October 16, 2009

Ms. Christine Brown-Woodbeck
Protection & Control Supervisor, Northern Stations
Hydro One Networks Inc.
North Tower, 483 Bay St.
Toronto, Ontario, M5G 2P5

Dear Ms. Christine

115 kV A1B 'A' Line Protection Upgrade at Aguasabon SS
Notification of Final Approval of Connection Proposal
CAA ID Number: 2009-EX454

Thank you for the detailed information regarding protection changes on 115 kV A1B 'A' line protection at Aguasabon SS.

We have concluded that the proposed changes will not result in a material adverse impact on the reliability of the integrated power system. The proposed protection changes are acceptable to the IESO.

The IESO is therefore pleased to grant **final approval** for the modification detailed in the attached assessment report. Final settings must be provided to the IESO via protection.settings@ieso.ca.

For further information, please contact the undersigned.

Yours truly

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cc: IESO Records

ASSESSMENT SUMMARY

Aguasabon SS

1.0 GENERAL DESCRIPTION

Protection changes are being made to the 115 kV A1B 'A' line protection at Aguasabon SS. This work is scheduled to be completed by late October 2009.

2.0 TECHNICAL SPECIFICATIONS & PROPOSED MODIFICATIONS

The new protection equipment on A1B will be designed to duplicate the existing protection on A1B as much as possible. The existing 'A' group protections consisting of HCB pilot wire relay with phase and ground supervision ZA3 + RXIL24, backup KDU-4+CJCG15E will be replaced by a new D60 IED except that the HCB relay is retained and supervised by the D60 zone 2 elements.

The upgrade will provide new zone 1 phase protection in addition to the existing HCB pilot wire relay and new zone 1, 2, 3 ground protections and HIROP protection will replace the existing over-current protections. These additions and replacements enhance the A1B 'A' line protection and are not expected to have a material adverse impact on the IESO-controlled grid.

At present, forward looking zone 3 protection on circuit A1B at Aguasabon SS provides back-up protection for the T1M breaker at Terrace Bay SS under normal system conditions but not with A5A out of service. To provide the same functionality with A5A out of service, the existing relay's zone 3 reach needs to be extended which would make it sensitive to high Lakehead Flow East (LFE) transfers. The new relay's zone 3 protection has a blinder which allows the reach to be extended and in order to verify that this new protection setting will not lower the existing LFE transfer limits; the IESO has conducted the following relay margin analysis.

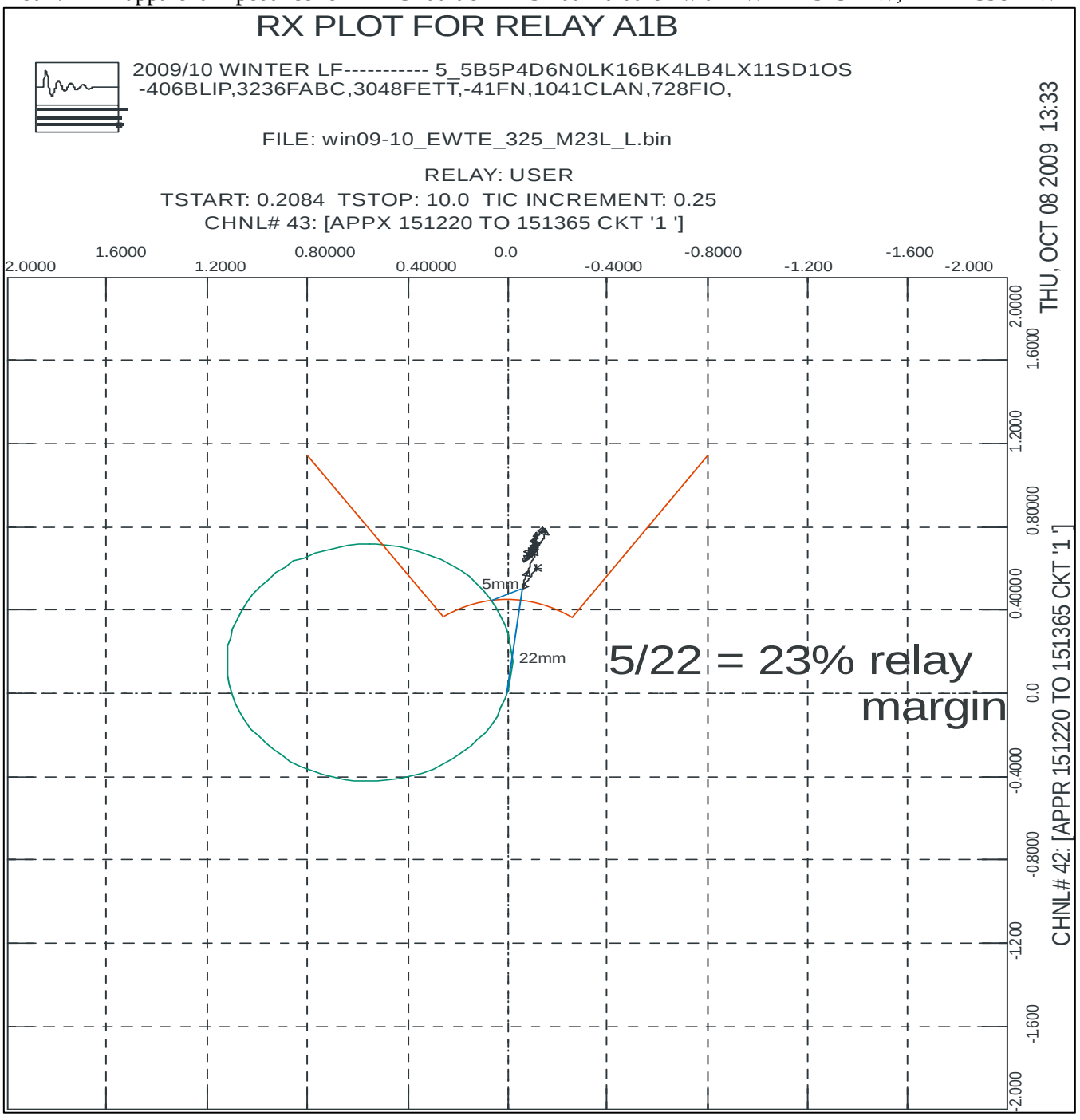
2.1 Relay Margin Analysis on 115 kV circuit A1B

