Q. Further to the response to PUB-NLH-045, explain in detail when and why Newfoundland Power's mobile gas turbine was located at Holyrood in 2013, how long it stayed there, the function it performed there, whether it successfully performed in this function, and if moved from Holyrood, why was it moved.

A. There was no requirement to initiate a blackstart of the Holyrood plant during the recent system events on January 4 and 5, 2014. Unlike the circumstances that occurred on January 11, 2013, during the recent events the 230 kV transmission lines into the Holyrood Terminal Station (HRDTS) were able to be restored quickly, thus providing for station service requirements. Please refer to Hydro's response to PUB-NLH-045 for additional detail regarding the January 11, 2013 events.

In 2012, Hydro determined (based on an AMEC assessment report) that the Holyrood gas turbine, used for emergency station service and blackstart capability, could no longer be available for use. At this time, Hydro was planning for an addition of a 60 MW (nominal) combustion turbine as part of its generation planning for 2015. In January 2012 it was determined that this unit would be located at Holyrood and configured to provide the required blackstart. In the meantime, Hydro developed a contingency plan to use the Hardwoods gas turbine (HWDGT) to provide blackstart power for the Holyrood Thermal Generating Station (HTGS). However, it was shown that during the events experienced on January 11, 2013, the HWDGT blackstart contingency plan was inadequate, due to its reliance on the Avalon transmission system. In order to utilize the HWDGT for the blackstart of the HTGS, a transmission path is required from the Hardwoods Terminal Station to the HRDTS. On this day, electrical faults had caused trips and lockouts of the HRDTS so no transmission path was available. There were considerable delays in

getting the HRDTS restored due to the blizzard conditions that prevented station maintenance crews from arriving at the station.

Hydro took steps towards an alternate HTGS blackstart contingency plan by requesting that Newfoundland Power relocate its mobile generation to Holyrood. An agreement was reached between Hydro and Newfoundland Power to relocate Newfoundland Power's 6.5 MW Mobile Gas Turbine (NP-MGT) and 2.5 MW Portable Diesel (NP-MD3) to Holyrood and connect them to the HTGS to allow for faster restoration of station service and to provide for plant blackstart capability. These mobile units were also configured to provide power to the interconnected power system via the HRDTS.

Engineering design and construction of a grounding system, overhead lines, and a transformer bay were required for the electrical connection to the HTGS. The engineering and construction work were completed, the units were commissioned and on April 24, 2013, a test to provide station service power into the HTGS was successfully completed. It was proven that the generation could provide for essential services critical to life safety and system operations as it allows for the operation of fans to evacuate smoke, the restart of air compressors, operation of cooling water pumps to maintain equipment temperatures, and operation of extraction pumps to manage water chemistry and exhaust hood temperature.

In order to facilitate a blackstart test of the HTGS, a coordinated effort between Hydro and Newfoundland Power was required along with a window of opportunity when no Holyrood units were required for system support. This window presented itself on May 10, 2013. Blackstart tests were performed; however, the tests showed that the mobile units were inadequate in providing full blackstart capability due to the inability to start up a Holyrood unit boiler feedwater pump motor. As a

result, Hydro continued to rely on its interim blackstart solution using HWDGT, while the Holyrood combustion turbine application was being advanced.

Following the test, the mobile units were disconnected and returned to Newfoundland Power in late May, 2013 for their annual capital and maintenance program.

Although full blackstart capability was not possible from Newfoundland Power's mobiles, Hydro recognized that this unit could help to secure the supply to essential services at the Holyrood generating station for the winter seasons. It would also provide the significant benefit of keeping much of plant auxiliary equipment operating in a warm state, thereby reducing the start-up time once the transmission supply is restored. Only one of the mobiles was required for this function. Hydro therefore determined that it would request NP-MGT be returned to Holyrood for each winter season until the new 60 MW (nominal) combustion turbine was in place.

In October, 2013 a letter was received from the Board requesting Hydro to take immediate action to ensure all possible options have been considered to provide reliable Holyrood blackstart capability. In November 2013, a report with the options was completed. This was filed with the Board with the preferred option to have a nominal 16 MW diesel plant, onsite, as a blackstart generating solution to be installed and commissioned by February 28, 2014.

In November 2013, Hydro made the request to Newfoundland Power to have NP-MGT re-connected at Holyrood. This unit was subsequently returned to the HTGS location and reconnected on December 30, 2013.