

January 7, 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: The Liberty Consulting Group Eighth Quarterly Monitoring Report on the Integration of Power Supply Facilities to the Island Interconnected System – Monthly Update

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. Nalcor Energy (“Nalcor”) has provided Hydro with the following information on various aspects of the Muskrat Falls Project.

COVID-19 Pandemic Effects on Muskrat Falls Project Execution

Nalcor and its contractors continue to follow all COVID-19 Health and Safety measures as per the established guidelines. Since May 2020, significant emphasis has been placed on strictly adhering to public health guidelines at all Muskrat Falls Project worksites and locations.

As a company, Nalcor must do everything it can to keep people safe at its work sites and within the communities in which it operates. As COVID-19 cases continue to increase across the country, the Lower Churchill Project (“LCP”) has implemented an additional layer of safety for the Muskrat Falls Project and in November 2020 implemented COVID-19 testing for the project work sites.

All workers going to the Muskrat Falls site in Labrador are now tested for COVID-19 prior to going to site. Workers must receive a negative test result prior to being granted access to the Muskrat Falls site. For the Muskrat Falls and Soldiers Pond sites, Exempt Essential Workers (workers who receive permission under the Newfoundland and Labrador Special Measures Orders to work in the province) are tested prior to going to site and must receive a negative test result before being granted site access. These workers are re-tested to maintain their site access.

In addition to testing, the LCP continues to follow the stringent safety protocols it established for its work sites. The LCP has engaged the Department of Health and Community Services on its testing

protocols and will continue to follow its project pandemic response plan and recommendations from public health authorities.

The safety of project workers and their families, the communities in which Nalcor operates, and the public is of utmost importance to Nalcor and the company is taking all responsible measures to protect people's health and safety. The LCP has taken this precautionary and proactive approach to protect the health and safety of the workers on the project and the neighbouring communities.

Labrador-Island Link Software Development and Testing Schedule (Board Request #2)

The Board requested the schedule for LIL software development and testing and for Hydro to advise the Board on any future changes to this schedule, the reason for the change, and the implications of any delay for delivery of power and energy to the Island Interconnected System over the LIL.

Dynamic commissioning of Pole 1 recommenced on November 28, 2020 and the dynamic commissioning test plan was successfully completed on December 15, 2020. A post-dynamic commissioning inspection of the valve hall was conducted on December 16, 2020 and no further issues or degradation of beam resistivity were identified. On December 18, 2020, the LIL was re-energized with the intent to transfer power continuously on Pole 1 at a power level accepted by NLSO¹ until dynamic commissioning is ready to commence on Pole 2. Between December 18, 2020 and January 6, 2021, the LIL transferred power near continuously from Muskrat Falls and Churchill Falls with a peak power flow of 150 MW, delivering over 50 GWh of electricity to the island. The LIL experienced one trip, on the night of December 29, 2020, which was not related to the software (it was determined to be a hardware issue). The issue was resolved and the LIL was returned back to service on December 30, 2020.

Interim valve hall remediation work on Pole 2 is complete. Currently, all beams with a measured resistivity less than 1GΩ have been removed, heat cured, and reinstalled. Dynamic commissioning tests for Pole 2 started on January 7, 2021 with energization of the equipment planned for January 8, 2021. At that time, Pole 1 will be taken offline while Pole 2 commissioning tests are conducted. After successful completion of Pole 2 dynamic commissioning, GE Grid will start commissioning the bipole system. GE Grid has moved the start of Bipole Trial Operations to February 5, 2021, ten days earlier than previously scheduled.

As previously reported, the Final Valve Hall Remediation Plan will involve replacing all affected beams, even those that have been heat cured for the Interim Valve Hall Remediation Plan. Delivery of the replacement beams is a critical activity for determining final schedule. GE Grid has advised that the beam supplier is scheduled to start shipping beams by the end of the first quarter of 2021. Options for beam delivery and sequence of installation are being considered as part of the final plan. The Final Valve Hall Remediation Plan is expected from GE Grid in January 2021.

Development of the Final Bipole Software is progressing at GE Grid's facility in Stafford, England. Final software development is a continuation of the interim software, which means the code for interim is the basis for the final. Dynamic commissioning of interim software is not required in order to proceed with dynamic commissioning of final software; however, the interim software is an early indicator of the performance and reliability of the functions already developed. Issues identified during interim dynamic commissioning will be corrected during development of the final software. Dynamic commissioning of

¹ Newfoundland and Labrador System Operator ("NLSO")

interim software will reduce the amount of testing required for the final software and ideally reduce the number of issues discovered in the final version.

The current schedule for bipole software is shown in Table 1. As previously noted, trial operations of the interim software are expected to begin ten days earlier than previously reported. Timelines for the final bipole software have not changed from the previous monthly update.

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 4, 2021	February 4, 2021
Trial Operations at Low Load: Start	February 5, 2021	February 5, 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) ²	June 29, 2021	August 1, 2021

Synchronous Condenser Binding/Vibration (Board Request #4)

The Board referenced Liberty’s discussion of binding/vibration issues with the Soldiers Pond Synchronous Condensers (“SC”). The Board required Hydro to report on these two issues, including details of the problems and the investigation into their root causes, as well as a plan and schedule to address them.

SC Units 2 and 3 have been successfully operated and tested with hydrogen up to 130 MVar, which represents 75% load rejection testing. Due to system conditions, testing at higher MVar levels was not possible at the time. Noise and vibration data have been collected during the testing process and included in GE Power’s final analysis report.

With respect to the foundation remediation work intended to address the lateral vibration issue, the 100% design phase is complete and drawings have been issued for construction. GE Power’s contractor, Vector Construction, mobilized equipment and resources to Soldiers Pond in December 2020. GE Power submitted their final analysis report of the SC Unit 3 elliptical bearing performance on December 14, 2020. The LCP and external technical experts have reviewed the report and are actively engaged in discussions with GE Power regarding the requirement for foundation remediation versus accepting the elliptical bearing. A decision on the path forward is imminent.

Muskrat Falls Update

Unit 1

On September 22, 2020, Unit 1 was synchronized to the Labrador power grid for the first time, marking the achievement of the First Power milestone. Following completion of post commissioning inspections and preventative maintenance on Unit 1 intake gates, the unit was returned to service in December

² Trial operations are complete after 30 consecutive days of power transfer without a system trip.

2020. Since December 21, 2020, Muskrat Falls Unit 1 has been running continuously at its maximum output of up to 206 MW. Muskrat Falls Unit 1 was released for service on December 22, 2020.

Unit 2

In early November 2020, Unit 2 commissioning work was halted after the generator upper cooling air shroud rubber seal failed during an overspeed test. The generator shrouds are located above the rotor and are used to contain the air circulating through the machine. The shrouds are supported off the upper bracket and have a rubber seal which presses against the air seal on the stator.

The contractor completed its repairs to Unit 2 in December 2020. With repairs completed, the contractor will resume overspeed testing in January 2021. Completion of Unit 2 commissioning and Ready for Operation is forecast for March 2021.

Units 3 and 4

Unit 3 assembly is approaching completion. Completion of Unit 3 commissioning and Ready for Operation is forecast for May 2021.

The Unit 4 rotor pole installation is underway. Completion of Unit 4 commissioning and Ready for Operation is forecast for September 2021.

If you have any questions, please contact the undersigned.

NEWFOUNDLAND AND LABRADOR HYDRO



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