

February 4, 2021

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

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

Dear Ms. Blundon,

Re: *Reliability and Resource Adequacy Study Review – Labrador-Island Link Monthly Update – January 2021*

On November 21, 2019, the Board of Commissioners of Public Utilities (“Board”) requested that Newfoundland and Labrador Hydro (“Hydro”) provide further information as a result of the findings in The Liberty Consulting Group’s (“Liberty”) Eighth Quarterly Monitoring Report on the Integration of Power Supply Facilities to the Island Interconnected System. In its response, Hydro committed to providing Liberty and the Board with a monthly status update regarding the schedule for the Labrador-Island Link (“LIL”) software development and testing, updated information in response to the specific requests detailed in the Board’s November 21, 2019 correspondence, and other pertinent information with respect to the Muskrat Falls Project. On January 19, 2021, the Board requested Hydro continue monthly reporting and outlined specific information, at a minimum, to be included.

The monthly report has been adjusted to reflect the Board’s request, with the exception of information related to LIL monthly energy transfers and Maritime Link availability and exports and imports in the month. Both pieces of information are currently included in Hydro’s monthly energy supply report and are not available in a time frame that corresponds with the timing of this report. In order to ensure the most up-to-date information is provided to the Board, Hydro requests the Board’s understanding in continuing to provide this information through the existing method.

1.0 COVID-19 PANDEMIC EFFECTS ON MUSKRAT FALLS PROJECT EXECUTION

The safety of project workers and their families, the communities in which Nalcor Energy operates, and the public is of utmost importance to Nalcor Energy and the company is taking all responsible measures to protect people’s health and safety. The Lower Churchill Project (“LCP”) and its contractors continue to follow all COVID-19 Health and Safety measures as per the established guidelines.

The LCP is closely monitoring the COVID-19 pandemic and the risk to project commissioning schedules from further disruptions as a result of the pandemic. Further commissioning disruptions and delays could be realized as key commissioning team personnel from outside Newfoundland and Labrador are currently required to complete 14 days of self-isolation in St. John’s prior to accessing the Muskrat Falls work site.

2.0 LABRADOR-ISLAND LINK

2.1 Commissioning Activities

2.1.1 Bipole Commissioning

The dynamic commissioning test plan for Pole 1 was completed on December 15, 2020, followed by a period of power transfer over Pole 1 until Pole 2 was ready to start dynamic commissioning on January 7, 2021. Pole 2 dynamic commissioning tests were completed on January 31, 2021, including successful 225 MW heat run tests on both Pole 1 and Pole 2. All valve halls were inspected after the 225 MW heat run tests to confirm resistivity of beams; no issues were identified. Bipole Dynamic Commissioning commenced on February 1, 2021 and is scheduled to take approximately three weeks to complete.

On January 11, 2021, following an ice storm in southern Labrador, Power Supply discovered damage to electrode line one (“EL1”). As a result of the damage, dynamic commissioning tests were paused while the issue was assessed. After the investigation, it was determined that dynamic commissioning tests could proceed in monopole operation in metallic return configuration or through the use of ground return using electrode line two (“EL2”). Due to the safety concerns related to working on an energized line/tower with ice load on it, the LIL is offline when crews are working during the day. As a result, commissioning tests and operation of the LIL are continuing primarily in the evening. The interim bipole dynamic commissioning schedule has been updated to account for the pause in testing while the damage was assessed and for time when the LIL was offline for repair work. The updated schedule is outlined in Table 1.

With respect to the final valve hall remediation plan, a replacement beam prototype has been designed and manufactured and is currently at GE Grid’s facility in Stafford, England for testing. GE Grid’s current schedule for beam manufacturing is to have beams for one pole completed by the end of March 2021 and beams for the second pole completed by the end of April 2021. LCP has received a preliminary plan for the final valve hall remediation work; discussions are ongoing with GE Grid to finalize the plan by the end of February 2021.

