newfoundland labrador hydro
a nalcor energy company

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January 4, 2013

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: An Application by Newfoundland and Labrador Hydro (Hydro) pursuant to Subsection 41 (3) of the Act for approval of a capital project to refurbish the stop logs at the Burnt Dam Spillway

Please find enclosed the original and eight copies of the above-noted Application, plus supporting affidavit, project proposal, and draft order.

The project proposed in the Application is the refurbishment to the stop logs at Burnt Dam. In its 2012 Capital Budget Application Hydro proposed a project to upgrade the Burnt Dam Spillway. This project was the second year of a four-year program to upgrade mechanical and electrical equipment. The original proposal involved inspection, refurbishment, and replacement, including upgrading the stop log system and gate infrastructure.

By Order No. P.U. 2 (2012) the Board approved a condition assessment, and advised that Hydro could utilize a supplementary application for approval to proceed with work that was found to be necessary and appropriate to do before reassembly. The Board also approved the capital expenditure to install the stop log storage system in the amount of $266,400 as set out by Hydro in its response to Request for Information PUB-NLH-47 as well as the expenditure to complete the inspection in the amount of $257,440. That approved budget for the inspection was the estimate only for work by Weir Canada Inc., and did not include any amount for internal labour, contingencies, or other costs. Hydro anticipates this portion of the project will be over budget, but will remain consistent with its estimates[1], shown in the table below.

[1] These estimates were provided in response to PUB-NLH-47, and include all appropriate costs.

Table 1: Upgrade Burnt Dam - Costs[2]

SCOPE OF WORK	Internal Labour ($000)	Materials ($000)	Consultant ($000)	Contract Work ($000)	Other Direct Costs ($000)	Total ($000)
Refurbish Stop Logs	15.0	3.5	17.5	200.0	5.0	241.0
Install Stop Log Storage System	26.9	22.5	50.0	145.0	22.0	266.4
Inspect Structure Concrete and Embedded Parts	32.5	3.5	25.0	10.0	5.0	76.0
Inspect Gates	29.5	3.5	20.0	10.0	5.0	68.0
Inspect Main Hoist Gearbox	42.5	5.0	0.0	116.0	5.0	168.5
Inspect Gate Hoists	64.2	7.5	0.0	260.0	7.5	339.2
Inspect and Clean Gate Screw Stems	32.5	2.5	12.5	70.0	0.0	117.5
Clean and Inspect Drive Shafts and couplings	17.5	2.7	0.0	30.0	0.0	50.2
Subtotal	**260.6**	**50.7**	**125**	**841**	**49.5**	**1,326.8**
Overhead, IDC & Escalation						108.8
Contingency						132.7
TOTAL						**1,568.3**

Hydro will submit supplementary application(s), after the inspections are complete, for any required replacement or refurbishment work that exceeds $50,000. At this time, Hydro has established the scope for work and cost for refurbishment of equipment associated with Gate No. 1. The cost is $35,000, and therefore Hydro need not submit a supplementary application, but will proceed with the work. It is anticipated that a similar cost will be necessary for the second gate.

In order to complete the inspection of the spillway structure, Hydro requires that the stop logs be refurbished to safely isolate the gate well for inspection. Details and costs are included in the attached project proposal.

[2] Includes the proposal contained in this application.

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO

Geoffrey P. Young
Legal Counsel

GPY/jc

cc: Gerard Hayes – Newfoundland Power
Paul Coxworthy – Stewart McKelvey Stirling Scales
Thomas Johnson – Consumer Advocate
Dean Porter – Poole Althouse

IN THE MATTER OF the *Electrical Power Control Act,* RSNL 1994, Chapter E-5.1 (the EPCA) and the *Public Utilities Act*, RSNL 1990, Chapter P-47 (the Act), and regulations thereunder;

AND IN THE MATTER OF an Application by Newfoundland and Labrador Hydro pursuant to Subsections 41(3) of the Act, for the approval of refurbishment of the stop logs at the Burnt Dam Spillway.

TO: The Board of Commissioners of Public Utilities (the Board)

THE APPLICATION OF NEWFOUNDLAND AND LABRADOR HYDRO (Hydro) STATES THAT:

1. Hydro is a corporation continued and existing under the *Hydro Corporation Act, 2007*, is a public utility within the meaning of the Act and is subject to the provisions of the *Electrical Power Control Act, 1994*.

2. In Order No. P.U. 2(2012), the Board approved the inspection of the Burnt Dam Spillway.

3. In order to ensure safe access to the spillway for inspection, the stop logs must be able to prevent water from entering the gate well. The current condition of the stop logs does not provide this isolation. The attached project proposal provides details of the condition of the stop logs, as well as the scope of work required to refurbish the stop logs for safe access to the gate well.

