteristics of the new breaker meet the Market Rules and Transmission System Code requirements; and
- Data monitoring for the new breaker will be supplied in conformance with the requirements stated in Appendix 4.16 of the Market Rules.

The IESO is therefore pleased to grant **conditional approval** for the installation of the new equipment, provided that the applicant adopts the recommendations stated in the attached report. Any material changes to your proposal may require a re-assessment by the IESO in accordance with Market Manual 2.10, and may nullify your conditional approval.

Provided that the proposed modifications meet all OEB's Transmission System Code requirements, **final approval** will be granted upon successful completion of the IESO Facility Registration process. During facility registration you will be expected to demonstrate that the project you have installed is materially unchanged from the proposal assessed by the IESO. Contact facility.registration@ieso.ca if you have not received a Facility Registration Summary package within the next 10 days.

To commence the construction process, you are advised to follow the necessary procedures and obtain the required approvals, licences and permits as may be required by the OEB and other regulatory authorities.

For further information, please contact the undersigned.

Yours truly,



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**CONNECTION ASSESSMENT
& APPROVAL PROCESS**
Connection Assessment Report

*Installation of 115 kV Breaker for Ferroresonance
Control at Riverdale TS*

Connection Applicant: Hydro One Networks Inc.

CAA ID 2005-EX212

Final Report

Prepared by
Long Term Forecasts & Assessments Department &
Consistent Information Set Department

February 11, 2005

1.0 Project Description

Hydro One Networks Inc. has submitted a connection assessment application for the installation of a new 115 kV breaker at Riverdale TS to mitigate the ferroresonance effect on transformer Riverdale T3 exhibited when the A3RM cable section to Slater TS is out of service.

The specifications of the new breaker are:

- Breaker Type: SF6
- Nominal Voltage: 115 kV
- Maximum Continuous Operating Voltage: 145 kV
- BIL: 650 kV
- Rated Interrupting Time: 3 cycles
- Maximum Continuous Operating Current: 1200 A
- 3ph short circuit symmetrical duty: 40 kA

A new disconnect switch will be added to help isolate the breaker for maintenance work. Hydro One will decide whether the second isolating switch (existing) for the new breaker will be replaced or retained.

For operational coordination, Hydro One may have to set a time delay in the operation of the breakers on the secondary of T3, to ensure that these breakers are triggered after the new breaker on the primary of T3 has operated.

The proposed changes are represented in figure 1.

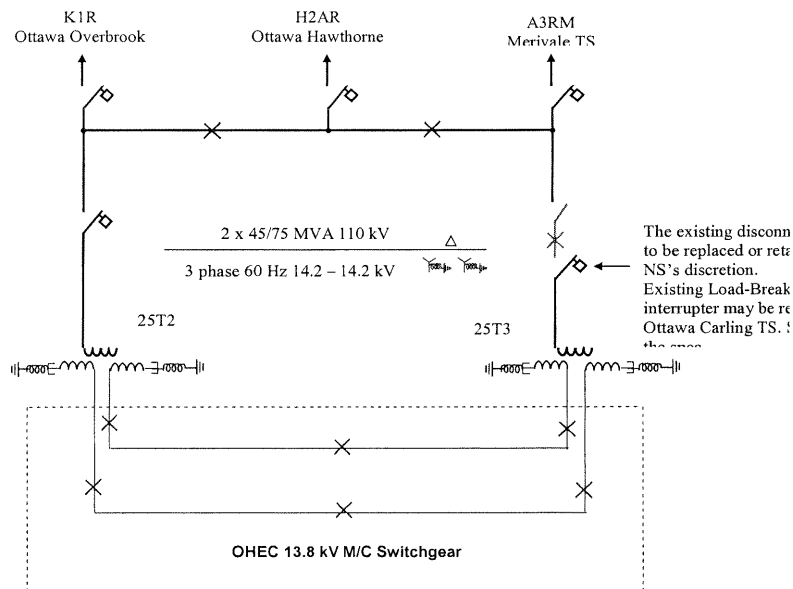


Figure 1: Proposed changes at Ottawa Riverdale TS

2.0 Assessment

The IESO performed its assessment on the basis of the information provided by Hydro One in their planning specification for the project.

The interrupting current capability of the new breaker is below the value of 50 kA, recommended in the Transmission System Code. However, with a rated interrupting capability of 40 kA, the proposed breaker has a comfortable interrupting margin when compared with the maximum 3ph fault current of 17.8 kA, calculated by Hydro One for 2004.

The IESO's assessment has also concluded that the remaining specifications of the proposed breaker fall within the values recommended in the market rules and the Transmission System Code, as follows:

- *Maximum continuous operating voltage* meets the requirements stated in Appendix 4.1 of the market rules;
- *Maximum Continuous Operating Current* meets the requirements stated in Appendix 2 of the Transmission System Code; and
- *Rated interrupting time* meets the requirements stated in Appendix 2 of the Transmission System Code.

Market Rules (Chapter 4 section 7.5) require each participant in the IESO-administered markets that is a distributor or a connected wholesale customer to provide the IESO on a continual basis with on-line monitored quantities as specified in Appendix 4.17. To meet this requirement, it is required that the applicant install all the necessary equipment required to monitor and make available to the IESO the information specified in Appendix 4.17 of the market rules on a continuous basis.

3.0 Conclusion and Recommendations

The installation of the proposed breaker at Riverdale TS does not have an adverse impact on the reliability of the IESO-controlled grid. The new breaker enhances the operational flexibility in the area and provides ferroresonance protection for transformer Riverdale-T3 when the A3RM cable section to Slater TS is out of service. In addition, the new breaker provides sufficient interrupting capability for the fault currents known in the area.

In the future, if system conditions change in the area and the short circuit levels increase beyond 40 kA, Hydro One will be required to upgrade the breaker whose installation is proposed in this project.

The applicant will be required during the facility registration process to demonstrate that data monitoring for Riverdale TS, including the new breaker, is supplied in conformance with the requirements stated in Appendix 4.17 of the Market Rules.

4.0 Notification of Approval

The IESO recommends that a Notification of Approval be issued for this project, provided that the applicant adopts the recommendations listed in section 3.