



Commission of Inquiry  
Respecting the  
Muskrat Falls  
Project

# Muskrat Falls: A Misguided Project



Volume 1: Executive Summary, Key Findings and  
Recommendations

Volume 2: Pre-Sanction Events

**Volume 3: Post-Sanction Events**

Volume 4: Looking Forward

Volume 5: Appendices

Volume 6: Exhibit Listing

The Honourable Richard D. LeBlanc  
Commissioner

March 5, 2020



**COMMISSION OF INQUIRY RESPECTING  
THE MUSKRAT FALLS PROJECT**

**MUSKRAT FALLS: A MISGUIDED PROJECT**

**VOLUME 3:**

**POST-SANCTION EVENTS**

**The Honourable Richard D. LeBlanc, Commissioner**

**Submitted to:**

**The Honourable Siobhan Coady  
Minister of Natural Resources  
for the Province of Newfoundland and Labrador**

**March 5, 2020**

**[www.muskratfallsinquiry.ca](http://www.muskratfallsinquiry.ca)**

## About This Report

This Report quotes heavily from testimony and exhibits presented at or to the Commission during the activities of its inquiry. Documentary evidence was catalogued and made available to the public on the Commission's website. When cited in this Report, these public exhibits are referred to by their individual number (for example, P-00001). Similarly, testimony given by witnesses during the public hearings was transcribed and made publicly available at [muskratfallsinquiry.ca](http://muskratfallsinquiry.ca). Quotes from testimony are cited with a date and transcript page number. Because both types of citations are so numerous in this Report, smaller type was used to reduce their intrusion in the text.

No changes to spelling or punctuation were made in any quoted material. The minimal additions to quotes that were made (for clarity) were inserted [like this].

It should also be noted that, unless otherwise indicated, all monetary figures are in Canadian dollars. As will be explained in more detail in the text, the "Muskrat Falls Project" and "the Project" both refer to the tri-part development that includes the infrastructure and generating station at Muskrat Falls, the Labrador-Island Link and the Labrador Transmission Assets.

For the convenience of the reader, a Glossary of terms, a list of Acronyms and a list of Names and Affiliations has been included in each of the first four volumes of the Report.

This Report is in six volumes.

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## CHAPTER 9: THE PERIOD FROM PROJECT SANCTION TO FINANCIAL CLOSE

During 2013, Nalcor, Emera, financiers and the governments of Newfoundland and Labrador, Nova Scotia and Canada continued to conduct negotiations for the financing of the Project and the Maritime Link, including the terms of the Federal Loan Guarantee. The formal legal documents for the FLG were eventually signed on November 29, 2013. The bonds for the financing were priced on December 10, 2013, and the funds were advanced on December 13, 2013. In this Report, the terms “Financial Close” or the “date of Financial Close” mean “on or before December 13, 2013.”

Nalcor’s Finance team led the Province’s negotiations in the months leading to Financial Close.

After the FLG Term Sheet was signed on November 30, 2012, Nalcor and Emera were required to satisfy several conditions precedent for the FLG (P-00065, pp. 7–8). As discussed in Volume 2 of this Report, they included a requirement that Emera obtain approval of the ML from the Nova Scotia Utility and Review Board. This approval was granted on November 29, 2013. The formal legal documents for the FLG were signed the same day. The UARB approval became an issue post-sanction of the Project, notwithstanding GNL’s understanding that this condition precedent had been met on December 17, 2012, the day it had formally sanctioned the Project. The Premier and Cabinet should have been aware of the risk in sanctioning the Project before the UARB approval (P-00067, p. 8).

### THE FEDERAL LOAN GUARANTEE AND FINANCIAL CLOSE COMMITMENTS

Several legal documents were signed at the time of Financial Close, including Project Finance Agreements, an Intergovernmental Agreement and Equity Support agreements.

In order to meet the conditions precedent for the FLG, GNL issued several Orders in Council proclaiming legislative amendments. As summarized by Tom Brockway of Grant Thornton in a review for the Commission (*Review of the Federal Loan Guarantees and the Power Purchase Agreement*), they included these key amendments (P-00454):

- OC2013-342
  - This order is titled the Muskrat Falls Exemption Order.
  - To satisfy the commitments of the FLG regarding rate regulations and cost recoveries associated with MF, LTA and LIL achieving

in-service, the passing of this order exempted MFCo, LTACo and LILCo from the Public Utilities Act and Part II of the EPCA [*Electrical Power and Control Act*].

- This order stated a public utility (with the following being acknowledged as public utilities for the purposes of this order: LIL Holding Corporation, LIL GP Corporation, LIL Limited Partnership, LIL Operating Corporation, Labrador Transmission Corporation, and Muskrat Falls Corporation) are exempt from the application of the NL Public Utilities Act and Part II of the EPCA.
- By passing the Muskrat Falls Exemption Order in combination with the signing and execution of the PPA, GIA, Transmission Funding Agreement, the LIL Assets Agreements and the LIL Lease Agreement, NL has satisfied its commitment under the FLG terms and conditions (as well as the Inter-governmental Agreement) to ensure the recovery of costs associated with MF, LTA, and LIL. This order restricted the PUB's ability to exercise its power and to perform their duties over MFCo, LTACo and LILCo by stating these entities are Public Utilities for the purposes of the MF Exemption Order and exempt from the NL Public Utilities Act (in combination with OC2013-343 noted below).
- OC2013-343
  - This order directed the PUB to adopt a policy that stated any costs, payments or compensation paid by NLH under any agreement within the scope of the Muskrat Falls Project Exemption Order including LILCo, LTACo, and MFCo shall be included as costs, expenses or allowances without any alterations, reductions or disallowances in NLH's cost of service calculation. This is to apply for any rate application or rate setting process to ensure that those amounts will be recovered in full by NLH in interconnected island rates charged to ratepayers.
  - Further, these costs noted in the point above, as well the NLH rates established, are not subject to subsequent review and will continue with no alterations, reductions or disallowances to these amounts.
  - Notwithstanding the two points above, no amounts paid by NLH as noted above will be included as expenditures or allowances in NLH's cost of service or any rate application or rate setting process whereby:
    - i. The amounts are directly attributable to the marketing or sale of power or energy by NLH to individuals or business outside the Province of NL on behalf of and benefiting MFCo; and

- ii. For each of MF, LTA and LIL until the time the Project is commissioned or nearing commission, NLH is receiving services from these Projects. (pp. 30–31)

All conditions precedent for the FLG were satisfied by November 29, 2013, which permitted Nalcor to sign the legal agreements required to access up to \$5 billion from lenders at Canada’s guaranteed interest rates.

At the hearings, many witnesses characterized the signing of the Financial Close documents on November 29, 2013, as the “point of no return” for the Project. Of greatest significance to the Province was its commitment to provide sufficient equity to complete the Project and to ensure that the debt guaranteed by the FLG would be paid back, in full, from revenue collected from Island ratepayers. On this point, Scott Shaffer of Grant Thornton testified (February 18, 2019, transcript):

Well, as I understand it, it was when the—basically, the paperwork was signed for the funding and, really, because of the certain terms in the financial close, is what I call the—basically the point of no return. It’s the point where the province is basically committed to doing this project. And if they were to step out from doing the project, then the Government of Canada could have come in, finished the project and have the province pay for those costs. (p. 35)

In his report, Mr. Brockway identified further consequences of the signing of the FLG documents (P-00454):

All documents associated with finalizing the financing for the Projects had to be executed and as part of this, the Guarantee Assurance Agreements and Project Finance Documents were executed. When these were taken in combination with the Equity Support Agreements and Equity Support Guarantees, this presented Canada (as the Guarantor), the step-in right to ensure the completion of MF, LTA and LIL. In addition, Canada also had the ability to continue to call on NL for equity contributions in order to complete the Nalcor projects to in-service. (p. 5)

The Intergovernmental Agreement signed on November 29, 2013, contained the following indemnity clauses (P-01809):

NL Commitments in FLG 3.5 A(v)(b)

4. NL hereby agrees to indemnify Canada for any Costs that Canada may incur under the Federal Loan Guarantee as a result of a Government Action that prevents a Project Entity from being able to recover Project Costs and fully servicing its Project Debt, which would otherwise permit the relevant Funding Vehicle to fully service its Guaranteed Debt (each an “Indemnifiable Event”).

...

NL Commitments in FLG 3.5 (A)(v)(c)

6. In the event that any failure to complete the Projects by the relevant Project Entity arises as a consequence of the failure of NL to comply with the commitments and requirements as outlined in Schedule B hereto, NL: (i) hereby indemnifies Canada for any Costs that Canada may incur under the Federal Loan Guarantee as a result of any Project not achieving Commissioning as defined in the MF\LTA MDA and the LIL MDA applicable to such Project and (ii) hereby acknowledges and confirms that the equity contribution obligations of Nalcor under the equity support agreements and of NL under the equity support guarantees (collectively, the “Equity Support Agreements”) described in Schedule C, remain in full force and effect in accordance with their respective terms. (p. 2)

In short, as these clauses and commitments indicate, there would have been harsh consequences for the Province had it decided to stop the Project after Financial Close.

At a press conference on December 10, 2013, Premier Dunderdale made these comments on the FLG (P-02724):

When the greatest moments of our history are recollected long generations from now, Newfoundland and Labrador’s historians will remember the choice that Prime Minister Stephen Harper made—the choice to stand beside our people in advancing the Muskrat Falls development under financing terms so advantageous that all Newfoundlanders and Labradorians will benefit. (p. 4)

The Grant Thornton review of the Federal Loan Guarantees and the Power Purchase Agreement summarized the conditions precedent for the negotiated FLG that were most significant for the Government of Newfoundland and Labrador (P-00454):

1. NL to provide the base level and contingent equity support required by Nalcor to support successful achievement of in-service for the components of the Nalcor projects. Base level equity is the amount of equity required to meet the required debt to equity ratios established in the FLG-1. Contingent equity is the amount of equity to cover further costs to achieve commissioning. This condition was achieved through the execution of the Equity Support Agreements and Equity Support Guarantees between Nalcor and NL.
2. NL would ensure that regulated rates for Newfoundland and Labrador Hydro (“NLH”) would allow it to collect sufficient revenue to recover all costs. This was achieved through the passing of various agreements including the PPA, Generator Interconnection Agreement, Transmission

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Funding Agreement, as well as the passing of a number of amendments to the Newfoundland and Labrador Energy Corporation Act (“ECA”) and the Electrical Power Control Act (“EPCA”). In particular, the legislation passed restricted the Newfoundland and Labrador Board of Commissioners of Public Utilities (“PUB”) from performing its duties and exercising its powers, so that regulated rates could not result in insufficient revenues to recover the costs of the Nalcor projects.

3. All documents associated with finalizing the financing for the Projects had to be executed and as part of this, the Guarantee Assurance Agreements and Project Finance Documents were executed. When these were taken in combination with the Equity Support Agreements and Equity Support Guarantees, this presented Canada (as the Guarantor), the step-in right to ensure the completion of MF, LTA and LIL. In addition, Canada also had the ability to continue to call on NL for equity contributions in order to complete the Nalcor projects to in-service.
4. The FLG-1 required the formalization of a regulatory framework in Nova Scotia through legislation and / or regulation. This condition was satisfied through the passing of the Maritime Link Act by NS on December 12, 2013.
5. As part of obtaining the financing and satisfying the FLG-1 pre-conditions, an independent engineer was required to be obtained for the Projects. The role of the independent engineer was to provide reports to the lenders and Canada. The first of the reports were to confirm that the budgeting and maintenance of the Projects were being conducted based on normal industry standards in Canada. These reports were to be provided to the lenders, Canada as well as the borrowers of the financing.
6. The cost overruns for each of the projects was to be funded with equity and/or additional debt. A separate account for each of the projects was set-up as part of the financing documents signed which established funds for which the eligible project cost overruns would be funded. The funding of these accounts was agreed upon and if these accounts become nil, any eligible project costs would then be funded through contingency equity contributions or additional debt. (pp. 5–6)

In 2012, GNL passed an amendment to the *Electrical Power Control Act, 1994* that provided Newfoundland and Labrador Hydro with the exclusive right to supply, transmit, distribute and sell electrical power and energy to the Island portion of the province. This restriction helped ensure the recovery of the full cost of the Project by giving NLH the exclusive right to collect revenues from Island ratepayers sufficient to pay for the Project. Ultimately, this exclusive right formed the basis for the creation of a legislated monopoly.

On November 29, 2013, the Power Purchase Agreement was signed by NLH and the Muskrat Falls Corporation (MFC), a Nalcor subsidiary. It stipulated that MFC would sell, and NLH would purchase, energy capacity, ancillary services and greenhouse gas credits. The payments would allow MFC to collect sufficient revenues every year to recover the amounts incurred for the purchase and delivery of the energy from Muskrat Falls. This requirement ensured that Island ratepayers, who could only purchase power that came from NLH as per the 2012 amendment noted above, would have to pay the full cost of the Project through the rates charged by NLH over the 50-year term of the PPA.

In exchange for these payments, MFC was required to provide NLH with energy to allow it to meet the requirements of Island ratepayers. The PPA further outlined specific requirements governing energy and capacity management, scheduling and terms related to MFC's ability to sell power to parties other than NLH and the mechanisms in place to recover the costs of the Project.

### **Cost Overrun Escrow Account Negotiations**

The FLG Term Sheet was signed on November 30, 2012. Section 4.10 described the procedure for funding Project cost overruns under the terms of the FLG (P-00065):

Cost Overruns for a Project must be funded with Equity and/or Additional Debt (subject to the provisions of section 4.8(a)) as follows:

- (i) Equal annual amounts calculated by dividing such Cost Overrun amount by the number of years remaining until COD [Commercial Operations Date]. Each annual payment shall be funded no later than the date of the first advance of Guaranteed Debt in each year prior to COD, and the first annual amount shall be funded prior to the first advance under Guaranteed Debt after such calculation is made;
- (ii) The Independent Engineer will confirm the Borrower's revised estimates of Expected Costs to Complete and any related changes to the construction schedule, all by way of an IE certificate; and
- (iii) Adjustments may be made to such funding requirements from time to time as estimates of Expected Costs to Complete (and related date at which COD is expected to be achieved) are updated or revised, all as confirmed by the Independent Engineer.

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The foregoing shall not in any way limit the enforceability of the provisions of Sections 3.1 or 4.8.

The expected costs to complete (“Expected Costs to Complete”) in respect of any Borrower at any given time shall be determined by the Borrowers and reviewed and confirmed by the IE by way of an IE certificate to be provided in connection with any drawdown requests prior to COD. The DG3 Capital Cost Estimates shall form the basis for the Independent Engineer’s review of and confirmation of any proposed changes to such estimates on an ongoing basis as construction proceeds. Expected Costs to Complete shall include contingencies and escalation. Expected Costs to Complete shall also include any interest during construction and costs associated with the Financing prior to COD, calculated on a pro forma basis. (pp. 12–13)

Thus Project cost overruns were to be funded by equity and/or additional debt (as defined in Section 4.8(a) of the Term Sheet) and paid in equal annual instalments until the Project’s Commercial Operations Date (as defined in Section 2.3). To illustrate this process with a simple example: if the cost overrun for any given year was estimated to be \$400 million and four years were left until the Project was completed, then Canada would require a yearly payment of \$100 million to be deposited in the Cost Overrun Escrow Account to fund that overrun.

During the FLG negotiations, Nalcor and GNL had strongly resisted including a COREA as a funding requirement. Both Nalcor and GNL considered the pre-funding of estimated cost overruns to be redundant, considering that GNL had agreed to provide Nalcor with sufficient equity to complete the Project. Canada was firm in its position, however, that the COREA provisions were required.

In 2013, during final negotiations for the FLG, Nalcor and GNL attempted to have the COREA requirements removed. As a Briefing Note of December 2, 2013, makes clear, Canada confirmed its position that the COREA requirements had to be included in the Financial Close agreements, since these requirements were stipulated in the Term Sheet signed on November 30, 2012 (P-03940, p. 2).

Negotiations on the COREA continued through November 2013. In notes taken during a meeting with Canada on November 21, 2013, Derrick Sturge, Nalcor’s Chief Financial Officer, wrote: “[T]hey do not believe our draft meets the defn of 4.10 in the Term Sheet” and “We are going nowhere on this issue. I believe they are correct. It was in the term sheet, we didn’t like it, but were squeezed to agree to it” (P-02523, p. 19).

On November 22, 2013, Nalcor sent a “package deal” to Canada to settle the outstanding business issues. The most significant of these was the cost overruns issue (P-03494):

On the cost overruns issue, Nalcor would agree to have funded cost overruns based on the Project budget as at financial closing (\$6.5B capital cost estimate and not the \$6.2B DG3 estimate) using substantially your definition of cost overruns. As such funding, if any, would only commence on the first anniversary of financial close. The funding would otherwise take place as per your draft with monthly reporting as per your draft and annual top ups if any. All deposits in the escrow account are included in the DER as equity only after the credit facilities are exhausted. Once debt is exhausted, we would have access to the escrow account to fund project costs without further equity investment until the escrow account is exhausted and the Contingency equity contributions would commence until Commissioning is achieved. If at commissioning any balance remains in the escrow account, it is released and may be distributed to Nalcor. (p. 2)

The reference in this proposal to a capital cost of \$6.5 billion and not the Project sanction amount of \$6.2 billion is discussed in Chapter 12 and elsewhere in this Report.

On November 25, 2013, Alison Manzer, external legal counsel for Canada, emailed Nalcor’s external counsel to advise that Canada accepted this revised wording and stipulated that the escrow payments needed to be included in the Equity Support Agreements and Equity Support Guarantees (P-02678, p. 2).

The final version of the COREA provisions are in Section 10.28 of the Project Finance Agreements (P-02361, p. 84; P-02353, p. 82). These provisions are technical and complex. Some of their basic provisions, however, are:

- Starting on the first anniversary of the first funds release date, and on each anniversary date thereafter up to the commissioning date, Nalcor and its subsidiaries shall cause the Lower Churchill Management Corporation to deliver to the collateral agent a Cost Overruns Certificate:
  - Reporting on the Cost to Complete
  - Advising of any changes to the Project Schedule and the expected Commissioning Date

- Confirming the amount of Cost Overruns, if any, as at the date of such certificate
- Confirming that any such Cost Overruns have been properly funded; the amounts set forth in the Cost Overruns Certificate shall be confirmed by the Independent Engineer in a certificate delivered to the Collateral Agent concurrently with the Cost Overruns Certificate which shall include comments by the Independent Engineer on the reasonableness of the Cost to Complete and the adequacy of the funding of the Cost Overruns

A Briefing Note prepared by GNL's Department of Justice on December 2, 2013, described the COREA process and corresponding changes in the Province's Equity Support Guarantee obligations. This Briefing Note identified the following key provisions (P-03940):

- Those commitments have been developed into two (2) agreements: an Equity Support Agreement (ESA), in which Nalcor commits to provide the equity investment as required to the Project subsidiaries; and the Equity Support Guarantee (ESG), in which the Province commits to provide equity requests made upon Nalcor if Nalcor does not or cannot fund. A separate ESA and ESG exists for the three project elements: Muskrat Falls, the Labrador- Island Link, and the Labrador Transmission Assets. The essence of these agreements is that the Province is providing a completion guarantee for each element of the Project.  
...
- The FLG also contained provisions which dealt with the use of equity to establish reserve accounts to cover actual and estimated cost overruns on an ongoing basis during construction. The provisions necessary to capture these commitments have been developed, negotiated and agreed between the parties since the October 31 drafts were reviewed by Cabinet. This has required subsequent amendments to the ESA and ESG to capture the additional equity funding obligations imposed by these provisions.
- The resolution to this issue requires the creation by each Project entity of a Cost Overrun Escrow Account with the following characteristics:
  - This account shall be established one (1) year from financial close. At that time, the Independent Engineer will provide an

assessment of the projected cost overruns for each of the Projects. The baseline for this cost overrun assessment will be the projected costs for each of the Projects as of financial close, as determined by the Independent Engineer;

- The Project entity will then be required to fund that projected cost overrun over the remaining anticipated years to commissioning, by placing equal annual installments into the account to fully fund the amount by the commissioning date;
  - The funds placed in this account will be funded 100 per cent from equity, and once deposited will otherwise be unavailable until commissioning. They may count towards the equity contributions of Nalcor/the Province, but will not be included in the calculation of debt/equity ratio unless and until actually expended, nor increase available corresponding debt financing; and,
  - In the event the Base Equity commitment and project financing are exhausted prior to commissioning, the funds in the Cost Overrun Escrow Account will be drawn on first to fund additional equity contributions; only once it were to be exhausted would additional equity contributions be required by Nalcor/the Province.
- The effect of these provisions is to increase the equity funding obligations from that which was originally planned, as in addition to actual expenditures equity needs now also be invested to cover anticipated cost overruns. (pp. 1–2)

The requirement to pre-fund projected cost overruns with equity meant that, every year during the construction period, GNL would have to borrow money to deposit into the COREA and thus would incur interest payments. As is discussed later, this was a contributing reason why the Project Management Team and the Nalcor executive felt a disincentive to report cost overruns to the Independent Engineer.

### **THE SECOND FEDERAL LOAN GUARANTEE**

As a result of significant cost overruns on the Project, the Province eventually required a second Federal Loan Guarantee (FLG-2). The documentation for FLG-2 was signed on March 30, 2017. The signatories were GNL, Canada and Nalcor's subsidiary companies.

There were three specific reasons for securing FLG-2: to secure an additional \$2.9 billion of debt financing, to reduce the equity required from GNL by \$2.7 billion and to reduce domestic electricity rates by 1.5 cents per kWh.

As summarized in Grant Thornton's review of the two FLGs and PPA, the terms and conditions of FLG-2 were generally consistent with those of the FLG, with the exception of the following new conditions (P-00454):

- guaranteed debt being up to \$1.85 billion for MF and LTA and up to \$1.05 billion for LIL;
- a guarantee fee of 0.5% of the net amount of the FLG-2 debt outstanding was introduced. This fee was to be included as part of the project costs to be recovered from ratepayers; and
- cost overrun escrow account payments ("COREA") were no longer required to be made and these payments were replaced with new annual equity prefunding requirements. (p. 7)

## EARLY CONTRACT BIDS

Between Project sanction and Financial Close, GNL authorized Nalcor to enter into some early contracts, to ensure that the 2013 construction season would not be lost. Bids were submitted on 12 work packages prior to Financial Close. Totalled, they were \$599 million (approximately 25%) above the DG3 budget amount (P-01677, pp. 11–12).

In a second forensic audit report prepared for the Commission (*Construction Phase*, December 7, 2018), Grant Thornton provided the following summary and implications of these circumstances (P-01677):

As indicated above, prior to financial close, bids were received from contractors whom ultimately were hired which collectively, exceeded the DG3 budget by approximately \$600 million, a twenty five percent (25%) overage. The amount of this overage exceeded the DG3 tactical contingency amount (\$368 million) by over \$230 million. Hence, prior to financial close, Nalcor should have been aware that the contingency amount included in DG3 budget was insufficient. Furthermore, Nalcor should have known that by April 2013 when the CH0007 bids were received (four months after sanctioning) that the DG3 contingency amount was exhausted. Accordingly, Nalcor knew that the remaining budget of \$4.2 billion (\$5.8 billion which is base plus escalation, less \$1.6 billion subtotal of DG3 budget at April 2013) after the consideration of CH0007 did not have any contingency remaining.

In an interview with Paul Harrington, LCP [Lower Churchill Project] Project Director we asked him if there was anything that precluded Nalcor from re-baselining and re-running the Cumulative Present Worth (“CPW”) when they knew the contingency was exhausted in April 2013. Mr. Harrington responded, “*Not my call.*” To clarify, we asked whose call it was. He responded, “*Senior management [Ed and Gilbert] . . . and Government.*” (p. 12)

By April 16, 2013, the variance between the known information on contract bids and the DG3 estimate was approximately 23% more than the entire Project contingency amount (\$368 million), as shown in the following table:

Contract Bids and Awards before Contingency Exhausted					
Package		DG3 Budget \$ millions	RFA Value * (\$ millions)	Contract Variance (Fav)/Unfav	
				\$ millions	%
CH0030	Supply and install turbines and generators	\$ 205	\$ 189	\$ (16)	-7.8%
CH0002	Supply & install accommodations complex & utilities	85	150	65	76.5%
CH0004	Construct southside road	40	34	(6)	-15.0%
CH0006	Bulk excavation	140	129	(11)	-7.9%
CH0024	Reservoir clearing (north & south banks)	148	131	(17)	-11.5%
CT0319	Construct HVAC transmission line (to Churchill Falls)	200	258	58	29.0%
CH0007	Construct intake, powerhouse, spillway & transition dams	781	1,081	300	38.4%
<b>Sub-total</b>		<b>\$ 1,599</b>	<b>\$ 1,972</b>	<b>\$ 373</b>	<b>23.3%</b>

\* RFA (Recommendation for Award) value which is inclusive of growth allowances based upon identified package risks. The RFA value could differ from the actual value awarded for the contract.

Figure 3.1: Contract Bids and Awards Before Contingency Exhausted  
(Source: P-01769, p. 35)

By Financial Close, bids on five other contracts had been received. These bids exceeded the DG3 budget by an additional \$226 million, as shown in the following table:

Contract Bids and Awards after Contingency Exhausted, before Financial Close					
Package		DG3 Budget \$ millions	RFA Value * (\$ millions)	Contract Variance (Fav)/Unfav	
				\$ millions	%
CH0032	Supply & install mechanical & electrical auxiliaries	157	250	93	59.2%
CD0503	Switchyard & converter earthworks	68	60	(8)	-11.8%
CD0501	Supply & install HVDC convertors	433	490	57	13.2%
CD0504	Civil works & buildings for converter station & switchyards	29	79	50	172.4%
CD0502	Construct AC switchyards	154	188	34	22.1%
<b>Sub-total</b>		<b>841</b>	<b>1,067</b>	<b>226</b>	<b>26.9%</b>

\* RFA (Recommendation for Award) value which is inclusive of growth allowances based upon identified package risks. The RFA value could differ from the actual value awarded for the contract.

Figure 3.2: Contract Bids and Awards After Contingency Exhausted Before Financial Close  
(Source: P-01769, p. 35)

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When asked what he would expect an owner to do if bids were coming in higher than the estimate, Keith Dodson of Westney Consulting Group testified: “Cancel the project and reassess.” He later expanded on this response, by adding: “Well, when they [owners] get bids that are higher than the sanctioned price, well then they typically cancel the bid, sometimes they pay the bidders, you know, something for their effort, and they reassess the project” (February 25, 2019, transcript, pp. 40–41).

There is no evidence that Nalcor revised the DG3 cost estimate between April 2013 and November 2013.

I find it egregious that Nalcor failed to advise GNL in April 2013 that, based on the bids received by that point, the Project’s \$368 million contingency was already exhausted. Furthermore, between April and November 2013, Nalcor received more bids that exceeded the DG3 cost estimates by an additional \$226 million. All of this was critical information that, had GNL been informed, most certainly would have caused it, acting responsibly, to at least reassess the Project.

On November 19, 2013, ten days before the Financial Close documents were signed, Nalcor reduced the contingency in a Forecast Final Cost estimate from \$368 million to \$183 million. Paul Harrington stated the justification for this reduction in an email sent to James Meaney, then Nalcor’s General Manager of Finance, on November 21, 2013 (P-02229):

Cost – We know we have approx 2/3rds of the total Project estimate firmed up as completed contracts, delivered Po’s or firm priced executed contracts or LNTP’s. The net effect of this is a cost increase of ~5% which results in the \$6.531B—so there is \$2.2B left to firm up with contracts and PO’s—the cost to complete as far as we know today is \$6.531B and we believe that the greatest budget hits are already behind us and even if in the worst case the 5% increase in cap cost we have seen continues to be experienced for the next \$2.2B (which we do not accept at this time) the \$6.531 would not exceed \$6.641. So we are now out of the realm of estimating theory and into the world of fixed and firm contract and PO costs. So MWH [MWH Canada, the Independent Engineer] can be assessing actual fixed and firm costs that we have and then focus on the costs we have yet to firm up and again using their experience look at the cost situation and pass an opinion on the reasonableness of our revised budget of \$6.531B. (p. 1)

I reject Mr. Harrington’s explanation. In November 2013, construction was in its early stages, the bids that had been received were approximately 25% higher than the DG3 estimates for these contract packages and the bids for many other large work packages had not yet been received. In these circumstances, Nalcor knew, or ought to have known,

that a contingency of \$183 million was grossly inadequate for a Project of this size and complexity.

## NOVA SCOTIA'S UARB REVIEW AND ITS CONSEQUENCES

In Newfoundland and Labrador, the Project and the Maritime Link were exempted from the regulatory oversight of the provincial utility regulator, the PUB, as noted earlier. In contrast, Nova Scotia had legislation that required its regulator, the Nova Scotia Utility and Review Board, to review and approve the ML before its cost could be passed on to ratepayers.

The sequence of events connected to the UARB's consideration of the Maritime Link is as follows:

**May 9, 2012:** The Government of Nova Scotia introduced the *Maritime Link Act*, SNS 2012, c. 9 in its legislature.

**May 9, 2012:** In St. John's, Deputy Minister of Natural Resources Charles Bown commented on the Nova Scotia bill in an email to his Minister, Jerome Kennedy (P-01252):

The Bill exempts project from the requirement in their Public Utility Act that the project must have approval from the UARB before its [sic] commences construction of a project. It is also exempts the project from the requirement that the rates charge for the power be approved by the UARB.

Minister has authority to set regulations which may include: the timing of the hearing; the subject matter to be considered, the criteria for approval by the UARB, timing and steps involved in the hearing, and any other matter the LGIC feels is advisable.

Its [sic] similar to our current situation. MF is exempt from PUB oversight, we set the terms for the PUB review and with the legislative changes, we will ensure rates are included in the general rates base without referral to PUB. (p. 1)

**May 10, 2012:** Premier Dunderdale commented on the Nova Scotia bill in the Newfoundland and Labrador House of Assembly. Her comments were reported in the media (P-01621):

### **Nova Scotia Following Our Lead: Premier**

New legislation in Nova Scotia ensures the Maritime link for the Muskrat Falls project will be reviewed by their own utility board. The Liberals here say that

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review will be more thorough than what we've seen in Newfoundland and Labrador. In the House of Assembly yesterday, Dwight Ball asked Kathy Dunderdale why Nova Scotia was getting a more rigorous review, but the premier says they're actually taking a page from the Newfoundland Tory book.

Dunderdale says the bill before the legislature in N.S. will allow the government to set parameters of the review like what was done here by the government of Newfoundland and Labrador. (p. 1)

**July 5, 2012:** Mr. Bown, with advance notice of the draft *Maritime Link Cost Recovery Process Regulations*, NS Reg. 189/2012, under which the UARB was to be directed in its review of the ML, prepared a draft letter (which was never sent) from Premier Dunderdale to Premier Dexter of Nova Scotia (P-01417):

I understand that you are considering a much broader scope for the UARB review of the Maritime Link project and a longer timeline.

You'll recall that, at our meeting in St. John's, you agreed to provide the UARB with a narrow scope. This would see the UARB review only the Maritime Link and no other alternatives. You also agreed to ensure that the review would be completed by the end of December.

I have been advised that you are now considering allowing the UARB to follow its normal regulatory process which gives it scope to review any alternative it wishes within the parameters of your Renewable Energy act and the pending federal coal regulations.

One of the reasons we held the meeting in St. John's was to ensure that we are aligned on our respective approach to developing both Muskrat Falls and the Maritime Link. Your letters to Premier Charest caused me great concern as it gave the appearance that you don't fully support our project.

I'm lead [*sic*] to believe that the expanded scope for the UARB opens the door again to the import of power from Québec. Not only is this unacceptable, the expanded process is inconsistent with the approach my government took in restricting the PUB regulatory review. This inconsistently [*sic*] will create a big headache for my government.

In order to advance this project on a schedule that would see first power in 2017; we must sanction in October–November this year. The federal government has linked our projects for the purpose of the Federal Loan Guarantee and the conclusion of the Terms Sheets for the Guarantee is required for project sanction.

A delay in the UARB process either through expanding the process or delaying its ability to report back on the Maritime Link application, means that we will

be forced to shut down spending on the Project and delay the project for a year.

I recognize that you are headed into an election and have some other regulatory matters that require attention. However, it is not appropriate to push the entire risk for the Muskrat Falls project in our lap.

We must be aligned on our approach to Muskrat Falls and the Maritime Link and we need to speak with a united voice to the Government of Canada. This project is important to both our provinces. (p. 1)

**July 13, 2012:** Nova Scotia released a draft of the *Maritime Link Cost Recovery Process Regulations* for a public consultation process.

Initially, Nova Scotia believed that the ML was the best supply option, but after consulting with the UARB it concluded that this belief required independent confirmation by the UARB in order to satisfy the public interest.

**October 2, 2012:** Both the *Maritime Link Act* and the *Maritime Link Cost Recovery Process Regulations* were proclaimed in force. The regulations included:

### **Application and review**

- 5 (1)** The Review Board must approve the Maritime Link Project if, on the evidence and submissions provided, the Review Board is satisfied that the project meets all of the following criteria:
  - (a) the project represents the lowest long-term cost alternative for electricity for ratepayers in the Province;
  - (b) the project is consistent with obligations under the *Electricity Act*, and any obligations governing the release of greenhouse gases and air pollutants under the *Environment Act*, the *Canadian Environmental Protection Act* (Canada) and any associated agreements.
- (2)** An applicant must provide the Review Board with the best information and evidence available at the time to apply the criteria in subsection (1).
- (3)** In its approval, the Review Board may order any terms and conditions it considers necessary.
- (4)** The Review Board must make a decision under Section 5 no later than 180 days after the date the applicant submits an application.
- (5)** An application must include all of the following:

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- (a) a statement of the purpose of the Maritime Link Project, including the reasons for the project and the specific relief being requested of the Review Board;
  - (b) a summary of the commercial transactions with Nalcor Energy together with copies of all relevant agreements;
  - (c) engineering and design details sufficient to enable the Review Board to approve the Maritime Link Project in accordance with subsection (1);
  - (d) capital and operating cost estimates for the Maritime Link Project, including proposed capital structure and return-on-investment;
  - (e) capital and operating cost estimates for Muskrat Falls, Labrador transmission assets and the Labrador-Island Link, together with supporting engineering and design evidence;
  - (f) an analysis of lowest long-term cost alternatives to the Maritime Link Project;
  - (g) anticipated schedule of construction and in-service schedule for the Maritime Link, as contemplated under the Nalcor Transactions.

### **Variance with respect to approved costs**

- 6 (1)** If requested by an applicant, the Review Board must establish a variance with respect to the approved cost of the Maritime Link Project.
- (2)** The size of the variance must be set by the Review Board.
- (3)** If at any time there are Project costs that exceed the variance established under this Section, an applicant must apply to have the excess costs approved by the Review Board in accordance with Section 8.

It should be noted that the reference to “lowest long-term cost alternative” in s. 5(1)(a) of the regulations is in contrast to the “least-cost option” wording in GNL’s Reference Question to the PUB, discussed in Volume 2 of this Report.

It is clear that before GNL became aware of the draft regulations it believed that Nova Scotia was planning to conduct a review of the ML that was as constrained in scope and powers as GNL’s Reference Question to the PUB. This initial impression was incorrect. Rather than subject the ML to a limited review, as GNL chose to do, Nova Scotia gave its

UARB full regulatory authority over the ML. This empowered the UARB not only to approve or deny the ML, but also to impose conditions on any approval so that it could obtain the greatest possible benefits for Nova Scotia ratepayers.

**November 28, 2012:** Representatives of Canada, Chris Huskison (Emera’s CEO), Nalcor’s Edmund Martin and the Chiefs of Staff for the NL and NS premiers attended a meeting to come to an agreement on the exact meaning of the word “sanction.”

This meeting was needed because the FLG Term Sheet of November 18, 2012, did not define “sanction”—yet “sanction” of the Project and the ML was a condition precedent for Canada providing the loan guarantee.

The definition of sanction had been a contentious point during negotiations with Canada. Derrick Sturge testified that discussion of the sanction definition occurred “at a political level” at the November 28 meeting (March 27, 2019, transcript, p. 22). I am unable to determine the outcome of the meeting from the evidence before me.

**December 5, 2012:** Nalcor’s board of directors voted to sanction the Project.

**December 5, 2012:** The Newfoundland and Labrador House of Assembly voted on Premier Dunderdale’s private member’s resolution in support of the Project following a two-hour debate. All 36 members of the governing Conservative Party, as well as Independent MHA Tom Osborne, voted in favour of the Project. Given the Conservative majority in the House of Assembly, the result of the vote was a foregone conclusion and largely symbolic.

**December 6, 2012:** All members of Premier Dunderdale’s Cabinet signed a Cabinet paper which authorized Nalcor sanction and proceed with the development of the Project. The Cabinet paper also authorized the Department of Finance to make the base and contingent equity contributions necessary to complete the Project.

**Early December 2012:** Throughout the first half of December, Nalcor and Emera conducted negotiations for a Sanction Agreement, to formalize the sanction of the Project and the ML.

GNL wanted to announce that the Project had been sanctioned and that the FLG had been approved. However, if the UARB did not approve the ML, it was unlikely that the FLG would be approved.

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**December 10, 2012:** Edmund Martin and Derrick Sturge met with Premier Dunderdale, Minister Thomas Marshall and other senior GNL staff regarding negotiations with Emera.

In his testimony, Mr. Sturge described this as a “checkpoint” meeting to update GNL on these negotiations. He wrote in his notes at the time that the Premier mentioned a “need to move now” and “huge pressure and tension” and that she was “really focused on NS backing off on deal we had with them on Nov[ember] 29.” Mr. Sturge also wrote: “Really hitting me how little some of the political folks know about the deal” (P-00879). Mr. Sturge further testified: “Clearly there was something going off the rails there of what we thought, or what the premier thought was the way it was playing out and I made that comment” (October 31, 2018, transcript, p. 90). However, he could not remember which individuals he was referring to as “political folks” (p. 91).

**December 17, 2012:** In an effort to fulfill the FLG condition precedent that the Project and the ML be sanctioned, Nalcor and Emera signed a Sanction Agreement. In this document, Nalcor and Emera agreed to sanction the Project and the ML simultaneously and, upon that sanction, Emera committed to complete and commission the Maritime Link in accordance with the terms of the Sanction Agreement and other formal agreements.

Section 5(a) of the Sanction Agreement contemplated “Negotiations upon Certain Circumstances” that would apply if the UARB did not approve the ML, or if it approved it with conditions unacceptable to GNL or Nalcor. In such circumstances, notwithstanding anything else in the Sanction Agreement, “Nalcor and Emera will attempt to reach a mutually satisfactory resolution of such issues with the goal of ensuring that the Maritime Link is built. For greater clarity, each Party shall be free to make its own decision as to the resolution of such issues in its sole and absolute discretion” (P-02966, p. 15).

The inclusion of the “absolute discretion” clause is very important. Although GNL had already decided to sanction the Project, Emera retained the right to exercise its “sole and absolute discretion” to make whatever decision it chose if the UARB did not approve the ML application (P-02966). This seems clear in the Agreement, yet—for reasons that were never properly explained—Nalcor maintained that the Sanction Agreement still satisfied the FLG condition precedent that the Project and the ML be sanctioned. According to Mr. Sturge (October 31, 2018, transcript):

I think what Canada had said is you guys go and work this out commercially between yourselves, which we did, and the sanction agreement really was that commercial agreement.

And I think our view at that point is with the sanction agreement in place and then the sanction of Emera and the sanction of Nalcor, that we had satisfied that condition and we're ready to move forward. (p. 38)

Premier Dunderdale testified that her officials and Edmund Martin “absolutely” assured her that the Sanction Agreement satisfied the condition precedent for the FLG, noting (April 2, 2019, transcript):

[I]n December, it was my belief that all of those demands had been met, we were in a good place. Negotiations were done, and everything was copper fastened down. There was a road forward over the next . . . six, eight, ten months to show the federal government that we could meet all the conditions present [*sic*], and then we could come to financial close. But for all intents and purposes, we could move forward with the work. . . . And when I found out in March that that wasn't the case, then I was very upset. (pp. 7–8)

After signing the Sanction Agreement on December 17, Emera announced its sanction of the Project in a press release (P-01675). Mr. Huskilson, Emera's CEO, was quoted in the release as saying: “Emera firmly believes that this project is the best and lowest-cost option for Nova Scotia, and that it will be an important component in meeting the province's clean energy needs for generations to come” (P-01675). Emera's announcement of sanction included an important qualification, however:

Today's agreement to sanction the project preserves the benefits of the Federal Loan Guarantee for Nova Scotians **while upholding the role of the regulator in Nova Scotia,**” said Mr. Huskilson. “Emera is applying to the UARB for a full review of the Maritime Link project to ensure Nova Scotia electricity customers receive the lowest-cost option for long-term renewable energy. We look forward to filing our complete application with the UARB next month and fully explaining the benefits of this project to customers in Nova Scotia.” (emphasis added, p. 1)

On December 17, 2012, Project sanction was announced at a ceremony at the Confederation Building in St. John's (P-00066). This occurred notwithstanding that the Cabinet Submission on the sanction decision, prepared by the Department of Natural Resources, had correctly noted that: “The FLG is contingent on sanction of both Muskrat Falls and the Maritime Link Project” and that “Emera is not required to sanction the Maritime Link until after the UARB completes its review” (P-00067, p. 7), which confirms that there was an obvious divergence of views within GNL about what constituted Project

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sanction. I recognize that this Cabinet submission was prepared before the completion of the Sanction Agreement, but it is clear that the issue of the UARB approval was well known in early December 2012.

Nevertheless, Nalcor satisfied the GNL politicians that the Sanction Agreement meant that the Maritime Link was actually sanctioned in Canada's eyes regardless of the UARB process. This is evident from both Ms. Dunderdale's testimony and Mr. Kennedy's handwritten notes of a meeting with Edmund Martin on December 17, 2012 (P-01301).

Nalcor did not attempt to confirm with Canada that the Sanction Agreement would satisfy the condition precedent of the FLG—it merely had a “belief” that it would work. This was a remarkably reckless basis on which to proceed to sanction such a large project. I find that Edmund Martin and Nalcor misled Premier Dunderdale and GNL into believing that the FLG was a certainty, when it was actually contingent on upcoming events in Nova Scotia, the outcome of which could not be predetermined.

GNL officials could also have independently confirmed with officials of Canada their understanding that the condition precedent had been met. However, like Nalcor, GNL did not do so. As a result, the Cabinet proceeded to announce sanction of the Project based on the false premise that the Sanction Agreement with Emera conclusively satisfied the condition precedent for the FLG. This is surprising, if not incomprehensible.

**January 28, 2013:** Emera's subsidiary, Nova Scotia Maritime Link, filed the application for approval of the ML with the UARB.

**March 12, 2013:** Alison Manzer, legal counsel for Canada, emailed counsel for Emera stating, in part (P-02703):

We have continued to struggle with the resolutions and the Sanction Agreement as to whether we have sanction or only a conditional sanction which does not meet the requirement of the condition precedent until the condition is met. We have not been able to conclude that the sanction as presented meets the condition as it remains conditional on the UARB results.

If the Nova Scotia UARB does not issue a ruling that is an approval, or issues a ruling that is outside of the agreed parameters set out in the Sanction Agreement, Emera will not be obliged to proceed on the basis it has approved by the form of sanction. Rather, there will need to be a re-negotiation process completed to require proceeding and that is in Emera's discretion. In that case the previously approved resolutions will fall away and approval of the new re-negotiated arrangement would be needed in order to proceed. In other words,

a different “deal” would have to be sanctioned by Emera. Given the legal requirement for the UARB ruling and that the revenue support for the project finance is dependent on that result, which is out of the control of Emera, the conditionality of the sanction is such that we cannot accept the proposition that sanction is complete until that UARB ruling has been issued. Rather, while we can accept the resolution as effective sanction subject to that condition, we must wait for the result of the UARB to finalize the sanction under this construct of the requirement for sanction. (p. 2)

During his testimony, Derrick Sturge was asked repeatedly to provide an explanation for Nalcor’s position that the Sanction Agreement satisfied the condition precedent. When asked why Nalcor did not seek confirmation from Canada that it did so, he pointed to the discussions around the Sanction Agreement that had taken place at the political level at the end of November, and to information relayed to him thereafter by Edmund Martin (March 27, 2019, transcript, p. 21). As the following exchange during the hearings shows, Mr. Sturge ultimately acknowledged that the Sanction Agreement did not satisfy the condition precedent (March 27, 2019, transcript):

**MR. STURGE:** —because the issue there was that what Ottawa wanted—or Canada wanted was sanction, they wanted the project sanctioned. So that was effectively what we had agreed. So, we were giving them exactly what they wanted—we were sanctioning the project.

**MR. LEARMONTH:** Well, if they—if you gave them exactly what they wanted, why did this thing blow up in or about March 2013?

**MR. STURGE:** I think—I think the reason it blew up is that when they dug in a bit more, they found that Emera hadn’t really sanctioned. (p. 22)

Mr. Sturge went on to testify that “the sanction agreement is a complex agreement. But what we were agreeing is that we would each sanction the project, and then if there were outcomes, there was a process of how we would deal with those between ourselves” (March 27, 2019, transcript, p. 24).

I find that the Sanction Agreement did not provide a rational basis for Nalcor’s position that it satisfied the FLG’s condition precedent. Ms. Manzer’s comments, in her email of March 12, 2013 (P-02703), were correct and provide a reasonable explanation of the effect of the Sanction Agreement.

Nalcor’s argument seems to be based on illogical rather than substantive reasoning. Canada required a guarantee that Nova Scotia would be involved in the Project and ML, so that these would be regional and nation-building projects. The Sanction Agreement

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did not provide that guarantee. Without UARB approval, I question what Emera could have done to proceed with the ML.

As referred to above, Ms. Dunderdale was “upset and distraught” when informed in March 2013 that Canada did not accept that the Sanction Agreement fulfilled the condition precedent for the FLG (April 2, 2019, transcript, p. 7). She testified that it was “a moment of high tension and high stress” (December 18, 2018, transcript, p. 5). She stated that she would not have voted in Cabinet to sanction the Project unless she believed that this condition precedent had been met and “we had everything nailed down.” Ms. Dunderdale testified that, from her perspective, there would be no project without an FLG. In fact, she stated initially that she saw the FLG as some form of insurance policy that protected the Province. She later testified that this “probably wasn’t a good choice of words,” stating she knew the difference between a guarantee and an insurance policy (December 20, 2018, transcript, p. 66). Based on my assessment of her evidence, I question whether she fully understood the implications of the FLG.

During her testimony, Ms. Dunderdale acknowledged that the decision to sanction the Project in December 2012 was based on what turned out to be an incorrect understanding of the facts. She also agreed that the Province had started to spend money on the Project as if this condition precedent had been satisfied (April 2, 2019, transcript, p. 8). On December 18, 2018, she testified that the most stressful aspect of the situation was not that the FLG could potentially be lost, but that:

I didn’t want to be in a position where anyone could say that I had misled the people of the province. That I had provided misinformation or something like that. And that I’d be in a spot that I’d have to go back and undermine confidence in people—in their government. I—you know, that was a big issue for me. (p. 30)

And it could have been the end of my political career, depending on where the rest of my Cabinet and caucus were. (p. 6)

She also testified that:

And it was a double problem for me because it was a political problem for me as well because, in good faith, I had gone to the people of the province and said: This is the circumstance, you know, we—we have the loan guarantee. . . . And the Cabinet papers had been done, everything had been done. So this was a huge issue for me and for Cabinet. It was huge. (p. 30)

In March, after Edmund Martin had been informed of Canada's position on the condition precedent, he met with officials of Emera and Canada to discuss this problem. He returned to the province and met with the Premier, the Minister of Natural Resources and several GNL and Nalcor officials. Ms. Dunderdale testified that: "I was extremely tense and the whole discussion was tense—and trying to keep it professional and not let tempers flare and so on and work our way through it, piece by piece" (December 18, 2018, transcript, p. 30). She stated that, at this meeting, "they assure me that this can be fixed and this is going to get done, and that's gonna get done and so on, and everything is going to be fine and we're not going to lose the loan guarantee" (December 18, 2018, transcript, p. 30). Eventually, this problem would be resolved.

Thomas Marshall (who was Minister of Natural Resources at the time) testified that he was only vaguely aware of the issue about whether the Sanction Agreement was enough to satisfy Canada that the condition precedent had been fulfilled, and that he was not involved in any discussions about it and that it somehow got resolved but he did not know how (April 1, 2019, transcript, p. 16). It is surprising that with the significance of this issue, the Minister responsible for Nalcor and the Project had so little knowledge and involvement in it.

**July 22, 2013:** The UARB issued its initial decision on Emera's application to approve the Maritime Link. Its conclusions were (P-00245):

Taking into account all of the evidence, the Board finds, on the balance of probabilities, that the ML Project (with the Market-priced Energy factored in) represents the lowest long-term cost alternative for electricity for ratepayers in Nova Scotia. In the absence of Market-priced Energy, the ML Project is not the lowest long-term cost alternative.

...

However, the Board remains very concerned with the availability of Market-priced Energy under the ML Project, as presently proposed by NSPML.

...

Until 2041, when Newfoundland and Labrador's Churchill Falls arrangement with Hydro Québec comes to a conclusion, the availability of Market-priced Energy from Nalcor is an issue of "substantial uncertainty". This leaves NSPI in the unenviable position of having no contractual certainty of obtaining Market-priced Energy from Nalcor. However, NSPML/Emera have accepted no risk as a result of that contractual uncertainty. As they have structured the deal, that risk falls entirely to Nova Scotia ratepayers.

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The Board concludes that the availability of Market-priced Energy is crucial to the viability of the ML Project proposal as against the other alternatives. More importantly, the Board finds that without some enforceable covenant about the availability of the Market-priced Energy, the ML Project does not represent the lowest long-term cost alternative for electricity for ratepayers in Nova Scotia.

It is the Board's obligation to protect the interests of Nova Scotian ratepayers. More specifically, the Board is required in this proceeding to apply the test under s. 5(1) of the *ML Regulations*. The Board has considered how it should address this significant risk to the viability of the ML Project as against the other alternatives. It could, under the *ML Regulations*, simply reject the Application, but that would not be the responsible result and would not be a productive outcome of the regulatory process.

Accordingly, the Board directs as a condition to its approval of the ML Project that NSPML obtain from Nalcor the right to access Nalcor Market-priced Energy (consistent with the assumptions in the Application as noted in NSUARB IR-37 and Figure 4-4) when needed to economically serve NSPI and its ratepayers; or provide some other arrangement to ensure access to Market-priced Energy.

...

This is a simple remedy to the fundamental risk underlying NSPML's Application for approval of the ML Project. If no such condition was imposed, the Board would fail in its regulatory oversight by approving an application that could potentially be commercially disadvantageous to NS ratepayers. (pp. 135–37)

As quoted in a media report of July 26, 2013, Premier Dunderdale expressed confidence that Emera and Nalcor would reach an agreement that the UARB would approve. She also noted that the Project had never been dependent on the approval of the UARB. She is quoted as saying: "We would never sanction a project and start to spend the amount of money we have spent at this time and have it all conditional (if) the whole thing could fall apart if the UARB said no" (P-02710, p. 1). However, that is exactly what GNL did.

**July to October 2013:** Nalcor and Emera negotiated the terms and conditions by which market-priced energy from this province would be made available for purchase by Emera. The drafted terms would become the Energy Access Agreement.

**October 20, 2013:** Nalcor, Emera and Nova Scotia Power Inc. signed the EAA (P-02665). As described in a report by Morrison Park Advisors, dated November 7, 2013, and prepared for the UARB, these were the main features of the EAA (P-00876):

- Nalcor commits to make available, on average, 1.2 TWh of non-firm energy per year to NSPI, during the period between the date of full power at the Muskrat Falls generation site and the year 2041
- The energy offered during any given year can amount to between 0 TWh and 1.8 TWh depending on the Nalcor Forecast of Available Energy
- Nalcor can offer the energy at any price up to a cap at MassHub prices (a measure of current market prices in New England); in the event that Nalcor projects that it cannot meet its energy commitments, Emera is responsible for making up the first 300 GWh per annum of the shortfall and Nalcor is responsible for the remainder; in this way, Emera shares some of the risk of energy availability, but the risk does not fall on Nova Scotia ratepayers

The EAA is not a power purchase agreement. It is an ongoing commitment by NSPI to solicit energy, and by Nalcor to sell energy, on an annual basis and through a regular bidding process. Under the EAA, neither party was required or guaranteed to buy or sell any amount of energy in any given year.

Morrison Park described the EAA as essentially a right of first refusal for NSPI when it came to Nalcor surplus energy, and a commitment that Nalcor would not sign a long-term deal with another buyer for that energy (P-00876, p. 6).

**October 21, 2013:** Emera filed the EAA with the UARB as part of a compliance filing.

**November 14 and 15, 2013:** The UARB held hearings on the EAA.

**November 29, 2013:** The UARB issued its supplemental decision, finding that the EAA satisfied the remaining condition of its July 22 decision. It approved the Maritime Link project (P-00366).

## THE ROLES OF CANADA AND THE INDEPENDENT ENGINEER

The FLG Term Sheet was signed on November 30, 2012. In its Section 4.9, the role of an “independent engineer” was defined. An IE was to be hired to represent the guarantor (Canada) and lenders to enable them to complete their due diligence, and to ensure that the borrowers (Nalcor and Emera and their affiliates) complied with the terms outlined in the FLG agreements and financing documents. In order to ensure the independence of the IE, the borrowers were to confirm in writing “that they have no contractual or other relationship with the IE other than the obligation to pay the fees of the IE” (P-00065, p. 12).

Section 3.5 (B) of the FLG Term Sheet had ten conditions precedent for the borrowers. Condition precedent (ix) outlines some of the IE’s due-diligence responsibilities (P-00065):

Review of technical aspects of the Projects, including engineering, water resource and any other required due diligence by the Independent Engineer (as defined herein), and preparation and finalization (as confirmed by the Guarantor and Lenders, acting reasonably) of a technical due diligence report (the “IE DD Report”) confirming that the Project execution plans are commercially reasonable, and consistent with Good Utility Practice. (p. 8)

Nalcor knew early in the negotiating process for the FLG that Canada would require some form of due diligence to be performed by an IE. In February 2012, Nalcor issued a Request for Proposals for an IE. Three companies were invited to submit proposals (P-02148). The scope of work outlined in the RFP included two major phases of work for the IE: a technical review of the Project prior to Financial Close and an ongoing review during the construction period. The IE reports were to be comprehensive, including but not limited to review of the following:

- Site conditions
- Project design
- Construction plan
- Capital costs
- Operations plans and costs
- Project agreements and contracts
- Permits and licences
- The Project’s financial model

During the Project's construction phase, the IE's role included a review of change orders, preparation of periodic status reports, approval of Nalcor's requests for drawdown of debt and verification of the completion of the Project (P-02149).