2.1.2 Soldiers Pond Synchronous Condensers

All planned commissioning tests for Synchronous Condenser Unit 2 (“SC2”) and Synchronous Condenser Unit 3 (“SC3”) were complete in December 2020. Foundation remediation preparation work has advanced as far as possible without cutting concrete.

After conclusion of commissioning tests for SC2 and SC3, GE Power has reported that the elliptical bearing is a suitable solution to address the vibration issues. LCP and their external technical experts have reviewed GE Power’s SC3 elliptical bearing vibration analysis report and are actively engaged in discussions with GE Power regarding the requirement for foundation remediation versus accepting the elliptical bearing. LCP and GE Power executives are also engaged in commercial discussions regarding the two options. A final decision is expected in February 2021.

2.2 Operations

2.2.1 Labrador-Island Link Damage

On January 11, 2021, following an ice storm in Labrador, damage to some of the steel crossarms on the LIL towers that carry the electrode line between Muskrat Falls and L'Anse-au-Diable was discovered. The majority of the damage has been isolated to the electrode line, predominately, electrode line one (EL1); however, electrode line two (EL2) did experience minor damage. Currently, the damage identified is isolated to 8 of 1,229 towers in Labrador that carry both the pole and electrode conductors. In addition to the 8 damaged crossarms, 16 areas have been identified as experiencing electrode line conductor damage that require repair including one span where the conductor is broken and remains on the ground.

In accordance with its emergency response plan, Power Supply was able to call upon contract lines and snow clearing resources to support the repair work. In addition, Power Supply has leveraged resources from Hydro, Churchill Falls (Labrador) Corporation, and its internal work forces from Soldiers Pond and Muskrat Falls. Tracked equipment with extended reach was mobilized to enable access to the towers. One of the work areas is relatively close to the highway, enabling easier access, while the other work site requires snow clearing of approximately 65 km.

As of February 4, 2021, three crossarms have been replaced and nine conductor sections have been repaired. The material required for these repairs were readily available from the inventory maintained for such emergencies. The current repairs are anticipated to be complete in February 2021, with additional inspections planned to occur continuously as the ice from the storm is still on the transmission line. A detailed inspection is planned once the ice has melted from the line to determine if additional repairs will be required during the summer work season. A root cause investigation into the failure has commenced.

On the night of February 3, 2021, during bipole dynamic commissioning, the LIL experienced an unplanned trip on Pole 2 which resulted in the correct operation of the protection and controls software to switch from bipole to monopole operation on Pole 1. Crews in southern Labrador investigated the transmission line near Forteau and discovered that a Pole 2 insulator string on a dead end structure released from a crossarm causing it and the conductor to separate from the jumper and fall to the ground. There is no further information available at this time as the investigation is just underway. Preparation for repairs is underway.

2.2.2 L'Anse au Diable Grounding Site Damage

In early December 2020, an inspection of the L'Anse au Diable Grounding Site identified storm damage to the protective berm, grounding pad, and some electrical equipment. A detailed inspection of the damage was conducted and determined that four of the ten electrode distribution sections were damaged; two sections were deemed repairable. After review of the design, it was determined that the grounding site can operate with eight out of ten electrode sections operational, therefore there was no impact to the energization or operation of the LIL. The site clean-up and initial repairs were completed in December 2020. A review of the grounding site design will be conducted during the winter and a full repair, and potential redesign work, will be completed in the spring/summer of 2021.

2.3 Outages

There are no LIL operational outages to report for the month of January 2021.

2.4 Schedule

The current schedule for the bipole software is outlined in Table 1. As noted above, due to the pause in dynamic commissioning tests as a result of the electrode line damage, GE Grid has updated their Interim Bipole Software schedule. At this stage of testing, the schedule is dependent on island grid conditions, Maritime Link repair work, electrode line repair work, and weather, and therefore is subject to change. There has been no change to the Final Bipole Software schedule in January 2021; however, based on GE Grid’s performance to date the risk of schedule slippage for the final software is high.

