Q. Please provide details of the proposed frequency control for the IIS in the ML control design. In the response state whether dead-bands will be used; have payments for this service been agreed and if so, please provide details.

A. Early design of the Maritime Link (ML) did not utilize a frequency controller at Bottom Brook (BBK) to assist in stabilizing the Island Interconnected System frequency for power system disturbances. It was determined through power system studies that maintaining reserve on the Labrador Island Link (LIL) and using a frequency controller at Soldiers Pond (SOP) to stabilize system frequency were preferable. This design would take advantage of the Line Commutated Converter (LCC) HVdc technology's inherent high speed response to power demands and the supporting electrical strength of the Québec Interconnection. In this scenario, the power order on the ML would be set and maintained for each hour. From the perspective of the Island Interconnected System, the ML would look like a load.

Recent power system studies by the vendor ABB have identified possible benefits of activating the frequency controller within the ML VSC controls. Activating the ML frequency control on the Nova Scotia end at Woodbine (345 kVac) would be a benefit to NSPI's system frequency control and Automatic Generator Control (AGC) system. The intent for the ML project was to displace a single thermal generator with clean, renewable hydroelectric power generated at Muskrat Falls (MFA) in Labrador. NSPI thermal generators participate in AGC today, and therefore without frequency control on the ML, NSPI will be removing a participating unit from its frequency control system.

For NLH, a frequency controller at the BBK Terminal Station may improve the Island Interconnected System's post disturbance recovery performance. The ML HVdc vendor, ABB, is currently analysing the benefits of activating the frequency controller at BBK following potentially high impact system disturbances. The potentially high impact system disturbances under analysis will include faults close in at Bay d'Espoir (BDE) and permanent or temporary LIL pole/bipole faults. The ML control system will have the flexibility to activate or de-activate the frequency controller at any time.

For the purposes of power system studies to date, a simple frequency droop setting has been used for the LIL to respond to frequency excursions in tandem with the somewhat slower response of the hydroelectric synchronous machines on the Island Interconnected System. The governor systems for most of the hydro generation have droop settings between 2% and 5%. Given the relative response rates the LIL must be set to ensure appropriate use of the spinning reserve within the provincial system to ensure no loss of load.

Detailed system studies by GE Grid are underway to assist with tuning the HVdc controller for optimal disturbance recovery performance.