Q. Sunnyside Replacement Equipment: Please: (a) describe the issue involving the use of improper lubrication used in the ABCBs, (b) identify which parts of the breakers were affected by the issue and under what weather conditions, (c) describe how and when this lubrication issue was identified, (d) state what type of lubricant was improper and what type was used to replace the improper lubricant, (e) explain the reason why Hydro found improper lubrication in B1L03 during its investigation after the January 2014 event, even though it was to be re-lubricated in 2007.

A. The issue involving the application of improper lubrication used in air blast circuit breakers (ABCBs) relates to the type of material in air blast breaker seals. Original ABB seals in ABCBs are nitrile rubber for which ABB recommends Dow Corning (Dow) 55 lubricant. In 2003, Hydro started purchasing seals from another supplier, Atelier A.H.R. Inc. (AHR). Replacement seals, from AHR, are silicone rubber for which AHR recommends Dow 111. Dow 111 is compatible with both nitrile and silicone based seals. The reason for the different breaker lubricant recommended by AHR is that Dow 55 penetrates and softens silicone rubber. Both Dow lubricants (55 and 111) are designed to function properly down to temperatures of -40 degrees Celsius. Hydro started purchasing AHR seals in 2003 and started discussions with AHR on re-lubrications for their seals in 2004. During investigation of the January 2014 event, Dow 55 was discovered on the B1L03 instead of the lubricants recommended for AHR parts (even though it was re-lubricated in 2007). It appears the reason for this discrepancy was the maintenance procedure did not clearly document the proper lubricant required for specific breaker parts. Following the events of January 2014, AHR were consulted and worked with Hydro to update and make improvements to ABCB maintenance procedures, which included best lubrication practices.

After the January 2014 events, ABB inspected the breaker and did not conclude that this lubricant was the cause of the breaker failing to trip.