On August 27, 2012, Nalcor signed a contract with MWH Canada Inc. (MWH) for the provision of IE services (P-02159). MWH is a subsidiary of MWH Global, a US-based international engineering, consulting and construction management company. As specified in Article 3.0 ("Client and Assignment"), the client was not Nalcor. Rather, the contract identifies "the client" as follows (P-02159, pp. 18–19):

Contractor's client for each Project is not the Owner of that Project but, instead, the lenders, the hedge providers, the federal government as guarantor, and such other entities as may be involved in providing financing for, or financial guarantees in support of, each of the Projects (initially and collectively "Client"). The rating agencies have been engaged and both the rating agencies and the federal government have already commenced their review of LCP. The lenders, hedge providers and others will be, but have not yet been, engaged.

The role of the IE is to provide independent engineering advice and independent engineering reports. Given the size, scope, and complexity of LCP, and the schedule for achieving financial close, Contractor will initially be retained and paid by Company on behalf of the Clients so that Contractor can familiarize itself with each of the Projects and LCP as a whole, identify the documents and information that will be required for its IE review, and commence an initial review of the documents and information currently available.

When the lead lenders for each Project are known, or as otherwise required, the Agreement will be retained separately, either directly or indirectly, by those lenders and by the hedge providers and federal guarantor, as the "Client" for that Project, provided Contractor is acceptable to those lenders. Contractor will then take instructions from and report directly to that Client in relation to that Project. Contractor will execute any assignments, novation instruments or further agreements as may be required by each of the lender Clients to give full effect to that arrangement and, at their discretion, may be required to issue separate, independent reports for each Project and, in addition, a consolidated report for the entire LCP Project incorporating those independent reports. (p. 28)

At the hearings, Nik Argirov, the Vice-President and General Manager of MWH, testified that the mandate of the IE was not to perform any detailed analysis on costs, schedule, engineering or any other technical aspect of the Project, but merely to carry out

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a high-level overview to see whether the principles and processes were correct and to determine if good practice was being followed (March 19, 2019, transcript):

We're—our mandate is not to do any detailed engagement, any detailed analysis on anything—not just cost but also it could be schedule, it could be engineering, it could be any aspect technical. It is just high overview—high-level overview—of wherever the—wherever we are examining to see if the principles are correct and, if there were standards, if the industry standards are followed or the good practice is followed. (p. 10)

I am satisfied that these contractual arrangements with the IE were in accordance with industry practice. The evidence establishes that although the IE was to report to Canada, it was appropriate practice for Nalcor to issue the RFP and review proposals for the appointment of the IE. It is of some significance, however, that the level of review was not a detailed analysis but was only undertaken at a “high level.”

### **The Independent Engineer's Work**

Nalcor held a kickoff meeting with MWH personnel on September 13 and 14, 2012. The PMT and personnel from the Project's engineering, procurement and construction management contractor, SNC met with MWH representatives, who included Mr. Argirov, Rey Hokenson (Project Manager) and representatives of Canada. As the Project unfolded, Mr. Hokenson was MWH's lead in the period prior to Financial Close (reporting to Mr. Argirov) and Mr. Argirov was the lead for the IE work during the Project's construction phase, first as an employee of MWH and later as president of his own company, Argirov Engineering Inc.

On February 14, 2013, Mr. Hokenson emailed a document to James Meaney that contained 18 comments on *Decision Gate 3 – Capital Cost Estimate Summary Report*, which had been prepared by James Loucks, an MWH consultant. Paul Harrington and Jason Kean of the PMT prepared draft responses to these comments. Regarding a question in the report about the existence of a management reserve, they pointed to the strategic risk analysis performed by Westney Consulting and wrote: “These [Westney's] management reserve recommendations form the basis of the Contingent Equity levels maintained by the Shareholder, as equity provider, for the Project” (P-02168, p. 5). This is notable because the evidence shows that the Shareholder, GNL, was not aware of any management reserve recommendation that it was specifically required to fund at that time.

Consistent with its dealings with other consultants, Nalcor attempted to influence and limit the IE's review of its work, particularly as it related to cost and schedule. This is clear from emails and other documents about the IE's work that I reviewed. Nalcor was successful in placing limits on the information requested by Mr. Hokenson and Mr. Loucks. If Nalcor had complied with all their requests for information, it is likely that additional deficiencies in Nalcor's determination of cost, schedule and other processes would have been revealed and considered by Canada prior to Financial Close.

### **Reliance Agreement**

On June 4, 2013, Nalcor, MWH and Canada executed a Reliance Agreement. It defined the relationship among the parties and confirmed that Canada would have full access to MWH and be able to rely on its reports and representations to facilitate the satisfaction of the FLG requirements. This Agreement fulfilled the FLG requirement that Nalcor confirm in writing that it had "no contractual or other relationship with the Contractor" other than the one arising out of the existing IE contract (P-02174, p. 96).

### **IE Draft Reports**

MWH completed its first draft of an IE report on March 22, 2013 (P-02169); a second draft followed almost four months later, on July 12 (P-02175). James Meaney forwarded the July 12 draft to the PMT, stating (P-02176):

Both Ed and the Province have been asking about the latest draft of MWH's IE report. Ed is wondering what some of the "big issues" are and NL want a copy ASAP. You probably recall we had committed to provide this to NL as part of that LCP Governance & Controls session held a month or so ago. The consensus amongst Derrick, Auburn and I this morning was a copy of the report should go to Ed before the Province gets it and he should be made aware of any key points. (pp. 4-5)

Mr. Meaney added that he could see potential "sensitivities" on contingency and stated: "Putting this report in circulation with Ed and the Province may result in a renewed discussion on contingency. Just wanted to make sure you weren't blind sided by this" (p. 7). At that stage, MWH was maintaining its opinion that the contingency amount was too low. Its July 12 draft report recommended that it should be between 12% and 18%. Nalcor's contingency was less than this.

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Mr. Meaney testified that Nalcor provided GNL with the July 12 draft of the IE report but no subsequent drafts because GNL did not specifically request them (March 21, 2019, transcript, pp. 93–94). Mr. Meaney could not provide any explanation as to why subsequent drafts of the IE report were not sent to GNL, whether requested or not. There is no indication in the evidence that GNL actually took note of the contents of the July 12 draft report, particularly on the issue of contingency. When Charles Bown was asked if he had studied the July 12 draft report, he stated: “I read it; I don’t think I understood all of it” (May 15, 2019, transcript, p. 33).

The IE prepared further draft reports on October 21 (P-02203), November 15 (P-01949) and November 27, 2013 (P-02236). GNL did not request copies of these draft reports. Mr. Bown testified that Nalcor had given GNL a commitment that it would provide GNL with copies of all of the IE draft reports. He explained that GNL’s understanding of why it had not received any draft reports after July 12 was because Nalcor had not received any subsequent draft reports before Financial Close (May 16, 2019, transcript, p. 67). Mr. Bown further testified that he felt “let down” by Nalcor’s failure to provide GNL with all of the draft IE reports and acknowledged that Nalcor had misled GNL with respect to the reports.

The November 15 (P-01949, p. 152) and November 27 draft IE reports both contained the following statement about contingency (P-02236):

While Nalcor adopted a theoretical P50 contingency based on analytical modeling (i.e., range uncertainty) of the project’s sub-element summary budgets, the IE expresses the opinion that the calculated overall 6.7% scope contingency is aggressive relative to our legacy experience with similar remote heavy-civil construction endeavors that typically have a contingency reserve for known, but not specifically quantified risks approaching **double to quadruple** what is currently provided for LCP. The IE is not aware of a separate management reserve allowance to fund or accommodate unknown risks or changed field conditions as is typical practice for these types of projects. As per AACEI practice, the scope contingency is assumed to be spent during project execution while the management reserve is considered not to be spent in entirety during project execution. (emphasis added, p. 120)

Mr. Bown and Thomas Marshall (then Minister of Natural Resources) were both questioned about the weight they would have given this statement on contingency if they had seen it before Financial Close. Mr. Bown agreed that, if he had seen it, it would have caught his attention “in a very serious way” (May 16, 2019, transcript, p. 69). In retrospect, he recognized the significance of not receiving the draft reports of the IE before Financial Close, but at the time it had not occurred to him to contact the IE directly to obtain them.

Mr. Marshall agreed that, if he had seen this statement on contingency, it would have “jumped out” at him and caught his attention in a “very big way” (April 1, 2019, transcript, p. 46). He stated, as well, that this information might have confused him because he was not aware of the concepts of “scope contingency” and “management reserve” (April 1, 2019, transcript, pp. 45–46).

I find that the information about contingency that was contained in the November 15 and November 27 draft IE reports was important enough that it could have caused the Province, acting responsibly, to re-evaluate the Project before Financial Close.

I accept Mr. Bown’s evidence that Nalcor gave a commitment to GNL to provide it with copies of all of the draft IE reports, and I find that Nalcor broke this commitment. However, I am also critical of GNL for failing to follow up with Nalcor about this commitment. GNL knew, or ought to have known, that the IE would be providing draft reports between the submission of its July 12 draft and Financial Close.

On November 29, 2013, MWH issued its *Interim Independent Engineer’s Report – Lower Churchill Project*. In it, MWH’s comments about the Project’s contingency were modified from how they had appeared in earlier draft reports. In this report, the following comments were made (P-02244):

While Nalcor adopted a theoretical P50 contingency based on analytical modeling (i.e., range uncertainty) of the project’s sub-element summary budgets, the IE is of the opinion that the calculated overall 6.7 percent scope contingency is aggressive relative to our legacy experience with similar remote heavy-civil construction endeavors. The IE understands that the Province will provide contingent equity for any budget shortfalls past the \$6.3B FLG. The contingent equity is currently undefined.

As the project moves into full-scale field execution with the award of CH0007 (Muskrat Falls Powerhouse), the IE would advocate for the adjustment of the project contingency fund. Due to significant overruns recently recognized with the award of CH0007, the project contingency fund is considered to be spent at this time and unavailable for future unknowns and risks associated with the field construction phase for all sub-project elements of the multi-year project. The IE believes the drivers on contingency will be varied and not entirely predictable as the project unfolds over the next several years. Issues associated with budget estimate accuracy, baseline schedule accuracy, uncompetitive market conditions, directed scope changes, changed field conditions, claims, weather impacts, resource shortages, directed schedule acceleration, potential contractor defaults, incremental owner project support costs, and other

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unknown risks are some of the typical factors that our experience indicates will consume contingency on a remote large-scale, heavy-civil endeavor. (p. 112)

The comments about contingency in the November 29 *Interim Report* are more generous to Nalcor than the comments in the November 15 and 27 draft reports. The following words, which were included in the November 15 and 27 reports, were removed in the November 29 report: “that typically have a contingency reserve for known, but not specifically quantified risks approaching double to quadruple what is currently provided for LCP.”

As already noted, GNL did not see the October and November 2013 draft IE reports before Financial Close. Therefore, these draft reports could not have had any effect on its decision-making. Yet some former GNL officials, including Kathy Dunderdale, Thomas Marshall and Jerome Kennedy, indicated that the work of the IE was an important element of oversight that they were aware was in place, and that it added to their belief that extensive due diligence had been undertaken for the Project before Financial Close. Obviously, GNL was not aware that the IE’s review of cost and schedule was a high-level review, not a detailed analysis.

I find that the reliance GNL placed on the work of the IE, without fully understanding the limited scope of that work and without seeing several of the IE draft reports, was clearly mistaken, misguided and unreasonable.

Nalcor did not receive the IE’s November 29 *Interim Report* until February 21, 2014 (P-02244, p. 2). Nalcor sent this report to GNL a few days later, on February 24 (P-02244, p. 1). This document, which had been relied on for Financial Close, was titled “Interim” because some outstanding work remained to be completed and would result in further changes. A final report dated December 30, 2013, was submitted by the IE (P-01930). Many of the ways it differed from the *Interim Report* were in explanations of technical terms, made so the report would be easier to read and understand (P-02247).

Grant Thornton reviewed the November 15, November 29 and December 30 IE reports and identified the substantive changes shown in Figure 3.3 (P-01677, p. 16).

The following are two examples where the original Draft Report November 15, 2013 was subsequently revised to what appears to have been included in the Interim Final November 29, 2013 report and/or the Final December 30, 2013 report:

Example	Draft Report November 15, 2013	Interim Final November 29, 2013	Final December 30, 2013
1	<i>The IE typically sees contingency allowances in the range of 12 percent to 18 percent at this state of project development.</i>	<i>The IE typically sees contingency allowances in the range of <del>12 percent to 18</del> <b>6 percent to 10</b> percent at this state of project development.</i>	<i>The IE typically sees <b>scope or tactile</b> contingency allowances in the range of <del>12 percent to 18</del> <b>8 percent to 12</b> percent at this state of project development <b>at comparable DG3 stage gates.</b></i>
2	<i>These contingency values appear low for this stage of project development, in our opinion.</i>	<i>These contingency values appear low for this stage of project development, in our opinion <b>-to be at the low end of the observed range which in our opinion is aggressive.</b></i>	<i>These contingency values appear low for this stage of project development, in our opinion</i>

Figure 3.3: Comparison of Wording in Independent Engineer's Reports

As can be seen, there were substantive changes made in these reports, particularly related to contingency and management reserve.

It was not until July 24, 2014, after GNL had established an Oversight Committee, that Nalcor and MWH, with the written acknowledgement and consent of Canada, provided a Reliance Letter that gave GNL access to all reports and certificates that the IE had prepared in relation to the Project.

I find it incomprehensible that GNL did not request access to the IE's draft versions and final *Interim Report* before Financial Close. These reports contained important information on Project cost and schedule, which at a minimum should have caused GNL to make further inquiries of Nalcor before causing the Province to be locked into such a major commitment.

### **Manzer/Meaney and the Relationship with Rey Hokenson**

The evidence indicates that both Alison Manzer and James Meaney had direct communications about what they considered to be deficiencies in the work of IE Project Manager Rey Hokenson and MWH consultant James Loucks. Examples of this include:

- In an email reply to Mr. Meaney dated September 23, 2013, Ms. Manzer stated: “Thanks trying to take the Rey pain away as best we can!!” Mr. Meaney forwarded her note to some of his colleagues at Nalcor, with the comment that “the good news is Cassels [Ms. Manzer’s law firm] also seem to realize Rey is a few cards shy and will try to keep him on track” (P-02181, pp. 1–2)
- On November 1, 2013, Mr. Meaney stated in an email to Paul Harrington and Lance Clarke: “I also just got off the phone with Alison from CBB. She gave me a “private” heads up that Rey and, interestingly, David Pyper from BF [Blair Franklin]<sup>1</sup> have some real “hot buttons” that we need to address ASAP, otherwise there’s potential issues with IE report” (P-02194, p. 1)
- In the same November 1 email, Mr. Meaney stated that Ms. Manzer “suggested we need another face-to-face session with Canada, CBB, MWH and BF in short order to address these issues and put them to rest once and for all to get a clean IE report by Nov 15. She acknowledged this will be painful, but has committed to being there to coral [sic] MWH and BF” (P-02194, p. 1)
- In a separate email to Ms. Manzer on November 1, 2013, Mr. Meaney wrote: “Please continue with your insistence that this meeting/presentation with Nalcor/LCP team happen and both Rey and Pyper attend in person (along with Canada). If we are to coral [sic] them both and get this over the line, that’s the only way it will happen.” Ms. Manzer replied: “You and I agree on that—will also keep feeding you the clues as to what you need to do on your side” (P-02196, p. 1)
- On November 1, 2013, Ms. Manzer forwarded to Mr. Meaney a copy of an email she had received from James Loucks, which had been copied to Mr. Hokenson; Ms. Manzer stated: “More flavour for what you have to have ready for Wednesday. Apparently there are some pretty extreme statement being made right now—I really really want

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<sup>1</sup> Blair Franklin was Canada’s financial advisor.

a smooth professional fully fact and chart backed meeting [sic]—please!” (P-02197, p. 3)

- Mr. Meaney replied: “As discussed, the Nalcor/LCP team will be well prepared with the facts and appropriate data charts. No matter how outlandish the statements from MWH/BF may get, we’ll keep our cool and demonstrate our professionalism and expertise, particularly for the benefit of the Govt Canada folks.” Ms. Manzer responded to say that it looked good and she was “Hoping this puts an end to the nonsense.” (P-02198, p. 1)
- By mid-November 2013, there were discussions about changing the MWH team after Financial Close. Ms. Manzer emailed Mr. Meaney on November 13, 2013, stating that the IE and Nalcor views needed to get “synched up” and that she had “raised this with Canada and suggested sooner than later a chat with Nik and a change of team—why sooner—because we need to have a sane rational view of the certificates and process and earlier than later.” Mr. Meaney offered his support for this suggestion (P-02351, p. 1)
- On November 19, 2013, Paul Harrington wrote that, “when we get through the IE report we should get Loucks and Rey removed from the team. Rey because of his poor organization and general performance and Loucks because he is argumentative and antagonistic towards Nalcor.” Mr. Meaney responded: “Alison has already indicated she is open to an MWH line-up change following delivery of the IE Report. . . . [T]hey would be the first 2 to go” (P-02212, p. 1)

On November 20, 2013, Ms. Manzer prepared a memorandum on cost and schedule issues, which consolidated general and specific comments about the November 15 draft of the IE report. The memorandum noted that Canada wanted MWH to provide a reconciliation of costs against the DG3 budget and that it was aware of the overrun on the Astaldi contract. Ms. Manzer wrote (P-02218):

Recognizing that this is a project which has a full Province of Newfoundland equity backing, that is the Province of Newfoundland must pay all costs to completion and commissioning of this project, including any overruns, and that the revenue agreements then cover all ongoing costs including resulting debt,

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this project is somewhat different in its cost analysis the Newfoundland equity funding commitment easing concerns regarding over runs which might be noted for the report. (p. 2)

This comment is instructive about the position Canada and the lenders were taking on capital cost overruns and GNL's backstop prior to Financial Close. In a response to that particular comment, Mr. Hokenson had a different view (P-02223):

We are aware of how the equity backing is being supported, but do not consider it as essential input in terms of how the Independent Engineer conveys opinions regarding cost matters. Our IE's Report is intended to review all inputs to the project's financial pro forma and comment on their accuracy to ensure proper analysis and disclosure. (p. 6)

In any event, and again considering the fact that GNL was providing contingent equity and was binding itself to pay the full cost of the Project even if there were overruns, one can understand to some degree why Canada was not looking for additional information in support of the Project's viability.

After considering the evidence relating to the IE's role, I have no confidence that the IE's reports were truly independent, complete and objective, considering the influence of Nalcor and others on their final form.

### **Lack of Communication with GNL: Capital Cost Increases and Schedule Concerns**

Nalcor had been under pressure from Canada to provide updated, detailed contract costing since informing Canada of the cost increase in excess of \$300 million on November 6, 2013. Nalcor had set up a data room where Project documents were electronically filed and could be accessed by various parties. On November 19, 2013, James Meaney sent the data room administrator a schedule detailing changes to 17 major contracts. In total, these changes increased the Project cost from the DG3 budget of \$6,202,492,545 to a "current final forecast cost" of \$6,531,754,580. Mr. Meaney asked to have the related files posted in the data room, writing: "Access needs to be given to Canada, Cassels Brock, Blair Franklin and MWH. Do not provide access to NL, BLG and Faskens at this time"<sup>2</sup> (P-02217). Whether Nalcor advised GNL of this cost increase prior to Financial Close is discussed subsequently.

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<sup>2</sup> BLG refers to a law firm working on behalf of GNL; Faskens was a law firm working on behalf of Nalcor.

On November 21, Ms. Manzer wrote to Mr. Meaney on the status of Nalcor's deliverables for Financial Close: "Quite frankly this is a shit storm and a no can close at this stage. Canada is confused and caught—who is not delivering to whom etc. The costing info has created a big issue—late and apparently not well done—causes real concerns for timely delivery during the deal and accuracy—NOT good at all" (P-02223, p. 4). Mr. Meaney responded that he was surprised to hear that the costing information was not well done and explained that it was late because it had to be approved by the Nalcor executive before going out.

On the same day, Ms. Manzer also advised Mr. Meaney that Canada, or certain of its representatives, had formed the impression that the Project costs were increasing and that Nalcor might have been hiding this from GNL. She advised Mr. Meaney to find a way to assure Canada that this was not the case. She stated (P-02223, p. 1): "Canada is concerned to be assured that NL is fully aware of this given the equity—that is of the cost increases there is a perception of runaway increases and maybe some elements of withholding that—nip that in the bud I say."

In a further email on November 21, Ms. Manzer reiterated that Canada was concerned about whether GNL was being fully informed on the issues that were being raised. Mr. Meaney replied to this concern by stating: "NL are aware of the forecasted capital cost increases" (P-02329, p. 1). In his testimony, Mr. Meaney said that this information was relayed to him by Derrick Sturge, who had attended a meeting with GNL representatives on November 21 and recorded that detail in his notes (P-02523, p. 20). Mr. Meaney stated in his testimony that at that meeting, Edmund Martin had briefed several GNL officials, including Charles Bown, Donna Brewer, Paul Myrden and Paul Morris, on the Project's capital cost overruns and other matters. This is discussed later in this chapter.

### **Schedule**

Another ongoing issue throughout the IE's Project review was MWH's concerns about Nalcor's scheduling methodology. MWH's concerns were based on Nalcor's strategy of having contractors, instead of the owner, prepare the detailed schedules. For example, the detailed schedule for construction of the powerhouse was not available to MWH until the Astaldi contract (CH0007) was signed on November 29, 2013, the same day the Financial Close documents were signed.

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MWH reflected its concern in its November 15 draft IE report, writing that it could not provide an opinion on the likelihood of the Project achieving its targeted in-service date (P-01949):

Our fundamental concerns surrounding the robustness and adequacy of the underlying scheduling methodology to accurately model workflow and predict critical project dates prevent us from opining further on the current IPS [Integrated Project Schedule]. (pp. 146–47)

In a memorandum on November 20, 2013, Ms. Manzer stated that, although she recognized that there was a difference in opinion between MWH and Nalcor, she felt it was time to move the focus away from methodology (P-02218):

The focus which would be most useful at this point in time would be general comment on the achievability of the schedule and its reasonableness, advice as to any controls which might be suitable, particularly given the contractors chosen, and we do not believe that a continued focus on a difference in methodology for scheduling is useful other than if specific impacts can be identified and outlined. (p. 1)

Mr. Hokenson responded by email to these comments on November 20, 2013, stating (P-02222):

We would be pleased to say that the listed completion dates are reasonable, however, from our perspective MWH simply does not have sufficient information in the form of a credible mathematical network to allow us to express the opinion, unless a large range (-/+ years) is applied to the listed key dates.

...

Other similar issues such as the following: install all-weather structure and 6-month award delay for CH[0]007 all should impact the schedule, but we see very limited protraction with the current update. As such, MWH would have to assume, without the benefit of vetting a more robust network to tell us otherwise, that the listed dates are not reasonable. Since this statement is not founded on fact, we are reluctant to be definitive.

...

In our opinion, there is really not a difference in methodology. The difference, in our opinion, relates to quality. (pp. 4–5)

## **Nalcor's Comments on the Draft IE Reports**

Earlier, I referred to Nalcor's influence on the work of the IE. On November 20, 2013, Paul Harrington provided an extensive markup of the draft IE report submitted on November 15. In the following excerpts, the text from the draft IE report is followed by Mr. Harrington's comments in italics (P-02234):

- The IE is not aware of a separate management reserve allowance to fund or accommodate unknown risks or changed field conditions as is typical practice for these types of projects.

**Comment [PH 102]:** *IE has been made aware of the NL Government Contingent Equity and completion guarantee—therefore suggest removing this highlighted section.*

- . . . that typically have a contingency reserve for known, but not specifically quantified risks approaching double to quadruple what is currently provided for LCP.

**Comment [PH 101]:** *Suggest removing this wording—the Final Forecast Cost is showing a much more modest increase over the Dg3 estimate of 5% with two thirds of the project at a Class I estimate stage.*

- Due to significant overruns recently recognized with the award of CH0007, the project contingency fund is considered to be spent at this time and unavailable for future unknowns and risks associated with the field construction phase for all sub-project elements of the multi-year project. The IE believes the drivers on contingency will be varied and not entirely predictable as the project unfolds over the next several years. Issues associated with budget estimate accuracy, baseline schedule accuracy, uncompetitive market conditions, directed scope changes, changed field conditions, claims, weather impacts, resource shortages, directed schedule acceleration, potential contractor defaults, incremental owner project support costs, and other unknown risks are some of the typical factors that our experience indicates will consume contingency on a remote large-scale heavy-civil endeavor.

**Comment [PH 103]:** *See comment in PH101 above and reword this to reflect the actual situation on LCP.*

- With the concern that Nalcor has expressed in the uncertainties surrounding the potential cost increase due to the competition for labor and key personnel, MWH believes that this concern could have been addressed in the cost estimate and reflected in the Project Schedule by including higher more customary contingencies and a lengthened project schedule.

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**Comment [PH 128]:** *This needs to be in the past tense—this is what nalcor was concerned about at DG3 which has since been superseded by actual events and mitigations.* (pp. 44, 57)

Mr. Meaney spoke to Ms. Manzer on November 20, 2013, in preparation for a call the following day in which Canada and Mr. Argirov were to go through Nalcor's comments on the draft report. Mr. Meaney wrote to various Nalcor personnel: "She [Ms. Manzer] is very much aligned with us and focused on getting clean IE report" (P-02227, p. 2).

On November 24, 2013, Mr. Meaney sent a revised version of the November 15 draft report to Mr. Argirov, Canada and some members of the PMT, in which Nalcor's comments were shown using track changes and comment boxes (P-02232). There were 154 comments, many of which requested content changes and deletions. Mr. Meaney noted in his cover email that, in order to meet the deadline for the FLG conditions precedent (November 29, 2013), the IE report would have to be delivered to Canada and Nalcor by 5:00 p.m. EST on November 27, 2013.

On November 26, 2013, Ms. Manzer sent to MWH and Mr. Meaney a printout of Nalcor's comments on the report that she had marked up by hand, indicating which of Nalcor's comments would be accepted. Many of Nalcor's proposed comments were accepted and other comments were marked with notations such as "revise if true." MWH was also directed to provide additional sections that were missing from the report including opinions about the reasonableness of the DG3 estimates and about the reasons for the cost increase in excess of \$300 million (P-02234).

Between November 26 and November 28, 2013, further proposals for changes to the draft IE report were exchanged. Ultimately, MWH and Canada accepted a significant number of the changes that Nalcor had proposed.

On March 28, 2014, Ms. Manzer wrote an email to Mr. Argirov indicating that Canada was asking for CVs for new members of the IE's Project Monitoring Team. She wrote: "The recent issues with Rey have really driven us to the brink and we need to get this turn over done soon" (P-02248, p. 1). As a result, Mr. Argirov took over the role of IE Project Manager during the construction phase of the Project (P-02249, p. 1).

On April 15, 2014, GNL released to the public a partially redacted version of the IE's *Interim Report* of November 29, 2013. The December 30 IE final report was not released at the time (P-02253).

It is not within the jurisdiction of this Commission to review the work or actions of Canada related to the FLG. I am also aware that the IE was reporting to and working for Canada. Nevertheless, I have determined that I do have jurisdiction to comment on certain issues with respect to the involvement of Nalcor representatives in its dealings with Canada on the FLG.

I have some concerns about the post-sanction relationship between Mr. Argirov and representatives of Nalcor, particularly Mr. Harrington. I find it surprising that Mr. Harrington sent emails to Mr. Argirov in which he complained about such things as the change in management for the Project, the decision of the new CEO, Stan Marshall, to bifurcate the Project into transmission and generation components and that some team members were not invited to a public event recognizing the progress that had been made on the Project. Obviously, Mr. Harrington was attempting to engage the IE, in the hope that Mr. Argirov might influence outcomes in the PMT's favour, but that is not the role of an IE. The fact that Mr. Harrington would raise such issues with the IE, in effect questioning the direction set by Mr. Marshall, is troubling. Such conduct could well have led to difficulties for the Project that would not have been in the Project's best interests.

It is also noteworthy that, on occasion, Mr. Argirov sent emails to Mr. Harrington's personal email account. Such communication, in my view, was inappropriate, since Mr. Harrington was being paid by Nalcor, and it supports my concern about the independence of the IE.

In the context of the independence of the IE process, both the relationship between Paul Harrington and Nik Argirov, and between James Meaney and Alison Manzer are a concern for me.

Mr. Argirov's willingness to change report conclusions according to Nalcor's submissions is troubling, based on my assessment of the reasons he gave for those changes in his testimony.

It is also important to recognize the efforts by Nalcor's PMT and James Meaney to both limit the review work being done by the IE and influence the content of the IE's report. The MWH report was meant to be the product of an *Independent* Engineer. It appears to me that the influence exerted on the composition of the IE's team and the comments on the work done are unwarranted and do not recognize the true independence required of an IE.

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## FORECAST FINAL COSTS VERSUS AUTHORIZATION FOR EXPENDITURES

Tanya Power, the Project Controls Manager for the Muskrat Falls Project, testified at the hearings. Ms. Power graduated from Memorial University in 1995 with a Bachelor of Engineering (Civil) degree and later received a Master's degree of Applied Science in Environmental Engineering. Between 1999 and 2016, she was employed by Hatch Ltd. and several companies that Hatch owned. At various times during this period, Ms. Power worked as a project engineer, a facilities manager, an infrastructure lead, an engineering controls lead, a project services manager, a commissioning coordinator and a project controls specialist.

Hatch assigned Ms. Power to work at Nalcor in May 2013. She worked first as a senior cost and schedule specialist and later as Project Controls Lead for the HVdc transmission component of the Project. In June 2016, still as an employee of Hatch, Ms. Power was promoted to the position of Project Controls Manager for the Project. In August 2016, she resigned from Hatch but continued as Project Controls Manager at Nalcor as an independent contractor.

### **The Project Controls Process**

Nalcor issued the document "Project Controls Management Plan" (referred to below as "the Plan") on March 7, 2011. It describes Nalcor's project controls philosophy (P-00865):

Project Controls is a process for controlling the investment of resources in an asset. The basic function of Project Controls can best be described as control or stewardship of scope, cost and schedule for a Project.

Stewardship is a structured process for establishing management control and achieving cost and schedule optimization. The overall objectives of the stewardship process are to:

- Reinforce Cost and Schedule Stewards' accountability and responsibility to identify cost drivers and improvement opportunities;
- Foster continuous communication, alignment and teamwork;
- Meet schedule milestones;
- Control scope creep;
- Prevent cost growth;
- Identify and capture cost and schedule reduction opportunities;

- Identify and mitigate cost and schedule vulnerabilities;
- Eliminate cost and schedule surprises; and
- Enable fact based decision making relative to scope, cost and schedule trade-offs. (p. 14)

The organization, roles and responsibilities of the Project Controls team are outlined in the Plan (P-00865):

The Project Controls Team working within the Nalcor PMT under the Business Services Function, will assume the lead role in the consolidation of information and the co-ordination of the planning and scheduling, cost estimating, and cost control. The Project Controls Team will provide PMT management with decision-making information by establishing appropriate levels of monitoring systems to ensure that control information is clearly defined and that roles and responsibilities of all participants are understood. (p. 16)

A critical component of the work of the Project Controls team was (and is) the preparation of monthly reports for cost, planning and schedule purposes. They are known as either “Forecast Final Cost” or “Final Forecast Cost” (FFC) reports—the two terms mean the same thing and are used interchangeably in Nalcor documents and in this Report. In the Plan, the following definition is provided for the term “Forecast Final Cost” (P-00865):

The anticipated cost of a project or component when it is complete. It represents the value of the Incurred Costs plus the estimated value of work left to complete, including approved Forecast Change Notices. (p. 10)

The work undertaken by Project Controls with regard to costs controls included:

- Preparing cost and consolidation cost reports
- Maintaining up-to-date forecasts of remaining work
- Facilitating the release of work by ensuring that authorizations were in place
- Coordinating the preparation of Project estimates
- Developing an overall integrated Project schedule based on detailed schedules of all elements of the Project
- Providing schedule overviews including integrity reviews
- Working across all Project elements to ensure the identification of critical issues that might affect progress
- Ensuring that all Project elements’ work plans recognized interfaces with other elements

The Project Controls team was large. It included a Project Controls lead, a chief estimator, a senior cost engineer, a senior project planner, a change coordinator and a project controller. Team members were located both in St. John's and at the Muskrat Falls site. They created and have maintained extensive databases and use sophisticated computer programs and tools in their work.

Ms. Power testified that, at the height of the construction phase of the Project, there were approximately 60 people on the Project Controls team. This number fluctuated over time. It had been reduced to approximately 35 people at the time of Ms. Power's testimony in May 2019.

The Project Controls team prepares an FFC report every month. It identifies the amount of money remaining in each commitment package, together with an amount for contingency. Each month, the Project Controls team also identifies and assesses risks and develops a plan for monitoring and controlling identified risks. In 2013, the focus of the monthly FFC was on cost, not risk. The expansion of the scope of the FFC to include risk began in or around May 2017.

The FFC package was usually prepared by Lead Cost Controller George Chebab under the supervision of the Project Controls Manager. The FFC identifies variations from the Authorization for Expenditure that is in effect at the time of a particular FFC's preparation. The AFE represented the budget that was approved by Nalcor's board at various times.

In 2013, the Project Controls intended practice was to hold a meeting on the tenth day of each month to review the preceding month's FFC. It was usually attended by the Project Controls Manager, various cost controllers from the Project Controls team and Mr. Chebab. Typically, Paul Harrington, Ron Power, Scott O'Brien and Gilbert Bennett would represent the PMT and management at this meeting. Others might attend from time to time. The meeting would usually last about two hours and would conclude when the attendees were in agreement with the contents of the FFC. Afterward, the Project Controls Manager would prepare a series of reports.

Commencing in 2013, a second meeting followed the one described above. It was also held to discuss the FFC, but for this discussion Mr. Chebab, who had been the Lead Cost Controller since November 2011, prepared a separate package. That package had both the information in the materials prepared for the first meeting plus confidential

information on bids that were under evaluation by the PMT and potential outcomes for future bids based on current trends.

The information about the ongoing evaluation of bid packages was considered to be confidential, so attendance at the second meeting was tightly controlled. The usual attendees included the Project Controls Manager, George Chebab, Gilbert Bennett and Paul Harrington and some other senior representatives of the PMT. They would adjust the most recent FFC to reflect the supplemental confidential information related to bid packages. A “Management Outlook” report was prepared afterward for review by Edmund Martin and Gilbert Bennett.

Mr. Harrington testified about the Management Outlook report’s purpose and the different names used for it. He stated that this report was often called an “Indicative Final Forecast Cost” report, for example, and conceded that “[w]e weren’t really very strict on terminology, I’ll be honest on that” and “sometimes, you know, we were sloppy.”

In reviewing both the documentary and oral evidence, it is clear that Mr. Harrington was correct when he stated that the PMT was not “very strict” in its use of terminology when referring to the Management Outlook report. In presentations to management, what is clearly a Management Outlook is at various times referred to as a “Final Forecast Cost Deck presented by the Project Team to CEO,” a “Final Forecast Cost Update,” an “Indicative Level Review of the Final Forecast Cost for the LCP based upon actual contract pricing and applying upcoming contracts/PO’s,” and simply as a “Final Forecast Cost.” For consistency in this Report, the term “Management Outlook” refers to what is clearly an FFC that has been supplemented by confidential information on bids.

Mr. Harrington described the Management Outlook reports as “crystal ball gazing.” His reason for using this description, generally, was that the reports focused on assessing future events that might or might not happen, rather than on known events that are fixed and firm. For this reason, he believed that the Management Outlook estimates lacked reliability, and stated that “you couldn’t take them to the bank.” In his testimony, Mr. Harrington provided the following explanation about why he felt the Management Outlook reports involved crystal ball-gazing (June 6, 2019, transcript):

**MR. SMITH:** Okay. And I want you to, sort of, give us your understanding of what you mean by there being a crystal ball type of number?

**MR. P. HARRINGTON:** Right. You know, it’s—the process that you would use is you would get the—your best knowledge of people who were around the

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table who had—you know, could look at what they were seeing as fixed and firm numbers, and then say, well look, if—say we've got five of 25 contracts and we've got bids and those five contracts are indicating this 5 per cent or whatever increase, well, if we project that forward, what would be the result if we did that?

And if we did that, what might happen? Could it be here, could it be there? Could it be less, could it be more? So there'd be a toing and froing between people who've got the most knowledge in that area, and then—we'd then present that, say look, this is where it could go, but we're mitigating.

We can go for a rebate; we can do value engineering; we've got a chance of bringing that number down, because it's a notional number. It doesn't—it's not fixed and firm, it's not hammered down, and even that, you know, that number that we get from the bids, they can go up and down—well, they usually go down when you do value engineering. So it's a dynamic thing, so that's why it's crystal balling, because you're looking into the future, what might happen. (p. 44)

Tanya Power prepared a report for the Commission about various Management Outlook briefing decks (P-03779). As noted earlier, Ms. Power was not named Project Controls Manager until June 2016. With the assistance of Mr. Chebab, however, she was able to locate detailed backup information for the Management Outlook files prepared as early as June 2013.

### **The Management Outlook Files and GNL Knowledge**

Financial Close was a critical date in the history of the Project. If GNL had decided to cancel the Project after Financial Close, the consequences would have been dire and possibly financially devastating for the Province. As noted earlier, many witnesses at the hearings described Financial Close as “the point of no return.” It was imperative that GNL receive all relevant information on the Project before Financial Close so that, if necessary, it could reassess, delay or even cancel it. Doing so after Financial Close was not an option—it was too late.

At the time of Project sanction (December 17, 2012), GNL publicly announced that the total costs of the Project would be \$6.2 billion, exclusive of interest and financing charges. The actual amount of Nalcor's November 2012 DG3 cost estimate was \$6,202,489,666, but this number was consistently rounded to \$6.2 billion. The public was not advised of any change in the cost estimate until June 2014, when it was announced that there was an increase of almost \$800 million to \$6.99 billion.

In her search for files related to Management Outlook reports, Tanya Power located three files linked to June 2013 FFC meetings:

- July 11, 2013: FFC for June 2013 of \$6,977,851,579
- July 16, 2013: a modification to \$6,971,666,831
- July 24, 2013: a modification to \$7,004,657,107

Based on this and other information, including an evaluation of bids, the PMT presented a Management Outlook report to Edmund Martin and Gilbert Bennett on July 22, 2013, that stated: “We are forecasting the FFC to be ~ \$7.0 billion, which is 12% beyond the DG3.” It also stated a potential to reduce the FFC by \$200 million to \$6.8 billion if mitigations were successful. The information in this report was not provided to GNL before Financial Close, nor was the information in the July 24 modification.

For the July 2013 monthly FFC meetings, Ms. Power located one file that identified a July 24, 2013 FFC modification of \$6,971,854,714. Of note, this is approximately \$33 million lower than the July 24, 2013 modification in the June 2013 files, as noted above. The information in this report was not provided to GNL before Financial Close.

For the August 2013 FFC meetings, Ms. Power located four files:

- August 27, 2013: FFC for August of \$6,824,516,419
- September 4, 2013: a modification to \$6,815,776,419
- September 5, 2013: a modification to \$6,838,285,730
- September 11, 2013: a modification to \$6,949,099,286

The PMT presented a Management Outlook report to Mr. Martin and Mr. Bennett on August 30, 2013. It stated: “We are forecasting the FFC to be ~6.9B which is ~10% beyond the DG3” and mentioned the potential to reduce the FFC by \$100 million to \$6.8 billion if mitigations were successful. The information in this report was not provided to GNL before Financial Close.

For the September 2013 meetings, Ms. Power located one file that identified an FFC modification of \$6,935,754,335 (October 8, 2013). The PMT presented a Management Outlook report to Mr. Martin and Mr. Bennett on September 12, 2013, indicating that the FFC would be in the range of \$6.7 to \$6.95 billion (8% to 12% beyond the DG3 estimate).

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It also stated the potential for mitigation of approximately \$100 million. This report was not provided to GNL before Financial Close.

For the October 2013 meetings, Ms. Power located one file that identified an FFC modification of \$6,814,586,731 (November 19, 2013). This report was also not provided to GNL before Financial Close.

It is clear that, prior to Financial Close, the Management Outlook reports were consistently indicating an increase in Project costs of between \$600 and \$800 million. During this period, bids on contracts were showing a cost overage of approximately 25% (\$600 million). The contingency amount of \$386 million was exhausted.

As stated in Volume 2 of this Report, Edmund Martin had absolute control over when GNL was provided with updates on Project costs and schedule. Therefore, fault for any deficiency in providing these updates must be assigned to Mr. Martin.

At the hearings, Mr. Martin was asked why he did not provide GNL with the July 22 and September 12 Management Outlook reports in 2013. He agreed that these two reports were based on the best information available at the time they were prepared. He also agreed that before he received the July 22 report, he was aware that the \$368 million allowance for tactical risk in the DG3 estimate had been completely exhausted and that a substantial number of bids were coming in over budget (June 12, 2019, transcript, p. 60).

In his testimony, Mr. Martin stated that he would not have made reference to “numbers” in his communications with GNL about these two Management Outlook reports. Rather, he would have said that there were “cost pressures.” In addition, his recollection was that he would have advised GNL that some of the bids received were higher, and others lower, than budget estimates, without providing much further detail. Mr. Martin did not make notes or maintain any other records about these communications with GNL.

Mr. Martin further testified that he had an obligation to provide GNL with information “that was structured in such a manner it was useful for their decision-making” (June 12, 2019, transcript, p. 66). He did not believe that the information in the two Management Outlook reports was reliable enough to meet this standard. This seems inconsistent with his own evidence that these two reports were actually based on the best information available at the time.

Mr. Martin confirmed that unless he believed that the cost numbers in any Management Outlook reports were reasonably certain, to the point where he was “comfortable” with them, he would not share the cost numbers with GNL. In cross-examination, he admitted that there were no written or established criteria to determine when or if cost numbers were reasonably certain and that he alone made the final decision about their certainty based on his own experience and qualifications (June 13, 2019, transcript, p. 92).

Mr. Martin provided this explanation about why he did not share with GNL the report of July 22, 2013 (June 12, 2019, transcript):

**MR. LEARMONTH:** Well, in terms of this July 2013 report, given the big jump that it was foreseeing or anticipating, why wouldn't you go in to government and, you know, say: here is a document, I want you to have a look at it; it shows an increase—well, have them look at it, it's not very difficult to understand, I mean, it's pretty straightforward what's going on in this document, information—but why not go in to government and explain it to them, and if you thought that there was much you could do in terms of mitigating, be under the 6.8—explain it to them, but—at least so they'd be in a position to know what the most recent information is. Why wouldn't you do that?

**MR. E. MARTIN:** Because I wasn't comfortable with the numbers and until I'm comfortable with the numbers, I'm not going forward to abdicate my responsibility.

My job was to come forward with information that was—at a reasonable level of accuracy. And that meant I was bound to stress these numbers, to push back on them, to have other sessions to go around to see where this thing could go. And I think in the final analysis from what had occurred, you know, from my perspective I got to a point, finally, where I was comfortable. (p. 62)

I find that Mr. Martin's explanation for not providing the information in the Management Outlook reports to GNL is unconvincing and implausible. Until mid-November 2013, the only information that Nalcor had provided to GNL on the cost estimate for the Project was the \$6.2 billion DG3 estimate. Furthermore, with the approval of Mr. Martin, Nalcor had confirmed in writing to Finance Minister Thomas Marshall on November 1, 2013, that the cost estimate remained at \$6.2 billion (P-02024, p. 2). This was obviously misleading.

It is unreasonable to believe that the \$6.2 billion DG3 cost estimate, completed in November 2012, could be considered on July 22, 2013, to be more reliable than a Management Outlook report prepared that same day and with considerable effort by the

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PMT and the Project Controls team. That Management Outlook report was based on the November 2012 DG3 cost estimate, but it was supplemented by important information on costs and other relevant and up-to-date information obtained since then, including information on the bidding process. It is beyond obvious that the DG3 cost estimate was prepared without the benefit of this new, recent and important information.

Mr. Martin agreed that the Management Outlook report of July 22, 2013, was based on the best information available at the time. Again, it goes without saying that the best information available on July 22, 2013, was much more reliable than the best information that had been available in November 2012, when the DG3 estimate had been finalized. The fact that the “numbers” may well have required further “stress” testing by Mr. Martin is no excuse for not providing this information to GNL.

None of the GNL civil servants or politicians who testified agreed with or accepted Mr. Martin’s decision to not disclose to GNL the Management Outlook report of July 22, 2013. All of these witnesses first learned about the report’s existence when they read the Grant Thornton *Construction Phase* report. Charles Bown, the Deputy Minister of Natural Resources in 2013, testified that he was “shocked” when he read it. The Clerk of the Executive Council at the time, Julia Mullaley, went even further, testifying that she was “shocked and angry.”

It is important to note that the \$6.531 billion revised cost estimate was the official cost estimate used in the Financial Close documents signed on November 29, 2013. It was also used to establish the baseline for the COREA. Nalcor did not prepare an Authorization for Expenditure for this \$6.531 billion cost estimate. This cost estimate was based on information contained in what was, in effect, a Management Outlook report.

Mr. Martin testified that the Management Outlook reports of July 22 and September 12, 2013, were not reliable enough to present to GNL. Nevertheless, the \$6.531 billion cost estimate in a Management Outlook report was of sufficient reliability, in the judgment of Mr. Martin, that it was used as the official estimate in the Financial Close documents for the FLG. This inconsistency is glaring.

I have one further observation on the question of whether an FFC and a Management Outlook report can be considered to be a reliable cost estimate.

In the file for the October 2013 FFC meeting located by Tanya Power, there is a record of an FFC modification of \$6,814,586,731 (November 19, 2013). This FFC was

reduced to a rounded number of \$6.531 billion on the instruction of Paul Harrington (P-03747, p. 1). In June 2014, the AFE of \$6.2 billion was finally revised to \$6.99 billion, an amount very close to the FFC modifications not only of this November 19 FFC file, but also of those from earlier in the year (specifically the Management Outlook reports of July 22, August 30 and September 12, 2013, discussed above). This raises a question about the reliability of the \$6.531 billion cost estimate used at Financial Close, especially since that amount contained a contingency of only \$183 million and included no management reserve for strategic risks.

Prior to Financial Close, the FFCs and Management Outlook reports were consistently indicating a cost estimate increase in the range of \$600 million to \$800 million. This is a significant increase and, clearly, the information contained in the reports should have been provided to GNL.

### **Bids on Work Packages**

In the period between Project sanction and November 29, 2013, Nalcor obtained bids on work packages from contractors and entered into preliminary contract negotiations with many of them. The bids received before November 29, 2013, from contractors who were subsequently hired after that date exceeded the DG3 cost estimate by approximately \$600 million, an overage of 25%, as noted earlier. The amount included for tactical risk in the DG3 budget, from which these kinds of increases were to be paid, was \$368 million. So by April 2013, when the bids on CH0007 had been received (the largest contract, eventually awarded to Astaldi), Nalcor must have known that the DG3 tactical risk amount (contingency) of \$368 million was totally exhausted. All of this information was reported by Grant Thornton in its December 2018 *Construction Phase* report (P-01677). None of this information was provided to GNL prior to Financial Close.

In testimony referred to earlier, which requires repeating here, Keith Dodson of Westney was asked to provide his opinion about what he would have expected an owner to do in a situation in which bids were coming in higher than estimated costs. Without hesitation, Mr. Dodson stated: “Cancel the project and reassess” (February 25, 2019, transcript, p. 40). In later testimony, he expanded on this response: “Well, when they get bids that are higher than the sanctioned price, well then they typically cancel the bid, sometimes they pay the bidders, you know, something for their effort, and they reassess the project” (p. 41). At the hearings, Edmund Martin was asked to comment on Mr. Dodson’s statement about

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cancelling and reassessing in these circumstances. Mr. Martin testified that the statement made no sense, in his opinion.

I disagree with Mr. Martin. I believe that Mr. Dodson's statement makes a lot of sense and I accept it as a reasonable approach that the owner of a project should follow in such circumstances. Mr. Martin's decision to withhold critical information demonstrated extremely poor judgment and it deprived GNL of the opportunity to cancel and reassess the Project. The decision about which action to take in the face of the disturbing information about bids before Financial Close was not for Mr. Martin to make. It was clearly GNL's decision. Mr. Martin either failed to recognize this or, out of concern that the Project might be cancelled or reassessed, he decided to keep GNL in the dark.

I referred earlier to a request by Thomas Marshall, then Minister of Finance, for an update on Project costs prior to Financial Close. On October 18, 2013, Paul Myrden (Department of Finance) asked Nalcor to provide Minister Marshall with a financial update related to the Project, including an **"update on expected total costs by component vs. budget, if available.** If not available, a reason why might be helpful along with an indication of when it might be available" (emphasis added, P-03469, p. 1).

On November 1, 2013, Auburn Warren of Nalcor provided Edmund Martin with a summary report he had prepared in response to this request. Mr. Martin reviewed and approved this report. Later the same day, Mr. Warren forwarded the report to Mr. Myrden. This report indicated that there had been no change in the Project's DG3 cost estimate of \$6.2 billion (P-02024). This was the last information on the Project's cost estimate that Mr. Marshall and other members of the GNL Cabinet, with the possible exception of Premier Dunderdale, received from Nalcor before Financial Close.

Minister Marshall's request indicates that he was seeking an update on the Project's cost estimate before Financial Close. This opportunity to provide the most recent figure to GNL was either ignored by Mr. Martin or, alternatively, he authorized the provision of what I consider to be misleading and/or deceptive information.

Beginning in July 2013, Canada had been pressuring Nalcor to provide an update on its DG3 cost estimate of \$6.2 billion. The PMT prepared this update, assisted by members of the Project Controls team. On November 6, 2013, members of the PMT met with representatives of Canada and their advisors in St. John's and reported an increase of \$300 million in the Project's cost estimate, as well as a \$300 million saving in financing costs to offset it, and the potential of an additional \$100 million saving that could be

realized by the sale of excess electricity. A monthly Forecast Approval Form prepared by George Chebab on November 20, 2013, contained the following notation in his handwriting: “Official FFC in Dashboard will remain at 6.531B as presented to Feds in Nov 06 audit as Instructed by Paul H” (P-03747, p. 1).

On November 13, 2013, a document entitled “LCP DG3 Estimate vs Current Final Forecast Cost Reconciliation” was prepared (also known as the “November 13 Reconciliation”). It showed changes from the \$6.2 DG3 cost estimate in five categories: material contracts, project management, environmental, balance of scope and contingency. The result of these changes was a revised cost estimate of \$6,531,754,580, the figure included in the Financial Close documents on November 29, 2013.

On November 19, 2013, the November 13 Reconciliation was changed when \$93,450,836 from the Astaldi Contract was transferred from the material contracts category to the contingency category. This increased the contingency from the \$89,494,034 shown in the November 13 Reconciliation to \$182,944,870 in the November 19 Reconciliation. The contingency in the DG3 cost estimate for tactical risk, however, had been \$368 million. So, at the time of Financial Close, it had been reduced by \$185 million. This is significant because the construction of the Project was in its early stages at this point, yet only \$183 million for contingency remained.

Both the November 13 Reconciliation and November 19 Reconciliation were called “Final Forecast Cost Estimates.” In reality, however, they were both Management Outlook estimates because they included information provided by the PMT on bid packages.

On November 19, 2013, at approximately 9:30 p.m., James Meaney arranged to have the November 19 Reconciliation posted to Nalcor’s data room. As referred to earlier, his email containing these instructions (P-02114, p. 1) stated: “Access needs to be given to Canada, Cassels Brock, Blair Franklin and MWH. Do not provide access to NL, BLG and Faskens at this time.” Neither Mr. Meaney nor any of the other witnesses who testified about this restriction provided a satisfactory explanation for why GNL was denied access to this reconciliation at that time. As the owner of the Project, GNL should have been given immediate access to it.

There is some suggestion in the evidence that sometime after 9:30 p.m. on November 19, 2013, some representatives of GNL may have been granted access to the November 19 Reconciliation in the data room. However, the evidence about this is vague and does not establish the identities of the GNL representatives in question. In any event,

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none of the GNL representatives who may have been granted this access and who testified had any recollection of accessing the November 19 Reconciliation in the data room or of ever seeing the November 19 Reconciliation before Financial Close.

This raises an important question as to who in GNL, whether civil servant or elected politician, was aware at the time of Financial Close that the cost estimate for the Project had increased to \$6.531 billion from the \$6.2 billion Project sanction amount. All the Cabinet Ministers of that time who testified at the hearings (Thomas Marshall, Paul Davis and Derrick Dalley) stated that at Financial Close they believed that there had been no increase from the \$6.2 billion DG3 cost estimate—they had not been informed that the cost estimate had been revised to \$6.531 billion. I accept their evidence on this point.

Premier Dunderdale's evidence about whether she was aware of the increase of \$300 million before Financial Close was unreliable. Ms. Dunderdale testified that she recalled that Mr. Martin had informed her of an increase to \$6.531 billion at a meeting in the presence of senior civil servants. Her recollection was that Mr. Martin had advised her that the \$300 million increase was offset by a corresponding \$300 million saving in interest and financing charges brought about by the FLG. She was unable to produce any notes to corroborate her recollection of this meeting, however, and could not even recall the identities of any of the civil servants present. Neither Charles Bown nor Julia Mullaley could recall attending such a meeting and they both denied having any knowledge of the increase in the cost estimate to \$6.531 billion before Financial Close. There is no evidence that Premier Dunderdale informed any members of Cabinet or anyone else in GNL about the information that she said she received at this meeting.

In her final submission, counsel for Ms. Dunderdale conceded that, “[g]iven the passage of time and the contradictory evidence before the Commission, Dunderdale acknowledges that it is possible that she was not aware of the capital cost increase at the time of financial close.”

It should be noted that Edmund Martin, who testified after Ms. Dunderdale on this issue, provided evidence of his disclosure to Ms. Dunderdale prior to Financial Close that was consistent with the evidence Ms. Dunderdale had presented. Mr. Martin testified that he met with Premier Dunderdale, probably at the Confederation Building (he was not certain), in the presence of senior civil servants and advised her of an increase of \$300 million in the Project cost estimate. He was uncertain of the date of the meeting nor did he recall the identities of the civil servants present. He did not make any notes of

what was said at the meeting. Mr. Martin testified that his presentation to the Premier was that the \$300 million cost increase was offset by a corresponding \$300 million savings in interest and financing charges and that there was an additional \$100 million that could be realized by the sale of excess electricity. He further testified that he advised Premier Dunderdale that “the impact on the ratepayer would be negligible” (June 12, 2019, transcript, p. 90).

