Q. Losses related to the HVdc Labrador-Island Link are mentioned in Exhibit 43, pg. 33 of 37 (5%), Nalcor Submission July 6, 2011 Synopsis of 2010 Generation Expansion Decision, Appendix C, pg. 3 of 9 (10%) and Exhibit 18, pg. 32 (7% & 8%). Please provide the design capacity and energy losses for the proposed HVdc Labrador-Island Link.

A. As noted in response to MHI-Nalcor-119 a maximum loss value of 10% worst case was chosen the determine the minimum acceptable operating voltage to the Labrador – Island HVdc Link. An estimated average loss value rate of 5% has been used for analysis purposes. Transmission losses will be evaluated further in conjunction with conductor, converter and transmission optimization during detailed engineering prior to Project Sanction.

At Decision Gate 2 the Labrador – Island HVdc Link has the following ratings:

- Operating voltage ±320 kV
- Rated capacity at Muskrat Falls
    - 450 MW per pole in bipole mode, 1406 A
    - 900 MW per pole 10 minute monopolar mode – 2812 A
    - 675 MW per pole continuous monopolar mode – 2109 A
- Capacity losses
    - Bipole mode
        - 84.85 MW winter (Ambient Labrador -13 ˚C, Island -1 ˚C)
        - 92.1 MW summer (Ambient Labrador 21 ˚C, Island 23 ˚C)
    - 10 Minute monopolar mode
        - 250.4 MW winter (Ambient Labrador -13 ˚C, Island -1 ˚C)

- 272.7 MW summer (Ambient Labrador 21 ˚C, Island 23 ˚C)
  - Continuous monopolar mode – earth return
    - 132 MW winter (Ambient Labrador -13 ˚C, Island -1 ˚C)
    - 144.4 MW summer (Ambient Labrador 21 ˚C, Island 23 ˚C)
- Energy losses are usage dependent. Assuming a design capacity factor of 95%, the system would have an energy loss rate of approximately 9.3%. The forecasted capacity factor for the line is 62% (4.9 TWh / (900 MW*8760 hr / 1,000,000 MW/TW), and losses would be correspondingly lower.