Q. Further to the response to PUB-NLH-282, which indicates that stand by generation will come on-line sometime between 10 and 20 minutes after the permanent loss of a pole which means that the converter and the dc line may have to operate with 100% overload for up to 20 minutes, rather than the 10 minutes as has been specified, explain what will be the impact on the converter station equipment and the HVDC overhead line of this extended period of operation at 100% overload.

A. The start time of the on island stand by generation in the ten to 20 minute time period following the permanent loss of a pole does not require the Labrador – Island HVdc Link (LIL) to operate at 200% current rating for 20 minutes. The following paragraphs explain the generation sequence following the permanent loss of a pole.

Recall that the LIL has a bipole rating of 830 MW delivered at Soldiers Pond (i.e., 1286 A per pole). In addition, under a permanent pole outage, the healthy pole has a 200% current rating (i.e., 2572 A) for ten minutes and a 150% continuous current rating (i.e., 1929 A) in monopolar mode. In terms of delivered power at Soldiers Pond, the 200%, ten minute current rating in monopolar operation (often referred to as 100% overload capability) equates to approximately 662 MW. The 150% continuous current rating in monopolar mode equates to approximately 552 MW delivered at Soldiers Pond. The delivered capacity of the LIL at Soldiers Pond has been graphed in Figure 1 for discussion purposes.

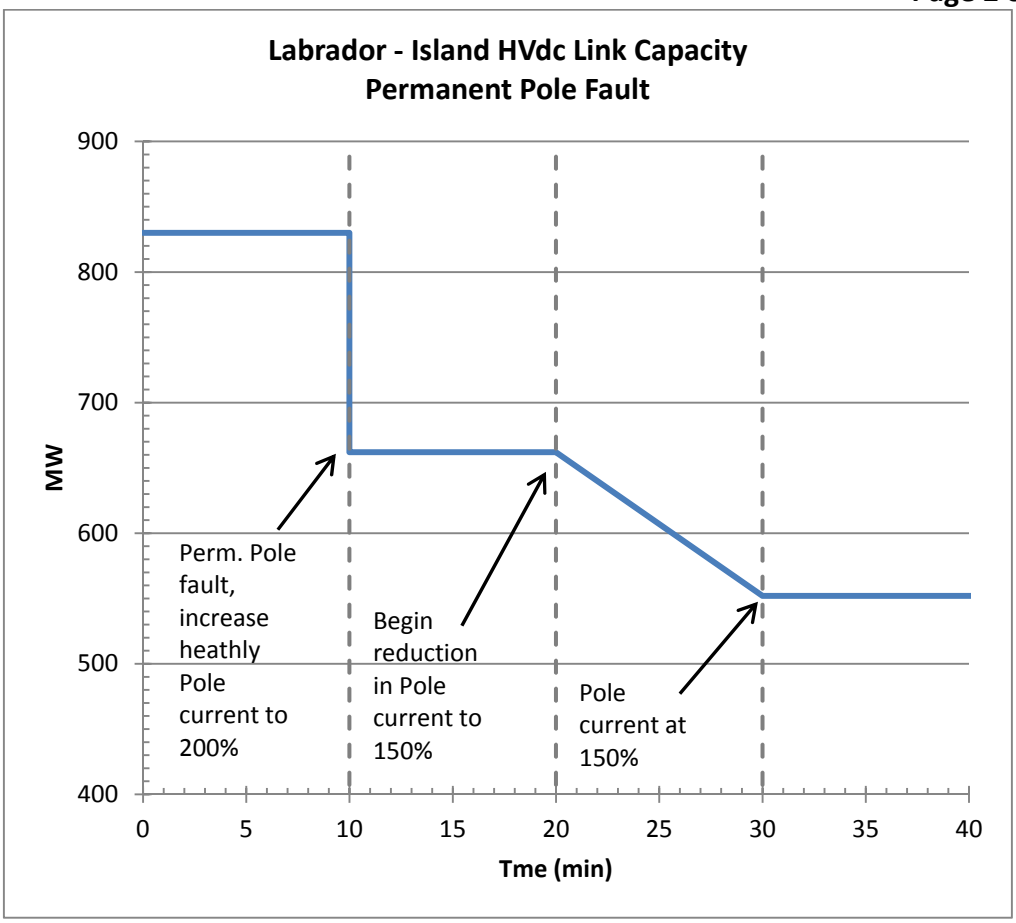

Figure 1 – Labrador – Island Link Delivered Capacity Following a Permanent Pole Fault

Figure 1 depicts the rated delivered LIL capacity of 830 MW in bipole mode. For discussion purposes, a permanent pole outage is experienced at time t = ten minutes. At t = ten min, the LIL will automatically increase the pole current on the healthy pole to 200% for ten minutes. The resultant delivered power at Soldiers Pond is 662 MW and is depicted in Figure 1 as the horizontal line at 662 MW for the period from t = ten min to t = 20 min.

Following ten minutes at 200% current rating, the LIL output must be reduced to its 150% continuous current rating over a ten minute period. Hydro will have its

generation dispatched in order to ensure that the reserves are available to provide the ramping required.