After considering Mr. Martin’s evidence, I find that it is vague and unreliable. I conclude that Mr. Martin did not inform Ms. Dunderdale of a \$300 million increase in the cost estimate before Financial Close.

Assuming, for the sake of argument, the recollections of Ms. Dunderdale and Mr. Martin are correct, I would question any belief on their part that the Project cost would not actually increase. The Project cost was presented to the public as \$6.2 billion excluding financing costs. A \$300 million increase in the Project’s cost meant that additional debt or equity would have been required to complete the Project.

In summary, I find it is unlikely that any of the GNL politicians were informed of the \$300 million increase in the capital cost estimate before Financial Close. However, there were certain senior GNL civil servants who were aware of this increase before Financial Close.

### **Donna Brewer, Deputy Minister of Finance**

Donna Brewer is a Chartered Professional Accountant. She joined GNL in 1987 and served as Deputy Minister of Finance and Secretary to Treasury Board from June 20, 2013, until she retired on October 31, 2017. She would have been in these positions for approximately five months at the time of Financial Close.

Ms. Brewer testified that on November 22 or 23, 2013, she became aware of an increase of \$300 million in the Project cost estimate. She testified that this \$300 million reflected actual cost overruns and was not simply an increase to be used to establish a new baseline for the COREA. Ms. Brewer testified that she had no recollection of ever advising Finance Minister Thomas Marshall of this \$300 million increase and could not contradict Minister Marshall’s evidence that he had no knowledge of this increase at the time of Financial Close.

As noted earlier, Julia Mullaley and Charles Bown testified that they were not aware of the \$300 million increase in the Project cost estimate at the time of Financial Close.

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Ms. Brewer had difficulty understanding how this \$300 million increase was not brought to the attention of Ms. Mullaley before Financial Close. She had even greater difficulty in understanding how Charles Bown would not have a recollection of being informed of this \$300 million increase before Financial Close, in light of various email exchanges and the fact that his Assistant Deputy Minister, Paul Morris, was aware of the increase.

Before she testified, Ms. Brewer reviewed the evidence of Edmund Martin. She could not recall ever being present at a meeting during which he disclosed the \$300 million increase. She also stated that she could not imagine that Mr. Martin would make this disclosure at a meeting without Ms. Mullaley or someone from her office being present. Ms. Brewer also stated that, although she was aware of the \$300 million increase before Financial Close, she did not receive the November 13 Reconciliation or the November 19 Reconciliation, which contained particulars about the increase to a more precise figure, \$6.531 billion, until sometime after Financial Close.

Ms. Brewer was unable to provide any plausible or convincing explanation for why she did not ensure that Minister Marshall was informed of the \$300 million increase in the cost estimate of the Project before Financial Close. I have no doubt that, since she was the Deputy Minister of Finance, she should have done so, and I am critical of her failure to discharge the duty she had to keep the Minister up to date on this important information. She indicated that \$300 million did not represent an exceedingly large amount of money in proportion to the \$6.2 billion, but I strongly suggest that for this province, \$300 million is a large sum of money no matter what it is compared to.

### **Paul Myrden, Director of Debt Management**

Paul Myrden is a Chartered Professional Accountant. He received the C.A. designation in 1978 and joined the provincial civil service in 2002, retiring in 2017. At the time of Financial Close, Mr. Myrden was the Director of Debt Management in the Department of Finance.

Mr. Myrden was assigned to work on specific matters related to the FLG during the summer of 2013, approximately six months before Financial Close. He was the primary person in the Department of Finance assigned to work on the FLG and carried out this work under the direction of Ms. Brewer.

Mr. Myrden testified that he worked both from his office at the Confederation Building and also from an office on Barnes Road in St. John's, which had been established

by Nalcor to complete the arrangements for the FLG. Mr. Myrden emphasized that his mandate was confined to two areas: the wording of GNL's guarantee, which included the establishment of a baseline for the COREA, and the capital markets component for the Project. In his view, the Department of Natural Resources was responsible for the development and reporting of any revision to the cost estimate for the Project, which would be used at Financial Close. Throughout his testimony, Mr. Myrden emphasized that the subject of capital costs was definitely outside his mandate. In cross-examination, he stated: "In terms of my responsibility for reporting on capital costs, I had none, okay?" And he later testified: "I did not feel it was part of my mandate. In fact, it clearly was not part of my mandate" (June 17, 2019, transcript, pp. 98–99).

I find that Mr. Myrden was aware that there were upward pressures on capital costs before Financial Close and ongoing discussions about a possible \$300 million increase in the cost estimate for the Project. In his testimony, Mr. Myrden described these ongoing discussions as "noise" and stated that he would only have given credence to this "noise" if he had received a document confirming that there was a revision to the cost estimate. He testified that the first time he became aware that a revised figure of \$6.531 billion had been included in the Financial Close documents was on March 30, 2019, when he was interviewed by Commission counsel. He added that, if at any time before Financial Close he had received a document such as the November 19 Reconciliation, he would have given it to the Deputy Minister of Finance, but since he had not ever received such a document, he had never reported anything on costs to Ms. Brewer or to Minister Marshall.

Mr. Myrden understood that, at Financial Close, the Independent Engineer would establish a COREA baseline by using the latest cost estimate for the Project. He was questioned about an undated note in his handwriting that was included in the documents obtained by the Commission. This note had information that established that, at the time he prepared it, Mr. Myrden knew that there had been an increase of \$300 million in the cost estimate. His notations are as follows (P-03473):

Cap Cost + 300 mil  
 Fin Costs - 300 mil  
 NS Sales. 100 ✓

DG3 \$ 6.2  
 Gone to \$ 6.5

+ 300 mil.

Some enhancements + overruns

Current estimates of project costs and comparison to Budget/DG3  
 with explanations for all material deviations

Figure 3.4: Paul Myrden Handwritten Note

Another undated note in Mr. Myrden's handwriting dealt with matters related to the FLG. Two of the notations read: "IGA – Haven't seen redraft" and "cost overruns – \$300" (P-03474, p. 1). I believe that the reference to "IGA" relates to the Intergovernmental Guarantee Agreement, which the Province signed on November 29, 2013. If, at the time Mr. Myrden wrote this note he had not seen a "redraft" of the IGA, it is clear that this note, with the reference to cost overruns, must have been written before November 29, 2013.

I conclude that both notes were written by Mr. Myrden before Financial Close and that Mr. Myrden knew at Financial Close that the Project cost estimate had increased by \$300 million. This conclusion is consistent with Mr. Myrden's oral evidence, during which he acknowledged that he had heard discussion before Financial Close about a possible increase of \$300 million in the cost estimate.

It is obvious to me that Mr. Myrden should have reported this information to both Ms. Brewer and to Minister Marshall, regardless of whether he believed that the subject of the capital costs was outside his mandate. An increase of \$300 million is significant. As Director of Debt Management, Mr. Myrden would have been acutely aware of, and appreciated, the impact that such an increase would have on the fiscal requirements of the Province, regardless of the apparent offsets of savings in interest or financing charges and extra revenue from the sale of excess electricity. I find that Mr. Myrden approached his work on the FLG with an unreasonably narrow view of his duties and responsibilities as a senior government official.

Furthermore, Mr. Myrden was well aware that Minister Marshall wanted to be informed of any changes in the cost estimate. After all, he was the official who, on behalf

of the Minister, sent the request to Nalcor for an up-to-date cost estimate of the Project on October 18, 2013, and he knew that the information received in response to this request did not indicate any change from the November 2012 DG3 estimate. When he became aware of the \$300 million increase, it should have been obvious to him that this was the type of update that Minister Marshall had been looking for. He should have ensured that it was provided to the Minister before Financial Close.

**Paul Morris, Assistant Deputy Minister of Energy Policy**

Paul Morris became the Assistant Deputy Minister of Energy Policy in the Department of Natural Resources on April 13, 2013, a position he held at the time of Financial Close. He reported directly to Associate Deputy Minister Tracy English and also to Deputy Minister Charles Bown. Upon his appointment, Mr. Morris was assigned to act as the liaison between the Department of Natural Resources and Nalcor on matters related to Financial Close of the FLG. He spent more than three-quarters of his working hours on this assignment. He testified that, although the Department of Natural Resources was the lead department for coordinating many parts of the Project, it was his understanding that the Department of Finance was the main lead responsible for the financing component, which included cost overruns. His position is obviously different from that of Mr. Myrden.

At the time of Financial Close, Mr. Morris understood that there had been an increase of \$300 million in the Project cost estimate. He testified that he believes he was first advised of this increase on or about November 22, 2013 (June 17, 2019, transcript, p. 113). However, he did not become aware of the exact details of the increase to \$6.531 billion (as shown in the November 19 Reconciliation) until April 26, 2019, when he was interviewed by Commission counsel.

Mr. Morris testified that it would have been his practice to inform Ms. English and/or Mr. Bown of this cost increase and that it is “very, very likely” that he would have done so even though he has no recollection “with absolute 100% certainty” of providing either of them with this information.

There is no email or other documentation to corroborate Mr. Morris’ belief that he had informed Ms. English or Mr. Bown of this increase in capital costs. Mr. Bown testified that he had no recollection of ever being informed by Mr. Morris or anyone else of the \$300 million increase prior to Financial Close. Ms. English did not testify at the Inquiry.

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After reviewing all the evidence, I am unable to determine whether Mr. Morris did advise either Ms. English or Mr. Bown of the cost increase.

### **Charles Bown, Deputy Minister of Natural Resources**

Charles Bown testified that he had no recollection of being informed before Financial Close that the Project's capital cost estimate had increased by more than \$300 million to approximately \$6.5 billion.

He acknowledged that in November 2013, he was aware that Canada, GNL and Nalcor were involved in negotiations on the wording that would be included in the Financial Close financing documents to deal with cost overruns and how they would be funded. However, he testified that, to his knowledge, these negotiations applied only to cost overruns that might possibly occur in the future, after Financial Close.

Mr. Bown testified as to his understanding of an email Todd Stanley of GNL's Department of Justice sent him on November 7, 2013 (P-02842, pp. 1-2), on the subject of cost overruns (May 15, 2019, transcript):

**MR. BOWN:** I don't have a full recollection of it. But what I understand it to mean is that, referring to section 4.10 in the term sheet, there was a requirement for COREA payments or cost overrun payments and that there was a request from—I guess a discussion between Nalcor and Canada, as I saw from other documentations that I've reviewed during the exhibits, of a need to be – to put this clause or these clauses inside of the Equity Support Agreement and equity support guarantee to ensure that if there was a cost overrun, that the principles of the COREA payments in the term sheet would be in the agreements so that the Equity Support Agreement, which requires Nalcor to make its equity payments, or the equity support guarantee, which would require the Government of Newfoundland and Labrador to make such payments, should Nalcor not make them.

**MR. LEARMONTH:** Right. So are you saying that this was an attempt to draft a clause that would deal with a cost overrun should a cost overrun occur?

**MR. BOWN:** Yes, you're bringing the language that's in the term sheet into the agreements.

**MR. LEARMONTH:** And that would be as opposed to the situation where there already had been a cost overrun identified and that it was—the language was being brought in to accommodate that known increase.

**MR. BOWN:** If that were the case, it would have been identified here. (p. 16)

Donna Brewer, Paul Myrden and Paul Morris received an email on November 22, 2013, that clearly stated that the capital cost estimate for the Project had increased by \$300 million to \$6.5 billion. This email stated, in part (P-03494):

1. On the cost overruns issue, Nalcor would agree to have funded cost overruns based on the Project budget as at financial closing (\$6.5B capital cost estimate and not the \$6.2B DG3 estimate) using substantially your definition of cost overruns. (p. 2)

Mr. Bown testified that he did not receive this email and was not informed of its contents. However, he agreed that if he had received it, he would have known that “we’re talking about a firm number, this 6.5, as opposed to a theoretical number” (May 15, 2019, transcript, p. 22).

On November 26, 2013, three days before the Financial Close documents were signed, Mr. Bown received an email from Derrick Sturge of Nalcor that stated (P-02125):

Hi folks, we heard back from Canada last evening on the outstanding project finance business issues. As you may recall, we gave them a written proposal Thursday evening last week on all of the remaining eight business issues. They came back last evening and gave us everything we asked for with one exception and with two clarifications. Included in the written proposal back to them (that they accepted) was that cost overruns would be pre-funded in an escrow account, but only from the cost estimate at Financial Close, which is certainly better than calculating overruns from the DG3 number. (p. 1)

Although Mr. Sturge’s email does not unequivocally state that there was a real increase in the Project’s capital cost estimate, the words “but only from the cost estimate at Financial Close, which is certainly better than calculating overruns from the DG3 number” indicates that the cost estimate at Financial Close would not only be different but also higher than the DG3 estimate. This is the only reasonable conclusion that Mr. Bown could have drawn from these words, based on the specialized understanding he had as to how the cost overruns were to be calculated and funded in the Financial Close documents. This information alone should have immediately alerted Mr. Bown to the fact that there was a real cost increase and should have prompted him to obtain particulars from Mr. Sturge or Mr. Morris, who also received this email. He did not do so.

As stated earlier, Mr. Bown was GNL’s point person and the main conduit for the flow of information from Nalcor to GNL about the Project. He was the Deputy Minister of Natural Resources, the department to which Nalcor reported. It was his responsibility to

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notify his Minister, the Premier and/or the Clerk of the Executive Council of any important information he received on the Project. He had close working relationships with senior Nalcor representatives, who called him the “shareholder.” Paul Morris knew about the \$300 million increase on or before November 22, 2013, and testified that it was “very, very likely” that he informed Mr. Bown of this increase, although he had no specific recollection of doing so.

I recognize that there is no single document or series of documents that conclusively prove that Mr. Bown was aware of the \$300 million increase in the Project’s cost estimate before Financial Close. However, after reviewing all of the relevant documentary evidence and the testimony of the witnesses who spoke to this issue at the hearings, I conclude that it is more likely than not that Mr. Bown was aware that there was a cost increase from the DG3 estimate. If he was not aware of the increase before November 26, 2013, the email that he received from Mr. Sturge on that date should have prompted him to dig deeper in order to ascertain the particulars of this important information. His failure to do so and his failure to report this information to his Minister is inexcusable.

Before Financial Close, the senior GNL civil servants identified above were aware of the increase in the Project’s capital cost estimate. These civil servants breached their duty by their failure to ensure that this important information was communicated to their respective Ministers before Financial Close, which was the point of no return.

The Commission spent considerable time dealing with this issue. This would not have been necessary if, before November 29, 2013, Nalcor had taken the time to send a short email to GNL representatives informing them of this increase.

### **Information Provided to Nalcor’s Board of Directors**

A meeting of the Nalcor board of directors was scheduled for November 14, 2013. Nalcor staff prepared a draft 120-page presentation deck for this meeting. It contained information related to the Project, including references on two slides to a revised cost estimate of \$6.5 billion, a cost that had been communicated to representatives of the federal government on November 6, 2013. Auburn Warren forwarded the draft presentation deck to Edmund Martin and Derrick Sturge on November 13 at 10:44 a.m. for their “review and feedback.”

On November 13, at 4:29 p.m., Mr. Sturge sent an email reminder to Mr. Martin (P-02532):

Hi Ed, sorry to bother you, but we need to get materials out to the Boards for briefing tomorrow. Right now revised capex shows up on two slides—do you want us to proceed on this basis or remove those two slides. (p. 5)

Mr. Martin replied (P-02532):

What page numbers are the 2 slides? (Save me looking through the deck on my blackberry!). I need to see the slides, but I am leaning to leaving them out and talking to it if necessary. I like to talk about overall value when talking about costs. (p. 4)

During his testimony on March 27, 2019, Mr. Sturge was asked why he would put forward the suggestion to remove the \$6.5 billion revised capital cost estimate from the presentation deck. He stated: “Well, the only reason I would’ve ever suggested it is the fact that Ed had, in the first instance, three or four days earlier, suggested that he didn’t want it to go in the deck” (March 27, 2019, transcript, p. 46).

Although Mr. Sturge testified that he did not agree with the removal of the two slides from the deck, he complied with Mr. Martin’s subsequent direction to remove them and prepared a revised deck with the two slides missing. This revised presentation deck was sent to the members of the board in their package of documents for the meeting the following day.

Mr. Sturge attended the November 14 Nalcor board meeting in person, Mr. Martin by telephone. The ten pages of minutes for that meeting contain no reference to the \$6.5 billion revised cost estimate. Mr. Sturge, who wrote contemporaneous notes of the discussions at the meeting, confirmed that his notes do not contain a reference to the \$6.5 billion revised cost estimate. During his testimony, Mr. Sturge agreed that it was “probable” and “very likely” that, if there had been a discussion at the meeting of the \$6.5 billion revised cost estimate, he would have recorded that in his notes.

Mr. Sturge also attended later board meetings held on November 15 and December 3, 2013. The minutes of these meetings do not contain any reference to the \$6.5 billion revised cost estimate nor do Mr. Sturge’s notes from those meetings. There were no further board meetings held until December 18, 2013, which was after Financial Close.

During his testimony, Mr. Martin was asked why he decided to remove the two slides from the November 14 presentation to the Nalcor board. His answer was that he did not want to surprise the directors with this information. He stated that he wanted to “be able

to describe it to them, verbalize it and then, once they understand it, let's move on" (June 12, 2019, transcript, p. 94). He was asked whether it was correct that he removed these slides so that he could provide a better explanation orally. He replied: "That's correct. And better explanation of the 6.5 and the offsets and the other pieces of it in total context, yes" (p. 95).

Mr. Martin also testified that he spoke about the revised cost estimate at the November 14 board meeting. During his testimony, Mr. Martin was referred to the minutes of the meeting of the board held on December 18 and to the materials that were presented at it, including the two slides reproduced in Figure 3.5 (P-04021, pp. 146–47).

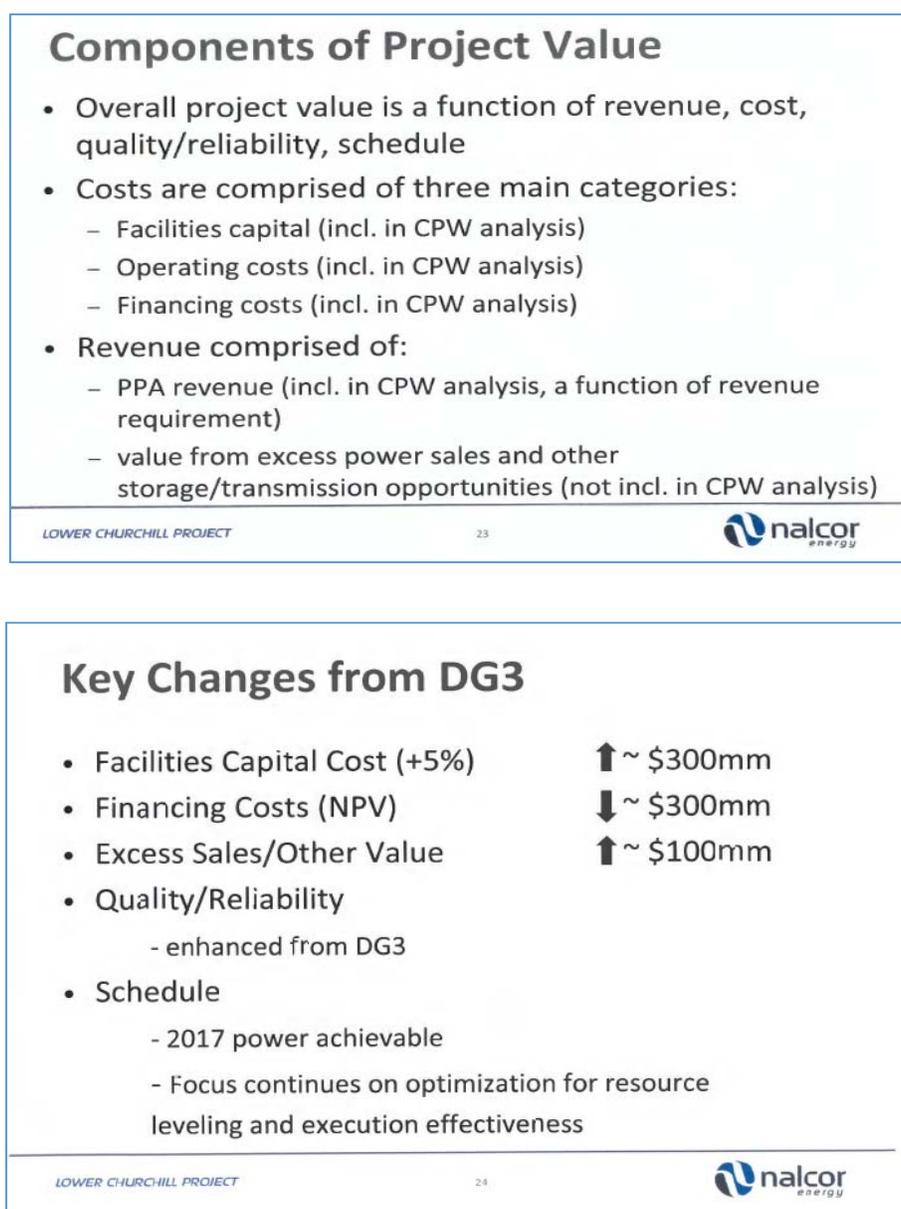


Figure 3.5: Slides from Nalcor Board Meeting of December 18, 2013

The presentation of information on the “Components of Project Value” slide reflects the approach that Mr. Martin often followed in reporting increases in cost estimates. He rarely reported increases in cost estimates in isolation.

During his testimony, Mr. Martin was asked why he would provide this information to the board on December 18 if he had already provided them with information on the \$300 million increase at the November 14 meeting. He confirmed that he had provided this information to the board at the November 14 meeting and stated that the December 18 meeting was “an opportunity to go through more detail with respect to the project; you know, where we were, the causes, we were going into Christmas” (June 12, 2019, transcript, p. 100). He added:

This slide was a chance to just review that again, but it was easy—not easy, it was, you know—it was just an opportunity to provide more detail around it, put the pictures on it, and, like as I said earlier, you know, I wouldn’t be surprising board members in the meeting unless I had already informed them where we were. (p. 100)

Ken Marshall, a member of the Nalcor board at the time of both Project sanction and Financial Close, testified that he was aware of the significance of Financial Close and that “the horse had left the barn in December 2013, yes” (June 10, 2019, transcript, p. 3).

He also stated that he was not aware of the existence of the Management Outlook report of July 22, 2013, until February 3, 2019, when he was interviewed by Commission counsel before giving testimony. Mr. Marshall indicated that he was both concerned and surprised when he was informed of the contents of the July 2013 report (June 10, 2019, transcript, p. 12).

At the beginning of his testimony, Ken Marshall gave what I find were long, qualified and somewhat evasive answers to straightforward questions. He was defensive about any suggestion that the Nalcor board did not properly discharge its duties. There were some inconsistencies initially between his testimony and the interview evidence he gave prior to his testimony. However, when reminded of his interview evidence, he tended to provide more direct answers. Later in his testimony, Mr. Marshall agreed without qualification that the Management Outlook reports of July 22, August 30 and September 12, 2013, should have been provided to the board before Financial Close and that he was not aware of the reason why they were not (June 10, 2019, transcript, pp. 17–18).

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As noted above, the Grant Thornton *Construction Phase* report stated that by April 13, 2013, Nalcor management was aware that the \$368 million allowance for tactical risks in the DG3 cost estimate had been completely exhausted. When pressed, Mr. Marshall acknowledged that this information was not presented to the board before Financial Close—and that it should have been (June 10, 2019, transcript, p. 17).

When questioned about whether Nalcor board members were aware of the \$300 million increase in capital costs before Financial Close, Mr. Marshall stated that initially he was a little bit “quizzical” about his recollection of this \$300 million increase. He went on to say that before he was interviewed by Commission counsel on February 3, 2019, he sought clarification from Gerry Shortall, who had been a board member at the time. Mr. Marshall stated that Mr. Shortall had indicated to him “quite clearly” that the board members had been aware of the \$300 million increase before Financial Close. Ken Marshall placed great reliance on this assurance and it appears to have resolved any doubt he had (June 10, 2019, transcript):

**MR. K. MARSHALL:** I am swearing that the \$6.5-million figure as—a billion-dollar figure, as I indicated in our preliminary interview back in February, that it was socialized and communicated with the board prior to the financial close—at meetings prior to financial close.

Can I say that it was done at the November 14 meeting? No, I cannot.

**MR. LEARMONTH:** Can you say it was done at the November 15?

**MR. K. MARSHALL:** No, I can say it was done in meetings prior to financial close on more than one occasion. That is my recollection. And that is my very clear recollection, which I validated with Mr. Shortall. (p. 29)

Mr. Marshall also testified that, although there was a \$300 million increase in the cost estimate, “[I]t was effectively still 6.2 [billion] because of the interest rate benefit” (June 10, 2019, transcript, p. 25). Later in his evidence, Mr. Marshall stated: “And the 6.5 we viewed as being effectively 6.2 because of the offset of the 300” (p. 145). He also said: “It was a wash as far as the board was concerned in our deliberation at the time” (p. 72).

I reject Mr. Marshall’s evidence that the board members were aware of the \$300 million increase in the capital cost estimate before Financial Close. I find that the Nalcor board was first informed of this \$300 million increase at the board meeting of December 18, 2013.

Edmund Martin had ensured that the two slides that showed a \$300 million Project cost increase (to \$6.5 billion) were removed from the presentation deck that was prepared for the November 14 meeting. I do not accept Mr. Martin's explanation that he decided to remove them because he did not want to surprise the directors with this information. Rather, I conclude that his reason for removing the two slides was that he did not want to advise the directors of the \$300 million cost increase at that November 14 meeting. The minutes of the November 14 meeting do not contain any reference to the revised cost estimate of \$6.5 billion, nor do Mr. Sturge's notes. I accept the evidence of Mr. Sturge that it is "probable" and "very likely" that if there had been any discussion at the November 14 meeting of the \$6.5 billion revised cost estimate, he would have recorded any such discussion in his notes.

The minutes of the November 15 meeting indicate that its purpose was to obtain board approval for the signing of financial documents required for Financial Close. There is no mention in these minutes of any discussion of a \$300 million Project cost increase. Once again Mr. Sturge attended the meeting in person and Mr. Martin by telephone.

The minutes of the December 3 meeting indicate that its purpose was to obtain board approval for the signing of a guarantee for the bond forward hedging obligations in relation to the FLG. Again there is no mention in these board minutes of any discussion of a \$300 million increase in Project capital costs. Both Mr. Martin and Mr. Sturge attended this meeting in person. As noted above, this was the last board meeting before Financial Close.

I conclude that there was no communication of the \$300 million cost increase in the capital cost estimate for the Project at the November 14, 15 or December 3, 2013, meetings of the Nalcor board.

As stated earlier, the materials provided to the directors for the December 18 board meeting contained clear references to the \$300 million cost increase, the \$300 million saving in financing costs and a potential gain of \$100 million from excess electricity sales. The minutes for this meeting contain the following statement (P-00684):

Mr. Bennett circulated a presentation on the Lower Churchill Project DG3 estimate compared to the current final forecast cost and advised that the information in the presentation was confidential and commercially sensitive. He noted that project management escalated slightly, environmental costs held their own, contingency was reduced by transferring work from smaller contracts to larger contracts where there was greater certainty to gain

efficiencies and cost savings but expect that the contingency will be fully used upon completion of the project. (p. 17)

After reviewing the exhibits, I conclude that the presentation that Mr. Bennett circulated at that December 18 board meeting contained information that was taken from the November 19 Reconciliation and that this was the first time this information (either the revised cost estimate of \$6.531 billion or the rounded figure of \$6.5 billion) was presented at a Nalcor board meeting (P-03609, p. 3).

A \$300 million cost increase in the Project in these early stages was material. It represented a capital cost increase regardless of whether there was an offset as a result of lower financing costs.

It is also noteworthy and surprising that the Nalcor board was never presented with an Authorization for Expenditure in the amount of \$6.531 billion.

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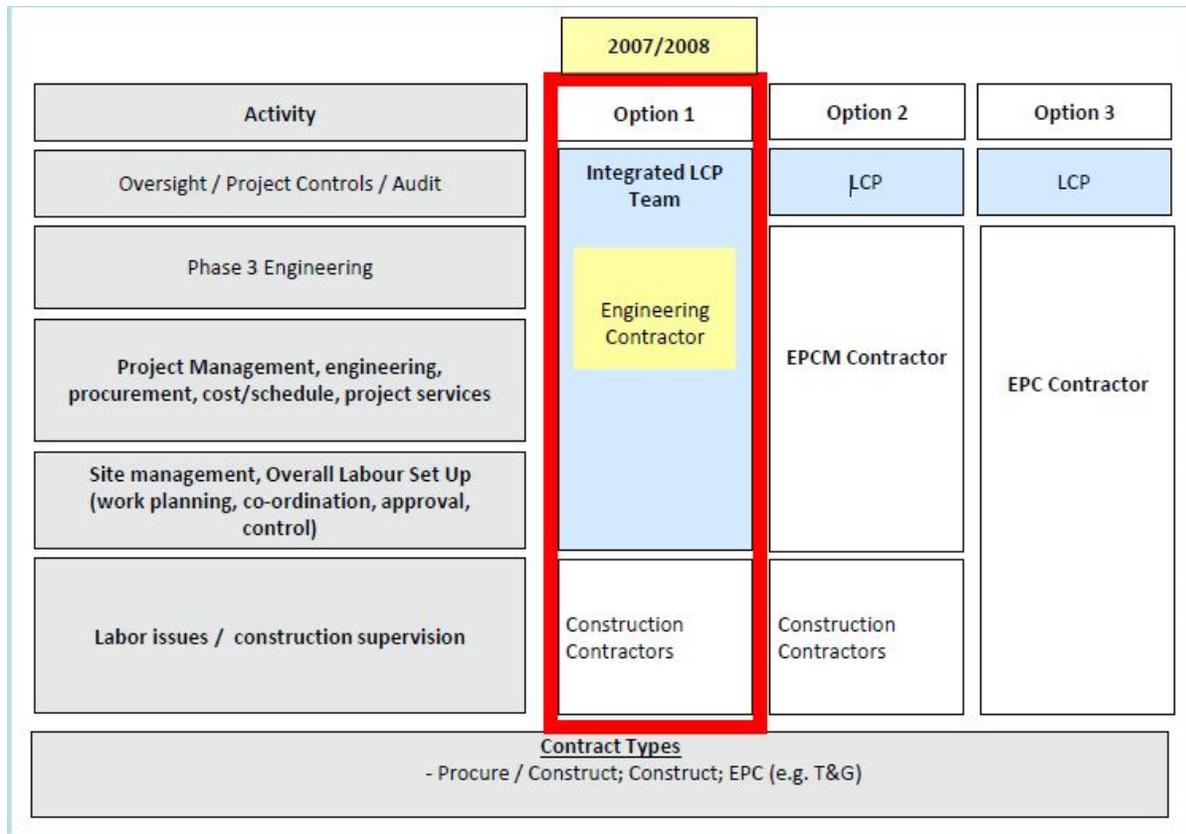
## CHAPTER 10: PROJECT MANAGEMENT

In the early planning stages for the Lower Churchill Project, Nalcor considered three project delivery management models:

- OPTION 1 **Integrated Management Team (IMT):** This model involves an integrated team of project managers within the owner's organization. There are often engineering/project support contractors, consultants and partners from outside organizations who supplement and support the owner's Project Management Team.
- OPTION 2 **Engineering Procurement and Construction Management (EPCM) Contractor:** This model involves an owner contracting with an EPCM contractor who is responsible for the engineering, design and technical specifications for the Project (either through itself or through its consultants), for the procurement on behalf of the owner of multiple contracts between the owner and contractors and suppliers for construction equipment, materials and supplies and for the administration and management of those contracts.
- OPTION 3 **Engineer Procure and Construct (EPC) Contractor:** In this model the owner of the project provides contractors with conceptual layouts or specifications for various scopes of work. Though the contractors execute the specific scope of work based on the owner's specifications, the contractors determine the optimization and detailed design of the work.

(Source: P-01177, p. 36)

Nalcor's PMT prepared the table reproduced in Figure 3.6 to illustrate the distribution of roles under the three project delivery models (P-01817, p. 5).



\*Red box denotes initial preference of Nalcor

Figure 3.6: Nalcor's Review of Project Delivery Models

As referred to in Volume 2, Nalcor engaged consultants in 2007 with an eye to developing the lower Churchill River. The consultants were asked to conduct feasibility engineering studies and investigations to determine the capabilities of major hydro and transmission engineering/construction consultants and to ascertain the engineering requirements for an EPC delivery model. In April 2008, EPC was screened out as a viable project delivery model because there was little interest by potential bidders (P-01177, pp. 25, 36).

Nalcor then focused on Option 1 and Option 2. It issued an Expression of Interest to gauge industry appetite for either the IMT model or the EPCM model. A presentation dated April 21, 2008, shows Nalcor's preference for the IMT model (P-02444). Under the heading "Project Framing," Nalcor noted that an "Integrated PMT" would manage all three scopes of work (generation, HVdc specialties and overland transmission). Later in the presentation, aspects of the approach to Organization Design during the Project's Phase 3 and Phase 4 are outlined (P-02444):

- ... We expect to move forward with two major consulting groups in an integrated team
- We have learnt from recent experience that the hands off approach does not work we must manage the consultants and be co-located to be successful
- The consultants would produce the engineering deliverables as shown previously with design integrity checking of drawings and specifications by LCP engineering ...
- Procurement and contracting would be carried out by LCP ...
- ...
- As demonstrated successfully on other mega projects, the model is to have a Home Office team which has the overall responsibility for HSE, Cost, Schedule, Risk, Planning, Engineering changes and Project Management with satellite site teams at major construction sites, primarily at Gull Island (pp. 13–14)

On February 20, 2009, Nalcor announced that it had issued an EOI for an IMT model to six engineering and project-management companies who were recognized as worldwide specialists in hydroelectric, transmission and civil construction projects, in order to determine their interest in bidding for detailed engineering design work for the Lower Churchill Project (P-02446). The six companies chosen were SNC, Hatch Ltd., Bechtel Infrastructure Corporation, Black and Veatch, MWH Americas Inc. and URS Corporation.

On April 14, 2009, Nalcor received the responses to the EOI. Its conclusion after reviewing them was (P-01177):

Utilizing the strategy evaluation process described earlier, and in consideration of the above findings, Nalcor determined that the best Project Delivery Approach for the LCP was Option 2, i.e. a Nalcor managed EPCM contractor. This Option facilitates a high-performing Owner team with “management and control” versus “do” mandate, in order to maintain overall control of the Project by focused management of the EPCM Contractor, while placing a significant effort on the traditional owner-lead [*sic*] activities (e.g. financing, environmental assessment, permitting, power sales, regulatory, aboriginal agreements, project labour agreements). (p. 37)

Pat Hussey, the Supply Chain Manager at Nalcor, testified that the EOI responses “showed clearly that they [the potential contractors contacted] were interested in EPCM model versus the type of model that we had gone out with” (March 1, 2019, transcript, p. 8).

Ron Power (of Nalcor) testified (May 21, 2019, transcript):

[W]e went out with an expression of interest to six companies to provide engineering and people to support an integrated team, they more or less indicated that they would support this model. But in visiting their offices they were leaning more toward providing for EPCM services instead of engineering only with support people.

So having gone through that expression of interest process with those six companies, we discussed it internally and for the reasons, I guess, noted on slide 10, we decided to change our model from option 1 to option 2, being the EPCM approach. (p. 30)

Early on, Nalcor had realized its own limitations for successful major project execution. In an internal document dated April 21, 2008, under the heading “How Would Credibility Be Viewed,” it was noted that “[w]e have to recognize that ECNL [Nalcor] has no history of successful major project execution—so we must focus on the NL experience and the quality of our people, suppliers and contractors” (P-02444, p. 12). Nalcor recognized that it required significant expertise in hydro developments to bring “essential know-how and specialist resources to the Project” and “minimize risk during construction” (P-02451, p. 5).

As a result of the contractors’ lack of interest in an IMT model, Nalcor decided to switch to an EPCM model. The official recommendation for the EPCM model was made in December 2009. A 2011 Nalcor document entitled “Overarching Contract Strategy” noted the management model choice (P-01177):

Following a great deal of effort, including research, analysis and consultation, Nalcor selected an EPCM delivery approach for all project components other than the SOBI Crossing, which will be managed directly by Nalcor under a lump sum EPC arrangements. (p. 29)

## THE EPCM REQUEST FOR PROPOSALS AND CONTRACT

On July 9, 2010, Nalcor issued a Request for Proposals for EPCM services to three potential bidders: SNC, Hatch and Black & Veatch (P-02133). At the time, the RFP contained the Gull Island hydroelectric development component, which would be removed from the package in October 2010.

Mr. Hussey testified that the RFP specifically indicated the possibility of the work becoming an “EP plus CM” contract. In other words, the RFP contained wording that

specified Nalcor's discretionary power to change the scope of the work, specifically by removing the construction management (CM) aspect of the EPCM role from the eventual contractor. The intention is articulated in the RFP (P-02133):

With respect to the Services for the one or more Components comprising the Project, Company reserves the option to award all or part of the Services and, in particular, reserves the option to award Construction Management Services separate from Engineering and Procurement Services. Proponent must clearly demonstrate, to the satisfaction of Company, that Proponent is providing the very highest caliber of Construction Management Services by providing evidence of past experience on similar projects and qualifications and experience of named individuals and construction teams. (p. 11)

Jason Kean referred to this discretionary power in a PMT Briefing Note prepared for Nalcor's counsel (P-01769):

At the time Nalcor bid the EPCM services scope, the market was overheated due to the boom in oil sands activity as a result of high oil prices, and concerns existed about the quality of all of the EPCM firms' construction management capability. Due to this concern, Nalcor included an option in the contract, to be exercised at its discretion, to remove the construction management scope from the EPCM contractor, thereby creating an EP+CM model. When SLI's [SNC's] challenges were exacerbated by their corporate scandal, the option was exercised. (p. 37)

Based on my reading of the early documents relating to the contracting strategy and the EPCM contract, it is my view that Nalcor intended to award a full EPCM contract. I find that the EP+CM characterization has been used by Mr. Kean to downplay the significance of the change from an EPCM model to an IMT model. If Nalcor had been concerned about SNC's construction management capability and intended to make construction management an optional service, this would have been more explicit in the overarching contracting strategy and bid evaluation documents. There are no references in the bid evaluation notes or overarching contracting strategy, signed by Mr. Kean and Mr. Harrington, that suggests that EP+CM was the intended project delivery model.

From July to December 2010, Nalcor assembled a bid evaluation team for the award of the EPCM contract (P-02134). Mr. Hussey testified that the bid evaluation team rented separate office facilities for its work, to remove itself from day-to-day duties and to maintain the confidentiality of the bid process. The evaluation team was split into two sub-teams—technical and commercial—and neither was privy to the results of the other's evaluation until later in the process, when the contract was about to be awarded.

Bid evaluation occurred in October 2010 and involved interviews with key personnel and construction management presentations. The notes of the evaluation team show that Hatch proposed an alliance network of seconded personnel from several companies who would execute the contract under Hatch's assistance and procedures. SNC, on the other hand, proposed to fulfill the contract using SNC personnel who were executing similar hydro projects at the time and who had the experience to successfully complete a project such as the LCP.

On October 22, the bidders were shortlisted to two applicants: SNC and Hatch. According to Mr. Hussey and Mr. Power, the third bidder had intended to enter into a joint venture with MWH, an arrangement that had fallen through. Mr. Hussey described the other bid as being substandard and deficient.

Mr. Hussey indicated that the bid evaluation team was initially concerned about the large discrepancy in the two bidders' fixed fees: either Hatch's bid was too high or SNC was attempting to "buy the job" by bidding low. However, following several clarification discussions with the bidders, the bid evaluation team felt comfortable in its understanding of the fixed-fee markup. Mr. Hussey also indicated that the bid evaluation team felt comfortable with SNC's lower fixed-fee component because SNC's estimates were similar to Nalcor's.

A major issue arose in discussions with Hatch about its proposed liability clauses because they did not meet Nalcor's corporate requirements. Hatch was unwilling to compromise on this.

Ultimately, the bid evaluation team decided that SNC had the best proposal, both technically and commercially. On December 20, 2010, the bid evaluations and recommendations for the EPCM contract were reviewed by another team, which consisted of Derek Owen, Gilbert Bennett, Derrick Sturge and John MacIsaac. This process included a review of the bid assessment procedure, the scoring sheets, the overall scoring and the final recommendation.

On December 21, 2010, the bid evaluation team made a presentation entitled "RFP for EPCM Services, Evaluation Summary and Recommendation" to Edmund Martin (P-02136). It outlined the team's findings: that SNC had a stronger technical and commercial proposal and that there was a notable difference on the fixed-fee portion of the two proposals. The review team completed its report on December 22, 2010, and concurred with the bid evaluation team's recommendation. The review team noted that considerable

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effort had been expended by the bid evaluation team in interviewing the bidders' personnel. They had conducted more than 150 interviews.

Following approval from the review team and Nalcor's management, Nalcor issued SNC a Letter of Intent for the EPCM contract on December 22, 2010. It provided that SNC would be responsible for all Project scopes of work, including the generation, HVdc specialties and transmission components, with two exceptions: the Strait of Belle Isle component (SOBI), which remained under Nalcor's management, and the Maritime Link, which remained under Emera's management.

The EPCM contract was awarded on February 1, 2011. It had an estimated value of \$350 million for 2.5 million work hours (P-01436). The general scope of work made the contractor responsible for:

- Design, development, engineering and technical specifications, including all follow-up engineering
- Procurement on behalf of Nalcor of multiple contracts between Nalcor and contractors and suppliers for construction, equipment, materials and supplies
- Construction management, including management of specific project completion activities
- Project-management services, including management of its engineering services, procurement services and construction management services, as well as other project-management services
- Other activities necessary to realize the contract's objectives

(Source: P-01436, p. 117)

A meeting note from the Premier's Office dated April 15, 2011, describes SNC as follows (P-02458):

- SNC-Lavalin is a major global engineering and construction firm that provides engineering, procurement, construction, project management, and project financing services to a variety of industry sectors including agrifoods, pharmaceuticals & biotechnology, chemicals & petroleum, environment, heavy construction, mass transit, mining & metallurgy, and power & water management.
- SNC-Lavalin was founded in 1911 and has been active internationally for 50 years. The company has offices across Canada and in 35 other countries

around the world. SNC-Lavalin's Head Office is located in Montreal, Québec.

- SNC-Lavalin has a wholly-owned subsidiary company in Newfoundland and Labrador – BAE Newplan Group Limited (BNG)—which is a multi-disciplinary engineering consulting company that provides services throughout Atlantic Canada and around the world. BNG operates offices in St. John's, Mount Pearl and Deer Lake. BNG provided the engineering, procurement and construction management services for the Voisey's Bay mine, concentrator, and related facilities in Labrador. (p. 2)

While the bids were being assessed and with the assistance of Westney Consulting, Nalcor held an "EPCM Mobilization Readiness" meeting for its staff (October 20, 2010). Its purpose was to create awareness about Nalcor's roles and responsibilities for managing the EPCM contractor and to identify a plan to ensure the internal team's EPCM readiness. Westney's presentation at this meeting focused on the owner's role, recommending the "depth of involvement" that an owner should take when overseeing an EPCM contract. Specifically, Westney indicated that: "Best practice in an EPCM contract sees a fairly involved role for the owner" in seven key areas or "core responsibilities" (P-01154, p. 10). Westney's presentation also indicated: "In all cases, the owner must carefully manage its role to ensure that it is not performing tasks for which the EPCM contractor is responsible. Doing so compromises the accountability of the contractor" (p. 10).

The following section discusses how well Nalcor was able to adhere to that advice.

### THE SNC TEAM

Normand Bécharde was one of the key SNC personnel working on the Project. Mr. Bécharde's resumé included extensive hydroelectric and construction engineering experience. He had worked as an area manager, construction manager, head of contracts administration, head of planning and cost control and project manager for several companies and projects, which most notably included phases of Hydro-Québec's James Bay Hydroelectric Project. Mr. Bécharde's most recent work experience was for the Société d'énergie de la Baie James (SEBJ or James Bay Energy) as the Québec–New Hampshire DC Link Project Manager. He had been responsible for project development of the DC line and substations. Mr. Bécharde was also Project Director for the Eastmain development, overseeing the completion of the Eastmain-1 project and starting the Eastmain-1A project. In his most recent project director role, Mr. Bécharde was responsible for managing

up to 650 people and was the most senior person on the project after the CEO. Mr. Béchard testified that both Eastmain projects were delivered ahead of schedule and were forecasted to come in under budget. In June 2011, Mr. Béchard was hired by SNC to work on the Project as a senior SNC manager and construction advisor. He moved to St. John's in early July 2011.

Paul Lemay, another SNC manager who worked on the Project from May 2011 until September 2014, was responsible for the Project's DG3 base cost estimate. Mr. Lemay testified that he had 30 years' experience in estimating, mainly for hydroelectric projects. The companies he had worked for included Kiewit, Bechtel and Hydro-Québec. Mr. Lemay joined the Project as Lead Estimator. He was responsible for assembling the estimating team, providing the rules and assumptions for the estimate, managing the estimate schedule and completing the estimate itself. The DG3 base estimate that Mr. Lemay completed for Nalcor encompassed the generating station, the HVdc specialties and the transmission line components but not the SOBI component.

SNC also engaged Jean-Daniel (J.D.) Tremblay to work on the Project, whose experience included working for consulting firms as well as a heavy civil contractor. Mr. Tremblay had joined SNC in 2007 as an estimator in the Hydro division. He joined the Project as an employee of SNC in the summer of 2011. Initially, Mr. Tremblay worked on the Project in Montréal and reported to Mr. Lemay. He later transitioned to working full-time in St. John's. Eventually, Mr. Tremblay became the Risk Coordinator and Interface Manager for the Project, a position he held until the fall of 2013.

Scott Thon had worked in power generation, transmission and power trading at TransAlta Utilities in Alberta before joining the Project. He was involved in the formation of AltaLink in early 2000 and was appointed President and CEO of AltaLink in 2002. AltaLink was subsequently acquired by SNC. Mr. Thon was seconded from AltaLink to SNC in January 2013 and appointed Executive Vice-President of Global Power, a position he held until March 2014. During his secondment, he worked on the Project out of SNC offices in Toronto and Montréal and often travelled to St. John's.

Two other key SNC personnel were:

- **Bernard Gagné**, Vice-President of Operations at SNC's Hydro division, who was responsible for the Project from his base in Montréal; Mr. Béchard and other senior personnel reported to Mr. Gagné

- **Serge Guerette**, Vice-President Operations and Project Services Manager (SNC's Hydro division): After some disagreement with the Nalcor PMT, Mr. Guerette was demobilized from the Project offices in September 2013; Mr. Guerette was then reassigned to SNC's Mount Pearl office and he continued to support Mr. Béchard and the Project from that office

Mr. Thon joined Mr. Gagné and Mr. Béchard as SNC representatives on the Nalcor-SNC Steering Committee along with Gilbert Bennett, Paul Harrington and Lance Clarke. Mr. Thon became involved with the Project during the transition to an Integrated Management Team model. He testified that his goal was to make that transition successful.

### WORKING RELATIONSHIPS: NALCOR AND SNC

After the signing of the EPCM contract in February 2011, Nalcor and SNC held a “kickoff meeting” on March 30 and 31, 2011. One of its purposes was to reach “alignment on expectations” by understanding owner and EPCM roles and to identify any gaps in overall implementation of Project work. In one of the presentation decks for the kickoff meeting, Nalcor listed these expectations of SNC (P-02456):

- Identify and implement all available value improving opportunities
- Apply SLI's [SNC's] full capability
- Bring in the “A” team
- Rigorously apply SNC-Lavalin's corporate know-how and Corporate application of Processes, Procedures and Tools (p. 57)

Nalcor also prepared a “Responsibility Assignment Matrix” that divided the responsibilities for various core activities between Nalcor and SNC (P-02456, p. 119).

The kickoff meeting documents indicate that the EPCM Project office was to be located on Torbay Road in St. John's, and that all engineering and management (with the possible exception of specialized engineering) was to be completed in Newfoundland and Labrador, in accordance with the Lower Churchill Construction Projects Benefits Strategy. Nalcor moved the engineering for the generation component to Montréal when problems with the EPCM contract arose.

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Nalcor alleges that deficiencies in SNC's performance began appearing as early as August 2011 and continued into 2012 (P-02463, p. 2). Nalcor responded by sending numerous letters to SNC expressing concerns on several fronts. The areas of concern included the slow rate at which managerial positions were being filled, the poor quality of personnel, the lack of proper Project control systems and missed deliverable deadlines.

Nalcor was critical of the quality of the management and field personnel that SNC assigned to the Project. This concern was identified in a PMT Briefing Note prepared for Nalcor's counsel (P-00264):

The quality of management and field personnel who SLI<sup>3</sup> were bringing forward consistently resulted in less than optimal delivery of the EPCM Services, manifesting itself as poor readiness for the engineering, procurement or early work construction phases. (p. 37)

This PMT Briefing Note also indicated that several key SNC personnel listed in the EPCM Agreement did not mobilize to the Project and that there was significant turnover of key SNC personnel, which Paul Lemay confirmed in his testimony. The PMT provided an exhibit that showed 17 turnovers in eight key SNC management positions in the first 18 months after the EPCM contract was awarded (P-00887, p. 18).

A "cold-eyes review" report of March 9, 2012, confirmed that SNC had several senior positions unfilled, which was a very serious concern. In the Briefing Note referred to above, the PMT stated (P-00264):

The results of this review were alarming with major deficiencies identified in SLI's performance, the lack of adequate systems and tools (including basic engineering systems such as document control), inadequate resources in senior positions, and a complete lack of alignment with the Shareholder. (p. 37)

When questioned about these concerns, Mr. Bécharde testified that Nalcor's PMT had micromanaged the hiring process, which had caused frustrating delays in his efforts to provide personnel. According to Mr. Bécharde, the Project Assignment Authorization (PAA) process that Nalcor required him to follow meant he had to have Ron Power's approval to hire personnel. Mr. Bécharde testified that the uncertainty of gaining that approval and the additional time it took to obtain it made the hiring process "really painful." He claimed that Nalcor used this process to "micromanage the way that SNC was performing under the EPCM" (March 26, 2019, transcript, p. 30). Mr. Bécharde also indicated that this process often

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<sup>3</sup> SLI (SNC-Lavalin Inc.) is the abbreviation Nalcor frequently used. This Report uses "SNC" to refer to the same firm.

delayed the payment of personnel, which “was a constraint on a daily basis.” Mr. Bécharde further said that if he had assigned someone to the Project without following the PAA process, SNC would not have been paid.

Mr. Bécharde stated that he brought senior and qualified people to the team whom Nalcor would not accept. In an interview with Grant Thornton, Mr. Bécharde recalled an example where Scott O’Brien was “very unfair” when he interviewed a resident engineer whom Mr. Bécharde had proposed for the Project.

### **SNC DIFFICULTIES: ALLEGED AND REAL**

The PMT’s Briefing Note referred to above also reported (P-00264):

A lack of implementation of the committed SLI process, tools and systems (e.g. PM+) resulting in poor controls and the need for Lower Churchill Management Corporation (LCMC) to step-in on numerous occasions to fill critical gaps (people and processes). This observation was reaffirmed by a cold-eyes review conducted in March 2012, which included SLI Corporate. (p. 38)

In a letter to Mr. Bécharde dated January 23, 2012, Ron Power expressed concern about the limited implementation of the PM+ software<sup>4</sup> and supporting project controls procedures (P-02479). He noted that it was apparent that SNC Project personnel had limited experience with the use of PM+ and the supporting systems. According to the cold-eyes review report of March 9, 2012, the PM+ software and procedures were brought in late and, from the perspective of the reviewers, could not be considered best practice. This was felt to be a very serious deficiency in SNC’s performance (P-00522, pp. 1–2). The reviewers went on to state:

For the focus areas that were reviewed the two project teams are not aligned. There was no demonstrated collective accountability also, there was no feeling of a collaborative working relationship. Walking the floor, there was a distinct a lack of “energy.” (p. 2)

Pat Hussey testified that the delays with procurement were because the PM+ software had not been implemented and the work of the SNC engineers in St. John’s had to be sent to Montréal for input into the software. In his view, the priorities in Montréal

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<sup>4</sup> PM+ is SNC’s proprietary project-management software system, which Nalcor’s Project Controls division continues to use to this day to manage cost reporting for the Project.

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were different than Nalcor's and, as a result, procurement for materials was delayed. This forced Nalcor to source other systems (such as Aconex) to provide information management services. Nalcor continues to use Aconex today for document management and PM+ for project controls.

Mr. Bécharde acknowledged these gaps in implementation and explained that they were created because SNC's Hydro and Transmission divisions did not widely use the PM+ system and were unfamiliar with it. Because SNC had brought in personnel from several of its divisions, including the Hydro division, SNC had to provide additional training on PM+, which took about six months. Further training was required for procurement, construction and cost control modules. Mr. Bécharde testified that SNC was not given adequate time to provide that training.

Scott Thon acknowledged that PM+ and other SNC systems were not fully implemented. However, he indicated the situation was not as dire as the PMT alleged. Mr. Thon testified that the feedback from the SNC personnel was that they could not properly implement PM+ because they were not getting the information from Nalcor that was needed to populate the system. Mr. Thon also testified that the person who worked on the Project in SNC's Project Controls division "was very experienced in PM+" (March 25, 2019, transcript, p. 132).

Beyond the Project's challenges, SNC was facing larger troubles in this period—specifically, allegations of bribery, fraud and corruption scandals that eventually led to criminal charges against senior SNC executives. This became an issue of significance for both Nalcor and SNC. In 2011 and 2012, there were news reports that SNC had bribed Libyan officials between 2001 and 2011 in exchange for construction contracts. In 2012, another bribery scandal involving former SNC CEO and Vice-President of Construction surfaced in connection with construction of the McGill University Health Centre in Montréal.

According to the same PMT Briefing Note (P-00264, p. 38): "SLI's reputation issues on international contracts and accusations of corruptions at senior SLI leadership resulted in major changes to the SLI Corporate Senior Leadership and became a significant distraction for SLI Leadership accountable for the EPCM Services Agreement." The PMT also noted that when the scandals were under investigation, Nalcor was "forced . . . to change from the Engineering, Procurement and Construction Management (EP+CM) model to an integrated team" (P-01769, p. 16).

In contrast, Ron Power testified that the scandals impacted SNC's ability to get horsepower into the Project, but he did not agree that they forced Nalcor to change delivery models. He indicated that the scandals also caused the Project to lose some important SNC personnel (Patrick Lamarre and Joe Salim, for example) who had been key individuals during the EPCM contract negotiations.

