



CONNECTION ASSESSMENT & APPROVAL PROCESS

ASSESSMENT SUMMARY

Applicant: Hydro One Networks Inc.

*Project: Hearn SS:
Replacement of the Initial Section of Cabled Circuits H7L & H11L*

CAA ID No. 2004-EX202

***Long Term Forecasts & Assessments Department
Consistent Information Set Department***

Date: 9th July 2004

Portlands Energy Centre Project: Relocation of 115kV Circuits H7L & H11L

1. Introduction

Should the Portlands Energy Centre Project be developed then the initial 652m underground section of the 115kV circuits, H7L & H11L, at Hearn SS would need to be relocated to facilitate the Project's development and incorporation into the IMO-controlled grid.

Since these cables are old and therefore somewhat fragile, Hydro One has proposed that the section of the existing 1250kcmil cables that would be affected by the development be replaced.

2. Parameters for the Existing and Replacement Cables

The impedances and ratings for the cables are given below:

Existing 1250kcmil conductors ($\approx 635\text{mm}^2$)

Impedance: R 0.0006
 X 0.0012 pu per km
 B 0.0201

Ratings: 530A continuous
 590A 10-day LTR

Replacement 800mm² conductors

Impedance: R 0.00021 (0.029Ω/km)
 X 0.00119 pu per km (0.1654Ω/km)
 B 0.03625 (3844.3Ω/km)

Ratings:

<i>Installation Method</i>	<i>Duct</i>		<i>Buried at terminations</i>		<i>Buried at JB No. 1</i>		<i>Pipe-crossing*</i>
	<i>Summer</i>	<i>Winter</i>	<i>Summer</i>	<i>Winter</i>	<i>Summer</i>	<i>Winter</i>	
<i>Continuous</i>	535A	592A	557A	614A	606A	665A	610A
<i>24hours emergency</i>	921A	963A	1102A	1149A	992A	1048A	939A
<i>15-min limited-time-rating</i>	2276A	2326A	2314A	2383A	2441A	2536A	2246A

Note: * Pipe-crossing ampacity determined for an ambient temperature of 32°C

Other details for the replacement cables

Construction: Single-core, copper conductor, paper insulated, corrugated aluminum sheathed and polyethylene jacketed, self-contained type fluid-filled cable.

Compliance: In accordance with IEC Standard 60141-1/1993

Nominal Voltage: 115kV - suitable for continuous operation at 127kV (tested at 138kV ac for 15-minutes)

BIL Rating: 550kV

Short-circuit withstand rating: 50kA for 500msec

3. *Assessment*

The change in the impedance of circuits H7I & H11L resulting from the replacement of the initial 652m section of these circuits will not have a materially adverse effect on the reliability of the IMO-controlled grid.

Furthermore, since the new cables will have a higher thermal rating than the cables that they are replacing, they will not restrict the operation of these circuits.