4. Therefore, Hydro makes Application that the Board make an Order approving, pursuant to Section 41(3) of the *Act*, the capital expenditure of $284,100 for the refurbishment of the stop logs at the Burnt Dam Spillway.

DATED AT St. John's in the Province of Newfoundland and Labrador this 4th day of January, 2013.

Geoffrey P. Young
Newfoundland and Labrador Hydro,
500 Columbus Drive, P.O. Box 12400
St. John's, Newfoundland, A1B 4K7
Telephone: (709) 737-1277
Facsimile: (709) 737-1782

IN THE MATTER OF the *Electrical Power Control Act,* RSNL 1994, Chapter E-5.1 (the EPCA) and the *Public Utilities Act*, RSNL 1990, Chapter P-47 (the Act), and regulations thereunder;

AND IN THE MATTER OF an Application by Newfoundland and Labrador Hydro for the approval, pursuant to Section 41 (3) of the Act, of refurbishment of the stop logs at the Burnt Dam Spillway.

AFFIDAVIT

I, Robert J. Henderson, Professional Engineer, of St. John's in the Province of Newfoundland and Labrador, make oath and say as follows:

1. I am Manager, System Operations and Integration Support of Newfoundland and Labrador Hydro, the Applicant named in the attached Application.

2. I have read and understand the foregoing Application.

3. I have personal knowledge of the facts contained therein, except where otherwise indicated, and they are true to the best of my knowledge, information and belief.

SWORN at St. John's in the Province of Newfoundland and Labrador this 4th day of January 2013, before me:)

Barrister – Newfoundland and Labrador

Robert J. Henderson

A REPORT TO
THE BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

BURNT DAM SPILLWAY
REFURBISHMENT OF STOP LOGS

Newfoundland and Labrador Hydro

January 2013

newfoundland labrador hydro
a nalcor energy company

1 Introduction

The Bay d'Espoir Development includes three hydroelectric generating stations, six reservoirs, and associated dykes, dams, canals and hydraulic structures. The headwaters of the Bay d'Espoir Development begin at the Victoria Lake reservoir at an approximate elevation of 320 meters. The water travels through the Granite Canal Hydroelectric Generating Station (Granite Canal), Upper Salmon Hydroelectric Generating Station (Upper Salmon) and finally through the Bay d'Espoir Hydroelectric Generating Station (Bay d'Espoir) where it discharges at sea level. Additional water is collected, stored and diverted from drainage areas between Victoria Lake and the Long Pond reservoir which is the forebay for Bay d'Espoir.

The Burnt Dam Spillway, shown in Figure 1, is a critical hydraulic structure in the Bay d'Espoir Development. It allows water from the Burnt Pond Reservoir, a small uncontrolled reservoir south of the Victoria Lake Reservoir, to be released in a controlled, non-destructive manner when needed for flood control. Water discharged from Burnt Dam Spillway is lost from the Bay d'Espoir Reservoir System, and not available for production of electrical energy at Granite Canal, Upper Salmon and Bay d'Espoir generating stations. The spillway consists of two seven-meter wide steel gates which can release a combined 1,144 cubic meters per second of water at the maximum flood level.

The Board of Commissioners of Public Utilities (the Board), in Order No. P.U. 2(2012), approved an inspection of the Burnt Dam Spillway Structure. To be able to safely inspect the spillway structure, the stop logs have to be installed to prevent water from entering the gate well. The existing stop logs are currently not able to effectively isolate the gate well to allow for the inspection of the structure. This project is to refurbish the stop logs so that the approved inspections may proceed.

Figure 1: Burnt Dam Spillway Structure

2 Scope of Project

The stop logs are deteriorated in condition such that they cannot effectively provide isolation of the gate well. The scope of the project is the refurbish the existing stop logs so that they provide effective isolation of the gate well. This will include the following work:

- Replacement of stop log seals;
- Replacement of bolts; and
- Recoating of stop logs.

3 Justification

This project is justified on the requirement to replace failing or deteriorated infrastructure in order for Hydro to provide safe, reliable flood management for the Victoria Lake and Burnt Pond Reservoirs as well as fisheries compensation flow into the White Bear River. In order to ensure the safe and reliable operation of the structure Hydro began a four-year rehabilitation program for the facility. The majority of the scope of work for the second year of the rehabilitation program consisted of inspection of various components of the structure. The components to be inspected include:

- Gate Hoists (gearboxes, drive shafts, lifting screws);
- Gate Moving Parts (rollers, pins and bushings); and
- Structure concrete and embedded parts.