According to Ken Marshall, the Nalcor board of directors was very concerned about the SNC scandals. In his testimony (October 15, 2018, transcript), Mr. Marshall stated that the board was

extremely concerned that there was some risk that we may have been compromised and we continued to press to make sure that we weren't. . . . We're still recognizing that SNC was an internationally recognized firm going through a bit of a crisis internationally and we didn't want to be a victim of that. But we didn't take all the work away, we just had to make sure that it was very controlled and tight. (p. 73)

Paul Harrington indicated that there was public pressure on Nalcor to justify why SNC remained on the project, which added to the difficulty in keeping people motivated (November 19, 2018, transcript, p. 74).

In its Briefing Note, the PMT raised other concerns about SNC's performance in this period. They included the lack of working interfaces between engineering deliverables and procurement, which had resulted in missed deadlines for the issuance of RFPs for commitment packages. In order to resolve this issue, Nalcor had to recruit and assign engineering deliverables coordinators. Mr. Harrington indicated that the interface issues were causing missed deadlines for "long-lead" items. Further, there was an indication from the PMT of a growing gap between Nalcor's and SNC's understanding about the number of work hours required for EPCM services. For example, SNC estimated that it would require 500 to 700 construction management personnel at the Muskrat Falls site alone, an estimate that was far in excess of Nalcor's expectations. The PMT's position was that SNC's contracting strategy was based on the Hydro-Québec model and that model was incompatible with the contracting strategy that had been approved by the Nalcor executive and was necessary for Project financing.

There is evidence that SNC's performance adversely affected early construction works on site. Darren DeBourke, Project Manager for HVdc Specialties, provided an example. He testified that SNC was responsible for managing the construction of a tap station on the north side of the river to feed construction power to the site. Mr. DeBourke

indicated that the tap station “ended up being 30 per cent over budget at the end of the day” (May 10, 2019, transcript, p. 4). In another example, Paul Harrington indicated in an email sent to SNC on June 19, 2012, that he had serious concerns after meeting with the road construction contractor. He felt that SNC had mishandled the early works through “incomplete planning, lack of proper communication and inadequate management” (P-03962, p. 1).

## ORGANIZATIONAL EFFECTIVENESS INITIATIVES AND OTHER MITIGATION MEASURES

It is clear that the relationship between Nalcor and SNC grew increasingly strained between 2011 and 2013.

As described in Chapter 6, on December 21, 2011, in preparation for the DG3 estimate, SNC produced a new estimate for reimbursable EPCM work hours. The new estimate was for approximately 5.5 million work hours, which was significantly higher than the 2.5 million work hours that had been submitted in SNC’s bid proposal. Nalcor believed that SNC had unacceptable expectations and it did not approve this new estimate.

In February 2012, Nalcor considered establishing a task force to deal with the ongoing issues with the EPCM contractor. On February 16, 2012, Ron Power sent an email to some PMT members and other employees at Nalcor outlining his thoughts about the proposal (P-02482):

While the Task Force exercise may result in org charts intelligent enough to allow us to move ahead (and remove “fat”), in my view we will not be able to agree long-term org and staff assignments which would result in agreement on total EPCM hours to the end of the job.

I believe we are better of [*sic*] managing SLI resourcing by rigorous management of PAA’s with relentless focus on definition and delivery of scope against schedule. Fixed fee could continue to be applied against every hour, same as now. From a DG3 estimate perspective we can then carry forward our current cost number keeping in mind that we will need to monitor and manage the resource levels diligently. (p. 1)

This email appears to support Mr. Béchard’s testimony that the PAA process was effectively being used to micromanage SNC’s resourcing and EPCM labour costs.

In his testimony, Mr. Bécharde recalled a heated meeting during which he and other SNC people walked out. According to Mr. Bécharde's testimony, Mr. Harrington yelled and bullied Mr. Bécharde and two other experienced SNC personnel (March 26, 2019, transcript):

So, he was bullying us, telling: You're incompetent; you will not be able to get the job done. I'm not satisfied. And he was yelling, yelling. Disrespect. Full disrespect. So, after five minutes, I just try—say: Hey, Paul, hold on. Just calm down. Just tell us what is going wrong and we are going to have a talk. But—no way; he was keeping yelling. So then I look to Nick, I say: We go—we don't—we are not going to stay here being bullied by this man. So, me and Nick, we just stood up and, well, that's it. And we went out of the office for the day. (p. 50)

Ron Power prepared a presentation for a meeting on April 24, 2012, in which he expressed concern that the Project would not pass through DG3 if SNC's estimate for EPCM work hours was accepted. This led to further discussions between Nalcor and senior SNC personnel and to the creation of an EPCM Services Task Force. The purpose of the Task Force was to expedite completion of the DG3 deliverables (P-02482, p. 7) and SNC's expectations for resource requirements (P-02486, p. 4). In the draft Task Force Charter, Nalcor and SNC agreed to a collaborative team-decision approach to complete the DG3 deliverables (P-02482, p. 10). From Mr. Power's April 24 presentation, it is apparent that Nalcor's intention was to keep the EPCM labour cost from increasing and allow Nalcor to "drive organizational resource requirements" (P-02486, p. 5).

In the summer of 2012, Nalcor engaged the consulting firm Deloitte to assess the Nalcor-SNC relationship and to implement a Team Effectiveness Program. Deloitte's purpose was to identify, discuss and implement ways to improve the working relationship between Nalcor and SNC. The effort was led by Derek Owen, whom Nalcor had also hired to lead the Independent Project Review discussed in Volume 2. Deloitte's work on this program included surveys and interviews of SNC and Nalcor employees. Deloitte carried out this work between July and September 2012. Some of its findings were (P-01887):

Team is operating in an high stress, high pressure environment that is derailing professional behavior

- Aggressive management
- Lack of respect for career experience
- Micro-management
- Confrontational
- Toxic communication (e.g. blame, defensiveness, stonewalling) (p. 26)

It is noteworthy that the Independent Project Review team, led by Derek Owen, produced a report dated August 31, 2012, in which it found that the Nalcor team “made excellent use of the interval between DG2 and DG3 to . . . [d]evelop and continuously improve Nalcor-SNC Lavalin alignment and organizational effectiveness” (P-00504, p. 13). Furthermore, the IPR found that Nalcor and SNC had proactively addressed the concerns regarding the implementation of the construction management strategy using alignment workshops and a step-by-step approach as the contracts were being awarded. The IPR commended this approach and recommended its continued implementation (p. 15).

However, it is clear that despite the IPR’s positive comments and Deloitte’s efforts, there were no significant improvements in the working relationship. From Nalcor’s perspective, the Team Effectiveness Program added some value but did not improve SNC’s performance. From SNC’s perspective, the relationship with Nalcor remained challenging. Mr. Bécharde recalled that after Deloitte’s involvement, Nalcor and SNC organized a town hall meeting with employees from both Nalcor and SNC. Its purpose was to show that management for both groups were aligned and committed to a successful project. Mr. Bécharde testified that everyone at the meeting was asked to stand up and comment openly about what was needed to improve the overall atmosphere at the Project office. He recalled “an assistant, administrative assistant that was SLI—and she was from the BAE-Newplan office—standing up and telling clearly that she was not believing, for her—and I’m choosing the term—this was full bullshit” (March 26, 2019, transcript, p. 54).

### **THE MOVE TO THE INTEGRATED MANAGEMENT TEAM MODEL**

Sometime in 2012, Ron Power made the decision to move the powerhouse engineering to Montréal despite what the Lower Churchill Construction Projects Benefits Strategy suggested. A Nalcor Engineering Deliverables Manager position was created to manage the office in Montréal. Mr. Power indicated that there were not enough key SNC people in St. John’s to complete the powerhouse engineering work as fast as was necessary.

By the end of 2012, it was clear that Nalcor intended to change the scope of the EPCM contract. In a letter to Mr. Bécharde dated November 19, 2012, Mr. Power stated that Nalcor “will be implementing organizational improvements to the Muskrat Falls site team, with full reporting to the Nalcor site manager” (P-02504, p. 1). Mr. Bécharde responded that,

as a result of this notice, SNC would decline any responsibility and liability under the performance requirements of certain parts of the EPCM contract.

On March 12, 2013, Nalcor formally announced the switch from the EPCM project management model to the IMT model. It is evident, however, that Nalcor had been de-scoping SNC as early as the spring of 2012, months before the official announcement. The decision to switch from the EPCM model was made by Nalcor's PMT with limited input from the Nalcor executive.

During 2012 and into early 2013, Nalcor removed SNC from managing procurement, project controls and construction management. SNC was also de-scoped from some components of the engineering and only retained full responsibility over the engineering of the powerhouse component. Responsibility for the engineering of the converter stations was taken away and awarded to GE Grid Solutions. The engineering of the turbines and generators was awarded to Andritz. The engineering for the transmission lines remained in St. John's.

Nalcor kept some SNC personnel on the Project, but it filled managerial positions with its own personnel and also recruited management contractors from agencies and companies such as Hatch, Stantec, AMEC and others. SNC continued to supply some personnel to the Project after the announcement of the switch to an IMT model.

Mr. Power testified that the decision to change management models was not taken lightly and that there had been many discussions among members of the PMT about it. The PMT Briefing Note states (P-00264):

Following extensive internal deliberation, it was becoming increasingly clear that the only viable approach to reduce the exposure of a lack of project management capability was to switch from an EPCM to an integrated delivery model, with SLI and Nalcor jointly contributing resources to the project team. This approach made sense as skill sets within each organization augmented the capability of each, while Nalcor believed that it could access the necessary resources to bolster the joint team from other consultants and providers (e.g. Hatch) as required. This joint team eventually was referred to as the Project Delivery Team (PDT), a joint Nalcor-SLI integrated organization led by Nalcor's senior resources under the umbrella of the newly founded Lower Churchill Management Corporation (LCMC). (p. 38)

The SNC witnesses who testified indicated, however, that Nalcor had made sustained efforts to push SNC out of the role of EPCM. In early July 2011, during the initial stages of the EPCM contract, Mr. Béchard had been assigned to St. John's by SNC. He testified that

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prior to joining SNC, he had been looking for a challenging project before he retired and that the Project seemed to be a good way with which to finish his career. Mr. Bécharde testified that he understood his role on the Project would be a senior management position, managing engineering and construction of generation facilities, substations and transmission lines. He testified (March 26, 2019, transcript):

It was clear in my mind and it was agreed with Patrick [Lamarre, Executive VP at SNC], that I was coming here and I will be having exactly the same authority that I was having with SEBJ, so coming here mean that I was managing the project. (p. 29)

As a result, Mr. Bécharde resigned from Hydro-Québec to accept a position on the Project. At Hydro-Québec, he had a good salary and a retirement plan. He stated that he would not have resigned his position at Hydro-Québec to work on the Project with less authority than he had while working for Hydro-Québec.

According to Mr. Bécharde's testimony, within two weeks of arriving in St. John's he realized that his role and the role of SNC as EPCM contractor were not what he had understood or expected. In 2011, Mr. Bécharde managed the SNC team. By early 2012, Nalcor took over more of his work in procurement and in early works execution on site. In late spring 2012, it became clear to Mr. Bécharde that he was only managing the execution of the engineering scope. Despite having what I would describe as significantly more experience in project management and in the construction of a hydroelectric facility than any of the core PMT members, Mr. Bécharde did not have a large management role in the Project. He recalled that, at the time, he and other SNC managers were asked to relocate to smaller offices. In Mr. Bécharde's opinion, this was a clear message that Nalcor was "taking over." Mr. Bécharde commented (March 26, 2019, transcript):

The way I can explain that is when they decide to push SLI out of the EPCM and they decide to put the integrated team in place, they were looking to have people from Newfoundland driving the show. There was very, very few SLI employee having a management role. It was either Scott O'Brien, Darren DeBourke, Kyle Tucker, Jason Kean, Ron Power that were in the top of the pyramid and they were the one to whom we had to report . . . they were giving us instruction and we were going along as per their instruction. (p. 47)

In an internal email exchange among SNC employees on February 5 and 6, 2013, one SNC project manager wrote (P-02423):

I sense that there is dissatisfaction among the staff about the way the project has been organized and has progressed to date. There is a degree of distrust

of the senior management group and their attitude toward the staff reporting to them. Many of the SLI folks feel they are being pushed aside and their opinions are not being listened too [sic]. (p. 2)

Another SNC employee responded:

I spoke to Scott [Thon] at some length after and expressed my concerns about this structure. . . . I think we are headed for trouble. (p. 1)

All of this evidence makes clear the ongoing apprehension among SNC personnel regarding their lack of input into decision-making, including into the decision to transition to the IMT model.

It was not until August 15, 2017, that Nalcor and SNC actually executed an Amending Agreement to reflect the change in SNC's work scope. It was made effective as of April 1, 2012 (P-01446, p. 1). Prior to the signing of this Amending Agreement, Nalcor's position was that the changes it had made to SNC's scope of work were authorized under the terms of the EPCM contract, which provided Nalcor with the flexibility to add resources and functions. The Amending Agreement confirmed that Nalcor had moved to using "a 'Project Delivery Team' to provide Procurement Services and Construction Management Services" (P-01446, p. 1). SNC's scope had been reduced to providing engineering services and supporting services, including resources, processes and tools for procurement, construction management and any other project-management services required by Nalcor.

Importantly, the Amending Agreement changed SNC's indemnity and liability obligations. The original EPCM Agreement specified that SNC was to indemnify Nalcor as follows (P-01436):

[F]rom and against any and all Liability which Company suffers, sustains or incurs arising out of or in connection with:

(a) any error, act or omission of the Consultant or its Personnel (p. 70)

The Amending Agreement limited SNC's scope of liability to (P-01446):

(a) any error, act or omission of the Consultant or its Personnel arising:

- (i) prior to April 1, 2012, in respect to all of the Services; and
- (ii) on or after April 1, 2012, in respect of Engineering Services only  
(pp. 3-4)

At the hearings, questions arose about whether the Nalcor executive, the IPR team, Nalcor board members and GNL fully understood the extent of the organizational dysfunction and other implications that resulted in and from the change to an integrated management team. The evidence is unclear as to whether the change to an IMT model was clearly communicated to GNL prior to Project sanction.

Nalcor board members Ken Marshall, Gerry Shortall, Terry Styles and Tom Clift testified that, prior to sanction, they were aware that a decision had been made to remove SNC as EPCM contractor. Mr. Marshall indicated that he agreed with the decision based on the concerns over the SNC scandals. All four directors testified that, leading up to Project sanction, they were satisfied that they were given all the information they required on this issue. However, I question whether the board members understood the full implications and potential risk stemming from the change in SNC's scope of work.

Derek Owen, the IPR team lead, testified that in 2012 he was aware that Nalcor had removed certain elements of the EPCM scope from SNC. It was his understanding that the final working groups were integrated in early 2013. The DG3 IPR report dated August 31, 2012, however, made no reference to SNC's reduced scope. In fact, it continued to refer to SNC as an EPCM contractor. Mr. Owen testified that the change in scope was not expressly set out in that report because the EPCM contract had not been formally amended at the time. Mr. Owen was not aware of any efforts by Nalcor to analyze the risks imposed by the change to an IMT model.

John Mallam, another member of the IPR team, could not recall when he heard that Nalcor had decided to change to an integrated management team. However, he acknowledged that the change was not mentioned in the IPR team's DG3 report.

Thomas Marshall, the Minister of Finance in 2012 and the Minister of Natural Resources in 2013, testified that he was not aware of the change to an IMT model until after Project sanction. He testified that even though he was informed after sanction, he agreed with the decision once the reasons for it had been explained to him. However, as I have done with the Nalcor board, I question whether Minister Marshall understood the full implications and potential risk stemming from the change in SNC's scope of work.

A presentation given by Nalcor to Minister Marshall on April 22, 2013, outlines SNC's role in the Project. It focused on Nalcor's "comprehensive procurement and assurance processes." The presentation did not, however, state that the role of SNC had been significantly downgraded and it concluded with suggested messaging for GNL that

included, “Government is satisfied that the relationship between Nalcor and SNC Lavalin is appropriate” (P-02586, p. 40).

Thomas Marshall testified that he did not have reason to be concerned about the change to an IMT model because it was his understanding that SNC would be doing the same work, regardless of whether it was as the EPCM contractor or as part of an integrated management team. Mr. Marshall acknowledged that he would not know enough about the differences between the two project delivery models to comment on this (November 6, 2018, transcript, p. 38).

Jason Kean testified that the strategic risk analysis for the Project at DG3 did not address any risk for the change from the EPCM to the IMT model. He testified that he did not consider the change to be a strategic risk because the de-scoping was already underway. Paul Harrington agreed with Mr. Kean’s testimony on this point and indicated that he had confidence that SNC’s removal as EPCM contractor could be mitigated to eliminate any possible strategic risk. Gilbert Bennett testified that he could not recall whether he questioned Mr. Harrington’s decision to make no allowance for strategic risk that might result from the switch to the IMT model.

### THE EPCM AND SNC: CONCLUSIONS

It is clear that, from the early stages of the Project, Nalcor had a strong preference for an IMT model. The early screening out of the EPC model and the lack of interest from the major potential hydro contractors to become involved in a project as part of an integrated management team forced Nalcor to consider an EPCM project model. Even after this model was chosen and an EPCM contract was awarded to SNC, Nalcor continued to maintain a high degree of involvement at the managerial level and scrutinized SNC’s management decisions aggressively. From the beginning, it was apparent that the hydro experts provided by SNC were not given full managerial authority over the EPCM scopes of work. Consequently, I find that the PMT never intended to allow SNC to perform all of the services stated in the EPCM contract, which would have reduced the PMT’s management authority.

Ron Power testified that (May 21, 2019, transcript):

[T]he other thing this Inquiry needs to keep in mind, we changed to the integrated team model not because we wanted, because our preference was

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to go with the EPCM model. That's what we started out—that's what we evolved into. But it wasn't happening as it needed to happen, so we went further into the integrated team model out of necessity. (p. 38)

I reject Mr. Power's explanation.

I am satisfied that SNC's early performance problems, including lack of resources, difficulty in the implementation of document control and project control systems and failure to complete certain deliverables on time, were matters that were of legitimate concern to Nalcor. Scott Shaffer of Grant Thornton testified (February 19, 2019, transcript):

**MR. LEARMONTH:** So do you have any comment on the point that it appears, based on this information, that there was at least some legitimacy to the concerns that Nalcor had about the performance of SNC.

...

**MR. SHAFFER:** Yes, absolutely. (p. 41)

However, instead of providing assistance and support to SNC in its attempts to resolve these problems, Nalcor exacerbated them by creating a poisonous work atmosphere, by micromanaging and interfering with work performed by the SNC personnel and by undermining SNC's efforts to recruit and hire personnel. I accept the evidence of Normand Béchard on this issue.

As noted above, Nalcor had expressed a strong preference for an IMT model before issuing the RFP. When industry response to that model was cool, it shifted gears. But when SNC had a weak start, Nalcor took full advantage of the opportunity that this presented and proceeded to manage events for the purpose of further undermining SNC's performance. In the end, Nalcor, and in particular the PMT, obtained the result that it had always wanted: an integrated management team with the PMT in charge and with SNC providing a limited support role in all areas except engineering, where it retained the lead role.

I also have concerns about whether Nalcor provided GNL with appropriate communications on the challenges with SNC, both before and after Project sanction. I find that the timing of the announcement of the switch to an IMT model is a matter of particular concern because the PMT had taken measures to implement that model in the months prior to sanction. By March 2013, the transition was a *fait accompli*.

I am not satisfied that the decision to de-scope SNC's role, nor the obvious liability risk associated with such a decision, was ever properly assessed by the PMT, the Nalcor

executive, or the Nalcor board. Nor was it properly communicated to GNL. The testimony of Mr. Harrington and Mr. Kean establishes that the PMT did not feel that it was necessary to assess the risk of the change. The documented communication between Nalcor and GNL is incomplete and lacking in frankness and transparency. The additional risks that this change introduced should have been quantified for the purposes of the DG3 estimate and the failure of Nalcor to do so was improper. The PMT's actions here are compatible with the view that the PMT felt that "we know best."

The decision to remove SNC as the EPCM contractor was made by the PMT without the approval of the Nalcor executive, the Nalcor board of directors or GNL. Gilbert Bennett testified (November 27, 2018, transcript):

**MS. O'BRIEN:** Okay. So you're saying that this was not something that was authorized by you. This was a decision that was made at Paul Harrington's level?

**MR. BENNETT:** It's within—this would be within the project team scope.

**MS. O'BRIEN:** Okay, so this is not a change that you believed that you had to approve?

**MR. BENNETT:** Had to ratify or approve? No. But, I mean, I would agree that this—these were the things that needed to have been done in order to ensure that the work gets done in a quality way.

...

**MS. O'BRIEN:** So even though that this change would've meant there was a, you know, a transfer of risk from what risk that was clearly in the lap of the consultant, SNC-Lavalin, and you're taking that risk now, and we're going to put it over in the lap of Nalcor. Those kinds of changes, you would have given full autonomy to Mr. Harrington and his team to make?

**MR. BENNETT:** The project team and the contract administrators within the context of their commitment on the contract have that authority. (pp. 51, 54)

In a press release previously referred to, which was issued on December 22, 2010, Gilbert Bennett was quoted as saying (P-02451):

SNC-Lavalin offers the world-class engineering, procurement and construction management experience required for a project of this magnitude. **Their specialization in hydroelectric developments, transmission, HVdc and civil works will be critical to the successful construction of the Lower Churchill Project.** (emphasis added, p. 2)

It is clear that Nalcor recognized that it required the specialization of SNC for the successful construction of the Project. Given this recognition, it is shocking that the PMT had the authority to remove SNC as the EPCM contractor without the approval of Gilbert Bennett, the Vice-President responsible for the Project or, for that matter, the Nalcor executive, the Nalcor board and possibly GNL.

There is no evidence to indicate that Edmund Martin and Mr. Bennett made significant efforts to address the problems with SNC at the executive level. Again, not only did the senior members of the PMT lack important hydro construction experience, they also personally benefited from the de-scoping of SNC. Many of the contract management and procurement labour hours that had been earmarked for the EPCM contractor were ultimately worked by members of the PMT.

The experience of SNC in hydroelectric development and construction, particularly that of Normand Béchar, was required and the opportunity to use SNC's experience was lost due to the decision of the PMT. In my view, that decision significantly impacted the Project in a negative way.

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## CHAPTER 11: ACTIVITIES FOLLOWING FINANCIAL CLOSE

Procurement, sometimes called “supply chain management,” includes the processes of contracting, purchasing, materials control, expediting, logistics and inspection of goods and services. When executed properly, procurement processes and procedures ensure quality, cost efficiency and fairness in the execution of a project.

The Grant Thornton *Construction Phase* report (P-01677) describes Nalcor’s procurement strategy as follows:

Nalcor’s overall procurement strategy is outlined in its Overarching Contracting Strategy. This document considers factors such as risk, skills, resources and capabilities, contract type, obligations and interfaces. In preparing this strategy Nalcor conducted an analysis of the contracting environment to determine lessons learned and best practices. (p. 106)

As quoted by Grant Thornton, Nalcor’s contracting strategy identifies these main objectives (P-01677):

- Achieve the required project quality
- Optimize the project schedule
- Minimize overall cost and schedule risk
- Achieve optimum and appropriate risk allocation
- Meeting benefits and First Nations obligations (p. 107)

Pat Hussey was initially contracted by Nalcor to oversee the supply chain management processes that were to be conducted by SNC, the EPCM contractor. Even before Project management changed from an EPCM model to an IMT model, as discussed in the previous chapter, Mr. Hussey had assumed managerial responsibility for all supply chain activities for the Project. He testified that this was necessary because SNC had not been executing procurement in a timely and efficient manner. He had been involved in developing the strategy for procurement and contract packaging prior to Project sanction and before the hiring of SNC.

### PROCUREMENT AND THE BID EVALUATION PROCESS

In March 2011, after hiring SNC as the EPCM contractor, Nalcor issued a “Master Contract Package List” to SNC (P-02129), a document that it had apparently developed with

some input from SNC. This document outlined the components of all the contracts to be issued during the Project and it has been regularly revised over the course of the Project using a change management process that the Project Controls team oversees. Nalcor had also developed other important contracting strategy documents, including the “Master Package Dictionary” (P-02084) and the “Overarching Contract Strategy” mentioned earlier (P-01177). Nalcor contracted outside consultants to review its various contracting strategies to ensure that they were appropriate. PowerAdvocate, for example, did one of these reviews in 2012, primarily looking at the contract strategy for the transmission line component (P-02083).

In Grant Thornton’s *Construction Phase* report, Nalcor’s bid evaluation processes, which were implemented to award individual work packages, were said to be well planned, considered and executed.

During his testimony, Pat Hussey described the processes for contract awards, starting with the time a package was developed until the awarding of its contract, referring to the flow chart below (P-00888, p. 16):

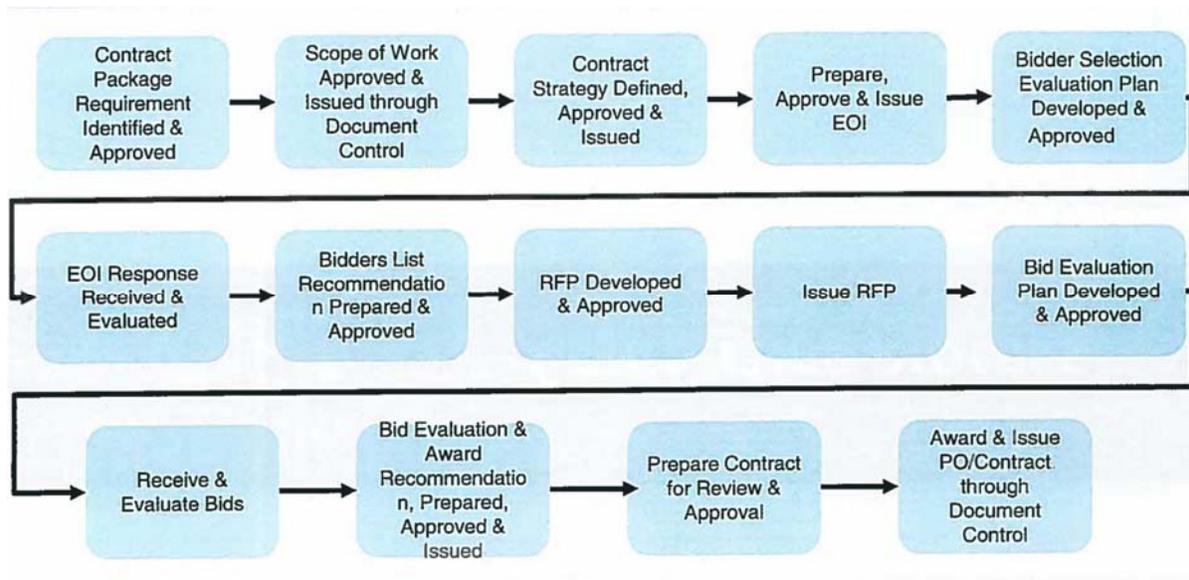


Figure 3.7: Nalcor’s Process for Awarding Contracts

Nalcor used one of the following four contract templates, according to the type of goods or services required:

1. Civil works, such as CH0007, the Astaldi contract
2. Services, such as for transportation or catering contracts

3. Supply and install, such as for the AC switchyard
4. Procurement of materials, which Nalcor bought and then free-issued to contractors

Nalcor developed and approved a Bid Evaluation Plan for each package before bids were received. These plans governed the evaluation of the bids. Bid evaluations took into account a range of considerations, including price, technical considerations, quality, safety, local benefits and sometimes environmental considerations. Mr. Hussey testified that when bids came in higher than the allocated budget, “we looked at whether—what ways we could reduce those prices, whether, you know, through negotiation or checking the scope” of work (March 1, 2019, transcript, p. 32).

Nalcor’s level of scrutiny of packages increased with the value of the package. Guided by their applicable authorization limits, PMT members would review and sign off on packages valued at less than \$10 million. If the package was worth more than \$10 million, a more formal due-diligence process was applied. That process involved consultations with Nalcor’s financial staff, insurance personnel and legal counsel. Nalcor’s Finance division was responsible for assessing the creditworthiness of all suppliers who bid on packages worth more than \$10 million (P-02130). Contracts valued at more than \$100 million required sign-off from Nalcor’s executive.

I am satisfied that Nalcor appropriately planned and executed its procurement and contracting policies and procedures. Although I have some concerns with the awarding of contract package CH0009, the Barnard-Pennecon contract (discussed in Chapter 15), I generally conclude that Nalcor’s procurement processes and procedures met what is said to be best-practice standards and that bids were properly evaluated.

### **The Contract Packaging Strategy: What Size?**

Mr. Hussey testified that SNC recommended the use of smaller work packages, particularly with respect to the Project’s transmission components. He added, however, that “the market told us differently” (March 1, 2019, transcript, p. 25). He further testified that SNC ultimately “signed off” on the work packages that Nalcor selected for the Project. Mr. Hussey was asked whether Nalcor’s use of large packages effectively eliminated smaller contractors from bidding, thereby reducing competition. He replied: “[I]t’s all about the contractor capability and the market appetite for any contract” (p. 68).

In its *Construction Phase* report, Grant Thornton made the following observations and findings about Nalcor's decision to use large work packages (P-01677):

- Nalcor subdivided the LCP into multiple work packages. We reviewed guidance from the Project Management Institute ("PMI") as published in the A Guide to the Project Management Body of Knowledge ("PMBOK"). PMBOK states ". . . the process of subdividing project deliverables and project work into smaller, more manageable components. The key benefit of this process is that it provides a framework of what has to be delivered." Therefore, it is our conclusion that Nalcor's decision to subdivide the Project into multiple construction packages followed industry best practices.
- Nalcor selected a procurement strategy to use large packages, less interfaces and more risk transfer to contractors. This decision was contrary to their research which indicated that smaller work packages work better and also contrary to SNC's opinion that the construction packages should be smaller. While this decision was not in accordance with the information Nalcor had available to them, Nalcor has indicated that financiers preferred larger work packages. Accordingly, Nalcor structured larger work packages.  
(p. 110)

The evidence indicates that the largest contract packages were the construction of the powerhouse and spillway, which was awarded to Astaldi, and the construction of the transmission line, which was awarded to Valard. As will be discussed subsequently, Astaldi's failure to perform and Nalcor's inadequate oversight resulted in major cost overruns, schedule delays and significant impacts on other contractors. Notwithstanding this, I am unable to conclude that Nalcor's decision to proceed with large contract packages was inappropriate in these circumstances. Clearly, however, Nalcor understood the risks in taking this approach.

### **Risk Transfer**

I agree with the conclusion of Miller Thompson, as quoted in the Grant Thornton *Construction Phase* report (P-01677):

*"In conclusion, while certain contractual terms included in the Agreements were negotiated to be more favourable to the Contractors than as originally included in the Owners' template, we did not locate any contractual terms included in the Agreements that were clearly unsuitable for an agreement of this type. Included in the Agreements were contract terms providing the Owners with the ability to approve additional costs and time extensions, and to terminate the Agreements*

*for convenience or for poor performance on the part of the Contractors. Therefore, delays and cost overruns that occurred cannot be attributed directly to the contractual terms of the Agreements themselves. The contractual terms of the Agreements reflect a procurement/contractual strategy employed by the Owners to limit the aggregate cost of the Project, and in so doing, allocated a higher proportion of risk to the Owners.” (p. 83)*

There was fair and competent consideration of risk transfer and retention in this strategy, relative to other procurement models.

### **Agreements Affecting Procurement Practices**

GNL issued or signed three official documents that influenced Nalcor’s procurement and contracting strategies. They included:

- The 2010 Lower Churchill Construction Projects Benefits Strategy (P-00035)
- The Lower Churchill Innu Impacts and Benefits Agreement, November 18, 2011 (P-00300)
- The Memorandum of Understanding between GNL and the Government of Nova Scotia for the Maritime Link, November 2011 (P-00044)

In order to maximize the benefits of the Project to the people of Newfoundland and Labrador, GNL and Nalcor prepared a document in 2010 to outline the overall benefits strategy for its construction. The Lower Churchill Construction Projects Benefits Strategy also outlined Nalcor’s commitments to gender equity and diversity. Its stated purpose was (P-00035):

This Benefits Strategy will inform all contracts, purchasing, and employment, and all contractors and subcontractors will be required to adhere to the principles and commitments as stated herein. The overriding objective of this Benefits Strategy is to provide opportunities and benefits to the people of Newfoundland and Labrador during the construction phase of the projects. (p. 1)

The Lower Churchill Innu IBA required Nalcor to obtain, through the Innu Nation, a list of potential bidders for specified contract packages. Their bids would be accepted with a view to ensuring that some benefits of Project construction accrued to Innu businesses. Similarly, the IBA required the hiring of Innu workers. The target spending

amount aimed for by the IBA was \$134 million. Nalcor exceeded this amount, because Innu businesses ultimately received more than \$575 million in cumulative value. The increase was partly because bids came in higher than estimated, though not significantly according to Mr. Hussey. There was also an issue with the IBA first-bid opportunity contracts. Mr. Hussey testified that Nalcor found that there was a premium of 2% to 5% built into the contracts to which the IBA applied when they were awarded to Innu-related companies.

The Memorandum of Understanding with the Government of Nova Scotia set out requirements for industrial and employment benefits for the Project. In this MOU, GNL agreed to direct Nalcor to ensure that Nova Scotia contractors, service providers, consultants and suppliers were provided with open, timely and transparent access to certain procurement opportunities for the Project. Specifically, Nova Scotia and Newfoundland and Labrador contractors were to receive “equal treatment” for the construction of the ML transmission project. The press release GNL issued to announce this MOU acknowledged the benefits for the full Atlantic region and specifically referred to Newfoundland and Labrador’s Lower Churchill Construction Projects Benefits Strategy, which required the Province to “first honour commitments made to Aboriginal groups,” and thereafter to give first consideration for employment to qualified residents of Newfoundland and Labrador. For construction of the generation project, residents of Labrador were to be considered first, followed by residents of the Island (P-00044, p. 1).

Grant Thornton concluded, as I do, that Nalcor had “well documented policies and procedures” in place for procurement, as well as extensive documentation. Relying on Nalcor’s internal audit group, Grant Thornton also concluded that “the documented policies and procedures governing Nalcor’s conduct in retaining and subsequently dealing with contractors were in accordance with best practice” (P-01677, p. 70). Generally I agree with Grant Thornton’s conclusions, subject to my comments on contract package CH0009, which appear later in this Report.

### **The Grant Thornton Report on Four Specific Cost Areas**

Based on anonymous complaints received, the Commission retained Grant Thornton to conduct a review of four specific areas of expenditures by Nalcor:

1. Living out allowances

2. Supplies, including personal protective equipment (PPE) and small tools
3. Non-arm's-length contracts
4. Recording of daily work hours

This review was managed by Jennifer Fiddian-Green, a partner with Grant Thornton, who leads its forensics practice in Canada.

### 1. Living Out Allowances

“Living out allowances” are funds paid to contractors and employees assigned to work in a specific location that is more than 125 kilometres from their place of origin (their normal residence). Although Grant Thornton did not identify anyone receiving this allowance who was not entitled to it, there were instances in which its payment could not be fully rationalized. However, Grant Thornton concluded that the explanation Nalcor provided in these cases appeared to be reasonable.

Despite Nalcor’s assurances that it had a process to cover situations in which a person’s “place of origin” changed while they were working on the Project, Grant Thornton found that Nalcor had no written policy for dealing with this scenario. It relied, instead, on self-reporting. Based on Grant Thornton’s review of living out allowances, there is no basis for me to conclude that there was any abuse regarding the payment of these allowances.

### 2. Personal Protective Equipment and Small Tools

Grant Thornton was advised by Nalcor that most of the PPE and small tools acquired for the Project were purchased by on-site contractors, not by Nalcor. Costs incurred by Nalcor for the purchase of PPE and small tools were, however, recorded in a general ledger account under “safety equipment.” I accept the following conclusion of Grant Thornton: “Based on the enquiry, review and testing work performed, we have identified no issues to report relating to PPE and small tools. We do note, however, that a number of internal control/process improvement opportunities were identified, given the size of this project” (P-04350, p. 18).

### 3. Non-Arm's-Length Contracts

This part of Grant Thornton's review was included because of a suggestion that companies that were not at arm's length from senior Nalcor management were contracted for services without a tender.

Grant Thornton selected contracts with 43 vendors and found that, for most of them, Nalcor's conflict of interest provisions were included in their contracts. Grant Thornton also found that not all vendors were required to provide an affirmation that they were not in a conflict of interest. As well, Grant Thornton found that Nalcor did not independently verify the information that was reported, relying instead on the agency or contractor involved to disclose any conflict of interest. Although a conflict of interest log existed, it was not being used to log complaints and investigations about this issue.

Having noted the above, however, Grant Thornton could find no conflicts of interest in the contracts that it reviewed. Although there was a weakness in Nalcor's process and it could have been more proactive in independently assessing and verifying vendor/owner information to ensure there was no conflict of interest, there is no indication that Nalcor entered into non-arm's-length contracts. I accept Grant Thornton's conclusion on this point (P-04350):

Based on the enquiry, review and testing performed, no additional conflicts of interest were identified. However, for a project of this size, we would have expected that a more detailed, risk-based approach be followed to independently assess, research and verify vendor ownership and directorship information to ascertain that no undisclosed non-arm's length relationships or other conflicts existed, rather than relying on vendors to self-declare. (p. 23)

### 4. Daily Work Hours

This part of Grant Thornton's review responded to a suggestion that employees had been paid for time not worked through the falsification of time records.

In late October 2017, Nalcor's internal audit team performed a Muskrat Falls site time-sheet review. This work was initiated as a result of anonymous allegations reported to Nalcor about time-sheet errors and inappropriate billings. Grant Thornton relied on Nalcor's internal audit and I accept Grant Thornton's conclusion (P-04350):

Based on the enquiry, review and testing performed, no unexplained discrepancies were noted relating to daily hours worked, other than for Individual #1. . . . As noted, this situation was previously dealt with by Nalcor

and the individual (who worked for a contractor) was dismissed from the Project. (p. 31)

I conclude that the policies and processes established by Nalcor were reasonable and incorporated acceptable practices related to procurement and contracting. Although the established policies were not fully implemented on all occasions, there is little evidence to indicate that costs increased as a result of Nalcor's procurement or contracting policies and processes.

### **NALCOR'S ON-SITE AUTHORITY AND OVERSIGHT OF CONSTRUCTION**

One of the issues arising from the evidence was the sufficiency of the PMT's on-site presence and Nalcor managers' on-site decision-making authority during the Project's construction phase. The evidence suggests that there was a disconnect between the PMT office in St. John's, where most of the decision-making took place, and the construction sites. Several witnesses testified that there were significant delays caused by the decision-making structure and that the PMT at the St. John's office micromanaged the work of contractors. It is clear from the evidence that this caused discord between Nalcor personnel and contractors.

Nalcor's "Construction Management Plan" of April 2, 2014, states (P-04028):

- A level of financial approval and decision making authority will be necessary at remote site offices (i.e. Muskrat Falls) in order to facilitate the efficient administration of the LCMC's contractual responsibilities.
- All contract changes will require approval of the LCMC in accordance with the Authorization Matrix . . .
- Timely decision making and responding to contractor queries, requests and clarifications is imperative to avoid delay claims from the contractors.
- LCMC site team representatives will be responsible to facilitate interpretation of any relevant LCMC and Nalcor Energy policies.
- Clear lines of communications to be established between LCMC site and home office teams and the contractor.
- LCMC's site team is a small, flexible group that is keeping abreast of the entire project and can proactively advise LCMC PMT at Home Office of impending changes, concerns and difficulties.

- LCMC’s Component Project Managers have cradle-to-grave accountability for their Project/Area, hence they must have influence and oversight on the overall construction progress.
- Home Office liaison will be with person’s counterpart in Site organization and not “up the line” through either organization. This is key to facilitate organizational effectiveness and ensure issues are addressed on a timely basis.
- ...
- The organization structure adopted for the Project is based upon defined roles and reporting relationships, such that each individual has a clear description of their authority, responsibility and accountability necessary for the project to succeed. (pp. 14–15)

Paul Harrington testified that there were two types of managers at the Project’s generation component site: site managers were responsible for the camp, catering and security, and construction managers were responsible for the management of the contracts, quality standards and the safety and environmental standards (June 5, 2019, transcript, p. 73).

Nalcor had documented the spending authority limits for the various levels of Project management in the Approval Authority Limits Matrix, within its “Capital Expenditure Authorization Procedure” document (P-03535, pp. 22–25). Ron Power testified that site managers had a spending authority limit of \$250,000. Project managers such as Scott O’Brien had an authority limit of \$2 million (P-03535). Initially, General Project Manager Ron Power had a spending authority limit of \$25 million. After his role changed (following bifurcation of the Project), that authority was decreased to \$5 million. The PMT contended that these financial authority limits were sufficient to empower the site team to make necessary decisions. This point was disputed by several witnesses.

### **Assessing Scott O’Brien’s Time on Site**

The Commission analyzed several travel claim authorizations for Scott O’Brien (Project Manager, Muskrat Falls Generating Station) and Gilbert Bennett (P-03636; P-03637) to determine how much time they spent at Muskrat Falls. The analysis covered the period from early 2012 to the end of 2018, beginning with their first visits to the site (Mr. Bennett’s on March 6, 2012, and Mr. O’Brien’s on April 24, 2012).

### Days on Site

	<b>2012 (Mar–Dec only)</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Scott O'Brien	12	19	33	14	19	19	5
Gilbert Bennett	20	24	35	28	27	66	45

*Figure 3.8: Scott O'Brien and Gilbert Bennett Days on Site 2012 Through 2018  
(Source: P-03636; P-03637)*

The records indicate that Mr. O'Brien made 96 trips to Labrador during this period covering a total of 121 days in six-plus years. This represents an average duration of 1.26 days per trip and totals approximately 7% of his working time during the period (based on 250 working days a year). Only 21 of those visits were for longer than one day. For his part, Gilbert Bennett spent a total of 245 days in Labrador during the period, with an average visit length of 2.13 days, which represents 14.5% of his time. Of Mr. Bennett's trips to Labrador, 94 of his site visits lasted more than one day. It should be noted that Mr. Bennett was responsible for the overall Project, while Mr. O'Brien was responsible for construction of the generating station.

### **Contractor Issues with PMT On-Site Presence**

The site presence of the PMT, or lack thereof, was an ongoing issue in the execution of the Astaldi contract to build the generating station. Mario Abbafati, then acting Project Manager for Astaldi, wrote a letter on June 23, 2014, to Desmond Tranquilla, a Nalcor site manager at the time, requesting that a Nalcor representative with sufficient authority be based at the site (P-03022):

Contractor writes to confirm that during the last few weeks Company has been asked on numerous occasions, to provide somebody from your organisation who is willing and able to stay on site Monday to Friday on a regular basis who has the knowledge and the authority to discuss and / or approve various subjects in respect of the activities which are being executed on the site, including discussions, modifications and approvals.

As you are already aware a lot of time is being lost / wasted as a result of Company not having such a responsible person on site on a full time basis. Time is of the essence with this prestigious Project, therefore it is most important that decision making should be streamlined in order that down-time is minimised and productivity is maintained. (p. 1)

Don Delarosbil became Astaldi's Project Manager at the Muskrat Falls site in May 2015 (he left the position in October 2018). Mr. Delarosbil testified about the problems that arose because of a lack of PMT decision-making authority on site (May 8, 2019, transcript):

**MR. DELAROSBIL:** Well, from my point of view, it's important to have somebody on the job site that has full responsibility for that project and the ability to be able to make decisions, construction decisions. They need somebody with construction experience that'll be able to see the impacts and understand your requests, what you're looking for and why you're looking at it, and the ability to be able to make a timely decision, some on a day-to-day basis and some—have the ability to instruct others to dig in deeper to be able to get back to the contractor or contractors on the information requested.

So, it's critical—as an example—and I believe Nalcor believed it was critical, too, from the contractor's point of view, because if myself or Georges [Bader] left the site we had to send a letter. So, I was a project manager for Astaldi, managing a \$1-plus-billion contract, I couldn't see myself not be on the job site to manage that work. It's just—it's just there's too many things that happen in a day that requires senior management attention. . . . There's a lot of things that happen. So, for me, it's critical; you need a decision maker.

...

**MR. LEARMONTH:** Now, based on your experience from working on other projects, what—how does this apply on other projects at this point, apply on other projects that you've worked on?

**MR. DELAROSBIL:** Well, every other—every other site that I've worked on there was a person on-site that had that authority.

**MR. LEARMONTH:** A representative of the owner?

**MR. DELAROSBIL:** That's right, yeah. (pp. 76–77)

Mr. Delarosbil added (May 8, 2019, transcript):

The issue was that there was nobody at these meetings from the Nalcor side with any decision-making power so everything dragged on. So the issue you had last week was compounded by the issue you had this week, compounded by the issue you were going to have next week. It was just compounded all the time and it was dragged on all the way through until, you know, in most cases, it was put into a pot and then after that we negotiated the pot, you know. (p. 79)

Mr. Delarosbil testified that he had authority to spend \$5 million on site. However, to his knowledge, the maximum authority that any on-site Nalcor representative had was

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\$25,000. When advised that certain Nalcor representatives had on-site authority of \$250,000, he stated: “Well, they didn’t use it if they had it.”

Georges Bader was Astaldi’s Lead Planner at the Muskrat Falls site from July 2014 until February 2015, at which point he was promoted to the position of Deputy Project Manager, a position he held until October 2018. Mr. Bader testified (May 8, 2019, transcript):

The importance of having a project manager on site is one side is commercial; the second side is developing a culture, a leadership for his team, for the contractors on site, a reference. . . . It will facilitate for him the decision-making process. Instead of just relying on a department manager [to] take on an issue, he will have his input as well, his own judgment. That was missed; frankly, that was missed on the site.

And Nalcor’s personnel on site were well qualified enough to help, you know? Like, department managers, inspectors, site managers, they had a job to do, they had a site to run. They were less concerned about the commercial issues because it’s a project manager job. So, every time we had a commercial issue, we had to meet with a dispute resolution personnel.

...

You’ll see letters on specific topics, probably 10 letters on specific topics; heating and hoarding or site instruction. . . . So lots of letters exchanged. One meeting between two senior managers would resolve this. It would free up the time for both personnel to focus on improving the job rather than worried about looking for how to get the money or financially or commercially be protected. (pp. 81–82)

When asked to state his understanding about the spending authority of the Nalcor representatives on site, Mr. Bader replied (May 9, 2019, transcript):

Well, I agree. My understanding was as well that \$25,000 was the limit for the individuals on site, and I believe this was said to me by the site managers. I think many of them. Because I’ve seen three of them. At least two of them mentioned that their limited authority or approval capacity was \$25,000. And to my understanding, even if they had it—more than that—they had to go always to St. John’s. That was the last four years on the job for every commercial thing. It had to go to St. John’s. And I think it’s part of a process management procedure Nalcor has. So, if it’s above a certain number, a committee has to take a place. That’s how it was explained to me. I may be wrong, but that’s how it was . . . explained to me that you would need the project control involvement to check where to bring the money from the contingency allocated. I think it was part of that change management process or . . . they had. (p. 1)

Ed Knox was Astaldi's Quality Manager at the Muskrat Falls site from January 2014 to October 2018. He, too, was critical of Nalcor's decision-making practice on site. He testified (March 15, 2019, transcript):

The problems we had, in a lot of instances, that the decisions being made on site in more than one occasion would be overturned by an engineer or somebody else off-site working with SNC-Lavalin or from the St. John's office or from the project management side itself. And this sometimes was disconcerting and, you know, troublesome from us because we were trying to progress the work and we have the solutions in play on site, but then those solutions would be pushed and delayed from input off-site. (pp. 43-44)

The lack of on-site decision-making authority impeded Valard's progress in its construction of the transmission towers, as well, according to its representatives. Kelly Williams, Project Manager for Valard, testified that there were often disagreements about the type of foundation to be used for the towers. Mr. Williams was critical of the lack of decision-making authority held by Nalcor representatives on site because, for example, it limited the ability to resolve foundation issues with Nalcor's site team. The following exchange took place during his testimony (April 3, 2019, transcript):

**MR. LEARMONTH:** So if you had a dispute as to whether it should be a grillage or a bog for example, would there be anyone on site who would have the authority on behalf of Nalcor to settle that issue?

**MR. K. WILLIAMS:** Typically no. Within the lower cost foundations, sometimes the authority would be there on site. But any significant increase in the foundation-type cost would be—would go back to St. John's for discussion and decision.

**MR. LEARMONTH:** But how long would it take for that—a problem of that nature to be resolved? I mean, you're in the middle of work. You can't . . . move all over the place. You have to do it sequentially, don't you?

**MR. K. WILLIAMS:** Yeah. Yes.

**MR. LEARMONTH:** So what would happen—were there any delays from your point of view?

**MR. K. WILLIAMS:** Yeah, there were delays. It could be days. It could be weeks. And on occasions it was months.

. . .

**MR. LEARMONTH:** Well, if there was a delay of months, how would that affect your work on the project, your ability to get the work done?

**MR. K. WILLIAMS:** It increased the non-linear nature of our work process, which is critical for our progression. So we would skip those sites, essentially, and we would move on to other sites where they were less contentious or where we were able to install the foundation and carry on with our subsequent activities.

**MR. LEARMONTH:** That would—that’s not the way you had preferred to go, is it?

**MR. K. WILLIAMS:** No.

**MR. LEARMONTH:** No. But did this cause problems?

**MR. K. WILLIAMS:** It caused—yeah, it caused problems with our workflow and it caused some conflict in the field at times. (p. 20)

Unlike witnesses from Astaldi and Valard, Barnard-Pennecon<sup>5</sup> witnesses did not explicitly comment on the question of whether the Nalcor on-site representatives had sufficient decision-making authority. However, there was commentary about usual industry practice. Aaron Rietveld was Barnard-Pennecon’s on-site Project Manager. He testified that being present on site is “typically how most of these bigger contractors perform their work. It’s certainly how we perform our work.” Mr. Rietveld went on to say (April 4, 2019, transcript):

Our project managers and superintendents that are assigned to the project are always there where the work is taking place and actively managing it, obviously construction—you know, construction projects, especially of this magnitude.

A lot of things happen every single day; issues come up that you need to be there to make sure they’re addressed and it’s just not really, from our standpoint, viable if had I been in, you know, Montana, say, to be able to manage the project effectively or participate. There’s meetings—you know, lots of meetings every day and just to see the work. It’s—you know, it’s just important that you’re there on this job site. (pp. 14–15)

Mr. Rietveld further stated that, in situations where the schedule is compressed, there are always many decisions to be made from day to day. He testified (April 4, 2019, transcript):

You’d be amazed at how many issues come up during the course of the day, whether they’re minor or major, that need a decision to be made and you need the appropriate level of decision-making ability at the site where you can actually see what’s going on and what—and then make an appropriate decision. (p. 15)

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<sup>5</sup> Barnard-Pennecon was awarded the contract for the construction of the north and south dams.

While Mr. Rietveld acknowledged that more decision-making on site is always beneficial, he was not critical of Mr. O'Brien's lack of presence on site. For instance, Mr. Rietveld testified (April 4, 2019, transcript):

**MR. LEARMONTH:** Would you have preferred if Scott O'Brien had been on site more often? Do you think that would have assisted you in delivering your work?

**MR. RIETVELD:** Well, again, I mean, he's the one that signed all the letters and—but I don't—I'm not naive enough to think that he's the—was always the one making the decisions, and so I don't know if having him personally on site would have helped or he would have—it would have been the same issue where everything would have still had to go to—you know, to St. John's . . . per se. But I do think that they could have been this—their site guys could have been empowered, you know, more to make more timely and—more timely decisions, sure. (p. 32)

In considering the testimony on this issue, I had the distinct impression that Aaron Rietveld and Derek Tisdell, who testified on behalf of Barnard, were being very careful in their testimony because Barnard had outstanding commercial issues with Nalcor. Based on the similarity of their evidence with regard to dealings with Nalcor, my sense is that contractors with ongoing involvement with the Project were, for the most part, very careful about what they presented to the Commission, including their observations regarding on-site authority. The same can be said for the representative of Andritz who testified at the hearings.

Several of Nalcor's site-management personnel also testified on the issue of the decision-making presence on site. Their testimony is discussed below.

Mark Turpin was an Area Construction Manager for Nalcor at the Muskrat Falls site from 2014 to 2016. In a May 2016 email to Stan Marshall (P-01901), Mr. Turpin reported on issues he had experienced at that site. In this note, he stated:

Its decisions like this from the C1 Component Manager [Scott O'Brien] that are stestimic [*sic*] to the overall problems associated with the entire C1 construction program at Muskrat falls. His lack of "Boots on the Ground" construction experience has stifled the execution progress with site decisions having to be vetted through an inexperienced St John's management team leading to incorrect and late decisions. The lack of team approach and failing to listen to opinions and suggestions from other more experienced professionals will continue to plague the project. (p. 5)

Mr. Turpin went on to detail an incident in which he had disagreed with Mr. O'Brien about Nalcor's approach to the roller-compacted concrete (RCC) mix design. Mr. O'Brien and Nalcor's PMT had made the decision that, to reduce Project risk, the contractor would be responsible for the RCC mix design. This responsibility involved determining the proper cement mixture, securing materials and production. Mr. Turpin, who was concerned about the timing risk and potential delivery delays, believed that the RCC mix design should be performed by Nalcor. Mr. Turpin and SNC's engineering manager engaged two RCC experts to consider the issue. Mr. Turpin indicated that the experts prepared a memo that proposed an alternative to the PMT's decision on the RCC mix design. Mr. Turpin explained in his email that: "The memo was ripped up in front of us with a warning if it ever surfaced all members who signed the Document would be fired" (P-01901, p. 5). In his testimony, Mr. O'Brien denied Mr. Turpin's allegation that he had ripped up the memo.

Mr. Turpin also wrote:

I had brought these issues to my superior at the time, Ron Power with no results, it appeared that he didn't want to discuss them. I then requested a meeting with both Ron Power and Jason Kean at the office prior to Christmas 2015 to outline my concerns. This was handled with a "you guys are going to have to work it out" response, which speaks volumes to their "Conflict Resolution Skills". Not what I was expecting from senior members of the LCP Management Team. (p. 6)

Desmond Tranquilla was a Nalcor site manager at the Muskrat Falls site from 2013 to 2015. He testified that most of the decision-making for the Project came from the PMT office in St. John's, and that the \$250,000 spending authority allocated to him was a lower spending authority than he had previously worked with on other projects. Mr. Tranquilla noted that this approach was not necessarily wrong, but that he was not used to that type of project delivery method. He testified that, in general, site managers "don't like being in situations where you believe you have all the accountability, but none of the authority to bring it about" (May 14, 2019, transcript, p. 39). Although Mr. Tranquilla stated that his \$250,000 spending authority was "a fairly light number for a site of that size," he also said it gave him sufficient authority to do his work and that he "probably communicated with Scott [O'Brien] on a daily basis" (p. 40).

