Q. What actions have been taken to increase the system resiliency / decrease the duration of any likely outages? Additional spare parts were mentioned. Did long term projected O&M costs include these measures?

A. The design principles applicable to the Muskrat Falls facility and the Labrador Island Transmission Link would generally be described in Nalcor's view as 'good utility practice'[1]. Specific principles are described in Section 2.3 of Nalcor's Submission to the Board[2].

From an operational perspective, Nalcor's approach to reliability has been to consider the types of events and issues that would be expected to occur, establish reasonable timeframes for recovery, and then to ensure that system performance would be maintained within those timeframes. For example, the approach used to evaluate HVdc reliability described in Exhibit 106 considers a two week repair period, and then considers the impact on system reliability over that relatively long timeframe. Nalcor's approach could be considered to be the opposite of that suggested in the question – rather than decrease outage time, system reliability has been evaluated in the context of performance over a relatively conservative outage time.

The reference to 'additional spare parts' provides insufficient detail and context to comment specifically. In general, manufacturer recommended spare parts will be provided. These will be specified during detailed engineering.

[1] Exhibit 30, page 8
[2] Nalcor's Submission, page 18

Nalcor's Transmission Planning Manual[3] and Nalcor's response to PUB-Nalcor-140 provide insight into Nalcor's transmission performance requirements. Spare synchronous condenser capacity will be available to provide for continued operation through an equipment contingency, and a spare submarine cable has been included in the Labrador Island Transmission Link capital cost estimate in order to provide for reliable operation of the link in the unlikely event of a submarine cable fault that may take some time to repair.

With the exception of the spare submarine cable, no specific steps have been taken to reduce the duration of outages. Nalcor's approach has been to expect the same level of performance as is generally expected in the industry, and to plan for contingencies that may arise.

As a result, operating budgets are based on industry norms and benchmarks for similar plants and transmission systems, including those presently operated by Nalcor or its subsidiaries. Operating cost estimates include provisions for regular, on-going system maintenance, including for spare parts, equipment and tools, as well as third party specialist support.

[3] Exhibit 105