To complete the approved inspections and, if required, repair of the embedded parts a safe work site must be established. The establishment of a safe worksite is accomplished by installing the eight stop logs upstream of the control gates. Stop logs, as shown in Figure 2, are modular hydraulic gates used for the flow control and control structure isolation.

Figure 2: Burnt Dam Stop Logs – Current Storage Arrangement

In Burnt Dam, the stop logs are installed in dedicated slots upstream of the control gates to provide a safe work site in the gate well and to prevent spilling water when completing gate maintenance. The stop logs in Burnt Dam are constructed of steel and are supplied with a set of rubber seals. When the gates are installed in their slots, the seals compress, forming a water tight seal. The presence of leaks around the stop logs prevents work from being safely completed downstream of the stop logs. However, the stop log seals in Burnt Dam have deteriorated to the point that they do not effectively seal and leaks are occurring. The leakage between and around the stop logs is so severe that the approved inspections cannot be completed safely. The leakage of Burnt Dam stop logs into the worksite can be seen in Figure 3.

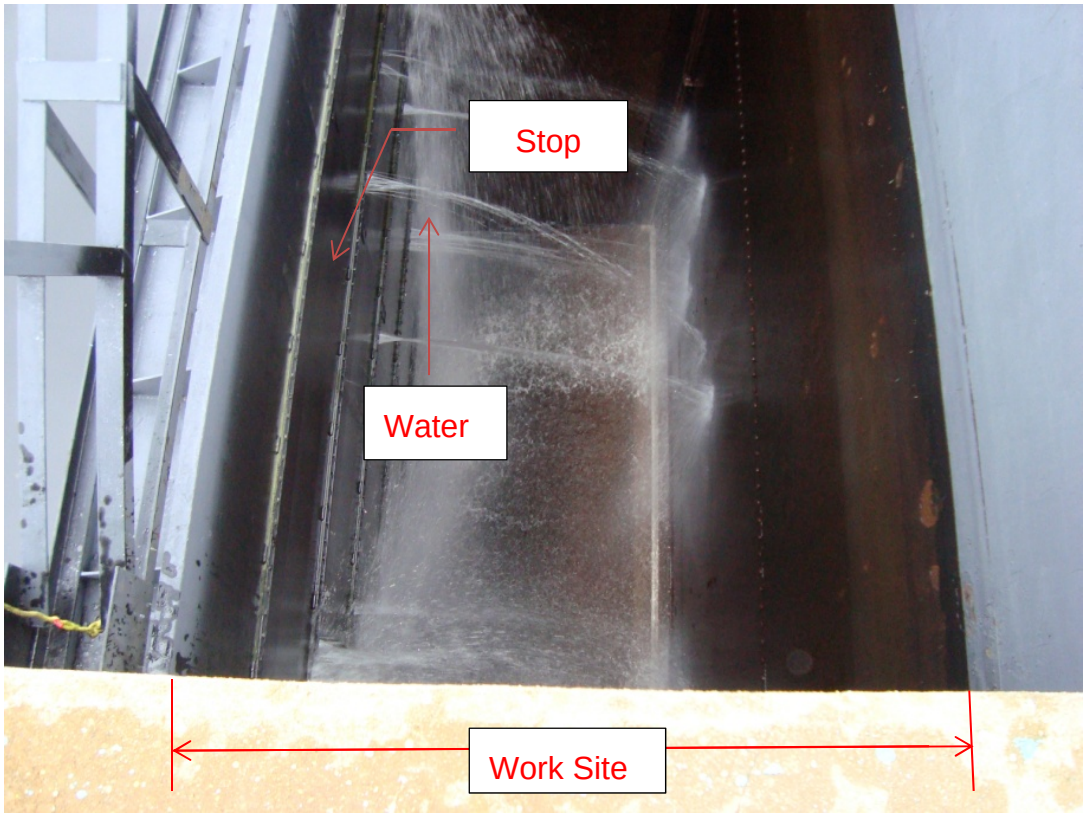

Figure 3: Leakage through installed stop logs into inspection site.

With the current condition of the stop logs, it is not possible to safely complete work on the gate and embedded parts. Therefore, Hydro is not able to complete the approved inspections as approved in Order No. P.U. 2 (2012). This will affect Hydro's ability to accurately determine

the extent of deterioration and rehabilitation required on the spillway. Likewise, when the rehabilitation requirements are determined, it would not be possible to safely complete the required repairs. In order to safely rehabilitate the spillway structure, the stop logs need to be returned to a good operating condition.