Mr. Tranquilla noted that the turnover on the site-management team was high. This included the resignation of Ted Vanwyk, whom Mr. Tranquilla described as a very experienced manager. In his letter of resignation (May 18, 2014), Mr. Vanwyk wrote (P-03048):

On the Lower Churchill Project, construction management is now directed by Nalcor in St. John's and on site we are the eyes and ears for others to organize high level meetings with the contractor and to make decisions. The contractor is fast learning that the decision making is done in St. John's, not at the site. This undermines our authority and significantly reduces our ability to manage as I believe we should be doing. (p. 4)

Mr. Vanwyk further stated:

I have significant experience on large direct hire projects, on large projects with Building Trades labour and on large projects where labour was fully reimbursable.

But I am unable to use this experience where I do not get all of the information and others are making the decisions. (p. 4)

Another member of the site-management team, Brian Cottrell, outlined similar issues when he resigned from his position as a Human Resources Advisor. In a resignation letter dated June 2, 2014, he wrote (P-03049):

I feel that my capabilities and experience are not being fully utilized, I am not challenged by my work or my work load and have no decision making capability. Further, the management style employed by St John's gives me great concern as the control and decision making capabilities do not lie with the experienced people on site, but rather with St John's who are removed from the day-to-day site operations and this often causes unnecessary delays. . . . I am concerned that in the month of May, 5 members of the Site Team have felt the need to resign and would expect this to have raised some major red flags with head office. . . . Communications between Site have always been an issue, in my opinion, although that has improved on the HR side in the last few months. . . . In short the Site Team seems to be here for show a concept I believe is becoming more and more obvious to all at Site, sub contractors etc, as time goes by. (p. 3)

It does not appear that Nalcor management made any significant adjustments as a result of the feedback that it received on this issue (as early as 2014). Nalcor's response was to apply more pressure to get site managers to agree with the PMT's approach. In an email sent to Paul Harrington on May 1, 2014, Ron Power reported (P-03047):

The Muskrat Falls versus Home Office "fifth column" activity (I do not believe it is necessarily vindictive), lead [*sic*] by Des [Tranquilla] and espoused by certain of Des's disciples, is continuing. However, I am beating hard on that one and I think alignment will be achieved. I have reached the point where it will be fixed, by me. I believe everyone is now getting the message / it is getting better.

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There might be some casualties. Des brings a lot of value in certain areas, and I want him on the project. (p. 3)

Following May 1, 2014, it appears that other site managers and on-site personnel left the Project over issues with Nalcor's management approach, including experienced site personnel such as Ted Vanwyk, Brian Cottrell and Desmond Tranquilla.

The concerns about the division of authority extended beyond contractors and the Nalcor site team. John Mulcahy, who was contracted to assist the Nalcor PMT from its office in St. John's, also expressed concern. In his letter of resignation, dated July 17, 2017, he stated (P-02819):

In all my years in construction, the field team ran the construction site and the head office supported the field team. On Muskrat Fall[s], it is vice versa and is to the detriment of the project and the people of the province especially with all the interfaces coming up. It cannot be micro managed from head office. (p. 2)

SNC also identified on-site authority as a risk to the Project. In its *2013 Risk Report*, SNC identified "difficulty transitioning to an integrated team project delivery model" as a major risk to the Project. Under the description of the risk, SNC wrote (P-01977):

Lack of proper delegation of authority, leading to an unsustainable authority structure as the site construction ramps up. Decisional team more familiar with the oil and gas industry than with heavy civil and hydro works, leading to mismatched processes and procedures, as well as to less than optimal value-plus decisions. (p. 16)

In its suggestions for mitigation measures, SNC indicated that Nalcor would need to "issue an authority matrix giving site managers latitude" (p. 16). The Nalcor PMT refused to accept a copy of this report, as discussed in Chapter 25.

Normand Béchard, the senior SNC person in St. John's and an advisor to the PMT as the IMT model proceeded, was asked about his experience as a project manager and the level of appropriate decision-making authority that was required on site. In his testimony, he stated (March 26, 2019, transcript):

But to me, it's just a question of common sense and experience, because if people on-site do not have authority, then everything is piling up, then the contractor is suffering delay in getting answers. And then delay pile up over delay and is just a monster that—after a few time, that will be a monster. So a site is something which is living. Everything is changing.

When you wake up in the morning, you don't know what will happen that day. So you got to make sure that—you got to make quick decision and make sure that the contractor will have everything so to go ahead. (p. 26)

In 2016, after Project bifurcation, John Maclsaac was appointed Nalcor's Executive Vice-President, Power Supply. Formerly the President of Newfoundland and Labrador Hydro, Mr. Maclsaac had worked with Nalcor since 2010 in senior roles. Mr. Maclsaac recognized the gap in management presence on site at Muskrat Falls. To address the problem with the transmission work, he arranged for Greg Fleming to be assigned to that Project component, based on Mr. Fleming's success in managing the SOBI component. Mr. Maclsaac testified (June 11, 2019, transcript):

And inside of spending time with the team leads and walking down the sites, what I saw inside of SOBI—and SOBI was originally considered from the original risk reviews to be the component with the highest technical risk—it was a highly functional team, and it was tracking consistent with schedule. The original schedule and with the original budget. And it actually delivered consistent with schedule and came in under the original budget.

More importantly, was what I saw in terms of team functionality and team leadership. And going to the field and walking down the sites with Mr. Fleming and his team, he was engaged and connected with the work. He knew the people by first name. And he was as engaged and connected with the people on his team as he was with the contractor's team as well. And I would consider it to be the functionality that leads to successful outcomes. (pp. 51–52)

Mr. Maclsaac further testified that he pushed managers and team leads to spend at least half their time in the field. He told his team his expectation was that they would “get out from behind your desk . . . shut your computer off, put your boots on and go to the work face. . . . I wanted our leads to lead by example and spend more time in the field and have more of their team members spend more time in the field” (p. 76). According to Mr. Maclsaac, this approach was different from the PMT's method to that point.

Mr. Maclsaac's approach caused tension for the project managers working on the transmission component. For example, Darren DeBourke, who was Project Manager, HVdc Specialties, had previously attended the transmission construction sites on a weekly or biweekly basis to supervise action plans for GE and Pomerleau. He took issue with instructions from Mr. Maclsaac to be on site five days a week. Mr. DeBourke's opinion was that Mr. Maclsaac's approach did not account for the seven other construction site responsibilities and home office duties that he managed. Mr. DeBourke testified that

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Mr. Maclsaac threatened to fire him if he refused, and Mr. DeBourke did eventually leave the Project.

### **The PMT Response to On-Site Issues**

The PMT members who testified at the hearings were asked about the issue of on-site authority and the presence (or absence) of PMT personnel on site. Their main response was that the difference in roles between the site team and the home office team were clearly delineated. The site team's responsibility was to manage the contractors according to specifications set out in the contracts. Any changes in the scope of work had to be dealt with by the PMT home office in St. John's. According to the PMT witnesses, the St. John's office had much broader responsibilities than the site team.

Scott O'Brien's response to criticism about his lack of presence on site was that he was needed in more than one location, including at manufacturing and engineering sites in Canada, USA and Europe. Mr. O'Brien's out-of-province travel from February 2012 until December 2018 is documented (P-03948). At the hearings, Mr. O'Brien testified that (May 30, 2019, transcript):

There's a very large team of people who are fully empowered to deliver the project at the site, and the site is led by a construction manager and a site manager, who have responsibility for delivery and management of the site team and the work of the contractors.

My role as project manager is to support that team but also to support the other aspects of the works that are taking place in other parts of the world in relation to the project in addition to managing and stewarding the work that's taking place in the home office in St. John's. . . . I'm not the site manager . . . nor am I the construction manager. They have very specific roles that are outlined in the construction management plan. (p. 91)

Ron Power responded similarly. He testified that the site team was empowered to execute day-to-day construction of the Project and that the PMT was providing quick responses when required. According to Mr. Power (May 21, 2019, transcript):

We have an empowered site team. There's a construction manager, Mike Harris, who's our claims avoidance specialist, or disputes avoidance specialist, was on site full time, and they were on the phone at least twice a day with Scott O'Brien. So, everything was actively managed. But if changes had to be agreed to that required expenditures over and above the scope—the base—if it's a change of the scope of work, well, that came back to St. John's to be managed. That was our management approach. (pp. 56–57)

Paul Harrington confirmed Mr. Power's views. He testified (June 5, 2019, transcript):

[S]o there's a difference between having authority to exercise the contract and to do everything with the contractor to ensure that the contractor delivers that which he is being, or they are being contracted to deliver in accordance with the specifications, the standards. They [The site team] can make some decisions which, you know, they are entitled to make, and I think examples of, you know, change orders can be written for snow clearing or moving rebar or doing small changes.

For any change that affects the overall integrity or the engineering of the project, or would extend the overall cost of that contract, would come back to home office. And the project manager in home office, as the company representative, would have the responsibility then to ensure that any of that engineering change would have, you know, been checked by the engineer of record. Or if it was an environmental impact it would be checked by the environmental team, or if it was a safety-related issue, that the safety team would look at it; if it's quality, it would be quality team. So the home office have that kind of overall kind of a big picture, if you want to call it that. (p. 73)

Mr. Harrington further indicated that, in contrast to what other witnesses had suggested, some large projects were, in fact, structured similarly:

I refer back to my recent discussions with all of the project directors and vice-presidents on the Site C project, the Keeyask project; the La Romaine project, I think, was there as well and other projects. I asked them that very thing: Where does your project manager sit? And they, almost all of them, said they sit in our home office and the construction manager at site manages the construction. (p. 74)

Ron Power also made the argument that moving the PMT to the site would have resulted in a duplication of roles. In his testimony, he stated (May 21, 2019, transcript):

So if we had to move the whole project management team to the site, you'd have twice as many people. And every person, in particular, you know, managers and engineers, over the life of the project is \$2 million or \$3 million. So that's why projects are not done that way. Projects are done with the project management done at the home office, and the construction management done at the site, with people who are on rotations. (p. 61)

Neither of these comments deal with the important issue of on-site authority. It is important that construction managers on site have authority to perform their jobs and make timely decisions.

Mr. Power and Mr. Harrington also took issue with what they considered to be the Commission's focus on members of the site team who left Nalcor. They indicated that other site and construction managers, such as Ed Bush, Peter Tsekouras, Dave Parady, Jeff Reid and Dave Healey, would not have expressed similarly negative sentiments. Mr. Power stated (May 21, 2019, transcript):

I will say for the years 2015, 2016, 2017 and 2018 we had, you know, 500, 600 people on the project, so you're going to expect to get some people who dissent and disagree with the way it's run—the project is run. But the project got built and the people who built it—the construction team who actually built it—you won't hear these sentiments. (p. 59)

For the various reasons referred to above, it is evident to me that the PMT and Nalcor's executive did not see any need to adjust the structure or management approach. In cross-examination, Paul Harrington stated (June 6, 2019, transcript):

**MR. BURGESS:** And did you ever think of reviewing or changing—because of the issues that were being raised—did you ever consider changing the process?

**MR. P. HARRINGTON:** I didn't see a reason to change the process. I didn't think that the process that we had required changing.

**MR. BURGESS:** Okay. But did you see at the time that Mr. Tranquilla resigned—and there was others in 2014, Mr. Cottrell—

**MR. P. HARRINGTON:** Sure.

**MR. BURGESS:** —and so on. Did you give it any thought about changing at that time, or did you dismiss it and say no, we don't need to change.

**MR. P. HARRINGTON:** I think the latter. (p. 71)

## **Conclusions**

Based on the evidence on the issue of on-site authority and oversight, I make the following conclusions:

- I am troubled by the PMT's oversight of construction activities, particularly with respect to division of authority between site and home office. Despite the clarity of Nalcor's matrix outlining limits to approval authority, I am not persuaded that the PMT was able to achieve a balanced and appropriate allocation of authority. Nalcor's PMT tightly controlled most construction decisions and attempted to micromanage construction activities from St. John's. Although

concerns came forward from several different sources—including contractors, Nalcor site-management team members and even staff at Nalcor’s home office—they were not addressed, allowing problems on site to persist and deteriorate further.

- The PMT’s approach of managing from the home office may not have been wrong in theory. But several circumstances particular to the Project, including an aggressive schedule, major performance issues with contractors and the PMT’s absorption of SNC’s construction management scope, should have alerted the PMT that a different approach was required. These circumstances, combined with the PMT’s lack of experience in the construction of hydroelectric projects and its unwillingness to delegate authority, adversely impacted both the Project’s cost and schedule.
- The PMT exerted far more control from the St. John’s office than was reasonable. Many of the decisions that were made in St. John’s should have been made on site. The merits of being regularly present on site and engaging with workers and contractors was referred to by several witnesses. Had they been on site more often, the people with the ultimate decision-making power could have been actively listening to contractors and making decisions based on receiving real-time feedback on problems and opportunities.
- The PMT attempted to manage disputes by writing letters from St. John’s. Contractors took issue with the delays and the extra layers of approval that resulted. Nalcor lost experienced site-management team members who felt they were not being well-used on site and were frustrated by their inability to make decisions and progress the work.
- Scott O’Brien did not spend sufficient time at the Muskrat Falls site. His out-of-province travel was not substantial enough to justify his lack of presence at Muskrat Falls.
- Having considered the testimony of Scott O’Brien, Ron Power, Paul Harrington and Gilbert Bennett, I am not persuaded by the argument that the PMT’s management approach was simply “how

construction management is done” and that people who did not agree with this approach were either not used to the management approach or were disgruntled. Problems with the PMT’s management approach were identified in numerous instances throughout the construction phase, particularly by people who have what I consider to be valuable experience.

- The PMT’s lack of hands-on experience in hydroelectric construction projects of this scale resulted in serious gaps that caused schedule delays and cost overruns. The PMT’s refusal to acknowledge, even now, that management gaps existed and that its approach could have been improved speaks volumes about the way this Project was managed.

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## CHAPTER 12: PROJECT COST DEVELOPMENT

This chapter examines how cost estimates and updates were prepared and shared with the Nalcor executive, the Nalcor board, GNL, the public, the Government of Canada and the Independent Engineer. It also outlines the jumps by which the Project costs climbed.

As noted in Chapter 9, the 2011 “Project Controls Management Plan” contains this definition of “Forecast Final Cost” (P-00865):

The anticipated cost of a project or component when it is complete. It represents the value of the Incurred Costs plus the estimated value of work left to complete, including approved Forecast Change Notices. (p. 10)

The term “Management Outlook” refers to an FFC that has been supplemented for review by the Nalcor executive with confidential information on bids, in order to prepare the most current and accurate estimate of the Project’s cost to complete. The PMT presented Management Outlooks to the Nalcor executive, in particular to Edmund Martin and Gilbert Bennett, so Nalcor could create Authorizations for Expenditure for the Nalcor board’s consideration and approval. At any given time, the most recent AFE is the Project’s official budget. The Project’s Governance Plan (P-00081) contains the following description of an AFE and its relationship to Nalcor’s larger budget, as follows:

The AFE system is the mechanism used by management to approve and control capital appropriation against approved Nalcor Energy Corporate budgets. An approved AFE represents the authority to commit only to expenditures within the scope and dollar value indicated by that specific AFE. When an AFE is approved, the authorized amount of that AFE reduces the remaining funds available for release from the annual capital budget. (p. 23)

As the Project moved forward and cost estimates increased, a series of upward adjustments to the Project’s baseline budget occurred. The PMT produced evolving total cost estimates in regular Management Outlooks for the Nalcor executive. The Nalcor executive would decide when to request Nalcor board approval for a revised AFE.

Figure 3.9 shows the evolution of Project costs from the time of sanction (2012) to March 2018 (which is still the forecast cost at this writing).

**Muskrat Falls Project  
Evolution of Project Costs  
(\$ millions)**

	Sanction Dec-12	Financial Close Dec-13	AFE 1 Jun-14	AFE 2 Sep-15	AFE 3 Jun-16	AFE 4 Dec-16	AFE 5 Jun-17	AFE 5 <sup>1</sup> Mar-18
<b>Muskrat Falls Generation</b>	\$ 2,901	\$ 3,265	\$ 3,372	\$ 3,686	\$ 4,801	\$ 5,071	\$ 5,500	\$ 5,500
<b>LTA</b>	2,610	2,546	2,786	3,089	3,447	3,447	3,724	3,714
<b>LIL</b>	692	720	832	878	878	878	894	904
<b>Total Project Capital Cost<sup>2</sup></b>	<b>\$ 6,202</b>	<b>\$ 6,532</b>	<b>\$ 6,990</b>	<b>\$ 7,653</b>	<b>\$ 9,126</b>	<b>\$ 9,396</b>	<b>\$ 10,117</b>	<b>\$ 10,117</b>

<sup>1</sup> Reallocation between LTA and LIL.

<sup>2</sup> Totals may not add due to rounding.

*Figure 3.9: Evolution of Project Costs*

## THE GRANT THORNTON CONSTRUCTION PHASE REPORT

As the evidence has shown, the internal Management Outlooks at any one time did not always match what was known about total Project costs by the Nalcor board, GNL, the Government of Canada or the public.

In its *Construction Phase* report of December 7, 2018, Grant Thornton analyzed the discrepancies between Nalcor's internal cost estimates and the AFEs presented to Nalcor's board and GNL (P-01677):

### **2.3 Cost Updates**

The PMT provided us a "... history of briefing decks and associated emails and meetings calls that were used to inform Nalcor executive of the cost and schedule increase as they were first identified by the Project team." During an interview with Paul Harrington, we confirmed that he had prepared the explanatory notes that accompanied the documents that were submitted to us for review on this matter.

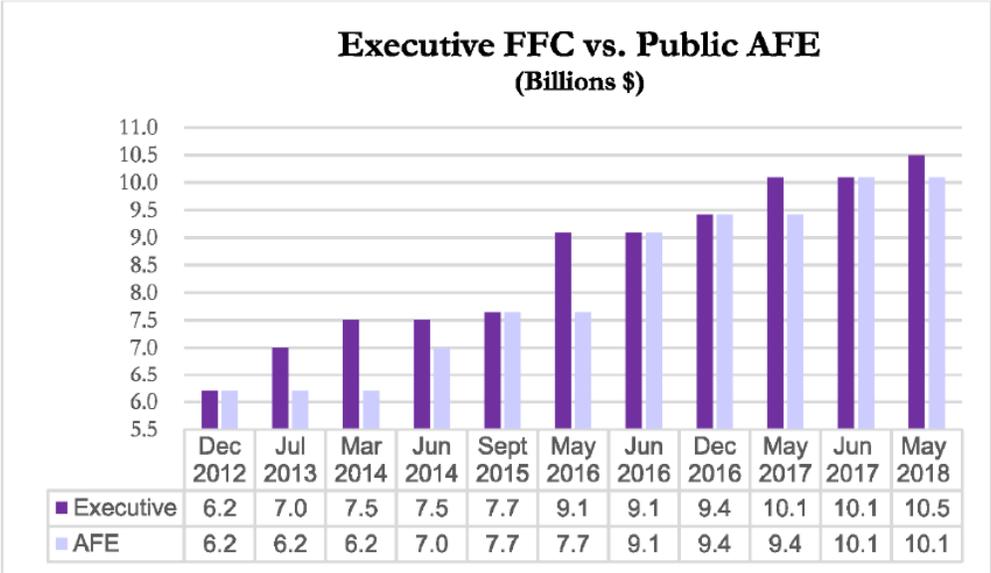
These briefing decks indicated that throughout construction, Nalcor's PMT monitored the forecasted cost to complete the project. These forecasts were communicated to Nalcor Executives including Ed Martin, former Nalcor CEO, Gilbert Bennett, VP-LCP. Monthly project budget monitoring and communication to financiers was based on the authorization for expenditure ("AFE") (the budget approved by the Board of Directors). (p. 18)

This Grant Thornton report noted that, for many months, the AFEs lagged behind the cost updates provided to the Nalcor executive. For example, seven months passed

between the time of the PMT’s February 2015 Management Outlook presentation to the executive and the date the corresponding AFE was approved by the Nalcor board.

In addition, the AFEs that went forward to the board and others were often significantly lower than the estimates in the Management Outlooks. For example, the July 2013 Management Outlook estimate was approximately \$7 billion, yet the Project cost estimate for the purposes of Financial Close (four months later) was \$6.531 billion (P-01828). In addition, as noted earlier, no AFE revision from the original Project cost estimate (\$6.2 billion) to the \$6.531 billion cost estimate used for Financial Close was ever requested or issued. Further, the AFE was revised to \$6.99 billion in June 2014 even though the Management Outlook estimate at the time was \$7.5 billion.

The chart in Figure 3.10, also from the Grant Thornton *Construction Phase* report, compares the Project’s Forecast Final Cost (as communicated to the Nalcor executive by the PMT) with the AFE that the Nalcor board approved and communicated to the public at the same time.



Note: The March 2014 estimate of \$7.5 billion was based on incorrect information provided to Grant Thornton by the PMT. It should be disregarded.

Figure 3.10: Final Forecast Cost Versus Authorization for Expenditure (P-01677, p. 19)

## AFE REV. 1

In February 2014, James Meaney began to prepare for a March meeting of the Nalcor board. At that meeting, approval would be requested for a new Project budget of \$6.531 billion, the figure that had been used in the Project financing agreements for Financial Close. According to Mr. Meaney's testimony (March 22, 2019, transcript, p. 7), the PMT informed him at the time that there were upward cost pressures from some of the contracts not yet awarded, particularly ones relating to the converter stations and the transmission lines. To cover these costs, the PMT proposed adding \$400 million to the contingency in the cost estimate. A draft AFE with this recommendation was discussed with Edmund Martin and Gilbert Bennett in early March 2014.

Later in March, Mr. Meaney prepared another draft AFE memo. It included language indicating a possible further revision of the AFE after major contracts were awarded. This memo was provided to Gilbert Bennett, who discussed it with Edmund Martin. Mr. Martin decided that the revised AFE would not be presented to the board in March but would be deferred to the board's June meeting. As a result of Mr. Martin's decision, the board was never asked to approve an AFE of \$6.531 billion, the Financial Close cost estimate.

Mr. Meaney testified that any final decision about AFEs was within the absolute control of Mr. Martin (March 22, 2019, transcript):

**MR. MEANEY:** . . . I mean, the understanding within the organization is if— anything with respect to, you know, a cost update or a schedule update, Ed had to sign off on that before it was gonna start moving through the steps of further consultation with folks from government, going forth to the boards for a revised AFE, and then—

**MR. LEARMONTH:** Okay, so are you saying that Mr. Martin had absolute control over the release of the information and projects costs?

**MR. MEANEY:** In terms of the final decision on cost updates, yes. (p. 8)

Nalcor held a press conference on April 15, 2014, to release, in redacted form, the Independent Engineer's *Interim Report* dated November 29, 2013. At this press conference, Edmund Martin mentioned that the costs of the Project were increasing—the first time he had said so in public. According to news reports at the time, commercial sensitivity and ongoing negotiations were the reasons he could give no specific cost figures. He is also quoted as saying (P-02693):

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We understand how important transparency is. We understand it's paramount that the people have a right to know, and we are going to get that information in their hands as soon as I possibly can without jeopardizing their financial needs. (p. 1)

On April 23, 2014, Thomas Marshall (then Premier) was reported as saying that the Project would continue until it was no longer the least-cost option, at which point the government would review its options (P-02044). This statement, reported by the media, was made in response to concerns about cost increases for the Project. I find that Premier Marshall's comment does not reflect the commitments that GNL made in the Financial Close documents. According to those agreements, a decision to cancel the Project would be much more complicated than Premier Marshall indicated in his statement. As has been noted earlier, many witnesses expressed the view that Financial Close was the point of no return.

On May 23, 2014, Mr. Harrington gave a Management Outlook presentation deck to Mr. Martin that contained the PMT's then current estimate for the total cost of the Project. The PMT requested an AFE of \$6.99 billion, a total that combined the \$6.35 billion in firm bid price contracts with an estimated \$640 million for contracts without firm bids. This Management Outlook also included a recommendation for a management reserve of \$280 million in the short term and an additional \$230 million for the long term, bringing the Project's total cost estimate to \$7.5 billion as of May 2014 (P-01831). This Management Outlook eventually led to the first revision of the AFE.

Figure 3.11 reproduces two slides from the Management Outlook presentation deck of May 23, 2014. They show that the PMT had clearly identified for the executive a total Project cost of \$7.5 billion, not \$6.99 billion (the amount that ultimately became AFE Rev. 1).

### Current situation

• Contracts with firm bid price <sup>(1)</sup>	\$ 6.35 B <sup>(2)</sup>
• Contracts without firm bid price (best estimate) <sup>(3)</sup>	<u>\$ 0.64 B</u>
• <b>Subtotal</b>	<b>\$ 6.99 B</b>
• Mgt. reserve for short term requirements <sup>(4)</sup>	<u>\$ 0.28 B</u>
• <b>Mgt. Outlook for short term requirements</b>	<b>\$ 7.27 B</b>
• Mgt. reserve for long term requirements <sup>(5)</sup>	<u>\$ 0.23 B</u>
• <b>Mgt. Outlook for project duration</b>	<b>\$ 7.50 B</b>

(1) Firm bid price covers all awarded contracts and those where bids are substantially advanced  
 (2) Includes \$ 224 M of contingency  
 (3) Best estimate reflects trends for lessons learned and latest estimates  
 (4) Short term covers the period thru early 2016  
 (5) Not required before 2016, mainly covers increase in Owner's team cost

### AFE and Outlook Recommendation

• Requested AFE <sup>(1)</sup>	\$ 6,999 M
• Mgt. Reserve – For short term <sup>(2)</sup>	<u>\$ 272 M</u>
• <b>Mgt Outlook – For short term</b>	<b>\$ 7,271 M</b>
• Mgt Reserve – For long term <sup>(3)</sup>	<u>\$ 230 M</u>
• <b>Mgt Outlook – For Project duration</b>	<b>\$ 7,501 M</b>

(1) Includes \$ 224 M of Contingency (4% of the AFE FTC)  
 (2) Short term covers the period thru early 2016  
 (3) Not required before 2016, mainly covers increase in Owner's team cost

Figure 3.11: Slides from the Management Outlook Presentation of May 23, 2014  
 (Source P-01831, pp. 8, 9)

It must be emphasized that all Nalcor witnesses confirmed in their testimonies that an AFE was to cover all estimated costs to Project completion. Edmund Martin testified (June 12, 2019, transcript):

**MR. LEARMONTH:** And in addition, the AFE was to include the estimated cost 'til completion or the in-service date of the project.

**MR. E. MARTIN:** That's absolutely correct, and you mentioned FFC earlier than that, too, and just wanted to make the point that it's an approval for expenditure as to what is to the end of the project. And that means that you wouldn't give more than the approval for—than—and—than what you understood the costs may end up being

**MR. LEARMONTH:** Yeah, 'til the end of construction.

**MR. E. MARTIN:** That's correct. (pp. 57–58)

AFE Rev. 1 (\$6.99 billion) did not cover all estimated costs to Project completion at that time (\$7.5 billion) and I find that it was deceiving to represent it as a legitimate AFE.

This information was presented by Commission counsel to Julia Mullaley, who was Clerk of the Executive Council in 2014. She stated that she was “shocked and angered” when she learned that this cost information was in the possession of Nalcor in June 2014 when the AFE revision to \$6.99 billion was considered by Cabinet (May 30, 2019, transcript):

When you walk in a Cabinet room and you're presenting and you're showing the ministers that this is your new revised budget for Muskrat at 6.99, and people are asking, is that it, are you sure? You know, are you sure, is this it, come on, is this it? Yes, you know, and mitigating, mitigate, and I guess the concept then is, you know, should not the 7.5 have been disclosed—

...

Yes, Cabinet and myself as chair of the Oversight Committee that was asking, and I think that gets back to my original concept yesterday, of being shocked and angered at understanding that this stuff existed and it wasn't being discussed, even when people were asking those questions. (p. 61)

At Nalcor's Annual General Meeting (held in public on June 4, 2014), Edmund Martin said that he would provide a Project cost update by the end of June. James Meaney testified that Nalcor also advised GNL and Canada in early June that a revised cost estimate was forthcoming (March 22, 2019, transcript, pp. 11–12).

On June 19, 2014, Mr. Martin advised Premier Marshall that the total cost estimate had increased to \$6.99 billion (P-04057, p. 23). Mr. Martin explained that the overrun of

\$788 million from the estimate at the time of sanction (late 2012) could be broken down as 70% for investments in productivity and reliability enhancements and 30% because of market pressures (P-04057, p. 19). As is discussed in Chapter 24, I doubt that there were any significant reliability enhancements budgeted at that time.

On June 20, 2014, Edmund Martin presented a Project “value and cost” update to the Nalcor board. The board unanimously approved the Project total cost revision (\$6.99 billion) as presented by Mr. Martin at this meeting (P-00687). The Management Outlook estimate of \$7.5 billion was not disclosed to the board at this meeting.

The same day, Nalcor presented a similar Project “value and cost” update (P-02257) to representatives of Canada and to the IE, in which Nalcor stated that the estimated cost of the Project had increased to \$6.99 billion, a total that included a contingency amount of \$225 million. Unlike the presentations given to GNL, the presentation to Canada and the IE included slides showing the increases in costs from the \$6.531 billion Financial Close estimate (November 2013)—not from the Project sanction estimate of \$6.202 billion (P-02257, p. 21).

On June 25, 2014, Edmund Martin gave another presentation to the GNL Cabinet, informing them that the capital cost estimate had increased to \$6.99 billion (P-02046). The presentation noted that the mitigation of electricity rates that would be required because of cost overruns could occur through three mechanisms: the Muskrat Falls return on equity, the Labrador-Island Link return on equity and export sales. A slide about rate mitigation was added to the presentation by Charles Bown, the Deputy Minister of Natural Resources (P-03551). Following this Cabinet update, Mr. Martin held a media briefing and presentation to inform the public of the increase in costs to \$6.99 billion (P-03552). Mr. Martin’s speaking notes for this briefing contained these points (P-03552):

- The Government of NL will ensure that NLEers benefit from the value that this project is returning to our province. The Government will use a portion of revenue from our export sales that were not included in the project economics to offset the anticipated 6–7% rate impact to electricity consumer in NL. As a result, electricity consumers can expect to have minimal changes in their electricity rates over the next 15 years—the same as what was forecasted at sanctioned [*sic*].
- This decision by Government will ensure electricity consumers in the province are the primary beneficiaries of the value realized from the Muskrat Falls Project. (p. 5)

**AFE Rev. 2**

On June 20, 2014, Nalcor sent construction reports to the TD Bank (as collateral agent), Canada and the Independent Engineer that recorded costs as of May 31, 2014. These reports noted a variance of zero between the Project budget (AFE Rev. 1) and the FFC, but mentioned that “[a]n update of the Forecast Final Cost is currently underway by Devco [Nalcor] and the results will be incorporated in the construction report for the period ending 30-June-2014” (P-02402, p. 10). Reference was also made to several major contracts that were pending award as well as construction work being in its early stages. There is no evidence that this information was disclosed to the Nalcor board or to GNL in their briefings from Mr. Martin.

The construction reports for the period ending June 30, 2014, were issued on July 21, 2014. They noted that the FFC for the Project components had been updated to correspond with the \$6.99 billion AFE. The reports recorded a variance of \$240 million for the LIL, \$107 million for the Muskrat Falls generating station and \$112 million for the LTA, for a total variance of \$459 million over the baseline Project cost of \$6.531 billion established at Financial Close (P-02403).

On July 22, 2014, Nalcor provided Canada and the IE with another cost update presentation. This one explained the cost overruns in more detail by breaking down the variances for individual contract packages (P-02264, p. 3).

On December 8, 2014, James Meaney sent Cost Overruns Certificates for the Project to Canada, the IE and the TD Bank as required by the Project Finance Agreements. These certificates included the same cost variances as appeared in the construction reports issued on July 21, 2014. These certificates confirmed that the overruns had been funded as per the terms of the financing agreements (P-02359). Cost Overrun Escrow Account funds of approximately \$115 million were sent by GNL to Nalcor and were then deposited into the COREA. This amount of \$115 million was derived by calculating one-quarter of the total overruns of about \$459 million.

The same day, December 8, 2014, Independent Engineer Nik Argirov also sent the IE Project Cost Overruns Confirmation Certificates to Canada and the TD Bank. These certificates were qualified as follows (P-02360):

1. We have been provided with reports and documents that identify and quantify the Cost Overrun which is the subject of this IE Cost Overruns

Confirmation Certificate and are satisfied they appropriately identified the cause and resolution of the circumstances that have given rise to the Cost Overrun.

2. We have been provided with the Material Project Documents or amendments to the Material Project Documents that engage the various Contreparties to Devco [Nalcor] under such Material Project Documents to complete the additional work (or to quantify the additional costs in a valid and binding manner).
3. We have no reason to believe that such reports, documents, Material Project Documents or amendments to Material Project Documents misrepresent the required additional costs or work in any material manner.  
(pp. 7–8)

In other words, the IE relied on the information certified by Gilbert Bennett and was agreeing with the cost projections and reporting Nalcor was making at the time.

On February 13, 2015, the PMT delivered a further update to the Nalcor executive, advising them of its current view on the cost to complete the Project. The PMT noted that bids received indicated that the three major contracts not yet awarded would cost \$272 million more than estimated in 2014. These contracts were for the North Spur, the north and south dams and the balance of the generation facility. This put the total estimated Project cost at \$7.77 billion—more than the \$7.5 billion that the PMT had given to management in May 2014.

This presentation indicated that an AFE for \$7.5 billion would be adequate for 2015 but that a further AFE would be required in mid-2016 for \$7.77 billion. With that, the expected costs of the Project to completion would be covered, “assuming the 4% contingency is adequate and there are no major contract defaults, claims or geotechnical issues” and assuming, most notably, that no further payments to Astaldi would be required above the value of its contract. At that point, the recommendation was for a timeline involving “alignment at political level” in April 2015, approval of AFE Rev. 2 in June and notification to the public in July or August 2015 (P-01822, p. 27).

In March 2015, further presentation decks were prepared that discussed in more detail the proposed AFE Rev. 2 of \$7.5 billion. Paul Harrington and other PMT members met with Edmund Martin on March 8 to discuss this update. Mr. Martin had “wanted to be in a position to discuss a project cost update with senior GNL Folk” the following week (P-01830, p. 3). On March 9, 2015, Edmund Martin and Derrick Sturge met with Minister of

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Natural Resources Derrick Dalley, Charles Bown, Craig Martin (the Oversight Committee Executive Director) and Julia Mullaley. The next day, March 10, 2015, Mr. Martin and Mr. Sturge attended another meeting that included Ms. Mullaley, Mr. Bown, Minister Dalley and Premier Paul Davis. The purpose of both meetings was to discuss the sale of distribution assets. Mr. Sturge testified about his recollection of these two meetings (March 27, 2019, transcript):

And then the next recollection I had was on the 9th of March, about three days, four—three or four days later. Ed and I met with a group at the province. And this would've been Minister Dalley, Charles Bown, Julia Mullaley, maybe Craig Martin and maybe others. But the purpose of the meeting was we were looking—we were briefing the province on—at that point they were—they had asked us to look at the sale of distribution assets of Newfoundland Power for Newfoundland Hydro. So Ed and I were going over to brief them on that issue, and at the beginning of the meeting Ed said something along the lines of: Before we get into the meeting I'm just gonna give you a quick update where we sit on Muskrat Falls. And my notes from that meeting are a little bit cryptic, but they say—they talk about some of the factors, and I had written down 7.5. So that would lead me to believe that he would've said 7.5 in that meeting as where he saw it at that point.

...

—the very next day, on the 10th of March, we met with Premier Davis, and it would've been his chief of staff, Joe Browne, and probably some of the same people that were in the meeting with the minister. And again, before—and again, the purpose was to talk about the sale of the distribution assets. But in that meeting, Ed did the same thing at the beginning, an update on Muskrat Falls and it's in my notes. In that meeting I didn't have the 7.5 written down, so I can't certainly—with certainty say he mentioned it, but the factors driving it I did have listed there. (pp. 72–73)

Ms. Mullaley testified that Mr. Martin did not mention a possible cost increase to \$7.5 billion at either of these two meetings. She testified: “No, and we were—talked about pressures again in general on the project, but it was a separate meeting altogether; so that, to say we were at 7.5, that did not happen” (May 29, 2019, transcript, p. 90).

If these Project updates were communicated, it is clear that they were done verbally. According to Mr. Sturge's testimony, Mr. Martin did not provide or refer to any written documentation at either meeting. After reviewing the evidence of Edmund Martin, Derrick Sturge, Charles Bown, Craig Martin and Julia Mullaley about these two meetings, I am unable to conclude that Edmund Martin made any clear, unambiguous statement to the

effect that the Project's cost estimate might be increased to \$7.5 billion in the near future. I accept Julia Mullaley's testimony on this.

However, since GNL was aware on March 9, 2015, that the Project was under cost pressure, I find it unreasonable that GNL did not follow up with Edmund Martin by insisting that he provide a written statement containing details of the cost pressures that the Project was facing. Considered together, these events show the lack of factual clarity provided by Mr. Martin to GNL regarding cost increases as well as GNL's lack of effort to obtain more detailed information in its oversight of Project costs.

Initially, Nalcor intended to have AFE Rev. 2 approved in June 2015. However, the request for its approval was delayed until September 15, 2015. As a result, GNL, Canada and the public were not made aware of the cost update until seven months after it had been requested by the PMT. More significantly, this was 16 months after the \$7.5 billion forecast in the May 2014 Management Outlook the PMT had provided.

In his testimony, Mr. Meaney was adamant that there was no "intent to mislead" Canada, but he did acknowledge that the delay resulted in Nalcor providing information to Canada and the IE that was "not up to date" and "wouldn't be accurate" (March 22, 2019, transcript, p. 65). One issue that Mr. Meaney cited as a reason for the delay was the amount of time that had been spent in mid-2015 dealing with the status of the IE.

The negotiations for a subcontracting agreement between MWH and Mr. Argirov were challenging and, according to a cost update chronology drafted by Mr. Meaney for the Commission, the matter "occupied significant time and effort for Nalcor, Canada, MWH and Argirov during a number of months in 2015" (P-02412, p. 2). The same document noted that the requirement for the IE to sign the monthly draw down certificates was urgent. The slowdown was attributed, in part, to MWH's desire to have an additional layer of quality assurance performed on Mr. Argirov's work by a senior MWH employee, which was not acceptable to Mr. Argirov (P-02415, p. 5). The agreement between Mr. Argirov and MWH was not finalized until September 2015.

Mr. Meaney's chronology also mentions an "LCP cost update discussion with Ed" that was held on June 5, 2015. The notation adds that there was a "[n]eed to have package together for GNL next week." Mr. Meaney testified that the intention was to update the Nalcor board at its June meeting.

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On June 22, Mr. Meaney sent an email to Gilbert Bennett and Paul Harrington that said, in part (P-02418):

I just spoke with Ed. He is prepping for discussion with Minister this evening. He asked me again about what is driving change from \$7.5 to \$7.6b. I let him know primary driver was LIL ROW [right-of-way] clearing. I am not sure he is totally there on \$7.6b and was asking if contingency could go tighter given he had previously prepped the Province on lower amount back in spring. (p. 1)

That evening, Mr. Martin sent a draft presentation to Gilbert Bennett and Auburn Warren asking: “Take a quick look please, I am running out of time.” This presentation deck provided some information on the status of Nalcor’s actions to address issues with Astaldi and also explained that Project costs were increasing to \$7.6 billion (P-03070).

On July 15, 2015, Premier Paul Davis, Ontario Premier Kathleen Wynne, Yukon Premier Darrell Pasloski and North West Territories Premier Bob McLeod were given a guided tour of the Muskrat Falls construction site. The time required to work out the logistics of this visit were cited by Mr. Meaney as another reason that the cost update was delayed from July to August.

The evidence indicates that Nalcor planned to publicly announce the Project cost update in late August 2015 (P-02551). On August 14, Mr. Martin sent Mr. Bown a draft presentation deck of the Project cost update (P-03580). On August 18, Mr. Martin and Mr. Bennett briefed Premier Davis and senior GNL officials on the Project cost update and explained the causes of the increase to \$7.65 billion and the potential sources of rate mitigation (P-02554). Following this meeting, it was decided to delay the public announcement until late September 2015.

AFE Rev. 2 for \$7.65 billion was approved on September 21, 2015. On the same day, Mr. Martin made a slide presentation to the GNL Cabinet about the cost update. News of a cost increase was not well received, as reflected in emails sent that afternoon by Mr. Meaney to Derrick Sturge and Auburn Warren (P-02419):

Apparently things didn’t go that well in Cabinet this morning and everything is now on hold. Auburn, keep your guys going on the basis that it is still a go for Weds. I will provide update as I know more.... Never a dull moment.

Had a chat with Gilbert. Apparently they don’t know what to do with rate mitigation. Some of the ministers fussed about cost increases and “who can they blame”. Also seems to be some squawking about role of OC [Oversight

Committee] and what they know and when. Auburn, not sure if you got anything else from Ed? (p. 1)

Canada and the IE were briefed about this cost update on September 28 (P-02287). On September 29, Mr. Martin informed the public of the cost increase in an address to journalists at the Muskrat Falls site. In a news article dated September 29, 2015, Premier Davis was quoted as making these comments (P-02013):

We know that based on what we've seen in other projects, I can tell you I'm not entirely surprised, but I'm certainly disappointed we're in the position we're in today. . . . It's a project that's going to provide great value for Newfoundlanders and Labradorians. (p. 1)

### **Reporting of Cost Overruns to Canada and the Independent Engineer**

Beginning in early 2015, the FFCs clearly indicated that the Project's cost estimates exceeded the June 2014 AFE Rev. 1 of \$6.99 billion. However, when preparing the monthly construction reports for the IE, which were certified by Gilbert Bennett, Nalcor made no mention of these cost overruns and instead represented that the Project's cost estimate remained at \$6.99 billion. The IE and Canada first became aware of the significant cost overruns on September 28, 2015, when they were informed of the revised AFE of \$7.65 billion.

Alison Manzer, Canada's external legal counsel, was completely taken aback when she and the IE were informed of the cost overruns, as the letter she wrote to Mr. Meaney on October 16, 2015, demonstrates (P-02290):

I am writing further to our recent telephone conference, being the Muskrat Falls Project update call with Canada and the Independent Engineer on Monday, September 28, 2015. The review during the course of that call was surprising to both Canada and to the Independent Engineer, as to a number of matters but most particularly as to the cost overruns identified, for the first time, during the course of that call. Both Canada and the Independent Engineer feel that the buildup of these cost overruns, and a proper estimate of further anticipated cost overruns, should have been identified on a month to month basis in the course of the regular reporting, and the recently held site visits. Canada is not prepared to proceed with the current reporting regime, without amendment, as it cannot accept significant cost overruns building, and being identified, late in the review process, and before they are able to provide input to properly recognize Canada's concerns in the setting of cost estimates, and contingencies. Accordingly Canada requires that we hold an all hands meeting,

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and work to a revised reporting process which will avoid these types of unreported, and unresponsive, identification of delay and cost issues.

...

The Independent Engineer is responsible to ensure that Canada is kept appropriately, and timely, advised as to status, progress, costing, and in the context of that responsibility is required to ensure that the monthly approvals of the funding and progress draws are accurately and appropriately reflected. The Independent Engineer is also responsible to ensure that the cost overruns are suitably costed. At this time there is significant concern that appropriate contingencies and estimates have not been included with regard to the power house and HVdc transmission line, and the potential for further delay, or costs to avoid such delay. As a consequence we also require item #8 to the agenda to be a discussion of the contingency and estimate process, and a discussion as to a mutually acceptable number to use for the cost overrun estimates which will be used for the cost overrun process and protocol for this year. We suggest that this discussion must go forward sooner than later.

While we recognize this is an extensive agenda, we require that a meeting be set to review these matters on an as soon as possible basis, timely resolution of these matters is necessary to ensure that the cost overrun process, and funding, is suitably undertaken for the required December dates. In addition Canada is concerned that the incidents of delayed reporting of cost overrun build up does not occur in the future, and must have assurances as soon as reasonably possible, around these issues.

If this cannot be suitably done in this manner, then the Independent Engineer will need to take this into account in their approval of the monthly draws, their reporting of site and related visits, among other matters, which we would prefer to avoid. However Canada has its responsibilities to ensure suitable and appropriate management of the costing of the project, and the Independent Engineer has its responsibilities to Canada in this regard, all of which must be suitably recognized in the review and reporting process. (pp. 2, 4)

Canada and the IE were greatly concerned about Nalcor's late reporting of cost increases. Nalcor had no good reason for the delayed reporting other than simply, and knowingly, not following through on its reporting duties.

The IE testified that he and the federal government officials were "upset" in 2015 when they were advised of this significant cost increase. The IE was required to report cost overruns to Canada and the financiers in a timely manner, so Nalcor's intentional decision to suppress or fail to disclose information about cost overruns put him in a position in which he was unable to fulfill his reporting requirements. In his testimony, Mr. Argirov

agreed that this was an awkward situation for him, because he was concerned that Canada and the financiers might think that he was not doing his job (March 19, 2019, transcript, p. 17).

When questioned about Ms. Manzer's letter of October 16, 2015, Mr. Argirov testified (March 19, 2019, transcript):

**MR. LEARMONTH:** . . . [T]his letter had to do with the information you just provided, that you got this sudden increase to 7.65?

**MR. ARGIROV:** Correct and with the gap in reporting as well. So it addressed many lingering issues that were every month they could be considered not significant, but when they start to collect after six months, and particularly when you get surprise. So it's such big jump and, of course, everything became significant. (p. 81)

### **Cost Overrun Escrow Account**

Under the terms of the Federal Loan Guarantee, the calculation of any cost overruns would define the yearly payments deposited into the COREA by way of equity injections from GNL. This process was described in Chapter 9 of this volume. In its assessment of cost overruns, Nalcor included only what it referred to as "fixed and firm" costs, meaning contracted or already incurred expenditures. It did not also include reasonably foreseeable costs. In a June 2018 presentation, the PMT stated that it followed this approach based on an understanding with Canada, as outlined below (P-00891):

It was understood with Canada and the IE that only fixed and firm costs were to be considered in the Cost Overrun calculation. Therefore until there were firm, fixed and executed Contract costs available the DG3 estimate costs would be utilized, similarly Claims were not considered as a Cost Overrun until they were settled.

The rational [*sic*] was understood to be that costs that were not yet realized as fixed and firm were not part of the pre funded equity payment calculation, as inclusion of costs that may not be realized could trigger an over funding of COREA payments and cause unnecessary financial hardship to the Province. (p. 5)

In another document prepared for Nalcor's counsel, the PMT explained its position further (P-00874):

- In an effort not be too punitive, Canada agreed that such forecasts would represent known, firm costs, such as awarded contracts and settled claims, and not be speculative in-nature by factoring in such elements as opening

bid prices or submitted, unattested claims. By doing this, the amounts of funds the Province would have to place in escrow would be reduced, thus aiding their ability to maintain other Provincial programs in this period of reduced oil royalty revenues.

...

- Project cost forecasts made public were to reflect known cost over-runs, while future cost risks and trends were characterized as under study and subject to future confirmation and reporting.
- The net result was that public cost forecasts were not risk-adjusted cost forecasts that considered the potential exposure of potential risk items. This led to repeated cost updates and a view that costs were not in control.
- The Province's weakened fiscal situation contributed to the reluctance to communicate early to the public that cost over-runs had occurred. (pp. 1–2)

Throughout the testimony, I heard evidence that the pre-funded equity obligations, in combination with this particular understanding of cost, were indeed part of the reason for the under-reporting of overruns to Canada, or at least were used as a justification for it. As a notable example, there was no Quantitative Risk Assessment performed for the Project between the sanction date in December 2012 and in May 2016, which would have provided a range for an estimated dollar value of the risks of the Project. When Ernst & Young, in its role as consultant to GNL's Oversight Committee, recommended in its 2015 report that cost and schedule risk be quantified, Paul Harrington wrote the following in a comment on the draft report (P-03638):

This is proposing a quantified risk assessment with associated cost and schedule implications—do we really want to run a monte carlo analysis now and then have to deal with Canada and the pre funded equity payment hit that will ensue? (p. 8)

In 2016, EY observed that some anticipated material cost variances were only appearing in the forecast when they were contractually committed. In a letter to Julia Mullaley dated April 12, 2016, Gilbert Bennett provided the following explanation for this approach (P-02389):

It is LCMC's [Lower Churchill Management Corporation's] opinion that reporting such variances prematurely does not add value to the project and only serves to undermine the credibility of reporting processes. In addition, public disclosure of speculative cost impacts that have not materialized is not commercially prudent at the very time discussions and/or negotiations are

occurring with contractors. This methodology is also consistent with LCMC's obligations under the Federal Loan Guarantee (FLG) and the agreed approach to final cost forecasting with the Independent Engineer and the Government of Canada. (p. 4)

Grant Thornton asked the PMT to provide evidence to substantiate its position that Canada shared its understanding that only fixed and firm costs needed to be reported. The following excerpt shows Grant Thornton's question and James Meaney's response (P-01898):

Question:

In the presentation provided to Grant Thornton on May 30–31, 2018, Tab 9 - Financial Close / Completion Guarantees / Corea notes that it was understood with Canada and the IE that only fixed and firm costs were to be considered in the overrun calculation of COREA. Can you please provide evidence that supports that Canada was aware and understood this?

Response:

With respect to an understanding on LCP cost updates and the impact on the COREA calculation, it became formalized in 2015 / 2016 as it related to the ongoing commercial negotiations with Astaldi. It was acknowledged between Nalcor and Canada/Independent Engineer that there was going to be an impact on cost / schedule once a commercial settlement was reached with Astaldi, but at the time of the COREA payments in December 2015 and December 2016 this could not be quantified with certainty. The execution of the December 2016 Completion Contract with Astaldi, and related impacts it had on overall project cost and schedule, was the means by which this eventually got settled. This was documented as the "Ongoing Commercial Negotiations Caveat" in the December 2015 / 2016 COREA certificates issued by the LCP entities, which Canada and the IE accepted. These documents are attached. (p. 2)

This answer provides an explanation for the "Astaldi Caveat" (to be discussed later in this chapter), which was finalized in December 2015. But it does not provide any explanation for other cost overruns. Furthermore, it fails to explain Nalcor's cost overruns up to December 2015, including those related to the Astaldi contract.

The official definition of cost overruns for the FLG is spelled out in the Master Definitions Agreement (November 29, 2013) as follows (P-02354):

**"Cost Overruns"** means in respect of the Projects, on any date, an amount equal to: (A) the aggregate remaining project costs to achieve completion of the Projects including (i) the remaining costs and payment obligations payable

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pursuant to the contracted items of the Project Budget including the cost of work completed but not yet paid for, *plus* (ii) any amounts set out in the Project Budget for non-contracted items of the Project Budget, *plus* (iii) all other remaining project costs including owners costs (included in the Project Budget but not covered by contract costs) and (iv) any appropriate contingencies and adjustments to such contingencies and escalation amounts and reasonably expected savings payable pursuant to the contracted items and non-contracted items of the Project Budget all as determined by the Credit Parties and as reviewed by the Independent Engineer as being reasonable, *plus* (v) finance costs estimated to be payable to the Commissioning Date in excess of the amount specified for that item in the Project Budget *less* (B) (i) total project costs in the Project Budget less cumulative Project Costs incurred to date by the Projects *plus* (ii) any cash deposits contained in the Cost Overrun Escrow Accounts; (emphasis in original, p. 11)

I find that this definition does not limit items to be reported to fixed and firm costs and that Nalcor was wrong in its interpretation of how it was to calculate cost overruns.

The PMT's position that "only fixed and firm costs" had to be included in the calculation of the annual COREA payment was not shared by Derrick Sturge and James Meaney. Mr. Sturge described the PMT's position as having "some truth" and being "maybe a little bit stretched" (October 31, 2018, transcript, p. 82). He also described the PMT's position as being "foreign" to him (p. 83) and testified that "my expectation is that forecasts were being set and we understood that that could have an impact on the province, but that wasn't the driver. That was never our driver" (p. 82). He further testified that he had confirmed with Mr. Meaney that the understanding with Canada was solely in relation to the Astaldi Caveat and that "there may have been some desire, prior to that, for certain folks to maybe want this to be the case, but that never was the case" (p. 82). He also said that "I got complete trust in Jim's [Meaney] view on this because he's the guy talking to Canada" (p. 83).

If the PMT's position on this had been correct, there would have been no need for an Astaldi Caveat, at all.

In his testimony, Gilbert Bennett disputed the suggestion that potential implications for the COREA payments were the reason that Nalcor did not undertake a QRA until 2016 (June 21, 2019, transcript, pp. 36–37). He testified that he did not subscribe to the idea that the results of such an analysis would automatically trigger increased COREA payments—those were tied to AFEs, which were ultimately approved by the CEO. I reject Mr. Bennett's explanation. The annual COREA calculation was not tied to the AFEs.

Mr. Argirov, the IE, testified that the COREA was meant to be funded based on reasonable estimates of cost overruns. He noted: “It doesn’t need to be realized; it doesn’t need to be fixed, but if it is a reasonably forecasted overrun, the equity portion has to cover it” (March 19, 2019, transcript, p. 56). I accept Mr. Argirov’s explanation.

When asked about the COREA and which costs were to be included in the official overrun calculation, Edmund Martin expressed his view that it was appropriate to include only “solid” costs in the AFE updates during the construction phase (June 12, 2019, transcript, p. 77). Mr. Martin later testified that he was “foggy” on the issue because he did not deal with the COREA; he deferred to the evidence of Mr. Meaney and Mr. Sturge (June 13, 2019, transcript, p. 29).

Even prior to Financial Close, Nalcor’s practices tended to exclude from the Project cost estimate any costs that were viewed as speculative, as seen, for example, in its refusal to make any allowance for strategic risks. Given this, in addition to the Project’s history of using aggressively low contingency allowances, it is safe to say that the COREA obligations and related understandings were certainly not the sole cause of the repeated failure to report cost updates in a timely manner during the Project’s construction phase. They could be considered factors that further discouraged Nalcor in providing conservative cost forecasts and provided an apparent excuse to keep anticipated cost overruns out of the budget.

As stated earlier, Canada and the IE were caught off guard by the cost update of \$7.65 billion in September 2015. As a result of Ms. Manzer’s letter (October 16, 2015) and the IE’s concerns, a meeting was held in Ottawa on October 30, 2015. Nalcor was instructed in the process it was required to follow to report cost overruns, as per the financing agreements. Nalcor agreed to change its process for reporting cost overruns to adhere to its obligations under the financing agreements.

