



October 1, 2003

Mr. Mel Yates  
Manager, Stations, T&D Sustainment Programs  
Investment Planning Division  
Hydro One  
483 Bay Street  
Toronto, Ontario, M5G 2P5

Dear Mr. Yates:

***Replacement of Rod Gaps with New Surge Arresters at Various Locations  
Notification of Approval of Connection Proposal***

***Thornton TS      CAA ID Number: 2003-EX163***  
***Kent TS            CAA ID Number: 2003-EX164***  
***Highbury TS     CAA ID Number: 2003-EX165***  
***Trout Lake TS    CAA ID Number: 2003-EX166***  
***Red Lake TS     CAA ID Number: 2003-EX167***

Hydro One has been carrying out a program to replace existing rod gaps, which provide a low level of transformer protection, with new metal oxide surge arresters. Recently, technical specifications and single line diagrams for surge arresters installations at Thornton TS, Kent TS, Highbury TS, Trout Lake TS and Red Lake TS were submitted to the IMO.

The technical specifications and in-services dates for each of the five surge arrester installations are listed in Table 1 attached. The table contains mostly the actual equipment performance data but where actual values were not available the equipment specification information was used.

The IMO reviewed the data provided by Hydro One and concluded that these installations will provide improved protection to the transformers and will not materially affect the reliability of the IMO-controlled grid. Hence, the proposed replacements were subject to the Expedited Connection Assessment Process, where a study is not warranted.

The IMO is therefore pleased to grant approval for the completion of the proposed surge arrester installations.

Please note that the new facilities will also have to meet the requirements of the IMO's Facility Registration process before being placed in service.

For further information, please contact the undersigned.

Yours truly,

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Manager - Long Term Forecasts & Assessments  
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cc: IMO Records

**Table 1. Surge Arrester Ratings**

<b>Number &amp; Location</b>	CAA ID 2003-EX163; Thornton TS Six phase-to-ground, one per phase, to be connected to T3 and T4 on 230 kV side	CAA ID 2003-EX164; Kent TS Six phase-to-ground, one per phase, to be connected to T1 and T2 on 230 kV side	CAA ID 2003-EX165; Highbury TS Six phase-to-ground, one per phase, to be connected to T3 and T4 on 115 kV side	CAA ID 2003-EX166; Trout Lake Six phase-to-ground, one per phase, to be connected to T3 and T4 on 230 kV side	CAA ID 2003-EX167; Red Lake Six phase-to-ground, one per phase, to be connected to T1/T2 and T3 on 115 kV side
<b>In-service Date</b>	October 2003	October 2003	September 10 <sup>th</sup> , 18 <sup>th</sup> 2003	May 2003	June 2003
<b>Type</b>	Metal Oxide gapless – polymeric station class	Metal Oxide gapless – polymeric station class	Metal Oxide gapless – polymeric station class	Metal Oxide gapless – polymeric station class	Metal Oxide gapless – polymeric station class
<b>Maximum Continuous Operating Voltage</b>	175 kV	152 kV	88 kV	152 kV	88 kV
<b>Front-of-wave impulse protective level</b>	488 kV	488 kV	289 kV	488 kV	289 kV
<b>Maximum discharge voltage at 10 kA impulse current</b>	452 kV	452 kV	262.6 kV	452 kV	262.6 kV
<b>Maximum switching surge protection</b>	381 kV	381 kV	Equipment specifications require; “Not more than 230 kV <sub>crest</sub> at 0.5 kA”	381 kV	Equipment specifications require; “Not more than 230 kV <sub>crest</sub> at 0.5 kA”
<b>TOV capability</b>	Equipment specifications require; “capability to withstand power frequency overvoltage of not less than 230 kV(rms) for 0.5 sec.”	Equipment specifications require; “capability to withstand power frequency overvoltage of not less than 225 kV(rms) for 0.5 sec.”	Equipment specifications require; “capability to withstand power frequency overvoltage of not less than 120 kV(rms) for 1.0 sec.”	Equipment specifications require; “capability to withstand power frequency overvoltage of not less than 225 kV(rms) for 0.5 sec.”	Equipment specifications require; “capability to withstand power frequency overvoltage of not less than 120 kV(rms) for 1.0 sec.”
<b>Max. energy dissipation per arrester</b>	Equipment specifications require; Maximum energy dissipation per arrester, as recommended in ANSI/IEEE C62.11 1993 standard for single column arresters meeting the above conditions.				
<b>Press relief capability</b>	65 kA	65 kA	80 kA	65 kA	80 kA