



# **CONNECTION ASSESSMENT & APPROVAL PROCESS**

## ***ASSESSMENT SUMMARY***

*Applicant: Hydro One Networks Inc.*

*Project: Replacement of 230kV Breakers  
PL24 & KT22 at R.H. Martindale TS*

***CAA ID No. 2002-EX025***

***Long Term Forecasts & Assessments Department***

*Date: 16<sup>th</sup> April 2002*

## **ASSESSMENT SUMMARY**

### **HYDRO ONE NETWORKS Inc. MARTINDALE TS - Replace 230kV breakers PL24 & KT22**

#### ***1.0 GENERAL DESCRIPTION***

Hydro One Networks Inc. is planning to replace the two existing 1800 amp 230kV air blast circuit breakers, PL24 & KT22 at R.H. Martindale TS with 3000 amp SF<sub>6</sub> units. The associated disconnect switches are not being changed.

The physical location of the two breakers that are to be replaced at Martindale TS is shown in Diagram 1.

The scheduled in-service dates for the two replacement breakers are as follows:

PL24	30 <sup>th</sup> August 2002	[Scheduled outage 12 <sup>th</sup> to 30 <sup>th</sup> August 2002, inclusive.]
KT22	25 <sup>th</sup> October 2002	[Scheduled outage 7 <sup>th</sup> to 25 <sup>th</sup> October 2002, inclusive.]

#### ***2.0 SPECIFICATION FOR THE REPLACEMENT BREAKERS***

The replacement SF<sub>6</sub> breakers are identical and are rated as follows:

- 3000 amp continuous
- 50kA interrupting capability
- 250kV maximum voltage
- 3-cycle interrupting time

[In accordance with normal Hydro One practice, the breakers are designed to trip and lock open upon detection of a low gas pressure condition. If the affected breaker should fail to open, then breaker failure protection will be initiated.]

For comparison, the existing air blast circuit breakers are rated 1800 amp continuous and have a fault interrupting capability of 23kA symmetrical & 26kA asymmetrical.

#### ***3.0 ASSESSMENT***

All of the 230kV breakers at Martindale TS, with the exception of breaker L23T22 and the two breakers that are to be replaced, are bulk oil circuit breakers, rated as follows:

- 2000 amp continuous
- 40kA interrupting capability
- 250kV maximum voltage
- 3-cycle interrupting time

Breaker L23T22 has already been replaced with an SF<sub>6</sub> unit with the same parameters as those that are to be installed to replace breakers PL24 & KT22.

Since breakers PL24 & KT22 are the only air blast units at Martindale TS, replacing them with SF<sub>6</sub> breakers will remove the requirement for the High Pressure Air System. Consequently the HPA system is to be decommissioned and all of the existing HPA facilities at Martindale TS are to be removed as part of this Project.

Following the replacement of breakers PL24 & KT22, three of the breakers at Martindale TS will be rated at 50kA, while all of the remaining breakers will be rated at 40kA. While the two replacement breakers will not comply with the Transmission System Code that requires a rating of 63kA for 230kV breakers, the new breakers will represent a marked improvement over the rating of 23kA for the existing breakers.