Table 1: Bipole Software Schedule

Interim Bipole Software		
GE Grid Milestones	GE Grid Schedule	LCP Schedule
Interim Software to Site	October 29, 2020	October 29, 2020
Dynamic Commissioning: Complete	February 20, 2021	February 20, 2021
Trial Operations at Low Load: Start	February 21, 2021	February 21, 2021
Final Bipole Software		
Final Software to Site	May 20, 2021	May 31, 2021
Dynamic Commissioning: Complete	June 28, 2021	July 31, 2021
Trial Operations (at available power) ¹	June 29, 2021	August 1, 2021

3.0 MUSKRAT FALLS GENERATION

3.1 Commissioning Activities

3.1.1 Unit 1

Unit 1 was released for service and transferred to operations on December 22, 2020.

3.1.2 Unit 2

Following the December 2020 holiday break, the Andritz commissioning team completed 14 days of self-isolation in St. John’s prior to returning to the Muskrat Falls site, resulting in about a week delay in the restart of commissioning activities on Unit 2. Unit 2 offline testing resumed with the return of Andritz commissioning personnel in mid-January 2021.

Andritz has completed repairs to Unit 2 arising from the failure of the generator upper cooling air shroud during an overspeed test in November 2020.

Andritz has identified a design issue with the bolts between the inner and intermediate head covers for the generating units. The bolts are subjected to excessive radial loading during overspeed conditions. Andritz’s engineering team has developed a solution, which includes redesigned bolts and a series of

¹ Trial operations is complete after 30 consecutive days of power transfer without a system trip.

dowels between the two covers. Replacement parts for Unit 2 have been shipped to the Muskrat Falls site and modifications are underway. Andritz expects Unit 2 modifications to be complete by mid-February 2021 at which time mechanical commissioning will resume.

These delays have created schedule risk for Unit 2 and a subsequent schedule risk to Unit 3, with the in-service of these units potentially slipping into the following month. LCP will have further insight into potential schedule risks by the end of February 2021.

3.1.3 Unit 3

Unit 3 assembly is nearing completion with installation/assembly approximately 94% complete

3.1.4 Unit 4

Unit 4 rotor pole installation is ongoing with installation/assembly approximately 75% complete.

Modifications to the head cover bolts will be made to Units 1, 3, and 4; however, this work is not expected to impact the commissioning schedule for these units.

3.2 Operations

As noted in the section above, Andritz has identified a design issue with the bolts between the inner and intermediate head covers for the generating units. Andritz has recommended a monthly inspection to Unit 1 until the necessary modifications are completed. Timing of inspections and required modifications will be scheduled with operations.

3.3 Schedule

The forecast completion schedule outlined in Table 2 has been provided to LCP by Andritz:

Table 2: Muskrat Falls Generation Commissioning Schedule

Generating Unit	Completion of Commissioning and Ready for Operation	Status
Unit 1	December 22, 2020	Turned over to operations
Unit 2	March 2021	
Unit 3	May 2021	
Unit 4	September 2021	

4.0 STUDIES RELATED TO RELIABILITY AND RESOURCE ADEQUACY PROCEEDING

As per Hydro's correspondence of October 2, 2020, the "Assessment of the Labrador-Island Link Reliability Considering Climatological Loads" is expected to be filed with the Board by March 12, 2021, following which Hydro anticipates filing updates to Volume I and III of its "Reliability Resource Adequacy Study" on March 26, 2021. As communicated during the second technical conference related to the *Reliability and Resource Adequacy Study Review* proceeding on November 30, 2020, Hydro is proceeding with "An Assessment to Determine the Potential Longer Term Viability of the Holyrood Thermal

Generating Station.”² Hydro anticipates the findings of this work to be available for final consideration by the Board and parties by the end of 2021/early 2022.

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

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO



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² Hydro anticipates submitting an application for deferral of these expenses in the near-term.