Q: Reference: ***Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls Final Report, August 19, 2016, Page 77, Conclusion IV-17, Point 2***

For Conclusion IV-17, Point 2, bullets d and f, please indicate Liberty's estimated probability per year of those types of events given Liberty's experience of other HVdc systems and its understanding of the design of the LIL converters and synchronous condensers.

A. Conclusion IV-17, Point 2, bullet d: Given that there are several synchronous condensers, the likelihood of an immediate outage caused by a single synchronous condenser tripping is very low. However, if there is a latent defect in the synchronous condensers, it may be necessary to take a synchronous condenser out of service for repair. It may then be necessary to run with fewer synchronous condensers than planned, and this could mean insufficient inertia to survive a temporary bipole fault, without major load shedding. The probability of this event occurring is likely to be less than once in 200 years.

Conclusion IV-17, Point 2, bullet f: Major fires in a converter station caused extensive outages of some HVdc schemes more than 20 years ago. Lessons were learned from these events, e.g. the minimization of flammable material in the valve halls, and since then only relatively small fires have been reported. The probability of a fire taking both poles out of service for an extensive period is likely to be less than once in 500 years.