On November 9, 2015, Ms. Manzer sent Nalcor draft reporting guidelines “to assist in interpreting and applying the reporting requirements provided in the Project Finance Agreements” for each of the Project components (P-02291, p. 2). This was almost two years after these financing agreements had been signed. A revised cost reporting protocol between Nalcor and Canada was finalized in November 2015.

A second result of the meeting held on October 30 in Ottawa was the “ongoing commercial negotiations caveat,” which was added to the Cost Overruns Certificates that Nalcor began issuing in December 2015. This caveat stated that the reported cost

overruns might ultimately be affected by the conclusion of ongoing negotiations with Astaldi (P-01913, p. 1). As referred to earlier, this addition became known as the “Astaldi Caveat.”

During the second half of 2015, Nalcor and Astaldi had been conducting negotiations with a view to establishing the recovery plan made necessary by the impact on Project cost and schedule caused by Astaldi’s slow progress in 2013 and 2014. The cost consequences of these negotiations had not been quantified nor accounted for in the \$7.65 billion AFE Rev. 2. The IE provided certificates confirming that the information in the Cost Overruns Certificates was true, subject to the Astaldi Caveat (P-02383). As a result, GNL provided \$335 million in additional equity to meet its obligations for 2015 under the COREA commitments (P-02408).

I conclude that the PMT’s position that “only fixed and firm costs” had to be included in the Province’s calculation of the annual COREA payment was not based on any understanding or agreement with Canada. I find that this position, reported to the Commission in 2018, was an attempt by the PMT to justify its past practice of failing to report to Canada its reasonable estimates of cost overruns as they became apparent, in contravention of the financing agreements that were signed at Financial Close.

### AFE REV. 3

When the Liberal government, led by Dwight Ball, was formed in December 2015, it was immediately concerned about Project costs and directed EY to conduct a full review of both costs and schedule.

At roughly the same time, in December 2015, Nalcor engaged Westney Consulting to conduct a quantitative risk analysis of costs and schedule. When asked about the timing of this QRA, Paul Harrington stated that it was because Nalcor had acquired more information from Astaldi on its concrete placement rates, which could then be projected forward (June 5, 2019, transcript, p. 43).

Westney conducted its QRA between February and April 2016. It produced two reports—one for the Project’s generation component and one for transmission (P-01954; P-03380).

On May 11, 2016, Derrick Sturge, Gilbert Bennett and PMT members briefed newly appointed CEO Stan Marshall. They discussed the results of the recently completed QRA

by Westney, which had indicated that, at a P75 value, the estimate of risks would increase the total Project cost to \$8.55 billion. This amount excluded an estimated cost of between \$250 and \$450 million that would be required to allow Astaldi to complete the powerhouse (P-01832, p. 18).

The DG3 cost estimate had been based on a P50 value from Westney's 2012 QRA. It was decided that for the 2016 AFE Rev. 3, Nalcor would use the more conservative P75 value. Stan Marshall testified that this value was chosen because the Project seemed to be tracking toward that number (June 28, 2019, transcript, p. 70).

On June 7, 2016, Nalcor briefed Canada and the IE on the revised Project cost estimates, informing them of the current P75 estimate of \$8.55 billion plus the cost of reaching a settlement with Astaldi (P-02298).

On June 22, 2016, Mr. Marshall delivered a Project update to Cabinet. By then, the cost estimate had increased to \$9.1 billion. This update also included extensive discussion of electricity rates and possible mitigation measures. It also noted that the recently revised load forecast was significantly lower than what had been projected at the time of Project sanction (P-04353).

Two days later, on June 24, 2016, Stan Marshall publicly announced that the estimated cost of the Project had increased to \$11.4 billion. This figure reflected the \$9.1 billion discussed with Cabinet plus \$2.3 billion for financing costs. He described the Project as a "boondoggle," adding (P-04343):

The original capital cost analysis, estimates and schedule was very aggressive and overly optimistic and just didn't account for many of the risks that were known, or should've been known, at the time. And the analysis, finally, relied on high energy prices which were projected to continue with the rise. (pp. 2-3)

The 2016 Cost Overruns Certificates were issued on December 13, 2016. The FFC for the hard costs of the Project was \$9.1 billion. This amount was based on the construction reports that had been issued on November 20, 2016. These Cost Overruns Certificates included the same Astaldi Caveat that had been included in the 2015 Certificates (P-01914; P-02393).

## THE FEDERAL LOAN GUARANTEE 2 AND AFE REV. 4

In 2016, GNL's equity obligations for funding the COREA totalled approximately \$886 million. At that time, GNL's borrowing for the COREA payments was becoming extremely onerous for the Province and had affected its financial position. It was estimated that funding the forecasted cost overruns would require three further equity injections of \$886 million, \$550 million and \$550 million in 2017, 2018 and 2019, respectively. For this reason, GNL and Nalcor initiated negotiations with Canada for a second FLG. These negotiations began on September 23, 2016 (P-03578). A waiver was obtained at the time in order to defer the 2016 COREA payments until March 31, 2017 (P-03463, p. 2).

While these negotiations were ongoing, a further AFE revision (AFE Rev. 4) of \$9.4 billion was approved. This AFE was necessitated by a Completion Agreement that required Nalcor to pay an additional \$270 million to Astaldi (P-03766). There is no evidence this new AFE of \$9.4 billion was communicated to the public at the time.

On March 30, 2017, Canada, GNL and Nalcor signed a second FLG agreement. It guaranteed an additional \$2.9 billion in debt for the Project. A COREA and pre-funded equity acknowledgement confirmed that the original COREA payments would no longer be required. They would be replaced by "new annual equity pre-funding payments." An initial payment of \$184 million was required in March 2017. Subsequent payments in December 2017, 2018 and 2019 would be based on overruns above the \$9.2 billion (P-03463).

## AFE REV. 5

By mid-2017, a further AFE revision (AFE Rev. 5) was required. On June 23, 2017, Stan Marshall stated that the Project's capital cost estimate had increased to \$10.1 billion, \$12.7 billion when financing costs were included. The components of the increase are shown in Figure 3.12.

<b>Project Capital Costs: Overall</b>		
<b>Description</b>		<b>\$ Billion</b>
June 2016		\$ 9.10
Astaldi	0.27	
Overland Transmission Settlement	0.14	
		\$ 9.51
Unplanned work	0.09	
Direct Cost, 3 month delay	0.05	
Balance of plant (above estimate)	0.06	
		\$ 9.71
Increase estimate to settle claims for delays & changes	0.40	
Updated estimate		\$ 10.11

Figure 3.12: AFE Rev. 5 (June 2017)  
(P-00127, p. 12)

It was also announced that the annual base operating and maintenance cost for the Project had increased by \$75 million over the original 2012 estimate, bringing these costs up to \$109 million annually (P-00127, p. 15). As quoted in a Nalcor press release issued June 23, 2017, Mr. Marshall stated (P-03187):

We were faced with construction issues including cofferdam and transmission conductor repairs, and impacts from worksite delays and interruptions. We settled one of the biggest risks facing the generation project as we finalized an agreement with Astaldi, who performed very well over the past year. Today, more than 75 per cent of all construction work on the entire project is complete, up from 48 per cent this time last year. (p. 1)

## **Conclusion**

The Project cost estimate remains at \$10.1 billion at the time of the preparation of this Report. While this amount appears to be sufficient to meet the present total cost estimate, other costs (discussed later) may still arise. The final Project cost will not be known until after all work has been completed and all outstanding claims settled, including any amounts for:

- Settling the outstanding Astaldi claim, which will be decided by an arbitration board
- Potential costs arising from the delay in the installation of transmission line software and the commissioning of the synchronous condensers
- Implementing any direction from GNL that may result from the recommendations of the Independent Expert Advisory Committee on methylmercury mitigation

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## CHAPTER 13: THE ASTALDI CONTRACT

Contract CH0007, for the construction of the intake and powerhouse, spillway and transition dams at Muskrat Falls, was awarded to Astaldi Canada Inc., a subsidiary of Astaldi S.p.A., an international construction contractor with head offices in Italy. As noted previously, it was the largest construction package issued for the Project and, as detailed in this chapter, it has accounted for the largest cost overruns (P-03741).

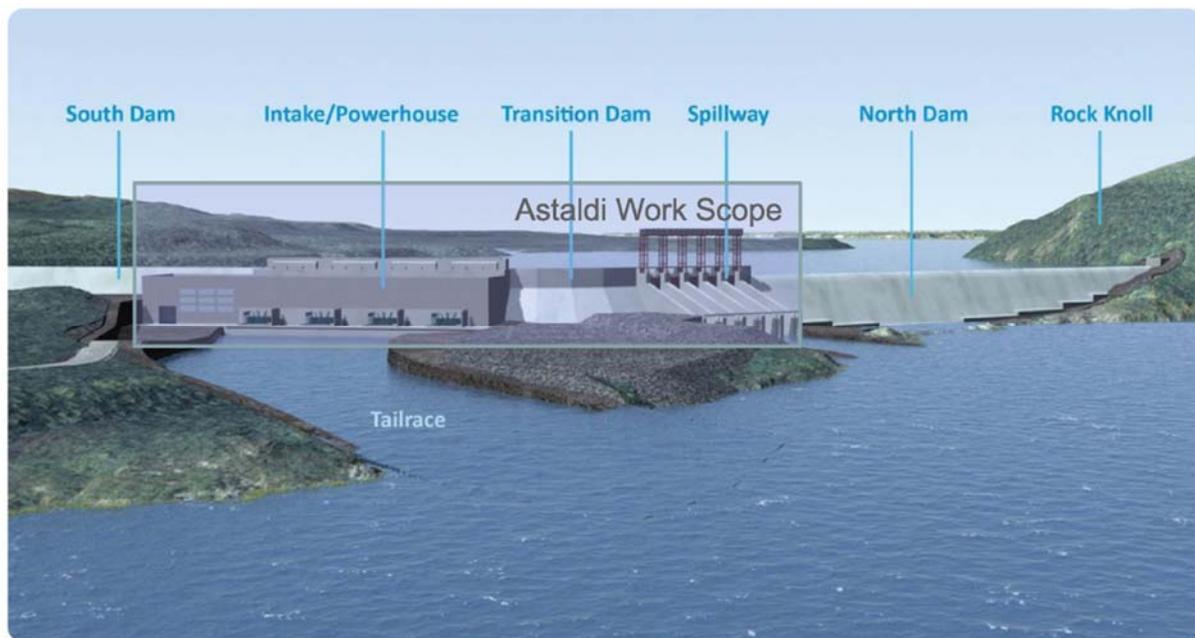


Figure 3.13: The Astaldi Work Scope – Muskrat Falls Generating Station Components

Lance Clarke was Nalcor’s Business Manager for the Project. At the hearings, he was questioned about why Nalcor had chosen to issue only one package for CH0007, rather than dividing the scope of work among several smaller packages. Mr. Clarke indicated that the decision was related to the large amount of concrete needed for the powerhouse and that, from a design and interface perspective, it did not make sense to split the scope of work.

The DG3 base estimate prepared by SNC put the cost for this scope of work at \$688 million. With an additional \$64 million for escalation, the total estimate was \$752 million (P-01677 p. 27). In its *Construction Phase* report, Grant Thornton concluded that as of March 2018, CH0007 had accounted for approximately \$1.2 billion (31%) of the

Project’s total cost overruns, an amount that reflected only CH0007 cost overruns—no other work packages transferred costs to this contract (P-01677, p. 27).

### EVALUATING THE BIDS: LABOUR

To award this contract, SNC issued a Request for Proposals to five large construction companies in September 2012. Two of the contacted bidders, Impreglio S.p.A. and Salini S.p.A., formed a joint venture to bid on it. The other three bidders were Astaldi Canada Inc., Aecon/Flatiron/Demanthieu and IKC-ONE. The four bids were received on April 16, 2013, and came in with the estimates shown in Figure 3.14.

	<b>ASTALDI</b>	<b>SALINI/JV</b>	<b>AECON/JV</b>	<b>IKC-ONE</b>
Total Evaluated Price (Billions)	\$1.14	\$1.16	\$2.03	\$2.05
Total Labour Hours (Millions)	6.82	5.85	6.89	9.51

Figure 3.14: Comparison of Bids for Contract Package CH0007  
(Source: P-01677, p. 28)

Nalcor’s DG3 estimate had pegged required labour hours for the CH0007 contract package at 3.66 million, much lower than the total labour hours estimated in any of the four bids. The bidders’ estimates of labour hours were 60% to 160% more than the DG3 estimate (P-01677, p. 28).

Paul Lemay, SNC’s Lead Estimator, testified about the process he had followed in preparing the cost estimates for DG3.<sup>6</sup> He stated that, with the assistance of a consultant, he had examined data from three dam projects in Canada: Nipawin (Saskatchewan), Eastmain-1 and Eastmain-1-A (both in Québec). Mr. Lemay also testified that in its “Decision Gate 3 Basis of Estimate” document (P-00094), Nalcor used a performance factor of 5.97 work hours per cubic metre of concrete, not the 6.44 hours that he had suggested. Mr. Lemay further testified that he had added an additional 20% to his estimate of labour hours for the powerhouse because of the possibility of lower productivity (March 29, 2019, transcript, p. 8), the potential causes of which are discussed later in this chapter. However, that increase may not have been added to his estimate.

<sup>6</sup> See Chapter 6 for details about Mr. Lemay’s work.

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At the hearings, Keith Dodson of Westney Consulting was questioned about global trends in productivity on megaprojects. He stated that Westney had been observing a significant decrease in productivity rates since 2004. Mr. Dodson attributed the decrease, in part, to the strengthening of safety culture within the industry. But he also stated: “The main contributor is a loss of frontline supervision and a change in the contractor’s business model where they tend these days to structure themselves to make their money off of the rates, as opposed to the completion of the project.” In other words, this change in business practice—whereby contractors no longer employed their frontline supervisors (such as experienced, tenured foremen) on staff but hired them project to project—contributed to reduced productivity rates (February 25, 2019, transcript, pp. 3–4).

Westney reviewed the estimates SNC had prepared in 2010, which assumed better rates of productivity than Westney’s database indicated. Mr. Dodson testified (February 25, 2019, transcript):

So the assumptions they were making was SNC could bring the people that had done those projects, they had the same contractors they thought could do the work. So, all the conditions for seeing much improved results were there.  
(p. 6)

When asked whose decision it was to determine productivity rates for the DG3 estimate, Mr. Dodson responded that it was strictly Nalcor’s decision, adding that Westney’s only obligation was to provide advice.

Ibbs Consulting Group (Ibbs) was jointly retained by Astaldi and Nalcor to conduct a productivity study in 2015. In its report of September 25, 2015, Ibbs stated that a target range of 11.5 to 12 hours per cubic metre was a conceivable target range but that this level of productivity would not be possible in cold weather (P-01929, p. 4).

In his interview with Grant Thornton, Astaldi Project Manager Don Delarosbil stated that the labour productivity factor of 6 to 6.5 hours in the Astaldi bid was not achievable and that a good direct labour productivity factor per cubic metre in Canada was about 9 hours (P-01677, pp. 37–38).

Scott Shaffer of Grant Thornton testified (February 18, 2019, transcript):

So the whole point of all this is that you have a estimate that has five hours—direct labour hours per cubic metre—you have the Astaldi bid at seven direct labour hours per cubic metre; you have Ibbs—who’s the expert they hired—said 11 to 12 hour—labour hours per cubic metre, only in good weather, and then you have the Astaldi project manager saying we can get nine.

And when you look at the actual numbers, they didn't come anywhere near any of those numbers, really, when you think about it. The 11½ to 12—well, I take that back. In 14—in 2015, they had 14 hours per cubic metre, and a sure—they sure didn't come near nine hours per cubic metre, which—according to Mr. Delarosbil. (p. 61)

## EVALUATING THE BIDS: COST

Lance Clarke testified that the PMT understood that the reason the bids of IKC-ONE and Aecon, two North American firms, were so much higher than Astaldi's and Salini's was because the North American construction market was quite heated at the time. He added that SNC had recommended international bidders precisely because of the active state of the North American market, testifying that “the sense was that the North American . . . contractors were going to be more risk adverse . . . they were going to be less hungry to come and get the business because they were busy” (May 23, 2019, transcript, p. 15).

Mr. Clarke also stated that Nalcor had “no doubt whatsoever” that the work could be done for \$800 million (rounded). He testified that the SNC estimate for the bulk excavation contract had been accurate and had come in under budget, which provided Nalcor with confidence that its \$800 million estimate for CH0007 would also be reliable. Believing the \$800 million was reliable, Nalcor was confident that the work could easily be completed for the \$1.14 billion estimate in Astaldi's bid. This confidence, in turn, meant that the PMT saw no cause for concern in the large differential in the four bid amounts, nor any cause to believe that the Astaldi bid was too low (May 23, 2019, transcript, pp. 16, 58). The PMT was also reassured to see that the Astaldi bid amount was in line with Salini's \$1.16 billion bid. Finally, Nalcor's check estimates, which had been completed by consultants John Mulcahy and Paul Hewitt, confirmed that the bid estimates were reasonable.

As outlined in the *Pre-Qualification Evaluation Report* and “Recommended Bidders List” document (P-03033), Nalcor's treasury and risk management group also completed creditworthiness assessments of the recommended bidders. The conclusion was that all were qualified.

The results of the creditworthiness evaluations for Salini and Astaldi were summarized by Rob Hull, Nalcor's General Manager of Commercial, Treasury and Risk and its Chief Risk Officer (P-01974), in an email written April 23, 2013:

I have reviewed the contracts from a treasury/credit perspective. My comments:

1. I believe the Salini JV to be an unacceptable counterparty from a credit perspective. Salini has recently been rated as BB by Fitch, which is near the bottom end of speculative. Further, FCC has a bankrupt subsidiary with allegations of bankruptcy fraud, and seems to be having their own set of problems in Spain, including substantial losses in 2012.
2. That leaves Astaldi. While I am not overly enthusiastic about the outlook for Italy (D&B Report states sovereign risk for Italy is moderate, with outlook as deteriorating) and hence exposure to an Italian firm for such a substantial contract, I understand there are commercial reasons as to why these two players comprise the short-list . . . the contract terms for Astaldi appear stronger overall versus the Salini JV. . . . I understand the commercial team believes the performance security provided to be the maximum amount we likely could obtain....would like to have seen it higher given the risk and seeing it is below our standard ask of 15%. I also understand Treasury enquired about obtaining security over the batch plant in the event of default....I understand that was rejected and I would like to understand why....on the surface, it would provide more value and also likely to reduce time and cost if they had to be replaced.

...

My conclusion....the Salini JV should not be considered further. Astaldi is better (less risk) but risks above should be communicated to the decision makers. (p. 4)

R.W. Block Consulting, LLC, who acted as consultants for Grant Thornton, reviewed the contract's performance security articles and commented as follows (P-01677):

Contracts that require performance bonds, often require bonds in the amount of 100% of the project's value. However, on very large projects (such as this) we have seen lower bonding requirements (such as 50%, or less, of contract value), and other approaches such as Letters of Credit and Parent Guarantees. As such, Nalcor's approach is consistent with approaches we have seen on other large projects, but as Astaldi S.p.A.'s reported financial deterioration has shown . . . , Parent Guarantees are not one-for-one replacements for performance bonds. (p. 77)

The *Recommendation for Award Summary Report* (P-01964) for the CH0007 contract, dated September 23, 2013, summarized the technical and commercial evaluation reports

on the two lowest bidders. Comparison charts indicated that the direct costs of Astaldi were “almost identical” to those in the DG3 estimate (P-01964, p. 7).

The summary of technical strengths and weaknesses for the two shortlisted bidders made special note of Astaldi’s Integrated Cover System element. As proposed, the ICS would enclose the powerhouse while it was under construction, thus controlling the climate and enabling work to take place for 12 months of the year. The *Recommendation for Award Summary Report* saw the ICS as one of the strengths of Astaldi’s bid (P-01964):

Astaldi’s contract execution strategy distinguishes itself by the use of a heated shelter over the powerhouse to be erected in the winter of 2014 (Jan–April) to permit work over the following 12 months in climate controlled conditions (especially useful for the winter of 2015).

...

The covered shelter permits Astaldi to better project production rates . . . and thus helps flatten the manpower curve. . . . This is considered to be a strong element of their execution strategy. (pp. 11–12)

## EVALUATING ASTALDI’S BID

Scott O’Brien, the Project Manager for the generation component, testified that the bid evaluation process was led by SNC. John Mulcahy took part as the owner’s representative. Mr. O’Brien also stated that secondary oversight was “the responsibility of the bid team and the EPCM consultant” (May 31, 2019, transcript, p. 48). Details about the bid evaluation process are outlined earlier in Chapter 11.

Mr. O’Brien testified that he was aware that Astaldi was awarded the contract on the basis of using an Integrated Cover System and that “the bid team had specific experience in utilization of structures like this in other locations” (p. 49). To his knowledge, there were no concerns raised by the evaluation team about the plan to build the ICS during the winter. He stated: “Astaldi agreed to the timelines, the milestones associated with the agreement, agreed that they could deliver in accordance with those milestones” (May 30, 2019, transcript, p. 81).

Mr. O’Brien further stated that the evaluation team did a thorough evaluation of all the bids and provided a recommendation to the owner to award the contract to Astaldi. The indication was that Astaldi brought the highest technical and commercial scores and

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therefore the decision to award the contract to Astaldi was reasonable (May 31, 2019, transcript, p. 58).

In his testimony, Lance Clarke agreed with Mr. O'Brien and pointed to Nalcor's visits to Astaldi construction sites in other countries. He stated: "So the fact that Astaldi could go and work in multiple countries around the world means they understood country risk, they understood nuances, they understood how to react and relate to those things and how it applied to their systems" (May 23, 2019, transcript, p. 15).

Both Mr. Clarke and Ron Power, the Project's General Manager, were satisfied that Astaldi's inclusion of key Canadian team members in its proposal mitigated any concerns about the company's limited cold-climate construction experience. In his testimony, Paul Harrington also commented on reaction to Astaldi's lack of northern construction experience (June 6, 2019, transcript):

So, it was a factor, it was considered. And what provided an offset against that was the team that was proposed led by Mr. Chrissolor plus his superintendents and supervisors that were on that organization chart. I didn't hear Mr. Power's testimony, but I know that Mr. Power looked into those individuals and they had the Canadian northern Quebec experience that was considered and offset the fact that perhaps Astaldi, corporately, may have not. They brought people to the table who did. (pp. 20–21)

The *Recommendation for Award Summary Report* also noted that Astaldi's inclusion of the resumés of construction personnel with "pertinent (Canadian) experience" alleviated concerns about the number of superintendents and the lack of specific hydro experience in Astaldi's Canadian division (P-01964, p. 12).

Ultimately, however, the weightings assigned to the bid evaluations emphasized low bid price above other factors, as Grant Thornton highlighted (P-01677):

[C]ommercial and provincial benefits accounted for 70% of the weighting. Of this particular weight, 90% was attributed to the low bid price. This means, that all other things being equal, 63% of the total scoring would favor the lowest bidder regardless of lower scores in execution of the work. As such since Salini and Astaldi were low bidders, they were selected for further consideration. (p. 28)

## A SHIFTING CONTRACT AWARD DATE

Initially, Nalcor had intended to award the CH0007 contract on June 3, 2013. However, delays in finalizing the Federal Loan Guarantee deferred the signing date by several months. The award date was pushed to July 31, 2013, then to October 31, 2013, and finally to November 29, 2013.

Astaldi's April 2013 proposal included a schedule for all works, based on milestone dates provided by Nalcor. On July 29, 2013, Nalcor issued Addendum No. 14 to Astaldi and Salini, the two lowest bidders. Addendum No. 14 included revised drawings, updates to the scope of work and revised milestone scheduling dates, the latter made necessary because of the delay in contract award. In addition, the addendum included a Limited Notice to Proceed date of September 24, 2013, and the revised contract award date (October 31). With these revisions, the revised Astaldi bid was increased to \$1,115,027,828.

Mauro Palumbo was the Contract Manager of Astaldi S.p.A., the parent company of Astaldi Canada. He testified about the significance of the changing of the contract award date (May 8, 2019, transcript):

From our perspective, the contract award—it's, of course, quite important—not quite, very important date, because it identified the effective date of the contract and the commencement date of all the activities on site. It was important because for this project, the impact of weather condition is—could be significant; therefore, having the award of the contract and the possibility to start mobilization during the favourable period of the year, as it is June, was an important matter.

...

These dates are obviously important because for us as—starting, as soon as possible, initial work was very, very important for the performance of the project. . . . This gap created serious concern for us, obviously . . . . (pp. 4, 7)

As negotiations continued with Astaldi in the lead-up to the signing of the LNTP, discussions took place related to the target cost of labour (specifically, the reimbursable LMAX) and other commercial terms. On September 14, 2013, executives from Nalcor, Astaldi Canada and Astaldi S.p.A. met in London, England, to negotiate an agreement for the execution of the contract and to establish an LNTP that would allow work to begin before the contract award date (P-03035). An agreement was made to reduce the LMAX by \$40 million and labour profit by \$2.8 million if Astaldi was awarded additional contracts

related to the North Spur stabilization work and the work on the north and south dams. Grant Thornton described the LMAX in its report (P-01677):

Target cost of labour was the Contractor's estimate of the reimbursable cost of labour. This includes actual wages and benefits paid by the contractor plus the associated government burdens (i.e. Canada Pension Plan). The reimbursable cost of labour was subject to an "LMAX". The LMAX was defined as the maximum value of the reimbursable cost of labour. The contractor was responsible for the reimbursable cost of labour which exceeded LMAX amount. On the effective date of the contract, the estimated LMAX was \$572 million, which was the target cost of labour of \$508 million plus \$64 million.

. . . Thus Astaldi would bear the risk of any labour costs which exceeded the LMAX that were not approved by MFC [Muskrat Falls Corporation] pursuant to any change orders. (pp. 74–75)

Lance Clarke testified about Nalcor's concern that the difference between Astaldi's bid (\$1.14 billion) and Nalcor's estimate (\$800 million) could mean that Astaldi would make a windfall profit from the contract. He explained that adopting an LMAX model alleviated this concern (May 23, 2019, transcript, pp. 19–20).

### THE LNTP AND ASTALDI'S MOBILIZATION TO THE SITE

On September 24, 2013, with the FLG still unsigned and CH0007 not yet awarded, Nalcor and Astaldi entered into an LNTP agreement so that initial construction work could begin at the Muskrat Falls site. The LNTP was scheduled to expire on October 31, 2013, when CH0007 would be signed. The LNTP outlined deliverables and the initial work to be completed by Astaldi (P-02139, p. 6), which included work related to mobilization to the site as well as design and procurement activities. On October 31, 2013, the LNTP expiry date was extended to November 30, 2013.

The LNTP could not deal with all of the issues that arose because of the contract signing delay, however. In an interview with Grant Thornton, Don Delarosbil, Astaldi's Project Manager, explained the impact that the time shift had on construction in a cold-weather climate: "[I]f you start in November instead of June you're not just losing four months, you're probably losing ten months. You almost lost a year of construction" (P-01677, p. 34).

Following the extension of the LNTP to November 30, 2013, executives from both Nalcor and Astaldi worked to deal with the effects of the delay. In communications with

the Nalcor executive, the members of the PMT commented on Astaldi's slow progress under the LNTP. In an email to Edmund Martin on November 7, 2013, Paul Harrington described a phone call he had with an Astaldi management team member (P-03040):

One new thing they put forward is they would agree to sign a contract with us with the condition that it is contingent on Nalcor having all approvals such as EA and Financial Close and FLG.

If that is OK with you it could help us to keep the mobilization going, there [sic] dealings with their banks and financial institutions etc and also remove a big excuse for a delay claim. they need to book this project this year before a key date in December

They may raise this contingent contract signing with you, pls let me know if you consider that an acceptable way to move ahead, it may provide the protection we need and the reassurance their banks need and remove any obstacles to moving ahead full speed. We sense there is a slowing down in their mobilization (p. 5)

On November 7, 2013, Mr. Harrington emailed Mr. Martin highlighting Astaldi's lack of progress (P-03707):

Astaldi needs a robust startup team to support the LNTP and Readiness requirements. There are gaps in both the individuals and in the positions. Astaldi's corporate processes need to be brought to bear on the readiness initiative through that startup team. (p. 2)

In response, Mr. Martin posed the following questions to Mr. Harrington:

1. Still the right contractor?
2. Can these things be fixed in time?
3. Anything else we need to be doing?
4. Anything I can do? (p. 2)

Mr. Harrington replied:

They are still the right contractor, they can pick up speed, we are doing all we can.

You could include the key message I highlighted into any phone call with Astaldi at that senior level, be positive but also very concerned that we do not see the full A team yet and we need to see better progress with the best Startup team they can muster– They may push back on you that we have not signed the contract so they cannot attract the best people– so be prepared for that (p. 1)

In an email sent to Emanuele Triassi (then CEO of Astaldi Canada) on November 23, 2013, Guido Venturini (then Project Director for Astaldi) outlined the issues arising from the delay in signing the contract from Astaldi's point of view (P-03139):

[T]o work under the LNTP and without a contract signed is generating significant technical problems and concerns mainly in the following fields:

1. Hiring process: Astaldi cannot hire peoples without
2. Procurement: all main contracts cannot be finalized. The LNTP protect Astaldi only for the amounts paid (LNTP, schedule 2, last paragraph)
3. Visa: expatriate are experiencing problems in obtaining 3 years regular working Visa. In this moment only short term visa have been issues
4. Permits: without contract Astaldi cannot obtain the Insurance cover and cannot start to operate
5. Procedures: there are no procedures for documental exchange (Nalcor does not want to use Aconex for the moment), accounting, invoices, etc

All these and other subjects are strongly affecting the results, although at present is not possible to say if this situation could affect the whole project.  
(pp. 1–2)

In his testimony, Mauro Palumbo also addressed this issue (May 8, 2019, transcript):

**MR. PALUMBO:** It appears evident that this—the fact that we were not yet awarded with the contract, this fact was generating—was negatively impacting our capability to perform some preliminary activities. This is a list of some of them.

**MR. LEARMONTH:** Yeah. And would that be because, you know, working under a limited notice to proceed puts you in a somewhat insecure position because you may not even get the contract? Is that the source of the concern?

**MR. PALUMBO:** Is—this was mainly our concern, apart from the fact that something could not be made, in any case, in an absence of a contract.

**MR. LEARMONTH:** Right.

**MR. PALUMBO:** For example, item one: Hiring process, cannot hire people without a contract.

The other fact was that having not a contract executed, we cannot assume strong liabilities before other subcontractor, for example, because we cannot

take engagement with third parties, giving them certainty about subcontract award, for example, without having ourselves be awarded with a contract. (p. 15)

As the date for the contract signing drew closer, Ken Chryssolor, Astaldi's Project Manager at the time, raised similar concerns to Guido Venturini in an email sent on November 22, 2013. He emphasized the effect of the four-month delay (P-03140):

The whole project schedule for the intake and powerhouse has been completely disturbed and is dependent upon two (2) main factors.

1. Supply and erection of ICS by 24 March, 2014 (Original Date)
2. Concrete placement P.H. Unit 1, slab 02 March, 2014 – 15 April, 2014  
Concrete placement Turbine Section 11 March, 2014 – 08 April, 2014
3. Supply of Draft Tubes (Elbows)

As we cannot place orders for items 1&3 without Nalcor's approval (Correspondence for approval has been addressed to Nalcor, with no response to date) **Consequently, I wish to inform you not to sign any agreement unless the milestone dates have been reviewed, revised and agreed by both parties.**

**If we commit to signing a formal agreement without considering the effects of the delays we are relinquishing all our legal rights to extension of time in the contract.**

Signing of contract in Canada by means of "intimidation" or "duress" is not acceptable.

(Speak to your legal advisors)

Therefore we have two options;

1. Refuse to sign the contract as presented.
2. Delay signing a formal agreement until mid-February 2014 taking into consideration revised milestone dates.

I am protecting Astaldi's interests and not Nalcor's.

Please inform your superiors of my serious concerns, as we will not be able to achieve under the present circumstances the milestone date for the powerhouse and intake. You are aware that I am presently involved in a similar situation, presently in the court of Quebec for a similar situation on a large Hydro Project. (emphasis added, pp. 1-2)

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When questioned why the advice of Mr. Chryssolor was not followed, Mr. Palumbo gave this testimony (May 8, 2019, transcript):

**MR. PALUMBO:** So the relationship with Nalcor—we're very, very close. We had—and we were convinced to have a good relationship with them, and that some principle of cooperation—good faith, good will—in order to achieve the target was feasible with this client. These comments of Ken Chryssolor arrived at a very late stage after six, seven months from the bid submission. During this period, we had worked closely. The milestone date has been changed during this period, and we arrived at November 22—so a few days before the contract execution—with an option to get this project or not.

We have received—at least our impression was that we will be able to find and solve any difficulties that we, as contractor, can face during the contract execution. Moreover, there were two other packages under discussion, which has been proposed by Nalcor during the London meeting. I am referring to the main dam and the North Spur stabilization.

...

And in November, if I will remember, our tender department—not here in Montreal, but in Rome—was working on the preparation of the main dam proposal on an exclusive basis, as for the agreement reached in September. So we had in front of us a contract of \$1.1 billion, plus two other packages of \$250, \$300 million, as for our estimates. Under such circumstances, it was very, very difficult to say no. The option was close to option two of Mr. Chryssolor, delay signing a formal agreement. Not a delay in the execution of the contract, but have the possibility to review the agreement milestone, find solution for the difficulties that can be encountered at a later stage.

**MR. LEARMONTH:** Okay.

But anyway, you decided to sign it and—

**MR. PALUMBO:** We decided to sign the contract. (pp. 17–18)

Both the CH0007 contract and the FLG were signed on November 29, 2013. The CH0007 contract value was \$1,024,292,550. Although the Limited Notice to Proceed had allowed some work to begin, the results on the ground were not the same as those that a signed contract would have yielded.

Astaldi's first monthly report was issued for the period ending February 25, 2014. It outlined the challenges Astaldi faced because of severe winter weather conditions, dewatering issues with equipment installed by another contractor, dust at the crushing plant and inadequate accommodations, office space and internet access (P-03721).

Constructing the ICS was also becoming a big problem. Internal Nalcor emails shared two versions of this first monthly report. Revision A2 was shared by Ron Power with a comment “complete turnaround from the first version in the same period” with much of the language toned down (P-03721, p. 1).

### DIFFICULTIES WITH THE INTEGRATED COVER SYSTEM

As noted above, a crucial part of Astaldi’s bid and execution plan was the company’s intention to construct an Integrated Cover System (sometimes termed a “dome”) to ensure that full production would continue at the powerhouse during the winter months. The ICS was designed to enclose the full powerhouse area and to have an extensive overhead crane system that would move construction materials inside the dome. When he was interviewed by Grant Thornton, Georges Bader, Astaldi’s Deputy Project Manager, stated that in Astaldi’s bid the ICS was a “concept design, which was modified as progress with construction advanced.” He further said (P-01677):

The concept of the ICS was included in Astaldi’s proposal to Nalcor. In the RFP, the ICS was a concept design, which was modified as progress with construction advanced. The ICS was reviewed and approved by Nalcor. It was initially contemplated that Astaldi would attend at the site in July, 2013, and commence the design for the ICS. Given the Project start date was delayed and the contract was awarded to Astaldi in November, 2013, design of the ICS started in the first quarter of 2014. Normally design would only start after a survey was conducted, but given the time of the year and the fact the site was snow covered, a survey was not possible. To validate actual foundation elevations. The design of an ICS takes approximately 4–6 weeks, and once the design is completed fabrication takes approximately 3 months. (p. 38)

Grant Thornton engaged Williams Engineering to review the ICS. In its report, Williams Engineering noted the following (P-01677):

The enclosure strategy is not uncommon in cold climates. Attempting to enclose an area as large as the dam structure combined with an overhead crane, material movement system is not common and warranted detailed scrutiny. . . . Using the temporary building to support a grid of cranes to move buckets of concrete from concrete trucks to the placement location was also not standard. The proposed system appears to be very congested—moving concrete by bucket to concrete pumps. (p. 38)

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In his testimony, Dr. James Gilliland of Williams Engineering acknowledged that his firm had been incorrect in assuming that the cranes were going to be used to actually move buckets of concrete (March 21, 2019, transcript, p. 55). Even so, the issue of congestion remained a concern on the part of Williams Engineering.

As noted by Mr. Bader, the design of the ICS was delayed because the contract signing had been deferred. Detailed design work for the structure was dependent on surveys of the site as well as rock excavation, which had been completed by another contractor prior to Astaldi arriving on site. On January 23, 2014, SNC held a meeting about the ICS design at its Montréal office. Team members from Nalcor's PMT, Astaldi and Proco Incorporated, the subcontractor hired by Astaldi to construct the ICS, plus other structural consultants, attended. Minutes from that meeting state that the ICS required redesign because of over-excavation at the site. Nalcor was responsible for providing Astaldi with the latest 3D model of the rock overbreak and interfaces by January 27, 2014 (P-03045, pp. 3–4).

In addition to over-excavation, winter weather was also a contributing factor in delaying the construction of the ICS. "Startup operation" notes of Vittorio Robiati, Astaldi's Construction Manager in 2014, state (P-03144):

The ICS design had to be done several times because once the rock could be surveyed properly over excavations made it necessary to modify the design.

Engineering can write the sequence of the meetings and of the redesigns. This also had to do with the construction of the platforms for its erection

The excavations were delivered to us very late and full of Ice and Snow and no clear and exact rock profiles were available or could be made.

Then apart from the costs of redesign and the delays there is the cost for the acceleration. We should have started the erection at the beginning of March and it will be July. Plus if we do not finish by November we have to place a vertical division to close in the two first units and the draft tubes will in any case start with some 4 months delay

...

ICS overbreaks in the previous excavations and the impossibility to do a proper survey due to ice and snow conditions have made it impossible to determine the exact locations of the rock and therefore complete a proper design. (pp. 91–92)

Notes taken by Paul Harrington at meetings attended by senior management of Nalcor and Astaldi identify the ongoing issues with the delay of the design and execution of the ICS (P-03129):

**Rome 15/16th/Feb 2014** – Meeting in Astaldi’s offices Rome – . . .

Schedule provide in Contract not being met – 4 weeks behind already,, Crusher still not operable(also OHS issues) Spillway cover behind schedule (2 to 3 weeks) and will be of no use (too little too late) First spillway pour scheduled for March now May 2014

**21 March 2014** Brainstorming with LCP Team . . .

Engineering

- ICS design is behind nothing submitted yet to Nalcor . . .

**Key Action** GET ASTALDI CORPORATE TO UNDERSTAND THEY ARE STRUGGLING AT SITE AND NEED HELP AT MANY LEVELS---TALK TO MARIO LANCIANI ASAP (pp. 3-4)

Another problem was an ongoing dispute between Astaldi and Proco, which ultimately resulted in Astaldi’s decision to terminate Proco’s contract. Grant Thornton provided this description of the events (P-01677):

Astaldi’s subcontractor Proco began construction of the ICS in July 2014 but Astaldi cancelled the contract on “. . . *December 20, 2014 on grounds that Proco failed to deliver on time, had excessive labour hours and provided poor management and supervision.*”

The ICS was originally planned to be completed between March 1, 2014 and September 30, 2014. At Astaldi’s request, this schedule was delayed with work planned for May 19, 2014 to December 22, 2014. Proco claims Astaldi made revisions and modifications to the schedule several times and on June 2, 2014 Proco expressed concern that the modifications could result in the work being impacted by winter conditions and increased costs. Additionally, Proco claimed Astaldi also failed to perform its own obligations under the Subcontract, including initial work site preparations, the timely supply of completed concrete work, crane pads, access roads, electricity, fuel, operational cranes, qualified crane operators, rescue teams, suitable lunch rooms, trailers and dry houses. (pp. 34-35)

In notes taken at a meeting held in Rome on October 8, 2014, Mr. Harrington recorded that Mario Lanciani, Astaldi’s American General Director, stated that the “ICS is a problem with sub contractor and design” and “Will not be able to use ICS for winter pours” (P-03129, p. 10). Mr. Harrington also observed that “ICS is becoming [sic] an obstacle

because of delays in construction . . . are we building the ICs or the powerhouse? We need to get the priority right!" (p. 5).

It is clear that the PMT was concerned about Astaldi's performance. In an email to Mr. Harrington dated May 1, 2014, Ron Power stated (P-03047):

**1 - Astaldi: Failure to Perform** I visited site last Saturday. The situation there is virtually hopeless. When I returned I prepared a deck entitled "Astaldi: The Road to Failure". I presented this to Lance, Scott, Gilbert, Ed Bush, Pat, and Brian. Des (and later Jason) tied in by phone. I will present it to you when you return. As a result of this session, 2 Steering Committee meetings were held this week with Astaldi. I did not attend on Tuesday, as I preferred that cooler heads prevailed. I did step in to yesterday's session, and I gave the following messages directly / verbatim to Mario, Jennifer and Manni:

- Astaldi are perceived as a joke on site
- the Astaldi troops on the ground are laughing at Astaldi
- we have paid in well in excess of \$100,000,000 to Astaldi to date and have nothing to show for it.
- the schedule is probably lost
- I requested Mario, Jennifer and their Mr. Cerri to get on a plane, today, with one-way tickets and to stay here until this situation gets fixed. (p. 2)

That said, Mr. Power reassured Mr. Harrington that they had already overcome significant challenges and would be able to overcome these challenges, as well.

As 2014 progressed, it became clearer to the PMT, however, that the schedule, if not "lost," was certainly under significant pressure. For example, on October 7, 2014, Project Controls Manager Ed Bush sent an email to Ron Power and Scott O'Brien outlining several concerns about the ICS schedule (P-03713):

The current schedule is ambitious and incomplete. . . . At this rate, based on the work in front of us, we will get only limited use from this structure over the coming winter months.

. . .

[I]t kind of makes you wonder why we are even contemplating proceeding with this work! Surely Astaldi would be thinking about this by now! (p. 3)

Notwithstanding this concern, Mr. Harrington emailed the following to Mr. Power on October 8, 2014 (P-03713):

As discussed, I am not in favour of getting involved in the ICS decision making. I feel very strongly that even though it may appear to be not adding value however I feel that this must be Astaldi's decision and not in any way driven or even suggested by Nalcor. It is also a credibility issue that Ed has mentioned many times as being a benefit to productivity and has classed this as one of the cost drivers to arrive at \$6.99 but in a positive sense.

So if ASTALDI decide to reduce or remove the ICS then so be it but under no circumstances should it be connected with anything we said, suggested or inferred. (pp. 1–2)

As 2014 drew to a close, the ICS was still not fully enclosed. Mr. Harrington made the following notes at a senior management meeting on December 15, 2014 (P-03129):

ICS over unit 1 and 2 will be enclosed with roofing and tarpaulins but Unit 3 and 4 are still [sic] under review.

...

Nalcor has no desire to approve or not. Same goes for ICS—this has to be an Astaldi decision alone. Nalcor will handle media fall out and with Government so Astaldi should not feel constrained to keep the ICS, they should decide based on the basis of a good business decision. (p. 7)

In early 2015, Nalcor and Astaldi met on several occasions to discuss the ongoing problems with the ICS. In a letter dated February 17, 2015, to Giacomo Orsatti, Astaldi's Project Manager at the time, Scott O'Brien stated (P-03025):

In Contractor's email of February 16, 2015 Contractor confirmed that work had been suspended in the Power House until such time as the overhead cranes in the ICS are commissioned.

...

[T]here will be a meeting in the Company's Torbay Road office in St. John's to discuss this matter with the goal of setting out a detailed plan with specific commitments for:

...

2. The viability of Contractor continuing any work on the ICS which continues to be a major impediment to Contractor's work and progress on the Project. (pp. 1, 2)

In a letter to Mr. Orsatti dated March 13, 2015, Mr. O'Brien stated (P-03026):

2. ... Contractor has confirmed its absolute intention to retain the ICS, commission the overhead cranes, and maintain this status quo for the

ongoing Intake and Power House work, at least for the immediate and near future. Contractor stated its belief that the benefits in keeping the ICS far outweigh any advantage resulting from its current removal.

...

4. Contractor has not provided any documented analysis or risk assessment to justify its decision. Absent a detailed analysis and risk assessment, Company has no ability to fully understand Contractor's belief in the added benefits of retaining the ICS in terms of cost, schedule and use of critical resources. (p. 1)

By late May 2015, however, Astaldi announced its decision to abandon the plan to complete the ICS. In October 2015, Astaldi began removing the structure. Mr. Bader and Grant Thornton were unable to provide an estimate of the total cost of the ICS, however Grant Thornton did identify \$1 million in change orders related to the demolition and removal of the ICS foundation (P-01677, p. 31).

## DIFFICULTIES WITH PRODUCTIVITY LEVELS

The slow mobilization during the LNTP period and the ongoing problems and delays with the ICS were not the only contributing factors to productivity issues that Astaldi faced. As outlined by Grant Thornton (P-01677):

In May 2018 the PMT provided a presentation to Grant Thornton about Astaldi which highlighted that Astaldi had an *"Exceedingly slow start in 2013–14 as a result of the following:*

- *Slow pace of ramp-up and missteps,*
- *Slow execution of Integrated Cover System (ICS) and removal issues,*
- *Missed labour contract management opportunities,*
- *Challenging benefits agreements,*
- *Mismanagement of the workforce allocation (production and support workers, particularly during 2014),*
- *Unrealized productivity expectations."* (p. 35)

Grant Thornton requested a summary from Nalcor of the cumulative labour hours incurred by Astaldi, compared to the cumulative volume of concrete poured by month between September 2013 and March 2018. After reviewing the summary, Grant Thornton noted that the average monthly cubic metre of concrete poured improved in 2015. However, it went on to state (P-01677):

It is important to understand that while Astaldi’s performance improved, they rarely achieved the concrete placement that the original schedule required. The original schedule required 478,000 m<sup>3</sup> to be placed over a 36 month period. Stated simply, in order to meet that schedule, Astaldi on average would have had to place approximately 13,300 m<sup>3</sup> per month (478,000 m<sup>3</sup>/36 months) cubic meters of concrete each month, including the winter months. This production level was attained nine times out of 57 months since commencement of the project in November 2013 (through August 2018). Additionally, the last time Astaldi attained the 13,300 cubic meter threshold was over a year ago in August, 2017.

As already indicated, the Astaldi bid assumed seven direct labour hours per cubic meter and the DG3 estimate assumed five direct labour hours per cubic meter. However, as the below table depicts, the direct labour productivity rate as measured on per cubic meter basis, was never below 14 direct labour hours. (pp. 36–37)

Figure 3.15 shows Grant Thornton’s calculations for Astaldi’s productivity over time.

Direct labour hours per cubic meter of concrete placed			
Year	Direct labour hours incurred for period	Cubic meters of concrete placed for period	Direct labour hours per cubic meter of concrete placed
2013	-	-	N/A
2014	456,373	29,754	15
2015	1,646,103	120,012	14
2016	1,894,271	110,162	17
2017	2,011,457	131,189	15
Through 8/31/18	576,602	26,911	21
<b>Total</b>	<b>6,584,807</b>	<b>418,028</b>	<b>16</b>

Figure 3.15: Astaldi Direct Labour Performance, 2014 Through 2018 (P-01677, p. 37)

Nalcor also expressed concerns about Astaldi’s performance, project management and site management. Between 2013 and 2015, there was a significant turnover of Astaldi’s senior site-management staff, as can be seen in this list of its Project Managers:

- September 2013 to February 2014: Ken Chryssolor
- February to May 2014: Mario Lanciani

- May to June 2014: Mauro Abbafati
- July to August 2014: Unfilled
- August 2014 to December 2014: José Alves
- December 2014 to August 2015: Giacomo Orsatti  
(Mr. Orsatti was also the Project Director during this period)
- May 2015 to the termination of Astaldi’s contract (October 2018):  
Don Delarosbil

In summary, during the first two years of Contract CH0007, six different people held the position of Project Manager for Astaldi.

In September 2014, Nalcor took steps to advance its internal review and analysis of Astaldi’s performance. In an email sent to Lance Clarke on September 21, 2014, Paul Harrington stated (P-03670):

[W]e will need data to be able to take this from gut feel and intuition to some real analysis and projection forwards.

So the steps I recommended we take are as follows

1 Assess and Evaluate current Astaldi performance and progress as compared to the approved schedule wrt concrete pours, concrete placement versus targets

2 Analyze and project forward the current performance and determine the likely outcome if nothing changes

3 Identify potential improvements ( or suggested actions) that would enhance the likely outcome and quantify the most relevant improvements and list these by priority

...

This analysis will also determine when we should be scheduling other contracts such as the dams and the N Spur—because if we are giving artificial and unachievable dates to those contractors and pushing for an award and start/end date that do not hold up then we need to manage that appropriately and ensure we are not making a bad situation worse. (pp. 1–2)

As noted earlier in this chapter, in November 2014, Nalcor and Astaldi jointly engaged the Ibbs Consulting Group to conduct a productivity study (“Productivity Study

Phase 2”). Grant Thornton quoted this excerpt from the Ibbs report, which was submitted March 7, 2015 (P-01677):

1. Labor productivity is degraded on Muskrat Falls by too much waiting time, too much rework, and not enough overall site coordination.
2. Project Critical Issues Scorecard – Craft labor direct loss of productivity
  - (a) December 2014 visit – Severe issues existed. Project recognized issues and was moving to remedy the issues.
  - (b) January 2015 visit – Significant progress made toward craft labor productivity improvement. Many external blockers prevent such progress from yielding results.
  - (c) Feb 17, 2015 info – We understand that most of the blockers still remain, thus preventing material productivity improvement.
  - (d) Score: Astaldi and MFC: Extreme Concern (pp. 37–38)

By the end of 2014, Astaldi’s performance had not improved. Mr. Harrington attributed this to Astaldi’s construction management organization, among other factors related to labour unions and the Impacts and Benefits Agreement (P-03065). He further said:

This culminated in November 2014 with a request by Astaldi, to release to them senior construction personnel within the Nalcor construction management team who were very familiar with major civil construction work and methods commonly used in Newfoundland and Labrador. This request was agreed to and a “reset plan” by Astaldi over the Christmas break was put into action. This reset plan, developed and implemented by Astaldi, included a lay off of almost all craft labour other than those needed for site maintenance and a “recall” of labour after the Christmas break. The recall of labour would be a modest number of craft persons and a relatively low concrete production and placement schedule during the very cold winter months. The Astaldi Construction Management organization under the new leadership was put in place and follows the Canadian model well known by craft labour and supervision in Newfoundland and Labrador. The Astaldi plan was to establish the new Construction Management team, replace the Project Manager, bring in Project Management support personnel ( which is continuing) get the Direct to Indirect labour ratio back into an acceptable band and plan the work more efficiently. (p. 2)

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In a response to the Independent Engineer written on April 2, 2015, Paul Harrington outlined Nalcor's continued efforts to mitigate issues involving Astaldi's performance (P-03065):

Nalcor have been meeting regularly (weekly) with Astaldi Senior management on operational matters, in addition 6 CEO level meetings have been held also since with the mid Year 2014. The focus of every meeting has been the same, i.e. Nalcor's concerns regarding Astaldi's Safety performance, Project Management, Construction Management, Production rates, Organization, Readiness to execute and Priorities.

...

Astaldi have been responsive and have endeavoured to make improvements in all areas, Astaldi have requested Nalcor's assistance (and Nalcor has responded positively) in all areas with working groups established in the Summer of 2014 to address challenges and concerns regarding various aspects of this contract including the Integrated Cover System, Winter Readiness, Spillway Production, Crushing, Batch Plant, PowerHouse production, Productivity, Construction Management. Incremental improvement was noted in the Summer/Fall of 2014 following the impact of the working groups but the improvement in production levelled off in November and was not sustained. (p. 2)

Mr. Harrington added that Astaldi's construction management methods were "not suited to operate in Canada's cold weather" (P-03065, p. 2).

In 2015, Nalcor also engaged Westney Consulting to review Astaldi's performance. Keith Dodson of Westney testified about its findings (February 25, 2019, transcript):

**MS. O'BRIEN:** Okay. All right.

I may—I'm going to jump ahead a little bit here because you did say earlier that you came back and you worked with the Lower Churchill Project in 2015, 2016 when the—

**MR. DODSON:** Right.

**MS. O'BRIEN:** —project was experiencing, certainly, some difficulties particularly with the Astaldi contractor. So you would have looked at it then. I'm not going to get into a lot of detail on your work in 2015 and 2016 with you, but are you aware from that work about the productivity rates or concrete production rates that were actually being achieved on the project in, at least, a general sense?

**MR. DODSON:** Absolutely.

When we first arrived in 2015 . . . we had three people involved. . . .

The first assessment was made by Pete Oppenheim in 2015 and productivity was terrible. We came back in June of that year and—for this team and things was changed. I think the team that Scott O’Brien and Peter Tsekouras and the Nalcor team did an amazing job in turning this project around. And the rates that were actually achieved here were better than the rates that we were discussing in 2012 as the world rates. So a world-class effort on the part of those people to get the project turned around. (p. 7)

In addition to Westney, Nalcor also engaged “industry leaders” to analyze the issues related to the Astaldi contract and provide some guidance on next steps. They included Long International and sub-consultants Cleveland Shaw Litigation Accountants and McInnes Cooper. As Nalcor described it, the outcome of this process was a recommendation to “retain Astaldi as the contractor and negotiate with them a financial contribution which would provide enough financial incentive to complete the job, but at the same time maximize their losses and minimize Nalcor’s contribution” (P-03804, p. 1).

As part of GNL’s oversight (discussed more fully in Chapter 26), it retained Ernst & Young to conduct various assessments of the Astaldi contract. Despite being restricted in what information it was able to access, EY did review information regarding Astaldi and the following was stated in an internal EY email dated April 29, 2015 (P-03066):

1. Schedule doesn’t provide the current status of the project. For instance, the bulk of the work on the Integrated Cover System is in the future. Therefore the schedule doesn’t reflect the delays these activities have encountered during wintertime...
2. There are more than 500 activities with negative float, ranging from -1 up to -150 days. Negative float indicates the inability to meet schedule milestones/deadlines. The more tasks with negative float, the more unrealistic the schedule is...
3. Schedule shows “Substantial Completion of the Work” on 30 June 2018 and “Final Completion of the Work” on 29 September 2018; however, in Nalcor’s January Monthly Report the construction progress curve for MFG [Muskrat Falls Generating] component reaches 100% progress in April 2018. There is potentially a 5-month gap. To be validated.

It also has to be noted that Astaldi “Control Schedule Baseline Document” and “Schedule Development and Control Plan” remain unapproved. (p. 1)

## FINANCIAL AND CONTRACTUAL DIFFICULTIES AND THEIR IMPLICATIONS

Astaldi's deteriorating financial position, and particularly that of its parent company, provided a further challenge to Nalcor.

