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Sent: Thursday, February 9, 2012 3:08 PM
To: Paul Wilson <plwilson@mhi.ca>
Subject: HVdc Transmission Lines

1. In establishing the design load return period for the HVdc transmission line, it is important to have a contingency plan in place. If one pole is out of service, a 50% overload capability on the second line will allow the system to carry 675Mw for an extended period of time. If both poles are out of service, the loss of 900Mw would have a significant impact on the Newfoundland system. Alternate supplies could be provided by CT's, diesel farms, interconnections with neighbouring utilities or curtailable loads (although there are only a couple of loads that would have any impact). The acceptable level of service is dependent upon the customer's requirements and their understanding of the options for alternative supply and associated costs.

2. There is a remote probability of a 1:150 year event occurring but the additional cost of \$150 million is required if Nalcor is to be in compliance with the CSA C22.3 No. 60628-10 standard. For lines above 230 kV, the reliability level recommended is 1:150 years if there is an alternate supply available (eg - Maritime Link). The same level, 1:150 years is suggested for lines below 230 kV which constitute the principal or only source of supply to an electric load. If there is no alternate supply for a 230 kV line and above, a higher standard of 1:500 year is required (eg - no Maritime Link).

3. MHI definitely considers reliability a major issue, particularly in view of the importance of the HVdc line and potential for outages caused by ice, wind, cable failure or other naturally occurring events. This is an issue of risk management and consequences (both financial and operational) of line failure. Given the usual harsh winter conditions and customer's dependence on electricity for heating homes, a line loss for a prolonged period, without adequate backup supply could be disastrous.

4. MHI recommends that Nalcor give strong consideration to a higher reliability in remote alpine regions, a 1:500 year return period, as it may be difficult to restore the line in case of failure due to limited access caused by an extreme weather event.

5. Customers are concerned with both reliability and costs. Given the dependence of customers on electricity in Newfoundland and Labrador, MHI recommends that Nalcor use prudence when establishing return periods and alternate supply with the costs of doing so.