Q. Please explain what steps have been and will be taken to minimise the number of flashovers on the overhead HVdc line, noting the proximity of the overhead line to the coast and the fact that the HVdc line will attract much higher concentrations of salt and other pollution compared with an ac overhead line.

A. The level of salt contamination that will be deposited on the insulators in the area of the Strait of Belle Isle (SOBI) made this a known area of special significance for the Labrador-Island Transmission Link, an area that extensive design and analysis work was required to ensure operational reliability. Given the sensitivity of HVdc technology to salt contamination, much of the overall line is routed away from the coastal areas; however, this is not possible in the SOBI area. As with many aspects of the Lower Churchill Project, a significant amount of historical data was used in the insulation design for the Labrador-Island Transmission Link. Actual salt contamination data was collected from 1978 to 1980. This data formed the basis of the design. This data was used by Teshmont at that time to develop the insulator leakage length (path from which current can travel over an insulator) and total required insulator length. The worst-case salt contamination level measured at the test site was used for their analysis and current insulator design. Technology advancement and research in insulator design has improved in the last 30 years, and therefore further analysis was performed by SNC-Lavalin in the last few years as part of the transmission line design using design standards and knowledge published by Electric Power Research Institute (EPRI). Nalcor took this design and had independent full-scale line voltage testing performed by STRI in Sweden, an independent company that specializes in high voltage testing. They ran multiple tests of the design, exposing the insulators to the meteorological conditions of salt

contamination and heavy ice accumulation on energized insulators for which they will be subjected to in the field during operation. The insulators passed all tests.