

December 9, 2014

The Board of Commissioners of Public Utilities  
Prince Charles Building  
120 Torbay Road, P.O. Box 21040  
St. John's, Newfoundland & Labrador  
A1A 5B2

**Attention: Ms. Cheryl Blundon**  
**Director Corporate Services & Board Secretary**

Dear Ms. Blundon:

**Re: Newfoundland and Labrador Hydro - the Board's Investigation and Hearing into Supply Issues and Power Outages on the Island Interconnected System: Winter Readiness Status of Hydro's Generation Assets Related to Critical Spares**

As indicated in its update report to the Board on December 1, 2014, Hydro has completed extensive reviews of its critical spares requirements in all three areas of its generation operations: hydraulic, thermal (Holyrood), and the gas turbines in Hardwoods and Stephenville. These reviews have included a detailed analysis of asset criticality and spare parts in reference to several factors, including their impact on generation reliability and replacement part availability.

In many cases, parts/components that have been identified as critical are already in inventory. In some instances, spare critical parts were ordered and placed into inventory while the critical spares reviews were in progress. Hydro has expedited the delivery of the remaining spare components critical for this winter with delivery dates in the near term as discussed below.

Hydro has made good progress in identifying parts as being critical to generation operations. The parts identified are at varying levels of criticality. Hydro's evaluation of critical spares is an ongoing process. In this process, consideration is given to: asset condition; level of criticality; parts availability/order lead time; and cost. In some cases, a balanced consideration of these factors may result in a decision to not procure into inventory where the risk to reliability is judged to be low and/or other measures are available to mitigate against generation unavailability.

Hydro's priority is to ensure critical spares readiness going into the 2014/15 winter season. In this context, Hydro's recent focus has been to determine if there are any critical spares which are essential for ensuring generation reliability this coming winter season, and are not currently in stock or expected in stock by early winter, or otherwise readily available. This focus has incorporated a consideration of three key factors:

- a) Hydro's expectation regarding the likelihood of component failure over this winter season taking into account the age, condition and performance history of the affected asset, and Hydro's accumulated knowledge of the performance characteristics of these assets generally;
- b) The lead time on ordering a replacement part if required; and

- c) Contingency measures that may be available to mitigate or eliminate any generation availability risk in the event of a component failure.

#### Hydraulic Generation

The analysis of spares for the top 25% most critical hydraulic generation assets confirmed most critical spares are currently in stock in Hydro's inventory system. This indicates a high state of critical spares readiness, and considering as well the extent of both the maintenance and capital refurbishments or upgrades performed in 2014 related to generation, Hydro is confident of the winter readiness status of its hydraulic generation assets.

Hydro's further analysis of hydraulic critical spares readiness using the criteria noted above has identified two components for which contingency plans have been developed to mitigate against availability risks in the unlikely event of a part failure over the 2014/15 winter season.

The deflector servo for the Cat Arm generating unit has been requiring more frequent repairs to the actuator shaft seals. However, permanent component failure in the near term is not expected based on condition inspection. Hydro is planning to order a spare servomotor in recognition that degradation will continue and replacement will be required in the medium term. Additional seals have been stocked to mitigate availability risk of the deflector servo through the 2014/2015 winter season.

Similarly, condition analysis of bearing coolers for Unit 7 at Bay d'Espoir and the Upper Salmon generating unit indicate failure in the near term is not expected. Based on continued degradation, Hydro will be procuring new coolers to cover the medium term. Repair fittings for these coolers are stocked to mitigate availability risk in the unlikely event that a repair becomes necessary.

#### Gas Turbines

Hydro's 2014 critical spares review identified a number of critical components for the gas turbines at Hardwoods and in Stephenville. Of the parts rated as having high criticality, many are in stock and the remaining parts are ordered with expected delivery dates within the December to mid-January timeframe. Of these components, the auxiliary systems liquid fuel system fuel valve at Stephenville is the one critical spare that is being monitored closely to ensure availability. The fuel valve controller is expected on site by mid-December.

Both the Hardwoods and Stephenville gas turbines have undergone significant upgrade and refurbishment since 2011. As a result, many of the critical components in these generation facilities have recently been inspected and, where necessary, replaced or refurbished. When critical spares readiness for the gas turbines was evaluated in this context, there were no additional components identified as necessary for operations reliability over the coming winter season.

#### Thermal Generation – Holyrood

Hydro's comprehensive review of its critical spares plan at Holyrood confirmed that its highest criticality assets include the 4 kV motors which are used at different stages of the operation of its generating units. In particular, this analysis highlighted Forced Draft (FD) fan motors and Boiler Feed pump motors as being highly critical to generation reliability. The failure of a FD fan motor on Unit 3 in late December 2013 and the unavailability of a ready replacement for that part contributed to the duration of the Unit's unavailability in the early part of January 2014.

Hydro's critical spares plan for 4 kV motors was outlined in detail in its response to PUB-NLH-455 as well as in the application to purchase the motors, which was approved November 27, 2014 in Board Order No. P.U. 46(2014). This plan and application involves the procurement of four spare 4 kV motors (one FD fan motor and a boiler feed pump motor for each of the three generating units) as well as additional spare parts for these motors to supplement those already in inventory. These spares are currently being manufactured with an expected delivery date of February 2015. Manufacturing time has been extended from the original quotation due to a supplier shutdown not included in the original quotation. Hydro is working with the supplier to expedite all stages of the manufacturing and delivery process to obtain an earlier delivery. Condition monitoring data of the installed motors does not indicate any impending risks.

Currently, many of the components associated with Holyrood's top one-third most critical assets are in stock. Procurement is in progress for various others, in addition to the 4 kV motors as noted above, with expected delivery dates in December and through the end of January. In a few instances, the lead times on a small number of spares is ten weeks or greater. However, the reliability risks in these instances have been assessed as low given the condition of the assets involved and Hydro's preparedness to make repairs in the unlikely event of a breakdown. The components with lead time for delivery of ten weeks or greater are noted below:

- a) Flanged Fisher valve (Units 1 and 2);
- b) 4" type ET Class 300 fisher (Unit 3);
- c) 2" type ED Class 300 fisher (Unit 3);
- d) 2½" flanged ball valve cw/ actuator fisher (Unit 3); and
- e) ½" ball valve Jamesbury Corporation (Unit 3).

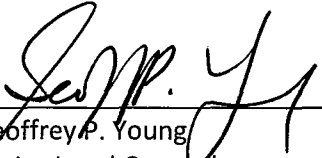
Similar to the situation with both the gas turbines and hydraulic generation, a considerable amount of preventive maintenance, corrective maintenance, and capital work has been completed at Holyrood in 2014 to ensure the winter readiness and reliability of these generation assets. Hydro is confident that this work, and the significant progress made on critical spares readiness in 2014, have placed Holyrood in a strong position from a winter readiness and generation reliability standpoint.

We trust that the foregoing is a helpful supplement to the information provided previously by Hydro in both its December 1 update report on generation winter preparation and in its responses to the recent Board Requests for Information related to generation critical spares.

If you have any questions or comments, please contact the undersigned.

Yours truly,

**NEWFOUNDLAND AND LABRADOR HYDRO**

  
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Senior Legal Counsel

GPY/jc

cc: Gerard Hayes – Newfoundland Power  
Paul Coxworthy – Stewart McKelvey Stirling Scales  
ecc: Roberta Frampton Benefiel – Grand Riverkeeper Labrador

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Danny Dumaresque