The CH0007 contract outlined the performance security instruments Astaldi was required to provide to guarantee its performance. They were summarized by Grant Thornton in the table in Figure 3.16.

Performance Security	Description	Amount (\$ Millions)
Parental Guarantee	Guarantee from Astaldi S.p.A. providing the financial or other support as may be required to ensure all obligations under the agreement continue to be fulfilled. <sup>407</sup>	Unlimited
Letter of Credit #1	Linked to the advanced payment of 10% of the contract price to the contractor and released when Nalcor had received full credit from the Contractor <sup>408</sup>	102
Letter of Credit #2	\$100 million until substantial completion certificate has been issued reduced to \$20 million until a final completion certificate has been issued <sup>409</sup>	100
Letter of Credit #3	Covering the warranty period <sup>410</sup>	10
Performance Bond	To guarantee performance of the work, pre-paid and non-cancellable <sup>411</sup>	150

Figure 3.16: Astaldi Contract – Summary of Security Instruments  
(P-01677, p. 76)

Another contract stipulation was that the 10% advance payment (\$102,429,255) that Nalcor gave to Astaldi at the signing of the contract had to be repaid in full. This would be done through invoice deductions. The first deduction would be made after cumulative invoices reached 20% of the contract price. Repayment amounts were to be 15% of the value of the invoice.

Nalcor and Astaldi held negotiations in mid-2015. They focused on disagreements over Astaldi's request for additional compensation based on the late start of the work under the contract, the level of labour productivity being achieved and Nalcor's decision to exclude Astaldi from bidding on the North Spur stabilization contract and the contract for the north dam and south dam. As early as 2014, the PMT had lost so much confidence in Astaldi's performance that it refused to recommend the firm for this additional work.

In a letter to Scott O'Brien dated July 21, 2015, Mr. Delarosbil suggested a temporary suspension of contractual notice requirements on a limited basis while negotiations were continuing (P-03072).

On July 31, 2015, Nalcor and Astaldi signed a Road Map Agreement, which was a guideline for negotiations (P-03073):

#### **ROAD MAP**

Nalcor and Astaldi Canada have the mutual intention to resolve, on a collaborative basis, some critical issues which have arisen during the performance of the Work. The CEOs of the companies exchanged correspondence on the subject and met on 16 June 2015. In order to progress with the above objective:

1. Nalcor will work with Astaldi to establish a re-baselined schedule. Contractor commits to perform the appropriate level of production to ensure the full compliance to of the new baseline schedule.
2. By 31 July 2015, Nalcor will revert on Astaldi request of return of the Advance Payment recovered and of suspension of the Advance Payment recovery until the end of 2015; Letter of Credit for repayment of Advance Payment and existing performance security to remain unchanged.
3. Astaldi will prepare an execution plan which includes the workforce required to complete the works described in the re-baselined schedule resulting from # 1 above. Nalcor will fully support this effort.
4. Astaldi will continue:
  - a. to seek and implement productivity improvement initiatives
  - b. to seek measures to mitigate the overall impact of the re-baseline schedule on the overall schedule.

5. During the two months following the signature of this document, the parties will cooperate in good faith to develop a process for a way forward to achieve the successful completion of the Work. (p. 2)

After signing the Road Map Agreement, Nalcor began to explore alternatives and options to Astaldi's continuing on the Project. Westney was again hired to look at both Astaldi's financial status and its financial capacity to complete the contract. Westney noted (P-03804):

At award, both Standard and Poor's and Moody's rated Astaldi as a B+ credit risk. However, as a result of risks to the company, including the Muskrat Falls project and other work in Turkey and South America, Westney advised that Astaldi now had liquidity and credit concerns which raised questions about the contractor's ability to complete the job. (p. 38)

Nalcor assessed the following alternatives for moving forward with Astaldi (P-03804):

Nalcor used the productive time of 2015, and indeed spent much of the last part of the year considering its alternatives for completing construction of the powerhouse. Its alternatives can broadly be categorized as either staying with Astaldi as the primary contractor or replacing them with a new contractor. (p. 38)

Based on the Westney analysis, Nalcor concluded (P-03804):

Nalcor's conclusion was that negotiating with Astaldi to continue construction for at least the 2016 construction season provides the least cost/risk exposure to Nalcor and the Government of Newfoundland and Labrador for moving forward. Considerations include;

- Astaldi has proven it has the capability to complete the work;
- It minimizes the possibility of Nalcor having to pay another contractor the full cost to complete the job, or minimizes the additional money that should have to be paid to another contractor should the decision eventually be made to remove Astaldi;
- It preserves the current construction team, including highly experienced Newfoundland and Labrador supervision;
- It allows the project to benefit from the 2016 construction season, which is now upon us; and
- Provides the most certainty and controlled predictive outcome with the least exposure to Nalcor.

Furthermore, providing financial support to Astaldi mitigates a number of important risks, including the possibility of abandonment by Astladi [*sic*],

a distress sale of Astladi [sic] which could result in their replacement with a less cooperative contractor, and future litigation with Astaldi.

It is also Nalcor's position that any financial support will only lessen Astaldi's losses, which will be significant. It will not result in Astaldi returning to a profit scenario in any way, but will only get them to a position where they are more able to complete the job. (p. 39)

As a result, Nalcor decided to continue with Astaldi.

## A NEW PROVINCIAL GOVERNMENT

In the general election of November 29, 2015, the party that had been in power since 2003 was defeated and a Liberal Government under Premier Dwight Ball was formed (December 15, 2015).

On January 18, 2016, Nalcor advised GNL that it would be entering into negotiations with Astaldi about how to handle ongoing cost overruns and schedule delays. In a presentation entitled "Lower Churchill Project Astaldi Update – Jan 20, 2016," which Nalcor gave to GNL on January 21, the following "key messages" about the state of affairs on the Astaldi contract were given (P-03671):

- Continuing with Astaldi (Contractor) to Powerhouse Contract completion is preferred
- Significant internal efforts in project execution, commercial and impact analysis support this
- Confirmed by external stakeholders (eg. Canada, IE, Westney, etc.)
- Not a "normal" contractor dispute situation given when it has occurred in the cycle of contract completion and the potential financial impact it could have on Contractor's organization
- Initial offer structured to include components for unit rate production, key milestone achievement and stretch targets
- Detailed discussions between Project Team and Contractor has identified a schedule delay impact of 12–18 month
- Overall incremental cash flow impact to LCP will include above noted payments to Contractor plus (i) cost to carry MF site for delay period, (ii) potential third party claims, and (iii) bond interest/sinking fund payments that would have been recovered through PPA under original schedule

- Implications for NL pre-funded equity requirements under the Project Finance Agreements and Federal Loan Guarantee (p. 3)

The presentation also compared cost estimates of three scenarios: terminating the contract, Astaldi abandoning the contract and reaching a deal with Astaldi.

In a letter to the Premier dated January 25, 2016, Clerk of the Executive Council Julia Mullaley raised concerns about the lack of independent analysis of the information provided by Nalcor on the Astaldi situation, noting that “the level of information provided is not sufficient to render an informed decision” (P-03874, p. 1). She also made the following recommendations:

- Government consider immediately engaging the necessary expertise (to be identified) to complete an initial assessment of the issue including in particular, validating the urgency of the issue, the conclusion that there are concerns with the solvency of Astaldi and the related risks to the project. Further validation will also be required to assess the options and related legal and financial risks and to provide a recommendation on how to move forward to manage the project and mitigate risk.
- Further consideration be given to how this independent assessment would integrate with the current review being undertaken by EY on Project cost and schedule risks, of which Astaldi is included (this assumes that EY is not the expertise envisioned above).
- Internal legal counsel in Justice and Public Safety familiar with the various contracts and terms of the Federal Loan Guarantee (and related agreements) be immediately engaged to assess any potential impacts on the agreements.
- Risk of potential change in senior executive at Nalcor and the resulting impact on the project be considered and deliberate thought be given to an interim replacement to be prepared to move quickly if the need arises. (pp. 1–2)

On February 25, 2016, the Premier, the Minister of Natural Resources and other GNL officials met with representatives of EY to discuss the Astaldi problem and other matters related to the Project. A record of this meeting includes the following notes (P-03086):

- EY’s estimate is the problem with Astaldi is in the range of \$600–\$800 million. Nalcor has been referring to a \$650 million issue.
- ...
- Specific to the Astaldi issue: EY is real surprised that discussions with Astaldi to resolve the \$600–\$800 million issue are still at a high level, even though the problem has been evident for 18 months.

- EY seriously questioned the Nalcor approach of hiring a consultant to convince itself that Astaldi was in financial trouble. They described this as a type of covert, private eye approach. So far, Nalcor has provided a report on Nalcor letterhead but refused to identify for EY who did this work on their behalf (to allow EY to follow-up and validate the findings).  
...
- EY indicated that the agreement with Astaldi stipulates that Nalcor pays Astaldi for every hour worked, and payments are not tied to achieving concrete poured milestones. Nalcor officials described this specific contract provision as “one regret they have”. So, Astaldi has been paid for every hour worked, even for building the failed dome and taking it down.
- Given that EY was kept away from the Astaldi file until very recently, they have only started to think about our options going forward. When EY asked Nalcor to walk them through the options Nalcor considered, EY got the “we know best” response, essentially dismissing anything beyond more cash to Astaldi now.  
...
- Even if the loss on the MF contract is made public on March 8–9, EY’s view is there still is ample time to get an agreement with Astaldi—the right agreement, not a rushed agreement.  
...
- EY recommended that Government’s negotiating objective should be to cover as little as possible of the Astaldi cost increase, while ensuring Astaldi maintains its good productivity for the next nine months. After March 8–9, we will have a better sense of how big a financial problem Astaldi has, and we can then enter into negotiations in a measured way. They noted the negotiation with Astaldi should be framed as a commercial negotiation, and we need strong commercial lawyers on our side. EY has little faith in Nalcor’s ability alone to negotiate the type of agreement that is required (because money isn’t an issue for Nalcor). (pp. 2, 4, 5)

In this meeting, EY advised GNL that it had been kept away from the Astaldi file until very recently. EY also recommended that Premier Ball call Edmund Martin and request that he provide GNL with Nalcor’s negotiating strategy with Astaldi.

It is clear that, at this time, GNL’s trust in Mr. Martin’s leadership was eroding. GNL instructed Mr. Martin to cease negotiations with Astaldi. Mr. Martin testified (June 12, 2019, transcript):

**MR. E. MARTIN:** Right. So we ceased negotiations, I had to, you know, remove myself from the table.

...

Following that, I can't give you a step-by-step sequence but, in general, what transpired after that was the government wanted more information. They wanted to bring EY in—and did—to delve into, you know, our information and such, and that continued for a period of time. (p. 13)

On March 31, 2016, Astaldi sent Nalcor a document entitled “Justification for incremental compensation” (P-03672), which included a claim for additional compensation of \$785,500,000 together with associated schedule relief.

On April 20, 2016, Mr. Martin's employment with Nalcor came to an end.

On April 21, 2016, Stan Marshall was appointed CEO of Nalcor.

On April 26, 2016, Filippo Stinellis, then CEO of Astaldi S.p.A., the parent company of Astaldi Canada, sent a letter to Mr. Marshall outlining the ongoing efforts of Astaldi and Nalcor to resolve the outstanding issues. He proposed a meeting in early May 2016. Mr. Stinellis stated (P-03087):

On 31 March 2016, Astaldi delivered this document, currently aggregating \$785,500,000 along with associated schedule relief, and, as you will see upon review, Astaldi's claims that contract CH0007 is void or voidable for reasons related to non-disclosure by Nalcor of crucial labour productivity information (upon which “Lmax” was based). (pp. 2–3)

On May 27, 2016, Lance Clarke responded to Astaldi's claim (P-01950):

We have reviewed the JIC [Justification for incremental compensation] in detail and feel compelled to provide you with our summary review following our detailed assessment of the various claims set out in the JIC. You will see that we have found little, if any, justification for the \$785,500,000 that Astaldi Canada is seeking. Astaldi Canada's suggestion that the Agreement is void for misrepresentation is not supported by the facts; Agreement CH0007 is valid and binding on the parties. The alternative claims presented in the various annexes in the JIC also suffer from a variety of problems: factual, legal and contractual. However, there is one overriding factor which applies generally to the various claims being advanced, and that is a failure by Astaldi Canada to recognize the serious deficiencies in its performance, particularly in 2013–2014, and the errors in its estimates of the cost to perform the work.

I understand that Astaldi Canada presented the JIC to satisfy our request for such a document as a precondition for further meetings to discuss the potential

for a commercial resolution to the cost and schedule issues you have raised. While we do not agree with the positions you have taken in the JIC, we do need to meet to try to come to a solution acceptable to both parties. (p. 1)

On May 29, 2016, during a concrete pour of a draft tube for the powerhouse at Muskrat Falls, the wooden formwork collapsed. This was a life-threatening incident and it was fortunate that there were no serious injuries or fatalities. Occupational Health and Safety issued a stop-work order on concrete pours for all four draft tubes, which remained in effect until September 24, 2016. The work stoppage caused further delays in schedule and increase in costs of approximately \$36 million (P-03119, p. 2).

On July 27, 2016, Nalcor and Astaldi executed a Bridge Agreement (P-03028). This Agreement increased the LMAX by \$150 million to allow work to continue until the negotiation of a full agreement was concluded. Effective December 1, 2016, Nalcor and Astaldi signed a Completion Contract that resolved many of the items in dispute and allowed work on the Project to continue.

Grant Thornton's *Construction Phase* report provides the following details about the contents of the two agreements (P-01677):

### **3.5.2 The Bridge Agreement**

. . .The agreement dictated that during the bridge agreement period, July to October 2016, all payments for labour and non-labour components for work completed would be made entirely on a pro-rata basis of pre-defined monthly payment values for specified installed volumes of concrete and the erection of specified structural steel components. Actual travel costs would continue to be reimbursed as incurred.

### **3.5.3 Completion Contract**

The bridge agreement was extended until November 30, 2016. While the bridge agreement was in effect, Astaldi continued working at the job site and continued negotiating with Nalcor. These negotiations led to the completion contract which became effective as of December 1, 2016. The total contract price was \$1.83 billion and was inclusive of the scope of the original contract and all change orders up to and including November 30, 2016. In addition, PCN-0705 was issued to increase the package budget another \$78 million for additional travel and escalation related to the completion contract. This settlement of \$884 (\$806 million+\$78 million) resulted in a total package budget of \$1.908 billion related to the completion contract. (pp. 30–31)

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Notwithstanding the signing of the Completion Contract, correspondence on July 22, 2017, from Astaldi to Nalcor shows a strained relationship between the respective Project Managers (P-03673):

Contractor [Astaldi] acknowledges receipt of the referenced letters and has to advise it is concerned with the escalating tone. One such letter that is particularly repugnant is LTR-1885. Contractor advises it has been placed in an untenable position where it perceives some Company [Nalcor] personnel are employing heavy handed bargaining practices that may, on one hand be considered to be unconscionable, and on the other hand totally against the guiding principles of the Completion Agreement whereby both parties made a commitment to ensure conditions would be sought under which the Work under the Agreement could continue to Final Completion.

Furthermore, Contractor has found that recent Commercial Meetings have been ineffective with reaching agreement on Changes, and the Steering Committee meetings are focused on broader issues. With no other ability to reach a consensus or compromise, Contractor is left with no recourse other than to put its positions on paper and reserve its rights to further dispute issues in the future. We regret Company is taking offense to this. (p. 1)

Nalcor and Astaldi signed a Settlement Agreement effective December 14, 2017, to resolve claims and specific matters that arose between December 1, 2016, and December 14, 2017. Under this agreement, Nalcor paid Astaldi a further \$20 million.

In early 2018, Astaldi's financial position and that of its parent company continued to deteriorate. On January 29, 2018, Mr. Delarosbil emailed Mr. O'Brien to follow up on the status of the payment under the Settlement Agreement (P-03849):

Hi Scott any news on the change order for the 20 million dollars. We are really in a hard spot right now and it would help if you could see what is holding the change order up. Please let me know if it is something on my side that is slowing things down. (p. 1)

By May 2018, Astaldi's financial position was at a crisis point. On May 23, 2018, Astaldi submitted a request entitled "Extraordinary Risk Request for Equitable Compensation" (P-03122):

After weeks of negotiations, both parties agreed to \$1,830 million dollars, and a revised baseline schedule to complete the scope of work, exclusive of Risk. Contractor's initial \$70 million dollars of Risk was not included in the Completion Contract, but recognized, negotiated down and not to exceed \$50 million dollars to take into account costs not reflected in the \$1,830 million

dollar price. Contractor would not have agreed to the Completion Contract without the inclusion of these mutually recognized Extraordinary Risks. (p. 5)

In response to this request for additional funds, Nalcor and Astaldi signed a Re-Advance Agreement effective May 29, 2018, which was amended on June 11, 2018. At this time, Astaldi's parent company in Italy was in the process of refinancing and was not providing cash support to Astaldi Canada. As a result, Nalcor agreed to advance an additional \$17.1 million (P-03031). Astaldi agreed to reduce payroll costs and focus performance on critical work scopes as identified in this agreement.

In an email to Lance Clarke and Scott O'Brien dated August 8, 2018, Astaldi's Francesco Rotundi requested further financial assistance from Nalcor (P-03127):

At the site right now Astaldi is doing everything possible to achieve the dates in term sheet without this agreement signed. We have hired an additional 100 men to achieve the targets and rented more equipment to make available for accelerate the work. . . . I think this show Astaldi commitment to making the work and meet the dates.

I ask for you to is consider my request on the letter of credit this will show your commitment to making things work with Astaldi. You have seen our cash flow, we are reviewing it and from outcome it's clear that we need support now on until September, after this period everything will be manageable, if we don't burn the invoice to be payed [sic] at that time, anticipating that payments to cover this period costs.

Otherwise I believe it will be a big mess for us and serious harm to the project and both our companies. (p. 1)

On September 6, 2018, the Funding Contract was signed by Nalcor and Astaldi (P-03032, p. 3). This contract contained terms for incentive compensation if Astaldi performed certain work scopes by certain dates and for additional advances by Nalcor to Astaldi of \$2.5 million together with incentive bonuses up to a maximum of \$8 million tied to work scope objectives.

On September 14, 2018, Nalcor wrote Astaldi alleging misrepresentation on the basis that the funds provided under the Funding Agreement and proposed Project Account Agreement were to be used for completion of outstanding work, not for accounts payable to subcontractors, suppliers and vendors (P-03128). By that time, subcontractors, suppliers and vendors for Astaldi were also contacting Nalcor to obtain payments that were due.

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On September 28, 2018, Nalcor issued a Notice of Default to Astaldi alleging the following events of default (P-03130):

- Contractor does not have either sufficient funds on deposit in its bank accounts and/or access to sufficient credit facilities available from any financial institution to provide necessary funds to finance working cash flow.
- Contractor does not have any source of revenue other than compensation to be earned under the terms of the Agreement, the Completion Contract and the IFC.
- Contractor's parent company, Astaldi SpA is unable or unwilling to provide funds to assist with Contractor's cash flow needs.
- Contractor has accounts payable based on invoices from its Subcontractors and suppliers in excess of \$18 million which are due and payable, and Contractor has failed to pay its debts as they generally have become due [Article 24.1(i) and (c) and paragraph 28(c) of the IFC].
- Contractor is unable to meet weekly payroll for its Personnel [Article 24.1(i) and (k) and paragraph 28(a) of the IFC].
- Contractor has failed to complete work scope objectives by the dates specified in the Completion Contract [paragraph 39(a) of the Completion Contract of the IFC].
- Employees and Subcontractors have filed liens for unpaid invoices, wages and/or benefits in excess of the amount set out in paragraph 28(d) of the IFC.
- Compensation available to be earned by Contractor under the Agreement and Completion Contract is not sufficient to pay the costs to complete the Work under the Agreement and satisfy its debts owed to Company, Subcontractors, suppliers and third parties, including but not limited to the following:
  - (i) Contractor owes Company \$92.8 million;
  - (ii) Contractor owes approximately \$78 million to Astaldi SpA as of August 13th, 2018 as confirmed by Fabrizio Tonucci of Astaldi Canada Inc.;
  - (iii) Contractor owes approximately \$51 million to Unicredit as of June 30th, 2018 as confirmed by Fabrizio Tonucci of Astaldi Canada Inc. (pp. 3–4)

On October 18, 2018, Nalcor sent a Stoppage of Work Notice to Astaldi (P-03130), based on the failure of Astaldi to provide a plan for continuity of work and Astaldi's

position that it had “no intention of providing any information as to how Contractor plans to maintain operations to complete the Works” (p. 5). The Notice stated that Astaldi was to secure all work fronts, shut down site operations and demobilize Astaldi personnel from the site.

On November 8, 2018, Nalcor delivered a Notice of Termination to Astaldi that stated: “Contractor has not remedied nor taken any steps to remedy the defaults listed in the Notice of Default” (P-03132, p. 1).

In his testimony, Stan Marshall discussed why termination had not occurred two years earlier (July 2, 2019, transcript):

In 2018, there is very little leg work left to be done. In 2016, they were just getting into it. And if you’d terminated Astaldi in 2016, you’d have to shut down the works for a year. That was the advice I got. (p. 59)

In anticipation of the possible termination of Astaldi, a Limited Notice to Proceed had been issued to Pennecon. After Astaldi’s contract was officially terminated, Pennecon was hired by Nalcor to take over the remaining work on the CH0007 contract. Scott O’Brien testified about the nature of the LNTP agreement (May 31, 2019, transcript):

The LNTP generally was intended to ready Pennecon to come to site to complete the work, should it be necessary. Not to mobilize, but it was established to undertake the readiness effort in establishing the organization, the processes, reviewing the work scopes that would be required to be completed, assess the situation, I believe prepare an estimate for performance of the work. (p. 18)

Mr. O’Brien further testified that due to the preparatory work done by Pennecon, the transition between contractors went very smoothly (May 31, 2019, transcript, p. 18).

Ron Power testified that he knew that “less than 10 per cent” of the work contracted to Astaldi remained to be completed when the Astaldi contract was terminated. He stated that, from his recollection, the estimate to complete the remaining work was “around \$150 million” (May 22, 2019, transcript, pp. 97–98).

It is important to note that details related to estimates, costs and other issues involved in the Pennecon contract were not entered into public evidence because there is an ongoing arbitration between Nalcor and Astaldi. This information was disclosed to the Commission by way of confidential exhibits. After reviewing these, I am satisfied that

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the most recent Project capital cost estimate of \$10.1 billion includes sufficient amounts to cover the costs in the Pennecon contract, assuming that those costs do not increase.

## CONCLUSIONS

From the commencement of its work pursuant to the LNTP signed on September 24, 2013, until May 2015, Astaldi failed to perform in accordance with its contractual obligations. This failure to perform resulted in significant schedule delays and cost overruns for the Project. Astaldi's performance improved after May 2015. This was due, in part, to assistance from Nalcor personnel and also because of Don Delarosbil's appointment as Astaldi's Project Manager. Nevertheless, Astaldi's performance fell well short of the productivity assumptions stated in its bid and upon which it was awarded contract CH0007.

In his email to Guido Venturini on November 22, 2013, Ken Chrissy had made a strong recommendation that Astaldi not sign any agreement with Nalcor unless schedule milestone dates had been reviewed and revised. Mr. Chrissy advised Astaldi it had two options: refuse to sign the contract as presented or delay signing the contract until mid-February 2014, taking into consideration revised milestone dates. Astaldi ignored this advice and executed the contract knowing that the schedule established was totally unrealistic. I find that, at the time the Astaldi contract was signed (November 29, 2013), Nalcor also knew that the schedule was totally unrealistic.

Nalcor had prudently included a clause in contract CH0007 that stated that Astaldi waived any right to make a claim because of the delay in awarding the contract. From a legal perspective, I understand that Nalcor's reliance on this clause could be considered defensible. However, with the sizable cost increase for the Project as a result of the Astaldi bid and the totally unrealistic schedule, Nalcor should have reassessed the Project schedule instead of proceeding in the manner it did. This reassessment could have been done before Financial Close—which, as described earlier, was the point of no return for this Project. A project management team that was properly qualified, experienced and acting reasonably would have done much more in order to prevent what eventually happened with Astaldi.

I also find that Nalcor did not give serious consideration to terminating Astaldi until 2016. Considering Astaldi's poor performance in 2014, I find that Nalcor's delay in

deciding whether to terminate Astaldi is surprising, to say the least. The CH0007 contract was pivotal to the success of the Project. Nalcor should have taken far more decisive action in dealing with Astaldi early on. While termination of the Astaldi contract may not have been a viable option in 2016, it could well have been so if done earlier, even if it meant a delay in the schedule.

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## CHAPTER 14: THE VALARD CONTRACTS

Valard Construction LP is a Canadian corporation headquartered in Calgary, Alberta. Since 2010, Valard has been owned by Quanta Services, Inc., which provides infrastructure for electrical power systems, pipelines and communications systems and is based in Houston, Texas. With approximately 40,000 employees, Quanta is the largest linear (transmission line and pipeline) construction company in North America. Valard has experience working on transmission lines in northern and remote locations.

Valard was awarded two contracts for construction of the Project transmission lines, CT0327 and CT0319. Contract CT0327 (Labrador–Island Link) was for the right-of-way clearing and construction of the LIL, which is the 350 kilovolt (kV) HVdc transmission line that connects Muskrat Falls (Labrador) to Soldiers Pond (Newfoundland). Contract CT0319 (Labrador Transmission Assets) was for the ROW clearing and construction of the LTA, the 315 kV HVac line connecting Muskrat Falls and Churchill Falls. The scope of work for the LTA contract was much smaller than for the LIL contract and also required far less remote access work because of the line’s proximity to the Trans-Labrador Highway. Because of the complexity of the larger LIL construction project, what follows deals mostly with the LIL contract with Valard, for which Quanta provided a parent guarantee (April 3, 2019, BJ Ducey, transcript, p. 2).

Construction of the HVdc LIL transmission line was originally divided into four packages: CT0327, CT0343, CT0345 and CT0346. Prior to seeking bids, Nalcor decided to combine the four packages into one. The resulting larger contract (CT0327) was signed with Valard on April 8, 2014, for \$809 million.

According to BJ Ducey, a Senior Vice-President with Quanta (April 3, 2019, transcript, p. 5), the scope of work required to complete the LIL contract was divided into the following two components:

- 1. Clearing land and constructing the ROW and access for the LIL.**

Nalcor removed this scope of work from Valard’s direct responsibility. Instead, Nalcor contracted directly with separate ROW contractors for access roads. Valard did provide some limited services for the clearing of the ROW.

2. **Building the 1,094-kilometre 350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond.** This part of the contract covered all work associated with the construction of the LIL, including preparing tower sites, surveying and marking the areas for tower foundations and guide anchor installations, selecting, assembling and erecting the tower structures and stringing the conductor wire.

As the 2014 Nalcor overview map (P-02840) reproduced as Figure 3.17 shows and as detailed on the next page, the LIL construction work was divided into two main geographical sections.

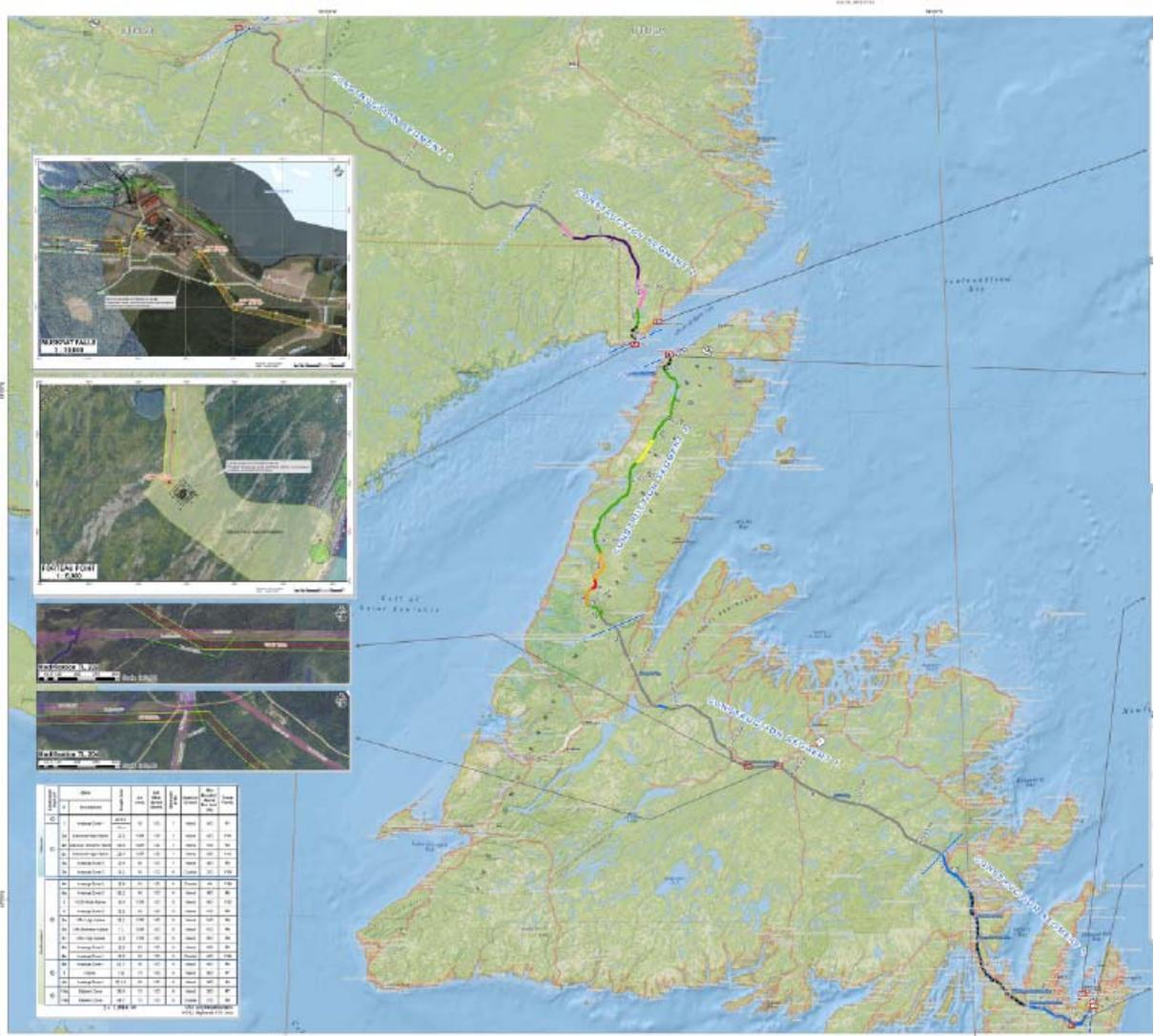


Figure 3.17: The LTA and LIL Transmission Line Routes

1. **The transmission line in Labrador.** Divided into two, its first segment was approximately 250 kilometres long, running southwest from Muskrat Falls toward the coast of Labrador. Segment two was approximately 147 kilometres long, running from the 250-kilometre point to Forteau, on the Labrador coast.
2. **The transmission line across Newfoundland.** The Island line was divided into three segments. The first segment was 227 kilometres long, from Shoal Cove on the Strait of Belle Isle to the southern part of the Great Northern Peninsula. Segment two ran 290 kilometres southeast from the Long Range Mountains to a point near Port Blandford. The third segment was 180 kilometres long, running from Port Blandford to the Soldiers Pond converter station on the Avalon Peninsula.

The following key people involved in estimating and managing the contract packages testified at the hearings: BJ Ducey (Quanta), Kelly Williams (Valard), Normand Béchard and Paul Lemay (SNC), and Jason Kean and John MacIsaac (Nalcor).

As noted above, Mr. Ducey is a Senior Vice-President of Quanta and is responsible for Quanta's Canadian businesses, including Valard. At the time of his testimony, Mr. Ducey had been with Quanta for 12 years. He was significantly involved in the management of transmission construction activities. During the construction of the LIL transmission line, he spent more than 150 days a year at Valard's sites in Newfoundland and Labrador.

Kelly Williams was Valard's Project Manager for the LIL construction. He had previous experience working on four other large-scale projects and megaprojects and had approximately eight years of transmission line project-management experience. Prior to working on transmission lines, Mr. Williams had 15 to 20 years' experience in forestry project management. Mr. Williams was present at the Valard construction sites full-time during the construction of the LIL.

Jason Kean was Nalcor's Deputy Project Manager and the main Nalcor contact for the Valard scope of work from 2011 to January 2017. Mr. Kean had no prior transmission line experience. In June 2016, John MacIsaac was appointed Nalcor's Executive Vice-President, Power Supply. As previously indicated, in November 2016 Mr. MacIsaac arranged for Greg Fleming's appointment as Project Director for the LIL. Mr. Fleming had

previously been the Project Director for the Strait of Belle Isle cable component of the Project.

The Commission also heard from SNC’s Normand B  chard, an advisor to Nalcor’s PMT. SNC’s estimator, Paul Lemay, also testified at the hearings. Mr. Lemay was involved in developing the DG3 estimate for the LIL contract package that Nalcor used in its contract negotiations. Mr. Lemay indicated that he did not have previous experience preparing estimates for transmission lines but that others on the SNC estimating team did.

In its *Construction Phase* report (P-01677), Grant Thornton identified the LIL contract as being one of six Project work packages that together contributed approximately \$3 billion (77.5%) of the \$3.9 billion cost overrun as of March 31, 2018 (pp. 40–41). The LTA contract was not one of these six packages, which is another reason why it is excluded from the following review.

Grant Thornton noted the following about contract CT0327 in its *Construction Phase* report:

CT0327 – Construction of HVdc Transmission Line was the second largest work package accounting for approximately \$788 million (20%) of the total cost variance of \$3.9 billion as of March 2018. Once adjusted for transfers from other work packages and scope changes of \$139 million the overrun on this work packs is \$649 million as summarized below:

	\$ Millions		
	<b>Transmission Line</b>	<b>ROW</b>	<b>Total</b>
Forecast Final Cost (Mar 2018)	1,054	469	1,523
Base Estimate	527	146	673
Escalation	53	9	62
Transfers from other work packages and scope changes	110	29	139
<b>Subtotal</b>	<b>690</b>	<b>184</b>	<b>874</b>
<b>Overrun (\$)</b>	<b>364</b>	<b>285</b>	<b>649</b>

Figure 3.18: Valard Contract CT0327 – Reconciliation of Cost Overrun (P-01677, p. 40)

The \$649 million overrun is attributable to a combination of factors including contracts awarded in excess of budget, settlement agreement, and change orders due to items such as geotechnical conditions different from planned and the conductor proud strand issue (net of insurance proceeds) and unallocated budget amounts. A breakdown of the variance and as explained subsequently in this report is as follows:

\$ Millions			
	Transmission Line	ROW	Total
Forecast (March 2018)	1,054	469	1,523
Base Estimate	527	146	673
Escalation	53	9	62
Transfers from other work packages and scope changes	110	29	139
Revised DG3 estimate	690	184	874
<b>Overrun</b>	<b>364</b>	<b>285</b>	<b>649</b>
<b>Reconciliation:</b>			
Contract award amount (Note 1)	809	242	1,051
Revised DG3 estimate	690	184	874
Contract greater than revised estimate	119	58	177
Settlement agreement	245	-	245
Approved change orders	25	187	212
Insurance claim	(25)	-	(25)
Unallocated budget	-	40	40
<b>Reconciled overrun</b>	<b>364</b>	<b>285</b>	<b>649</b>

*Note 1 – Please note that the \$242 million in contract value for ROW is an estimate. Our review focused on contracts in excess of \$10 million. There were other contracts included in this work scope that were less than \$10 million.*

Figure 3.19: Valard Contract CT0327 – Components of Cost Overrun  
(P-01677, p. 41)

As shown, after deducting escalation amounts plus the transfers from other work packages, the cost overrun is \$649 million on this contract package.

In his testimony, Scott Shaffer of Grant Thornton provided the following explanation for the cost overruns (February 18, 2019, transcript):

So, I guess in summary, when you look at this particular contract, what do you really have in terms of the reasons for the cost variances? You have potentially design reliability enhancements, even though it's a little unclear right now, but based on what the project management team said, you had the large settlement for the conductor proud stranding issue, the lost time and escalation issues. You had geotechnical problems with the tower foundations. You had issues with the right-of-way in terms of turning it into permanent access and then they were dealing with the weather and terrain and other problems. And then you had the contracts in excess of the budget amount; when the contracts came in, it exceeded the budget amount. That's really in summary what caused all this. (p. 73)

Nalcor had planned a competitive bidding process to select the contractor for the LIL work. Applications for bidder responses were sent to 23 target companies, ten of which registered interest. In his testimony, Mr. Ducey indicated that in 2013 and 2014, several other large-scale transmission projects were ongoing in North America. Very few contractors had the skilled craft labour and equipment necessary to execute the LIL contract.

Nalcor used a two-phased screening approach to rank the respondents. First, the respondents were scored on their answers to questions related to commercial, technical, health and safety, environmental and quality evaluation criteria. This phase occurred between October 1, 2012, and March 31, 2013. Eight of the ten respondents met the minimum requirements of this preliminary screening and moved on to phase two screening, which took place from April 2013 to January 2014. The second phase involved a more in-depth review of each contractor's ability to perform the work.

The evaluation team ultimately found that Valard was the only bidder capable of doing the job. According to Jason Kean (May 6, 2019, transcript):

[I]t became fairly clear that Valard were the contractor of choice through that process. Good relevant knowledge. Canadian—northern Canadian experience. And we went and saw projects, and eventually we were able to negotiate through a contract which was awarded to Valard. (p. 12)

Because there had been only one suitable bidder following the screening exercises, Nalcor proposed an “open-book” contract negotiation. Using this method, the costs for the work scope in question are established collaboratively by the owner and contractor. Consequently, starting in the fall of 2013, representatives from Nalcor and Valard worked together for several months to set costs for the various units in the scope of work.

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In his testimony, Mr. Kean acknowledged that by using open-book negotiations, Nalcor lost the benefits and advantages of competitive bid pricing. Evidence from both Valard and Nalcor suggests, however, that open-book negotiations were not unexpected or generally uncommon, given the Project's size and the low number of available specialized contractors at the time. In these circumstances, I find that it was appropriate for Nalcor to proceed with open-book negotiations with Valard, notwithstanding that some members of the Nalcor team had no prior experience with this type of negotiation.

The open-book negotiations were conducted over ten months. In March 2014, the parties signed a Memorandum of Understanding in which Valard agreed to amend its bid price to \$820 million (P-02733, p. 4). This was less than what it had originally proposed. The contract was signed in August 2014.

The March MOU was the mechanism that took the ROW (clearing and access-road building) scope of work out of Valard's work package. It was removed because disagreements had emerged about the ROW clearing work during the open-book negotiations. Nalcor's initial price for the ROW estimate was \$230 million, a price at which Valard was not prepared to take on the risk for the work. Mr. Ducey testified that Valard and Nalcor "could not agree on a price, and so Nalcor felt that they could do it in a more efficient manner through another contract arrangement" (April 3, 2019, transcript, p. 13). In Mr. Kean's words: "Valard wasn't willing to take the risk on the right-of-way access. Of course, they would take it, but . . . they would wish to . . . be covered from an overall risk perspective, given the amount of unknowns" (May 6, 2019, transcript, p. 19).

The alternate arrangement for this work, which Valard and Nalcor agreed to, made Nalcor responsible for contracting the subcontractors for the ROW services and Valard responsible for the management and oversight of those contracts. Valard was to be reimbursed for their oversight services. The arrangement also included a cost-savings incentive (P-01885, pp. 187–89). The cost savings would be split between Nalcor and Valard if Valard could work with the ROW contractors and complete the work for less than Nalcor's budgeted \$230 million. Nalcor and Valard also agreed to jointly evaluate the bids for the ROW work and to make a joint recommendation for the awarding of the contracts. In his testimony, Mr. Kean noted that some Nalcor employees were seconded to Valard's team to assist with managing the ROW contract. Although all these arrangements were envisioned as a way to reduce the cost of the contract, they eventually led to problems and conflict during the LIL contract's execution.

Nalcor and Valard had additional serious disagreements during the open-book process, which slowed the progress of the negotiations. In January 2014, Mr. Kean emailed Valard commenting on the lack of progress in negotiations (P-02732). At that time, Valard saw the progress as being what was expected, in the circumstances.

Another area of dispute involved the estimate of the total cost of the work. There were issues about labour productivity, schedule, the number of work fronts, craft labour, equipment needed and efficiencies for tasks such as tower assembly and stringing operations. As negotiations progressed, Valard formed the impression that the estimates developed in the open-book negotiations were higher than Nalcor's DG3 estimate, creating stress and pressure between the Nalcor and Valard teams (April 3, 2019, transcript, p. 9). According to Mr. Kean, the two sides were very strong in their positions related to the quality of their respective estimates. Based on its experience and work on similar projects, Valard felt that Nalcor was underestimating the labour and equipment required for the job.

As noted above, the LIL contract was signed on August 8, 2014, at a price of \$809 million (P-01885, p. 194). The contract price was a combination of lump sum and unit-price components. The unit-price portion stipulated that part of Valard's compensation would be based on the number and type of foundations and towers installed and that, in turn, would be determined by geotechnical conditions. Valard was not prepared to enter into a fixed-price contract because of the limited amount of geotechnical information available at that time.

The LIL contract also described a "family of foundations" for tower construction. In other words, engineers decided that several foundation types would be needed for the various tower locations along the transmission lines, depending on the type of terrain on which they would be built. The foundation types included grillage, rock, and H-Pile, which is sometimes referred to as "pile" (P-01885, pp. 214–16). Each type had a different unit price, which would be reflected in the calculations for Valard's unit-price compensation. According to Kelly Williams, grillage foundations are suitable for tills and cohesive soils and are typically less expensive than other foundation types. Rock foundations are the most stable and are built on bedrock surfaces. They are typically more expensive than grillage foundations. Pile foundations are the most expensive of the three. They are needed for towers erected on bog, muskeg or silty soils and can extend deep into the ground.



Figure 3.20: Types of Transmission Tower Foundations  
(Clockwise from top: grillage, pile, rock)

Determining the appropriate type of foundation for any given site occurred when the installation team arrived and assessed geotechnical conditions and conducted any necessary excavation and borehole drilling. The foundation selection process set out in the contract involved this on-site assessment and the resulting recommendation, which would then be sent back to Nalcor's engineering team in St. John's for final approval (P-01885, p. 450). The geotechnical conditions for the tower locations had a significant impact on cost overruns for this package.

Work on the transmission line began in October 2014 in Labrador, close to the Muskrat Falls generation site. Valard installed several trailer camps along the route of the transmission line, housing 150 to 250 people per camp location. Camps and construction crews were moved along the line, going from activity to activity. Mr. Williams indicated that the crews worked throughout the year, although periods of scaled-down activity occurred when it was not possible to access certain locations.

Valard began work with a limited number of crews and planned to start in a location with the best available access. There were early problems with the geotechnical conditions at the foundation sites and problems with access to the sites. Mr. Williams testified that the access roads deteriorated as crews and equipment were brought to the tower locations, causing difficulty with travel and transport. Valard found that it had to take on the maintenance of the roads between the structures so that it could continue moving equipment.

It was not long before Valard grew concerned about the quality of the work being done on the ROW clearing. On October 20, 2014, Kelly Williams wrote Nalcor advising it that additional costs and delays might result from deficiencies in ROW clearing. Mr. Kean appeared to be shocked by this letter. His reply, addressed to the president of Valard at the time, expressed dismay that Mr. Williams had filed a formal delay claim without first discussing the issues in person with him (P-02856). Mr. Kean also indicated that Nalcor was "extremely distraught" and disheartened by Valard's approach (May 6, 2019, transcript, p. 20). In their testimony, however, Mr. Williams and Mr. Ducey were of the opinion that the notice for potential cost increases was documentation that was contractually required.

Problems with the access roads and ROW work continued into 2015. In an attempt to get the schedule back on track, Valard hired an Alberta company (A&B Construction) in the fall of 2015. It is evident from a series of emails that Nalcor did not agree with

Valard's decision to engage A&B (P-02736). According to Mr. Williams, after discussion with Valard and Nalcor's ROW managers, A&B was demobilized from the Project.

Several documents were prepared by Valard leading up to settlement agreements negotiated in 2017. In a presentation deck dated May 4, 2017 ("Settlement Meeting Presentation Materials"), it was concluded that Valard was not able to manage the clearing and construction of the access road because Nalcor overrode Valard decisions, did not communicate financial terms of the road-building contract and directed the ROW contractors without Valard involvement (P-02734, p. 100).

In my view, these problems were indicative of the general failure of both parties—but particularly Nalcor—to communicate and work collaboratively. Nalcor's contracting arrangement with Valard was complex, under which the ROW scope was contracted directly with Nalcor but Valard was to manage the ROW construction. It is clear that the purpose of this arrangement was to reduce the amount of the Valard contract to bring it more in line with the DG3 estimate. The result, however, was a contract that was awkward and more difficult to manage. I find that this arrangement led to Nalcor impeding Valard in its ability to manage the ROW contract. Despite any savings Nalcor achieved from carving off the ROW work from the LIL contract, I am satisfied that Nalcor's approach to contracting and managing the LIL contract ultimately resulted in delays and cost overruns. According to Mr. Kean, the ROW work ended up with an increased cost of approximately \$340 million (May 6, 2019, transcript, p. 21).

## THE ISSUE OF GEOTECHNICAL INFORMATION

In addition to the ROW work and access-road problems, major issues in the execution of the LIL contract were rooted in the fact that the geotechnical information available in 2011 and 2012 was extremely limited, yet it still formed the basis for the transmission line design and DG3 estimate, including the materials estimate. As stated in the LIL contract, foundation types for each tower location were selected based on data from geotechnical analysis of subsurface conditions. The limitation of the geotechnical information meant there was a great deal of uncertainty about how construction would progress and how much the contract would cost. Thus a significant part of the cost overrun for the LIL contract resulted from actual geotechnical conditions being far different from the conditions that had been forecast.

The PMT recognized the problems presented by the lack of geotechnical information. They were described in a Briefing Note prepared for Nalcor’s counsel (P-01769):

The differences in the actual geotechnical conditions versus the geotechnical baseline conditions used for the cost estimate in 2012, resulted in a significant change to the planned versus actual foundations types installed, with a significant increase in solid foundations. Where poor soil conditions were identified, alternate H-pile foundations were utilized at a frequency of nearly twice the original plan, adding significant cost to the foundation program (reference PCN-0531), particularly for the HVdc line. (p. 40)

In his testimony, Normand Bécharde explained that sufficient geotechnical information was critical in order to accurately estimate costs for the transmission line. Without sufficient information, contractors would have to factor in significant risk premiums. He testified (March 26, 2019, transcript):

[W]hen you’re building a transmission line—the cost of a transmission line is quite easy. You got to buy the steel for the boom; you got to buy the material for the isolator and all the hardware; you got to buy, too, the conductor. This is easy. So you go out on tender; you ask price and you manage the material and you free issue it to the contractor.

Now you got to give a contract to contractors, and those contractor—the main cost is related to the foundation of those tower. So if you’re not giving them any geotechnical information, they are going to factor in their risk because you’re asking them to take the geotechnical risk. So will it be anchor foundation? Will it be pile foundation? They don’t know. But doing a pile foundation will cost a lot more than doing a rock anchor foundation.

So all this, when you would do the estimate of the transmission line you’ve got to put a huge known-unknown factor because you know that you don’t have any site investigation and you know that there will be costs related to it. (pp. 34–35)

According to Mr. Bécharde and Kelly Williams, much of the geotechnical testing done for the LIL route before construction began was of a “desktop” nature. It was limited in its ability to accurately predict soil and ground conditions. Mr. Williams explained that a “desktop study” is performed largely from an office and involves limited geotechnical ground-truthing, such as drilling and test-pitting. Desktop studies use information such as light detection and ranging (LiDAR) imaging, surficial mapping, aerial photography and any available information from the ground/sites. Mr. Bécharde testified that with a desktop study “you’re just looking at the type of overburden; you don’t know what’s going on underneath the overburden” (March 26, 2019, transcript, p. 34). Mr. Bécharde also testified that on

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other projects with which he had experience (including Hydro-Québec projects), a decision to build a transmission line would never occur without sufficient geotechnical investigation (p. 35). Mr. Williams, too, testified that there was too little geotechnical investigation done by Nalcor prior to arranging its estimate for the LIL contract. He added that he had never seen a project of this size undertaken with so little advance geotechnical work conducted.

Paul Lemay, SNC's estimator, testified that there was limited geotechnical information available when he prepared the DG3 cost estimate for the LIL contract. Consequently, he included an allowance of \$100 million for geotechnical investigation for the transmission line (March 29, 2019, transcript, p. 17). Mr. Lemay indicated that the \$100 million could be broken down as \$100,000 per kilometre, allowing for three or four bore holes to be drilled and tested for each kilometre. Mr. Lemay further testified (November 1, 2018, transcript):

Well, usually we have—we would like to have as many boring holes along the transmission line and where the structure will be built, ideally, that's what we would expect but many times we don't have all these information, so we have to assume that the condition—if the condition, especially for the transmission line that is spread over 1,000 kilometres, we may have a few surprise even there, so we need to put an allowance for this uncertainty . . . and that's what I did. (p. 84)

As stated earlier, I question whether the \$100 million was ever added to the DG3 estimate and Mr. Kean testified that he knew nothing about it.

Williams Engineering, a consulting firm based in Calgary, Alberta, was contracted by Grant Thornton to review the geotechnical studies that Nalcor had completed in 2011 and 2012. Williams Engineering concluded (P-01678) that

very little field data was available to accurately calculate the foundation design parameters for each transmission tower. In some cases, no data was available at all. In this situation, a conservative approach should be taken that would result in underestimating the actual capacity of the soil at each tower where confidence in the existing soil conditions is low. (p. 38)

During Nalcor counsel's cross-examination of Mr. Ducey, it was pointed out that some field studies had been completed for the proposed transmission line between Gull Island and Soldiers Pond. Ground-truthing tests had included some test-pitting, percussion probes, rock anchors and bore holes. AMEC's 2009 *Geotechnical Report* on that work confirms this (P-02861):

Areas at or near the given coordinates for each PI and at representative test locations along the corridor were examined on the ground and intrusive investigations were performed. In total, one hundred and thirty-five (135) test pits were excavated, one hundred and two (102) percussion probes were drilled, sixteen (16) rock anchor pull-out tests were performed, approximately forty-six (46) km of bog terrain was probed, twenty (20) areas were mapped for geological features and two (2) boreholes were drilled at the riverbank locations of the Churchill River crossing. (p. 29)

This does indicate that some ground-truthing geotechnical work was done. However, the extent to which that work provided a sound basis for the design and estimate of the transmission line for the Project is questionable.

Documents show that SNC also did some baseline study of geotechnical conditions in April 2012. To prepare its HVdc geotechnical baseline document for the estimate, SNC used memos completed by AMEC in 2011 and 2012. These memos cited technical reports and studies performed by Hatch, AMEC and SNC in 2008 and 2009 (P-01900). According to the SNC “Geotechnical Baseline” document (P-01900):

In late September, 2011, members of AMEC’s Environment and Infrastructure (AMEC), St. John’s office were requested to join SNC Lavalin’s (SLI), Lower Churchill Project (LCP) team in order to provide geotechnical expertise with respect to the surficial and bedrock geology that would be encountered along the AC and DC line corridors and to provided [*sic*] specific geotechnical parameters related to design of the transmission tower foundations along the corridors. (p. 13)

This led to AMEC providing the following advice to SNC in December 2011, as recorded in an email dated December 14, 2011 (P-01900):

Past programs have provided preliminary geotechnical parameters along a defined corridor. This corridor has changed over much of the proposed transmission line. . . .

Good, high confidence level, field, geotechnical information is available only for a portion of the proposed new routing where it crosses or is on the same alignment as the original route. A large portion of the new proposed route has no field work at all; only LiDAR and air photo interpretation have been performed to date. The LiDAR images and air photos have provided a good basis for surficial geology determination, however, there are many areas away from existing construction or data points, where the surficial geology is little more than a guess. This is especially true in areas of very flat terrain. Conversely, there are areas on the LiDAR that are well defined and our confidence level is very high.

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There are approximately 32 towers where no information is available, i.e., LiDAR and/or air photos are missing.

In order to obtain geotechnical information on the portions of the proposed route where no investigations have been performed and where there is spotty information, a full geotechnical investigation is required. (p. 75)

AMEC then listed a series of steps that would have to be taken in order to properly perform the geotechnical work:

This investigation would include stages as follows:

- A complete review of existing data in relation to the proposed route with recommendations for the type of investigation that would be required. It could be as little as a site reconnaissance by a geologist or geotechnical engineer for most sites, or sampled boreholes as would be required for structures located in fine grained sensitive soils;
- Prepare work plans;
- Prepare H&S, Quality and EPP plans for the proposed fieldwork;
- Prepare tenders or quotation requests for specialized equipment, such as Nilcon vane and geotechnical drilling;
- Perform the fieldwork and laboratory analysis;
- Prepare detailed geotechnical reports as required. (pp. 75–76)

Obviously, there was only limited geotechnical data on which a cost estimate could be made.

In his interviews with Grant Thornton, Jason Kean acknowledged that, despite these recommendations, additional geotechnical investigation for the LIL had not been undertaken (P-01677):

We didn't have any geotechnical data because we weren't allowed under the environmental assessment process. We could fly a little mini Kubota excavator on a helicopter to dig down one meter in a few locations. That was it because it would be deemed that we would start construction if we were to have entered into a lot of these remote locations. So that challenged that from an estimating perspective, we had to make assumptions based on mapping and geotechnical data. (p. 42)

In a Nalcor presentation dated March 30, 2016 ("HVdc TL: Geotechnical Risk Review, Background, Current Situation, Action Going Forward"), the PMT sought approval from the Nalcor executive for an additional budget to support "risk mitigation" on the

transmission line construction. Nalcor acknowledged that it had relied on a desktop study for its risk report and that such studies “have inherent inaccuracy” (P-02737, pp. 4–5). The presentation also stated that the DG3 estimate “did not adequately account for variability” for foundation materials and that there was no contingent material included in the estimate to account for this (p. 7). The PMT requested a LIL contingency of \$5 million for implementation of risk mitigation measures to address the unexpected geotechnical conditions. The presentation outlined the situation as follows (P-02737):

- Design projections based upon Desktop Geotechnical Study completed during engineering phase given the impracticalities and EA limitations of undertaking a geo program that would increase confidence
  - Desktop study based on available data
  - Structures foundation types identified along preliminary line route
- Result is 11 foundation types
- Material procurement was aligned with these projections, with the plan to check and “true-up” any shortfalls with Segment 5 order.
- . . .
- **Segments 1 & 2 are indicating more grillage than rock**, in particular for tangent structures
  - Grillage: Plan = 33%; Forecast 49%
- **Quantity projections of 1% Pile not consistent with field conditions**, or Baseline Geotechnical Report wherein it stated that rock or grillage is expected to be used at 95% of locations, while the remaining 5% soft, sandy soil of significant depth where alternate foundation solutions (H-Pile, cribbing, etc.) (emphasis in original, pp. 5, 8)

This presentation also communicated that H-Pile foundations were considerably more expensive than grillage and rock foundations. Specifically, it cites the contract unit price for grillage foundations ranging from \$13,500 to \$27,000. The unit price for deep rock foundations is pegged at \$81,500 and the unit price for H-Pile foundations is \$215,000 (p. 9). A higher percentage of H-Pile foundations would clearly have a substantial impact on the cost of the contract.

