Q. In Hydro's root cause analysis of the 2013 Unit 1 lube oil failure filed as part of Hydro's 2013 supplemental capital budget application for the project, an incorrectly set resistor (Page 9) and a vendor QA/QC oversight failure (Page 10) were identified as root causes. Please explain the role these two factors contributed in the system failure and the degree to which they were or were not major contributors.

A. With respect to the Unit 1 failure experienced at the Holyrood Thermal Generating Station on January 11, 2013, three causal factors were identified using TapRooT® root cause analysis, as documented in the *Holyrood Unit 1 Failure - January 11, 2013 Root Cause Analysis* report. The incorrectly set resistor in the starter cabinet and the vendor QA/QC oversight were the two root causes related to Causal Factor #3: DC Powered Lubricating Pump Not Operating Properly. In this instance, the resistor setting is meant to fine-tune the motor speed to deliver target lube oil pump discharge once operating in tandem with either the primary or standby lube oil pump. This would not be considered to be a major contributor.

In contrast, the motor speed, as dictated by internal adjustments while dissembled at a service centre prior to April 2009, would be considered to have played a larger role. The service contract for all motors that are repaired for the Holyrood plant are performed under a single contract with "as-found and as-left" inspection records detailing all the component conditions both measured and observed. Over 98% of the more than 700 motors at the Holyrood plant are of an AC design and motor speed is not adjustable and hence not recorded. Having operated this facility for over 40 years, Hydro did not have any prior experience with improperly adjusted motor speed on DC motor repairs and as such, this requirement was not stipulated in the QA/QC process.