4 Conclusion

The rehabilitation of the stop logs is a key component of the overall refurbishment of Burnt Dam Spillway to ensure safe, reliable operation of the gates, allowing flood waters to be spilled in a controlled, non-destructive manner when reservoir levels reach prescribed levels, and allowing water to be released to protect fish populations. The inspections approved in Order No. P.U. 2(2012) are critical to ensuring the safe and reliable operation of the gate. To ensure these inspections are completed safely, the stop logs must be rehabilitated.

Project Estimate

The budget estimate to complete this project is provided below:

Table 2: Budget Estimate

Project Cost:*($ x1,000)*	**2013**	**Beyond**	**Total**
Material Supply	3.5	0.0	3.5
Labour	15.0	0.0	15.0
Consultant	17.5	0.0	17.5
Contract Work	200.0	0.0	200.0
Other Direct Costs	5.0	0.0	5.0
Interest and Escalation	19.0	0.0	19.0
Contingency	24.1	0.0	24.1
TOTAL	**284.1**	**0.0**	**284.1**

Project Schedule

The anticipated project schedule for this project is provided below.

Activity		Start Date	End Date
Planning	Open Job	Jan 2013	Jan 2013
Design	Prepare and Tender Required Contracts	Jan 2013	Feb 2013
Procurement	Award Contracts	Mar 2013	April 2013
Construction	Refurbish Stop Logs	May 2013	May 2013
Closeout	Prepare and Issue Required Documentation Close Out Project	May 2013 Jun 2013	May 2013 Jun 2013

(DRAFT ORDER)
NEWFOUNDLAND AND LABRADOR
BOARD OF COMMISSIONERS OF PUBLIC UTILITIES

AN ORDER OF THE BOARD

NO. P.U. __ (2013)

IN THE MATTER OF the *Electrical Power Control Act*, RSNL 1994, Chapter E-5.1 (the EPCA) and the *Public Utilities Act*, RSNL 1990, Chapter P-47 (the Act), and regulations thereunder;

AND

IN THE MATTER OF an application by Newfoundland and Labrador Hydro for approval to proceed with the refurbishment of the stop logs at Burnt Dam Spillway (the "*Application*"), pursuant to Section 41(3) of the Act.

WHEREAS Newfoundland and Labrador Hydro ("Hydro") is a corporation continued and existing under the *Hydro Corporation Act*, is a public utility within the meaning of the Act, and is subject to the provisions of the *EPCA* and

WHEREAS Section 41(3) of the Act requires that a public utility not proceed with the construction, purchase or lease of improvements or additions to its property where:

a) the cost of construction or purchase is in excess of $50,000; or
b) the cost of the lease is in excess of $5,000 in a year of the lease,

without prior approval of the Board; and

WHEREAS in Order Nos. P.U. 2(2012) and P.U. 5(2012) the Board approved Hydro's 2012 Capital Budget, including the inspection of the Burnt Dam Spillway; and

WHEREAS the Board approved supplementary 2012 capital expenditures in:
(i) Order No. P.U. 24(2012) in the amount of $492,100 for the refurbishment of the Cat Arm Road;
(ii) Order No. P.U. 25(2012) in the amount of $5,192,600 for the Stephenville Gas Turbine Alternator Rewind and Upgrade;
(iii) Order No. P.U. 26(2012) in the amount of $1,616,500 for the increase in generating capacity at Mary's Harbour; and
(iv) Order No P.U. 27(2012) in the amount of $3,155,000 for the refurbishment of the Cat Arm Dams; and
(v) Order No. P.U. 35(2012) in the amount of $199,700 to replace the damaged mechanical penthouse section of the Hydro Place roof; and

WHEREAS in order to ensure safe access to the spillway for inspection, the stop logs must be able to prevent water from entering the gate well which is not achieved with the current condition of the stop logs; and

WHEREAS on January 4, 2013, the Applicant applied to the Board requesting approval of the capital expenditure of $284,100 for the refurbishment of the stop logs at the Burnt Dam Spillway; and

WHEREAS the Board is satisfied that the supplementary capital expenditure for refurbishment of the stop logs at the Burnt Dam Spillway is necessary to allow Hydro to provide service and facilities which are reasonably safe and adequate and just and reasonable and should be approved.

IT IS THEREFORE ORDERED THAT:

1. Pursuant to Section 41 (3) of the *Act*, the Board approves the capital expenditure of $284,100 for the refurbishment of the stop logs at the Burnt Dam Spillway.

2. The Applicant shall pay all expenses of the Board arising from this Application.

DATED at St. John's, Newfoundland and Labrador, this day of , .

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