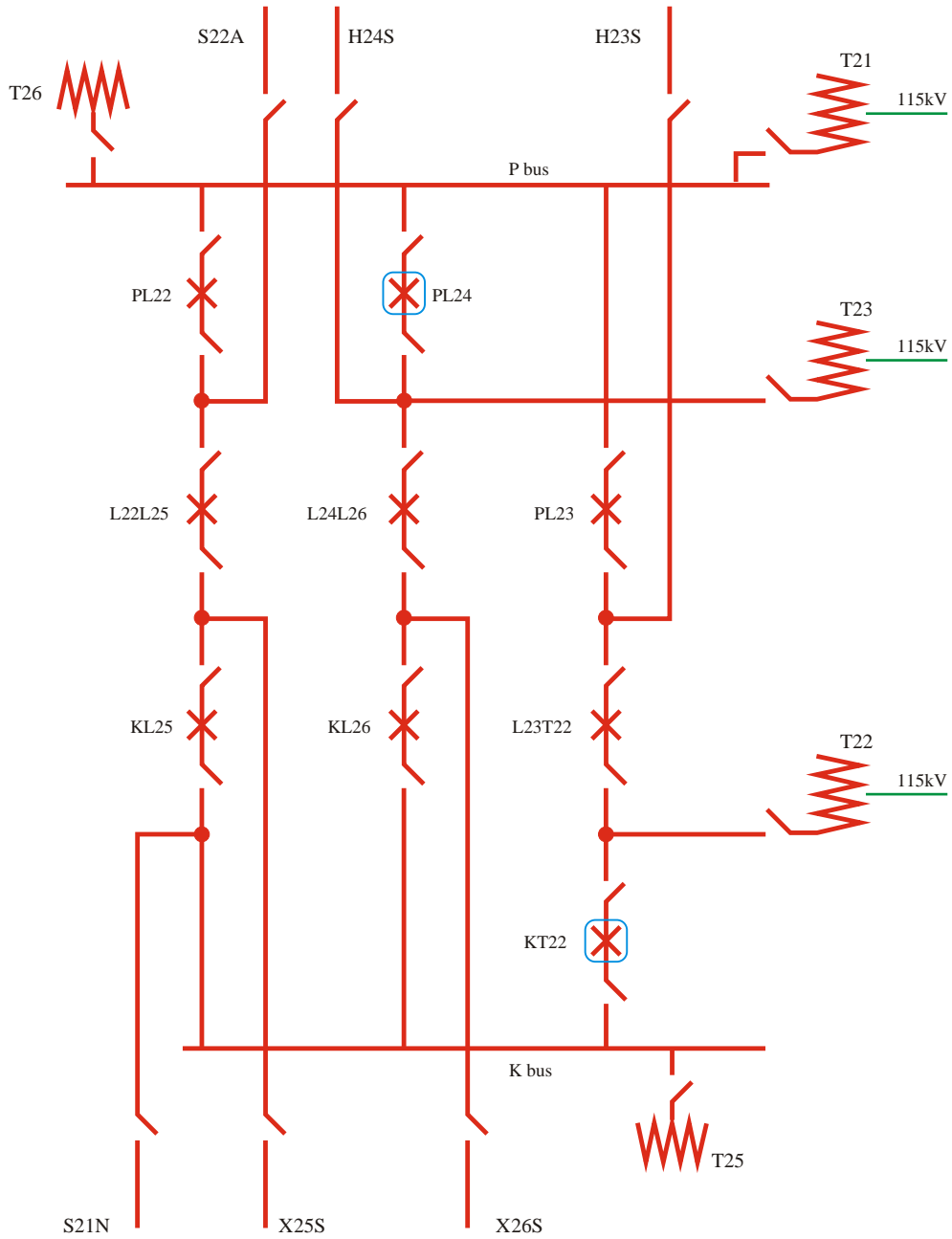
Once the two air-blast breakers at Martindale TS have been replaced, the minimum fault rating of the existing facilities at Martindale TS will then be 40kA, providing an additional margin of 17kA to accommodate any future increases in fault level. This is expected to be adequate for possible future developments, however should the fault level increase to above the 50kA rating of the new breakers due to developments by a third party, then the subsequent replacement of these two breakers would be expected to be undertaken at Hydro One's expense.


### ***Conclusions***

Since the replacement of breakers PL24 & KT22 at R.H. Martindale TS is considered to represent a like-for-like replacement of existing facilities, it will have no adverse impact on the IMO-controlled grid.

### ***4.0 NOTIFICATION OF APPROVAL***

It is therefore recommended that a Notification of Approval of the Connection Proposal be issued.



 Breakers that are to be replaced