Three scenarios were setup using the win09-10 base case with pre-contingency conditions as follows:

Scenarios	Scenario 1: All elements I/S, fair weather	Scenario 2: M24L O/S, fair weather	Scenario 3: All elements I/S, Adverse weather
Contingencies Studied	Respect single element contingencies; i.e. M23L , M24L	Respect single element contingencies; i.e. M23L	Respect single element contingencies and simultaneous loss of two 230 kV circuits mounted on a common transmission tower; i.e.M23L, M24L, M23L & M24L
LFE	398 MW	110 MW	109 MW
EWTE	325 MW	64 MW	63 MW
Flow on A1B from Aguasabon to Terrace Bay	114 MW	79 MW	87 MW
OMTE	0 MW	0 MW	0 MW
MPFN	0 MW	0 MW	0 MW
Silver Falls GS	47 MW	47 MW	47 MW
TCPL Nipigon GS	40 MW	40 MW	40 MW
Alexander GS	66 MW	66 MW	66 MW
Pine Portage GS	140 MW	140 MW	140 MW
Cameron Falls GS	75 MW	70 MW	70 MW
Aguasabon GS	45 MW	45 MW	45 MW
Terrance Bay Pulp GS O/S	0 MW	0 MW	0 MW
Wawatay CGS O/S	0 MW	0 MW	0 MW
Umbata Falls O/S	0 MW	0 MW	0 MW

The lowest relay margin of 23% was found under scenario 1 for a phase-phase-ground fault on M23L at Marathon and the relay margin plot is shown below.

Plot 1: A1B apparent impedance for L-L-G fault on M23L at Marathon with EWTE =325 MW, LFE = 398 MW



The IESO System Operations Manual 7.4, Appendix B, states that *"Following fault clearance or the loss of an element without a fault, the margin on all instantaneous and timed distance relays that affect the integrity of the IESO-controlled grid, including generator loss of excitation and out-of-step relaying at major generating stations, must be at least 20 and 10 percent, respectively.*"

The zone 3 protection on line A1B is a timed distance relay so the relay margin of 23% is greater than 10% and meets the above requirements.

2.0 REQUIREMENTS

Hydro One must notify the IESO as soon as it becomes aware of any changes to the assumptions made in the connection assessment. The IESO will determine whether these changes require a re-assessment. Protection systems must be designed to meet all the requirements of the TSC and must be coordinated with existing schemes. Although as far as the IESO's requirements are concerned there is no critical need for protections duplication on the A1B 115kV circuit, where duplicate facilities exist for this circuit the new or modified protection systems must also be fully duplicated and supplied from separate batteries. Provided that the TSC requirements are satisfied, the IESO does not have additional requirements.

3.0 ASSESSMENT & CONCLUSIONS

This expedited System Impact Assessment concludes that the above detailed protection changes are not expected to have a material adverse impact on the IESO-controlled grid. The proposed protection changes are acceptable to the IESO.

4.0 NOTIFICATION OF FINAL APPROVAL

It is therefore recommended that a Notification of Final Approval of the Connection Proposal be issued, subject to the requirements detailed above.