Kelly Williams also testified about Valard’s problems with Nalcor’s material procurement, particularly with respect to delays in making construction materials available to the construction sites. He explained that the foundation material, tower

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material and conductor wire were “free-issued” by Nalcor. In other words, Nalcor bought the material and made it available to Valard. Nalcor’s material procurement was based on the geotechnical DG3 material projection, which turned out to be different than what was actually required. The occasional delays in availability that resulted impeded the flow of work. The Nalcor presentation referred to on the previous page (March 30, 2016) acknowledged this issue (P-02737, p. 10). Mr. Williams added that the procurement issue was not completely resolved until near the end of the contract.

Nalcor’s inaccurate projections arising from the lack of geotechnical work also adversely affected Valard’s ability to work in a fully planned linear sequence. Mr. Williams testified that there were often delays because of disagreements about foundation types, and these disagreements involved significant correspondence and many meetings (April 3, 2019, transcript, p. 19). He explained that the Nalcor representatives on site had limited authority. Any significant change in foundation type or any increased cost had to be referred to St. John’s for a decision. When asked about the length of these delays, Mr. Williams stated: “It could be days. It could be weeks. And on occasions it was months” (April 3, 2019, transcript, p. 20). He indicated that this had a significant effect on workflow and productivity.

Disagreements about foundations disrupted the sequence normally followed for site activities on linear projects. Mr. Williams testified (April 3, 2019, transcript):

**MR. K. WILLIAMS:** It increased the nonlinear nature of our work process, which is critical for our progression. So we would skip those sites, essentially, and we would move on to other sites where they were less contentious or where we were able to install the foundation and carry on with our subsequent activities.

**MR. LEARMONTH:** That would—that’s not the way you had preferred to go, is it?

**MR. K. WILLIAMS:** No.

**MR. LEARMONTH:** No. But did this cause problems?

**MR. K. WILLIAMS:** It caused—yeah, it caused problems with our workflow and it caused some conflict in the field at times. (p. 20)

In his testimony, Quanta’s BJ Ducey noted (April 3, 2019, transcript):

[O]n these linear projects like this, think about it. We have hundreds of people out there; we have millions of dollars’ worth of equipment out there; that it’s inefficient—if you stop that heading, you stop that work front or get it off track

or in—you know, out of sequence. It's incurring a lot of cost while it's—you know, a decision's come back into an office to be made to be then sent back out to the field.

Some—I'd say the majority of projects, the owner and the contractors understand that you need to make decisions—smart decisions, the right decisions, the correct engineering decisions in the field close to the work front. (p. 29)

Also speaking to this point, Mr. Williams testified (April 3, 2019, transcript):

The ideal is to have that field decision-making authority and control there with both teams. On occasion on other projects there—it does occur where the head office of the client is more involved than is ideal. But perhaps not to this degree. (p. 29)

Mr. Williams further stated that some disagreements led Nalcor to direct Valard to install what Valard considered to be inappropriate foundations. Mr. Ducey testified that disagreements of this nature were not uncommon between an owner and the contractor. However, the disagreements between Valard and Nalcor resulted in multiple installation attempts at some tower locations, productivity issues and conflict. These, in turn, resulted in schedule delays and increased costs.

In a January 2017 Information Brief prepared for Lower Churchill Management Corporation, Jason Kean wrote (P-02858):

Historically Valard have alleged that Company was deficient in the following manner:

1. Provided an unsuitable family of foundations;
2. Exercised or delayed decision making with respect to approval of presented foundation recommendations; and
3. Instructed the use of grillage foundations in saturated soils that lead [*sic*] to settlement and the need for Valard to remove and reinstall a number of foundations in Segment 1, Structures 1 to 400 zone. (p. 15)

Mr. Kean further noted that Nalcor's position on the subject of foundation selection was documented in several letters to Valard that had articulated its concerns about "poor quality of workmanship leading to foundation settlement have been discussed extensively going back to the start of the Work" (p. 15).

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This brings us back to whether Nalcor could or should have conducted more detailed geotechnical studies before Project sanction. According to Williams Engineering, Nalcor should have done more. In its report to Grant Thornton, Williams Engineering stated (P-01678):

Best practice is to attend each tower location and complete a minimum of one borehole per tower location. Depending on soil conditions, a site investigation might include an alternate investigation method such as a test pit (digging a hole), confirmation of bedrock conditions, or other appropriate testing techniques. (p. 38)

Opinions were not unanimous on this point, however. Mr. Béchard did not fully agree with the position that it was best practice to drill a bore hole at each tower location. He testified that the following procedure had been followed on other projects that he had worked on (March 26, 2019, transcript):

Ideally we try to do it [site investigation] at every tower position. But let's say that on 50 kilometre those tower are in farming area and you did investigation and you find that in this area rock is there, so you can apply what you discover there to the 50 kilometre which is on farming area. So it all depends of the topography, the type of soil, the area where you are building those tower. (pp. 35–36)

Kelly Williams provided a similar response in his testimony. He stated that it was neither feasible nor necessary to drill a bore hole at every tower location. He explained that engineers conducting a geotechnical study generally start with a desktop study to identify different zones across the transmission line and then physically test them. From there, engineers can assess whether all the locations within a particular geographical zone would share the same properties.

My review of the evidence indicates that Nalcor knew that more geotechnical work was required. This is confirmed in the AMEC technical memorandum of December 14, 2011, concerning the Muskrat Falls to Soldiers Pond geotechnical design parameters, in which AMEC made recommendations that Nalcor chose not to follow (P-01900, p. 70). This ultimately impacted the accuracy of its DG3 estimate.

I also refer to the presentation of March 30, 2016, in which Nalcor acknowledged that its desktop analysis had “inherent inaccuracy” (P-02737, p. 5). This evidence provides strong support for the position that Nalcor was well aware that the absence of a reasonable level of geotechnical information was a significant risk to the Project, one that was likely to, and did, result in cost overruns.

Furthermore, I do not accept Mr. Kean's explanation that Nalcor could not perform additional geotechnical work because of restrictions imposed by the environmental assessment (EA) process. On February 1, 2019, the Deputy Minister of the Department of Municipal Affairs and Environment, Jamie Chippett, wrote to Peter Ralph, GNL's counsel for the Commission, supplying context for whether the EA process would have inhibited Nalcor's ability to conduct geotechnical investigations on the LIL. This is Mr. Chippett's response to one of Mr. Ralph's questions (P-03276):

*3) Was there any process, short of a full release from environmental assessment, that would have allowed Nalcor to undertake additional testing before the Labrador-Island Link was released from environmental assessment? What would the details of such a process be?*

Testing or investigation required to prepare the information submitted for an environmental assessment can be reviewed and discussed to determine what is reasonable to complete in advance of registration, without compromising the integrity of the assessment process, as described in our answer to question #1.

The proponent describing the need and scope of the additional testing would initiate a review and discussion. Should Nalcor have identified the need to conduct testing before the release of the Labrador-Island Transmission Link project from environmental assessment, the Department could have considered the request. (p. 4)

It is obvious that there was no basis for Mr. Kean's explanation.

I accept that it is not the recognized industry practice to drill bore holes at each foundation site, as was suggested by Dr. James Gilliland of Williams Engineering. However, I conclude that Nalcor should have applied to GNL for permission to conduct additional geotechnical investigations before the Project's environmental release and before the preparation of the DG3 estimate and Project sanction. It is clear that the lack of geotechnical information is directly linked to the inadequacy of the DG3 estimate for the transmission lines. Both Nalcor and SNC were aware of the limitations of the desktop geotechnical data and should have known that there was a high level of uncertainty about actual geotechnical conditions along the transmission lines.

Nalcor should have realized that more detailed geotechnical work was required in order to prepare a reliable DG3 estimate. Nalcor should have allocated a much greater amount of contingency on this package. I am satisfied that the underestimation of risk exposure here resulted in significant cost variance on this contract package.

## DEWATERING AND PROUD STRANDING

Two other key issues arose during execution of the LIL contract that contributed to cost overruns.

The first was the dewatering of foundation installation sites. Under its contract, Valard was required to keep any holes dug at the foundation sites dry by pumping out water (“dewatering”). Valard claimed that Nalcor imposed “excessive” dewatering requirements that were beyond what Valard believed to be the industry standard. For this reason, Valard argued that the cost of the installation of the foundations was higher than contemplated by the contract. Nalcor took issue with Valard’s characterization of the industry standard and Jason Kean rejected Valard’s claim for additional compensation for dewatering activities.

Mr. Ducey acknowledged that Valard ultimately viewed the dewatering issue as minor, when considering it in context with the other issues Valard had with the LIL contract. In settlement negotiations, Nalcor and Valard agreed that the dewatering issue was minor and that they would focus on more substantial issues.

The proud stranding issue, however, contributed significantly to overruns and schedule delays on the LIL contract. The concept of “proud stranding” was described in a Nalcor briefing of October 18, 2016 (P-02841, p. 29), reproduced in Figure 3.21.

- The installed portion of the conductor is exhibiting what is being referred to as a “proud strand” phenomenon.
- Erratically, one of the strands in the outer most conductor layer is randomly rising, by approximately 2 mm (nearly  $\frac{1}{2}$  a strand diameter).
- This phenomenon has presented itself randomly throughout the installed conductor, irrespective of line location or geographical area.

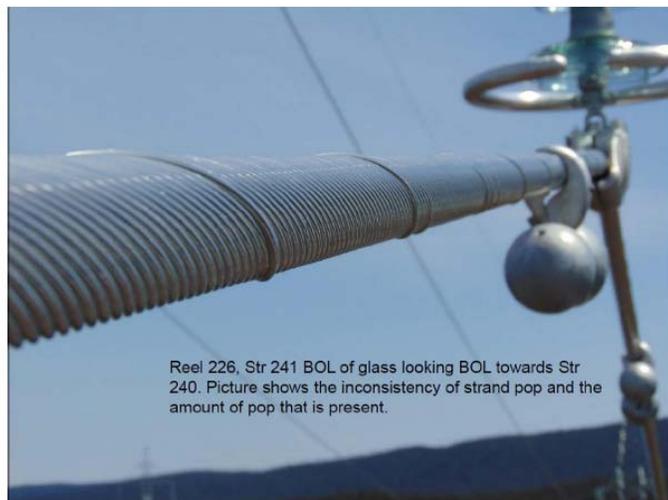


Figure 3.21: Proud Stranding of the Transmission Line

Proud stranding can reduce the reliability of a transmission line if it is not remedied. Nalcor first identified the proud stranding problem in a tower inspection on March 14, 2016. This prompted Nalcor to conduct an investigation to identify the extent of proud stranding in the work completed to that point. Stringing operations continued while field data was collected and experts were engaged (P-02841, p. 28). The field testing and troubleshooting exercise showed Nalcor that proud stranding was “widespread and random” across the entire length of the installed conductor wire. As a result, stringing was suspended in June 2016. A modified conductor wire had to be tested, manufactured and installed, which delayed stringing for several months.

The PMT’s post-sanction Briefing Note prepared for Nalcor’s counsel states (P-01769):

The discovery of a technical/quality condition known as conductor proud stranding on the HVdc line in late spring 2016 led to a decision to halt stringing for three months until the root causes for the phenomenon could be narrowed down and a plan developed to avoid its future occurrence. Following the successful testing of a modified conductor, all non-installed conductor was modified accordingly, with a decision made to remove and replace the ~340 km of installed conductor with the modified design. (p. 41)

Nalcor briefings also indicate that no significant anomalies had been detected during the manufacture of the conductor and that the conductor had passed Nalcor’s pre-delivery inspection (P-02841, p. 25). Nalcor also noted that “Proud Stranding is an extremely unique phenomena with little industry knowledge of why it occurs or how it will impact the long-term behavior of the Conductor” (P-02841, p. 43). Though no blame could be attached to either party for the proud stranding issue, Nalcor had to assume the cost responsibility for the wire’s replacement. In addition, Valard sought compensation for the increased cost and delay that resulted from the discovery of the proud stranding issue. The Nalcor claims briefing indicated that the cost impact of all this was substantial. A preliminary estimate for replacement of 170 kilometres of conductor wire was \$60 million and an additional \$40 million was required for conductor modification and other costs (P-02841, p. 48).

## SETTLEMENT OF VALARD’S CLAIMS

Mr. Ducey testified that the relationship between Nalcor and Valard had become “very fractured” by early 2016 and “it was very hard to have productive discussions” (April 3, 2019, transcript, p. 36). From Valard’s perspective, project costs were a significant issue for

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Nalcor and by this time there were several outstanding Valard claims and disputes that Nalcor had not addressed. Nalcor and Valard's executive management met many times in attempts to resolve issues. Little progress was made.

As a result of ongoing issues, conflict and the number of claims it had made, Valard began to prepare a claim for compensation and litigation. It hired C2G International to assist in its preparation (P-02734).

In June 2016, John Maclsaac was appointed Nalcor's Executive Vice-President, Power Supply. He asked the transmission team to "start to do a very deliberate scrub of what was outstanding so that we could appreciate what we felt were our stressors to our current AFE going into 2017" (June 11, 2019, transcript, p. 57).

By late 2016 and early 2017, there was strain and tension among PMT members who worked on the transmission side of the Project. This was apparently linked to differences of opinion about the commercial exposure assessment related to Valard's claims and the proposed plan for handling that exposure. In essence, Mr. Maclsaac had reviewed those claims and saw more potential commercial exposure than Mr. Kean had previously identified. Mr. Maclsaac testified: "It's not that he [Mr. Kean] had misstated or not that he had not disclosed, it was that he had a different sense for the quantum of potential exposure than myself, a difference of opinion" (June 11, 2019, transcript, p. 57).

On January 4, 2017, Jason Kean resigned from Nalcor. In his letter of resignation, Mr. Kean noted issues with Mr. Maclsaac. He wrote that his decision to leave "was values-based. Mr. Maclsaac and myself do not share the same ideology, while Mr. Fleming, Transmission Project Director, was undertaking significant organization change that diminished my role and the requirement for my services" (P-04049, p. 2).

However, a major issue continued to percolate. Mr. Kean felt that Mr. Maclsaac had made "disparaging and inaccurate statements" to Stan Marshall, alleging that Mr. Kean had withheld information related to the cost impact of conductor proud stranding, geotechnical conditions and trade labour escalation.

Mr. Kean met with Mr. Marshall on July 17, 2018. In that meeting, he maintained that he had been fully transparent about the cost and risk exposure as it existed at the time the 2016 QRA was prepared. In his view, his assessment of the cost impacts had been discussed in various updates and presentations. Mr. Kean wrote Mr. Marshall a few days later (July 20, 2018) and reiterated that he understood he had been wrongfully accused

by Mr. Maclsaac of withholding known costs from being considered during the preparation of the June 2016 AFE, thus resulting in the need for a further AFE revision in 2017 (P-04049, p. 1).

Mr. Maclsaac advised Mr. Marshall that Nalcor should have known there was \$100 million in cost exposure that it would be required to pay to Valard. Mr. Marshall's concern was that if there were costs that should have been identified before 2016, he would have to explain to GNL and the public why they were not included in the June 2016 AFE.

From my review of the Valard and transmission line briefing materials of 2016, it is clear that Jason Kean had previously identified access, geotechnical and procurement issues as potential areas for claims.

On March 20, 2017, Bruce Hallock, one of Nalcor's dispute-resolution managers, provided a claims assessment memo to John Maclsaac and Greg Fleming. In this memo he advised about the cost of the Valard claims: "The current projection from Valard is that they total about \$300 million. So far these claims are little more than numbers on a spreadsheet, with a limited description, no backup, and a great deal of Valard verbal motivation and augury" (P-03185, p. 2).

Six weeks later, Valard presented a document outlining its claim. Mr. Kean testified that he had not received a claim document from Valard before he left Nalcor and that he was not aware of any \$300 million projection. He added that Valard had not advised him that it was pursuing litigation nor that it had assembled a team to prepare a claim. Mr. Kean's assessment up to that point was that any claim from Valard was weak. He indicated that he had presented the LIL contract risks to various groups including the Oversight Committee, and to Mr. Maclsaac in January 2016.

Nalcor's presentation to the GNL Oversight Committee on January 29, 2016, appears to confirm Mr. Kean's testimony. On the last page of the "TL Update" presentation, Mr. Kean wrote under "Claims or Disputes" that the HVdc contract had "potential claims for (1) geotechnical conditions and (2) potential access conditions." He also noted that Nalcor considered its position to be "very strong" in such an eventuality (P-03261, p. 16). Mr. Marshall and Mr. Maclsaac indicated that the issue was simply that Mr. Kean's assessment of the cost exposure was different from Mr. Maclsaac's.

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Bruce Hallock's assessment in March of 2017, which is referred to above and which occurred after Mr. Kean had left Nalcor and before Valard had presented its \$300 million claim, appears to support Mr. Kean's assessment. In his memo, Mr. Hallock wrote (P-03185):

Most contractors overstate their initial claim amounts hoping to settle around the 40–50% mark. Our actual claim settlement average to date on about \$80 million in claims is 25%. So a \$300 million claim may have a value of up to \$75 million but I would not even propose that value. (p. 3)

That said, I am satisfied that Mr. Kean's belief that the Valard claim was weak was highly optimistic and indicated a lack of comprehension of Nalcor's potential liability, which should have been factored into the 2016 AFE revision.

The claims evaluation of May 4, 2017, prepared by Valard's consultant C2G International, stated (P-02734):

- The vast majority of the delay on the Project to date was incurred in Work Front 1 and is attributable to the delayed predecessor clearing and access road construction:
  - ✓ 307 days of delay in completion of clearing and access road construction;
  - ✓ 48 days additional delay in critical path foundation work due to added spring breakup;
  - ✓ 107 days additional delay due to critical path stringing work suspension;
  - ✓ 33 day *delay reduction* in completion of critical path stringing work; and,
  - ✓ 306 day further *delay reduction* in completion of Work Fronts 2 and 3.
- Valard was not able to manage the clearing and access road construction as Nalcor overrode Valard decisions; did not communicate financial terms of roadbuilding contracts; and directed contractors without Valard involvement.
- Not only were the access roads constructed much later than planned, but significant access road deficiencies have persisted throughout construction.
- The extensive changes in foundation types have resulted in substantial financial losses to Valard.

- The stand-alone costs associated with the forecasted delay in overall project completion totals \$31,867,701.
- Our detailed analysis of the time-related field general conditions losses indicates that \$56,716,043 of the loss is attributable to delay, and \$23,998,757 is attributable to subsequent acceleration efforts.
- Additional losses totaling \$15,277,207 have been identified in costs associated with Mechanics.
- Additional losses totaling \$10,765,865 have been identified in costs associated with Survey.
- Additional losses totaling \$1,323,195 have been identified in costs associated with Camp occupancy impacts. (p. 100)

Discussions between Nalcor and Valard about this claim resulted in a settlement set out in two Amending Agreements. The first agreement was signed on June 27, 2017. Valard was paid a \$40 million settlement under this agreement (P-02740). The second Amending Agreement was signed on June 30, 2017. This settlement brought the total price for the LIL contract to \$1.078 billion for all direct and indirect costs (P-02002, p. 1). There appears to be a discrepancy between the amount noted above and the reference in the Grant Thornton report to a final contract value of \$1.054 billion. In any event, the negotiations resulted in a global settlement of \$245 million, as identified by Grant Thornton (P-01677, p. 46) and confirmed by Mr. Ducey (April 3, 2019, transcript, p. 43).

In his testimony, Mr. Kean expressed surprise at the Valard settlement amount. His view was that there was significant concurrent delay caused by Valard. He recognized that Valard would be entitled to make a claim for reimbursable time due to geotechnical issues but he felt a time extension could have been granted to Valard that would have waived any liability for delay.

I find Jason Kean's views on the settlement are unreasonable. There is no basis upon which I could reasonably conclude that the settlement was not proper or that it was inadequately negotiated by Nalcor. I suspect that Mr. Kean's lack of transmission experience and defensiveness over his own approach to managing the contract may have influenced his assessment of the settlement.

Valard's perspective was that there were improvements under Mr. MacIsaac's approach, which included a "reasonable cost structure" and increased presence in the field. Measures were also undertaken to do further geotechnical investigations in advance

of the actual construction at various sites and to jointly determine the foundation types at each tower location. A change in site authority was also initiated.

## RELIABILITY

The PMT stated in its Briefing Note (cited earlier) that cost growth on the LIL contract can be attributed to seven factors (P-01769):

- (a) DarkNL Reliability Driven Changes
- (b) Geotechnical Conditions – far worse than anticipated
- (c) Conductor Proud Stranding – an unknown phenomenon to industry experts
- (d) Compressed Schedule – resulted from late release from environmental assessment
- (e) ROW and Access Works – scope changes, inefficiencies and execution errors
- (f) Contracting Market Conditions – productivity and price gap from DG3 estimate
- (g) Contract Strategy Changes – cost premium to accelerate for 2017 completion and monopole operation (p. 40)

I take particular issue with the first justification above, that the cost increases were partly attributable to DarkNL reliability-driven changes. In fact, DarkNL, a widespread power outage, had little to do with reliability decisions for the transmission line. The PMT Briefing Note itself explains that “a number of design changes were made to increase the design reliability and robustness of the HVdc transmission line in the period of 2013–2014” (P-01769, p. 40). DarkNL occurred in January 2014.

According to Mr. Kean (May 6, 2019, transcript):

[T]he 37,000 tons of towers and foundations in DG3, well, when we awarded the contract to Valard, that was probably in the range of, you know, 45,000 tons. And when it was all said and done, well, it probably became closer to 50,000 tons. Things got bigger. This is a—the LIL is a very, very, very beefy system. (p. 17)

Mr. Kean explained that the increase in tons of steel was a required scope change “because the requirements on reliability and loading changed” (May 6, 2019, transcript, p. 17). I also note that when the cost of the Project increased by approximately \$300 million between the time of sanction and Financial Close, Edmund Martin suggested that this was partially driven by reliability improvements.

The PMT Briefing Note also noted a positive net consequence from the transmission line overruns (P-01769):

The net result from a reliability perspective was an improved line reliability through the establishment of what can be characterized as permanent transmission line access roads across the bulk of the transmission line, which will greatly aid both operational efficiencies and reduce the time to repair in the event of an unplanned failure. (p. 42)

I have difficulty accepting both the cost-overrun justification and this apparent self-serving promotion of the reliability improvements. I am satisfied that many of the changes to the scope of the LIL contract did result in reliability improvements. However, I find that most of these improvements were a by-product of the changes needed to complete the construction of the transmission line. For instance, while it is true that road access to towers for maintenance and repairs is now improved because the quality of the roads was raised to provide all-season use, the original purpose for the change to such roads was to provide access during transmission line construction and not to increase reliability.

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## CHAPTER 15: THE BARNARD-PENNECON CONTRACT

Of all the major contracts that resulted in large overruns for the Project cost, there is one in particular that leaves some question in my mind about what transpired during the award process. It is contract CH0009 awarded to Barnard-Pennecon Limited Partnership.

Contract package CH0009 was for the construction of the north and south dams at Muskrat Falls. The contract was awarded to Barnard-Pennecon. It was approved on August 14, 2015, and a Limited Notice to Proceed for initial work was executed the same day. The agreement was signed on October 29, 2015, with an effective date of August 20, 2015. The scope of work for CH0009 included the following:

- (a) **Construction of the north dam:** This is the main dam running between the spillway and a rock knoll on the north side of the Churchill River. The north dam has a stepped face and was constructed using roller-compacted concrete and some conventional concrete. The north dam was completed in 2019.
- (b) **Construction of the south dam:** This smaller, earth-filled dam runs from the south side of the river to the powerhouse. The top of the south dam is narrow but has enough space for one lane of traffic, allowing access to the top of the powerhouse. The south dam was completed in the fall of 2017.
- (c) **Construction of the upstream, downstream and intake channel cofferdams:** The cofferdams were temporary rock dams used to divert water into the spillway while the north and south dams were under construction.
- (d) **Removal of the cofferdams**
- (e) **Excavation of the tailrace rock plug**
- (f) **Supply, installation and removal of the temporary bridge over the spillway approach channel**

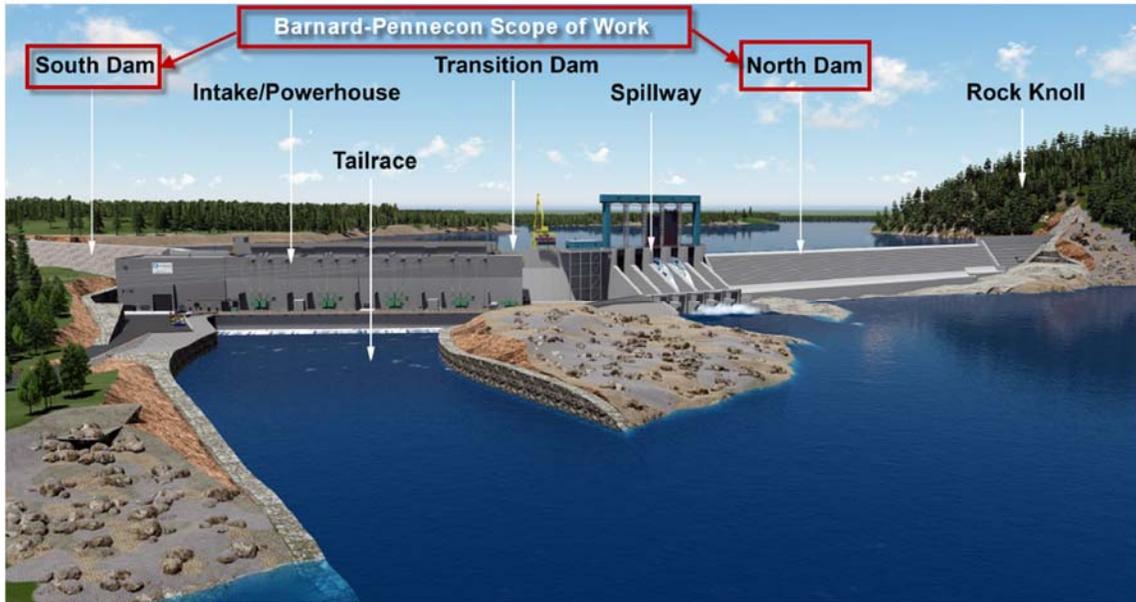


Figure 3.22: The Barnard-Pennecon Scope of Work at Muskrat Falls

## COST OVERRUNS

Grant Thornton’s *Construction Phase* report for the Commission identified CH0009 as one of the six main packages that contributed to the Project’s total cost variance. The overrun on this contract is “mostly attributable to the contract awarded in excess of the revised DG3 estimate and change orders” (P-01677, p. 53). The base estimate for CH0009 was \$117 million. The contract award amount was \$287 million. There were also significant approved change orders and back charges of \$91 million as of March 2018. According to Grant Thornton (P-01677):

We reviewed the change order log and noted that the change orders and back charges were the result of the following:

- Changes in quantities and issues with the cofferdam
  - Additional labour incurred to address shortage of rock fill
  - Changes in quantities and labour as the contract is reimbursable
- (p. 56)

Change orders for this package up to January 2019 were valued at approximately \$62 million (P-02868). The largest change orders are Change Order 0005 (Upstream Cofferdam—Grouting Program) valued at \$14 million and Change Order 0051 (Extension of Time) valued at \$16.5 million.

Because there were still some contractual issues outstanding, several figures in the Grant Thornton report and other exhibits made available publicly on the Commission's website were redacted for commercial sensitivity. Notwithstanding those redactions, I have had full access to each of the exhibits and have reviewed them. However, I limit my comments here to protect the commercial interests of the parties in their ongoing discussions to resolve outstanding claims.

## THE 2014 BID EVALUATION

On August 1, 2014, Nalcor issued a request for proposals (P-02749) for this contract to the three potential bidders that the bid evaluation team had identified:

- Astaldi Canada Inc. (Bidder 1)
- Barnard-Pennecon Joint Venture (Bidder 2)
- H.J. O'Connell-Dragados Joint Venture (Bidder 3)

According to Nalcor's Bid Evaluation Plan for this contract (P-02753), the members of the CH0009 bid evaluation team in 2014 included, among others (P-02753, p. 6):

- Package scope: Mark Turpin (Lead)
- Commercial: Roy Lewis (Lead), John Mulcahy (Support)

The Bid Evaluation Plan, dated September 15, 2014 (P-01867), was approved and signed by the bid evaluation team and PMT in October 2014. The Bid Evaluation Plan "describes the process for receiving, reviewing, and evaluating Proposals including the approach for a Recommendation for Award" (P-01867, p. 4). It specified that the bids were to be evaluated based on commercial and technical criteria, as well as several other elements including quality, provincial benefits, risk management, health and safety, and environmental considerations, and it included the evaluation schedules for each.

According to the final Bid Evaluation Plan, "[t]he Contract Administrator will determine the Final Total Estimated Contract Value for each Bidder resulting from the application of the final Technical weight ratings of each Bidder Proposal against the Final Conditioned Contract Price" (P-01867, p. 10). The Plan provided an evaluation summary that assigned weights to bid components, assigned price values to qualitative and quantitative components, and normalized any deviations and exceptions in the bids in order to make the bids comparable (P-01867, p. 12). A member of the bid evaluation team then collected

the scoresheets from the team members responsible for the commercial and technical evaluations and rendered the final estimated contract value. The successful bidder would be the one with the lowest final estimated contract value after normalization, adjustments and weighted commercial and technical evaluations.

In the late summer/early fall of 2014, Nalcor held meetings in St. John's and Muskrat Falls with the three potential bidders. The tender closed on October 22 and initial bids were opened on October 27, 2014. According to the bid opening record, all the bid prices were significantly higher than the \$117 million base estimate and the revised estimate. The two lowest bids were from Barnard-Pennecon (\$315,797,500) and H.J. O'Connell-Dragados, which submitted two bids, the lower of which was \$308,699,055.

The contract had been scheduled to be awarded on December 23, 2014, but that did not occur. According to Grant Thornton, CH0009 "was not awarded until August 5, 2015. There were two reasons for the delay in the award of this contract: 1) uncertainty of the completion date of other work packages it interfaced with, and 2) the estimated contract value exceeding the budget by more than 50%. As a result of these factors, Nalcor decided to explore a cost reduction program" (P-01677, p. 54).

The bid evaluation team focused its price-reduction efforts on Barnard-Pennecon (Bidder 2) and H.J. O'Connell-Dragados (Bidder 3). The bidders submitted several revised proposals in response to Nalcor's requests for optional pricing for delayed dates for river diversion.

A major difference between the bid proposals of Barnard-Pennecon and H.J. O'Connell-Dragados was how each bidder accepted the risk for craft labour. In his testimony, John Mulcahy characterized the H.J. O'Connell-Dragados bid as a hard-money bid, meaning that its price was "a unit-price lump-sum" contract in which the contractor assumed all productivity risk (May 2, 2019, transcript, p. 45).

In contrast, Barnard-Pennecon's bid showed that it was unwilling to assume the labour productivity risk. Ed Over, the Commercial Lead on the bid evaluation team, wrote the following in an email to Lance Clarke and Ron Adamcyk on January 15, 2015 (P-02768):

We spoke to Kevin [Ellerton] again. They [Barnard-Pennecon] are really concerned by what they saw on site. He said that they are unwilling to take trades labour direct cost risk. In essence, we would pay actual trades labour cost whatever the cost is. No cap. It sounded like the other costs are fixed. (p. 1)

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Derek Tisdell of Barnard-Pennecon confirmed these concerns in his testimony (April 4, 2019, transcript):

We were very concerned about the availability of skilled labour at the Muskrat Falls site. In particular, because of the amount of other general contractors that were sharing that same site, we'd be in competition with them for the same labour pool and the same labourers, operators, carpenters. In addition, there was quite a bit of work going on across Canada where, again, the same labour pool would be potentially pulled to other places. So our concern was the availability of the skilled . . . trades labour. (p. 7)

Instead of a hard-money approach, Barnard-Pennecon had used a craft labour target-price model in its proposal. This model set a craft labour target price of \$46,462,521 (equivalent to 551,878 work hours at \$84.19 per hour). Barnard-Pennecon would be paid corporate overhead (called "General & Administrative") on the 551,878 work hours. Barnard-Pennecon was willing to share in the overruns above the craft labour target price and accept up to \$3,856,389 of craft labour risk. Beyond that, craft labour would become reimbursable (billed to Nalcor) and the craft labour risk shifted to Nalcor.

According to Mr. Tisdell, under the target-price model Barnard-Pennecon was still responsible for indirect labour costs even if or when craft labour became reimbursable. In other words, this indirect labour risk did not shift to Nalcor. Therefore, Barnard-Pennecon still had a financial incentive to minimize the work hours needed to complete the scope of work.

The bid evaluation team factored in the difference in the two approaches to craft labour risk by adding the work hours that they estimated would be needed to fairly compare the two bids. This "normalizing" of the Barnard-Pennecon bid was factored into the analysis of the final estimated contract values. Ultimately, the bid evaluation team recommended Barnard-Pennecon, despite the potential labour-risk exposure for Nalcor.

However, as the following discussion illustrates, there was more to this bid evaluation process than that.

In investigating why there was a significant overrun on package CH0009, Grant Thornton identified a letter dated May 22, 2016, from Mark Turpin of the 2014 bid evaluation team (P-01901). After Mr. Turpin's contract was terminated (May 2016), he wrote to Stan Marshall and advised him of concerns he had with the award of package CH0009 to Barnard-Pennecon (P-01901):

Where upon completion [of CH0006, the bulk excavation contract] in 2013, I was then reassigned to Area Manager of CH-0009 North and South Dams Contract to finalize the Engineering and Procurement Package. The procurement package was tendered and an Award Recommendation was presented to Management in April 2015.

...

Another topic that needs to be investigated is the actual award of CH-0009 North and South Dams itself. As the Area Manager, I was the lead team member responsible for the tabulation of the award recommendation to LCP Management. After a year of technically reviewing the proposals both technical and commercial scores, an award recommendation was made promoting HJOC / Dragados JV. This was a unit rate contract with no labor risk for Nalcor. After I was assigned to the North Spur in April of 2015, I was surprised to learn that the award went to Barnard Pennecon JV with a contracting strategy that assigned all labor productivity risk to Nalcor (similar to the current Astaldi contracting strategy except with an even greater risk of No Labor Cap) with a Contract Value greater than the HJOC Dragados JV proposal with no labor risk.

One would ask how is this allowed and possible too [*sic*] happen. (emphasis in original, pp. 5–6)

In a Grant Thornton interview, Mr. Turpin stated (P-01908):

We, Myself and Roy [Lewis] did [the] bid recommendation and we recommended the project be awarded to an alternate, not Barnard Pennecon, it was a Joint Venture between Dragados and H.J. O’Connell. (p. 19)

When asked whether his team’s evaluation was completed and submitted, Mr. Turpin responded: “It was—We put a nice bow on it and said here you go guys, . . . here’s the package” (p. 19). Mr. Turpin’s evidence is that he and Mr. Lewis drafted and signed a formal recommendation. Mr. Turpin believed that the recommendation was submitted by Mr. Lewis to Nalcor’s PMT in December 2014. As noted in his letter quoted above, the award recommendation said that package CH0009 should be awarded to H.J. O’Connell-Dragados.

Mr. Turpin provided the Commission with two supporting documents that indicated that H.J. O’Connell-Dragados was the “best option” (P-02766) and had the lowest final estimated contract value (P-02828). He recalled that these documents did not constitute the recommendation itself but were support documents for the formal recommendation that the bid evaluation team signed off on (April 3, 2019, transcript, p. 78). Mr. Lewis retired on

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December 22, 2014, shortly after the bid recommendation was complete. Mr. Lewis did not testify at the hearings.

The Commission, Nalcor and Grant Thornton searched through many email accounts and the Nalcor documents database but could not locate any formal award-recommendation document drafted or submitted by Mr. Turpin and Mr. Lewis and their team. Members of the 2015 bid evaluation team who were appointed after Mr. Turpin and Mr. Lewis left the bid evaluation team testified that they had not seen a formal recommendation for award from the 2014 bid evaluation team.

Ken McClintock took over as the Package Lead/Area Manager. He testified: “There’s no evidence that there was any recommendation. There’s two documents that I think have been referred to in the past. That’s all we found” (May 14, 2019, transcript, p. 4). He further testified that he had reviewed the two supporting documents from Mr. Turpin and Mr. Lewis and that he considered them to be an “initial evaluation” (May 14, 2019, transcript, p. 4).

Ed Over, who was appointed Commercial Lead on the 2015 bid evaluation team, testified that he had “heard rumours that they [Mr. Turpin and Mr. Lewis] either completed the evaluation or had made one, but we never saw one” (June 20, 2019, transcript, p. 4). Greg Snyder, who had been involved in the 2015 technical evaluation, testified that he “wasn’t aware” of any award recommendation made by Mr. Turpin and Mr. Lewis (June 20, 2019, transcript, p. 3). Mr. Mulcahy, who was on the technical evaluation team in 2014, also testified that he could not recall seeing a recommendation from Mr. Turpin and Mr. Lewis (May 2, 2019, transcript, p. 17).

In cross-examination, Nalcor provided evidence that Mr. Turpin went to Barnard’s head office in Bozeman, Montana, on April 29, 2015, and stayed to May 1, 2015, presumably to do further evaluation and negotiation in relation to Barnard-Pennecon’s bid (P-02970). This visit to Bozeman would have been months after Mr. Turpin and Mr. Lewis were said to have completed their recommendation for H.J. O’Connell-Dragados. Mr. Turpin was asked about this trip at the hearings (April 3, 2019, transcript):

**MR. SIMMONS:** Now, why on earth would you be going to Bozeman, Montana to talk to Barnard-Pennecon if there’d been a final bid evaluation wrapped up with a bow on it in December of 2014?

**MR. TURPIN:** Again, I can’t remember ever going to Bozeman without Roy Lewis.

...

**MR. SIMMONS:** Okay. So if we assume now that I mean you've submitted an expense report—

**MR. TURPIN:** Yeah.

**MR. SIMMONS:** —for a trip in March and we'll assume you were there in March—

**MR. TURPIN:** Okay.

**MR. SIMMONS:** —my question was can you give me any explanation of why, if there was a final recommendation made in December by Roy Lewis—

**MR. TURPIN:** Yeah.

**MR. SIMMONS:** —that would have ended the consideration—

**MR. TURPIN:** Yeah.

**MR. SIMMONS:** —of giving the contract to anyone other than H.J. O'Connell, why all—why these other presentations were coming in from Barnard-Pennecon and why you went to see them in March.

**MR. TURPIN:** There was further commercial negotiations happening.

**MR. SIMMONS:** Okay. And if there's further commercial negotiations happening it's because there's been no decision made yet on who the contract is going to be awarded to.

**MR. TURPIN:** I'm not disputing that there was.

**MR. SIMMONS:** Oh, okay.

**MR. TURPIN:** We had made a recommendation, myself and Roy. It—I never alluded that it was ever accepted or acted upon.

**MR. SIMMONS:** Right. And from—

**MR. TURPIN:** They'd only got to—the last signature on it would have been mine, my (inaudible)—

**MR. SIMMONS:** Yes.

**MR. TURPIN:** —and the technical team and the commercial teams. But as for anything above myself—

**MR. SIMMONS:** Mm-hmm.

**MR. TURPIN:** —being this scope area, I don't think anybody ever signed off on it or accepted it. (pp. 105–6)

In consideration of Mr. Turpin's evidence, and without the December 2014 award recommendation document, I question whether Mr. Turpin and Mr. Lewis did, in fact, draft

and submit a formal recommendation for H.J. O’Connell-Dragados. Certainly, if they had made that bid recommendation, it was obviously not accepted by Nalcor’s PMT. Regardless of whether there was an award recommendation made in December 2014, the evidence relating to the bid evaluation activities in 2015 also requires further examination.

As noted earlier, Mr. Turpin left the bid evaluation team in April or May 2015. He testified that Scott O’Brien and Ron Power asked him to take on the position of Area Manager for the North Spur stabilization package (CH0008) because the work on that package had started badly. Mr. Turpin was asked to “provide some input to help straighten it out” (April 3, 2019, transcript, p. 80). Mr. Turpin testified that he expected that his work on the North Spur would be temporary and that he would return to his position as Area Manager for CH0009. Mr. Turpin did not return to this position and Nalcor terminated his contract in May 2016.

## THE 2015 BID EVALUATION

Following Mr. Turpin’s reassignment, a new bid evaluation team was appointed to determine the awarding of CH0009, which included among others (P-01870, p. 6):

- Commercial: Ed Over (Lead), Ken McClintock, John Mulcahy
- Technical: Ken McClintock (Lead), John Mulcahy, Greg Snyder

Mr. McClintock became the Package Lead/Area Manager for the CH0009 bid evaluation team on May 19, 2015. Mr. McClintock had been a Nalcor contractor on the Muskrat Falls Project on various scopes of work since January 2010. At the hearings, he described his work as “ad hoc services over the last several years” (May 14, 2019, transcript, p. 1). Before joining the bid evaluation team, his previous Project scopes of work had included development of bid documents for the EPCM contract, development of many Project documents and bid evaluation for early temporary site services. After serving on the 2015 bid evaluation team, Mr. McClintock continued to do contract work for Nalcor, assisting with “Plan B” for Astaldi in 2016 and 2018.

Mr. Mulcahy had joined the CH0009 bid evaluation team in 2014, when Mr. Turpin and Mr. Lewis were involved in evaluating the bids. He remained on the team until August 2015. Mr. Mulcahy was involved in various other scopes of work on the Project, including assisting with costs analyses and estimates for several construction packages.

Mr. Over was contracted through SNC. He provided services for the CH0009 bid evaluation team during two separate periods: first as Contract Administrator (late 2014 to March 2015) and then as Commercial Lead in 2015. Mr. Snyder was also contracted through SNC and joined the CH0009 bid evaluation team to assist with the technical evaluation in the summer of 2015.

Mr. McClintock testified that, upon review of the two documents from the bid evaluation of Mr. Turpin's team (P-02766; P-02828), he found errors and deviations. In Mr. McClintock's view, the errors and deviations made the initial bid analysis invalid.

From May to July of 2015, the bid evaluation team focused on clarifying the bids and negotiating reduced bid prices with Barnard-Pennecon and H.J. O'Connell-Dragados. The final proposals from these two bidders were submitted on June 30, 2015. Subsequent revised final proposals from both were received on July 9, 2015.

In May and June 2015, Mr. McClintock devised new scoring criteria ("revised scoring") for the bid that differed from the scoring method in the 2014 Bid Evaluation Plan ("original scoring"). When the revised final bid proposals were received, the bids were evaluated using the revised scoring. At a meeting on July 24, 2015, the PMT did not approve the use of the revised scoring to determine the award of CH0009. Ultimately, this analysis was referred to as a "sensitivity analysis" in the final award recommendation.

According to the final 2015 bid evaluation and award recommendation (P-01870):

This new BET [Bid Evaluation Team] reviewed all previous work carried out by the first BET. In addition to the activities stated in Section 8.2 below, the BET believed that an alternative evaluation methodology would be more suited to the nature of the work. More specifically, the BET believed that the evaluation should focus more on project execution, schedule and quality of the proposed project management teams. Accordingly, this alternative methodology was employed as part of the sensitivity analysis conducted. Attachments 10a and 10b provide the basis of evaluation (methodology) as well as the results using two normalizing scenarios (113,295 and 382,000 Mhrs [man hours]). (p. 4)

According to Mr. McClintock's testimony, following the meeting with the PMT on July 24, 2015, he sent an email to three bid evaluation team members (Mr. Mulcahy, Mr. Snyder and Mr. Over) indicating that the original scoring criteria should be used. As of July 24, 2015, the original scoresheets had not been completed by the bid evaluation team. Mr. McClintock's account of what happened after the July 24 meeting is not wholly consistent with what is written in the final award recommendation document (P-01870):

## 8.2 FINALIZATION

On July 24, **Barnard-Pennecon JV** was recommended during a meeting with senior management. After this meeting work proceeded to finalize all documents and gain required approvals. (emphasis in original, p. 8)

When asked whether “finalize” was an accurate description of what was to take place, Mr. McClintock responded (May 14, 2019, transcript):

Yeah, finalizing in this context meant redoing the scoring, the analysis had already been done, redoing the scoring, but I agree that it could’ve turned out a different answer, so, yeah, probably wording was not—could’ve been different. (p. 16)

On July 27 and 28, 2015, Mr. McClintock received a completed commercial scoresheet from Mr. Over, a completed execution plan scoresheet from Mr. Mulcahy and Mr. Snyder, and a completed schedule scoresheet from Tony Scott (P-02805). In his testimony, Mr. McClintock confirmed that applying the original scoring criteria had the potential to render a different result than his revised method had suggested (May 14, 2019, transcript, p. 16).

Notably, the scores for the execution plan evaluation of July 27, 2015 (P-02805, p. 3) were different than the scores for the execution plan evaluation ultimately used in the final award recommendation (P-01870, p. 26). The spread between the bidders’ scores changed from 2.3% (76.8% for Barnard-Pennecon versus 74.5% for H.J. O’Connell-Dragados) in the former, to a wider spread of 10% (80.5% for Barnard-Pennecon versus 70.5% for H.J. O’Connell-Dragados) in the latter. When asked why this change occurred, Mr. McClintock testified that he had further discussions with Mr. Mulcahy and Mr. Snyder about the execution plan evaluation scores after the scores were submitted on July 27. Mr. Mulcahy and Mr. Snyder both testified that they could not recall further discussions or revisiting the scores after July 27, 2015.

Mr. McClintock testified about his recollection (May 14, 2019, transcript):

**MS. DING:** So it appears that the gap has grown between July 27 and when you did this final award recommendation. Can you explain why that might’ve happened?

**MR. MCCLINTOCK:** Sure. Basically process. When I sent the documents out initially I’d asked Greg and John to do it together. They were the main technical guys. I am—was also part of that technical team, and although I would never really try to get involved in any technical decisions that those fellas are—

decided on—there was a lot of work that we had done. And so, the part I can play is to, let’s say, ask them why they came to a certain conclusion and find out if it was consistent with what I saw was going on in all the information I had read. So the result was that we—the three of us agreed on some different scoring in some different areas.

**MS. DING:** Okay. And Mr. Mulcahy in his testimony indicated that he didn’t remember discussing this with you after he submitted his score sheets on July 27. Do you have any response to that?

**MR. MCCLINTOCK:** He didn’t remember reviewing the scoring?

**MS. DING:** Yes, after July 27.

**MR. MCCLINTOCK:** With Greg and I? Oh, I guess he forgot.

**MS. DING:** So you don’t believe that’s correct?

**MR. MCCLINTOCK:** No, it’s definitely not correct. (p. 17)

Based on my review of the main comparison summary on page 12 of the Award Recommendation (P-01870), I note that the change in the execution plan evaluation scores, on their own, would not ultimately have changed the recommendation in favour of Barnard-Pennecon.

### **Normalizing the Bids**

The process of normalizing the bids must be also considered here, based on the evidence of Mr. Mulcahy. Because bidders use different approaches and assumptions when responding to RFPs, the purpose of normalization is to allow bids to be compared on an “apples to apples” footing. In the case of the CH0009 bids, the Barnard-Pennecon bid price was normalized to factor in Barnard-Pennecon’s use of a craft labour target-price model.

According to the evidence, the methodology used to normalize the bids was to determine what quantity of work hours to add to the Barnard-Pennecon bid to estimate Nalcor’s responsibility for reimbursable craft labour. The normalization analysis would determine whether the additional hours added to Barnard-Pennecon’s bid caused its final estimated contract value to exceed that of the H.J. O’Connell-Dragados lump-sum unit price. The normalization analysis shows that the bid evaluation team chose three components as the basis for calculating additional labour hours: the upstream cofferdam, the north dam and the tailrace.

The bid evaluation team used a “tender check estimate” (done by Mr. Mulcahy) of the labour hours required for the three components. The amount arrived at was added to Barnard-Pennecon’s bid. For the north dam component, the bid evaluation team added even more hours to account for concrete productivity issues already observed on site with Astaldi and reduced productivity for placement of roller-compacted concrete. The normalization process estimated that an additional \$6.1 million should be added to the Barnard-Pennecon bid price, based on Mr. Mulcahy’s labour cost estimates.

It appears that there was an error in the normalization analysis when applying the Astaldi productivity factor. This error was reviewed by Mr. McClintock (P-02826). On its own, the error did not affect the result of the analysis, which was in favour of Barnard-Pennecon.

Mr. Mulcahy devised the normalization methodology and analysis that was used in the final 2015 award recommendation. In an email to Mr. McClintock on July 20, 2015, Mr. Mulcahy stated that he “tried to make a rational analysis as to where we should increase Bidder #2 [Barnard-Pennecon] man-hrs estimate from items in Nalcor estimate” (P-02797).

At the hearings, Mr. Mulcahy testified that he could not recall why he was asked to do the analysis, surmising that he may have been spot-checking the three components. Upon reviewing the final bid recommendation, Mr. Mulcahy indicated that the methodology shown in his July 20 email was not a fair basis for a normalization exercise. Mr. Mulcahy pointed to the fact that there were nine components that should have been used to estimate potential labour overruns.

Mr. McClintock disagreed with Mr. Mulcahy’s evidence, pointing out that the three areas selected were the areas with the most significant differences in estimated labour hours. In other words, the three selected components would have comprised most of the potential labour overruns for package CH0009.

Both Mr. Mulcahy and Mr. McClintock had extensive experience in the field of cost and schedule estimating and I cannot discount the evidence of either. However, based on my consideration of the normalization analysis and normalization methodology used, I question whether the normalization process was done appropriately.

## **The Quality and Experience of the Barnard-Pennecon Team**

Another question that arises about the bid evaluation is the weight that the team placed on the quality and experience of the Barnard-Pennecon project team. As discussed previously, the bid evaluation team was unsuccessful in implementing the revised scoring criteria, which valued the contractor's team more highly than the original scoring had. Even so, there were several references to the consideration of the quality of the Barnard-Pennecon project team. For example, in the final award recommendation, the following was listed as an additional factor that supported the recommendation (P-01870):

2. To achieve River Diversion as planned, the successful bidder must "hit the road running" upon Award. The BET believes that BPJV is better prepared to meet this challenge as its project team is experienced and balanced with a strong leader. The BET does not have the same confidence in ODJV's proposed team. (p. 4)

It is difficult for me to determine how much of an impact the experience of Barnard-Pennecon's team had on the bid evaluation process. However, it appears to have been a factor that attracted considerable attention. In an email to Edmund Martin on August 14, 2015, Gilbert Bennett stated (P-02814):

HJOC's had a lump sum on most craft, while the Barnard one has a target price and 50/50 risk/reward until they run out of profit – then cost shifts to us. We have analyzed this, and believe that the exposure here is offset by the strong experience in their team – this scenario is not a credible one in our mind. We have looked at labour estimates using CH0007 performance, and using that performance index, the proposals are almost identical. In summary, the work is heavy on equipment, not labour, so good organization will take us toward the North Spur experience rather than towards CH0007. We have the proposal with the strongest organization. (p. 1)

It is worth noting that at least some of the most experienced team members that Barnard-Pennecon listed in the bid were not ultimately assigned to the Project. For example, Matt Wagley was listed as Project Manager in the bid, but he was replaced by Aaron Rietveld for the execution of the contract.

## **H.J. O'Connell's Outstanding Claims**

There is evidence that there was another reason why H.J. O'Connell-Dragados was not awarded contract CH0009. Following the testimony of Mr. Turpin and Mr. Mulcahy, Commission counsel received an email from Leonard Knox, a former vice-president at

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H.J. O’Connell (P-03259). Mr. Knox had been interviewed by Commission counsel prior to Mr. Turpin and Mr. Mulcahy’s testimony. On May 22, 2019, Mr. Knox wrote:

I have been following the deliberations re Contract CC009, RCC dams, with interest. I attended the session today and needless to say, the testimony of Mr. Mulcahy was disheartening to say the least, from the perspective of a open and fair tender process. As I told you in my interview with yourself and Ms. O’Brien I did not feel we were engaged with a fair process. The testimonies of Mr. Turpin and Mr. Mulcahy support my concern.

In my interview I told you that during the Execution of CH 006, Mass Excavation, and while we were still engaged with tendering the Astaldi Contract, CH 007, I was called into the office of a senior Nalcor manager (he made sure we were alone) while I was at the Torbay office on other business. He then indicated to me if I continued with our request for additional compensation for changes to our contract then that would have a negative impact on us, ie in terms of getting other work at site. Based on the awards of all other contracts at that site from that point, including CH 009, I can only conclude he was not joking. In my view, based on the evidence to date, we were clearly competitive with lowest risk for Nalcor for CH 009 and yet we were not selected. The person who made that suggestion to me was Mr. Jason Kean. (p. 1)

In his email, Mr. Knox refers indirectly to H.J. O’Connell’s partnership with Innu-Kiewit Constructors, Nielsen and E.B.C. (IKC-ONE), which jointly executed contract package CH0006 (bulk excavation works and associated works). On August 27, 2013, IKC-ONE submitted a Request for Equitable Adjustment, claiming an “equitable adjustment to the Contract price of \$24,766,250 (due to acceleration, indirect and other impact cost components) and \$6,258,409 (in unpaid change requests)” (P-02745, p. 131).

In his testimony, Mr. Kean recalled the meeting that Mr. Knox referred to in his email of May 22, 2019. Mr. Kean stated that he discussed the CH0006 outstanding claims with Mr. Knox but said that he did so only with contract package CD0504 (construction of the Soldiers Pond substation) in mind. Mr. Kean recalled that he had asked Mr. Knox whether Nalcor could expect a “repeat” of the CH0006 claims if H.J. O’Connell was awarded the excavation work at Soldiers Pond. Mr. Kean pointed to the fact that H.J. O’Connell was later awarded the CD0504 contract for Soldiers Pond despite the outstanding claims from contract CH0006. Mr. Kean also testified that he had limited involvement with package CH0009 and was not contemplating that package when he met with Mr. Knox and discussed the outstanding claims.

All of this raises the question of whether IKC-ONE's outstanding claims had any bearing on the bid evaluation for CH0009. In the documents pertaining to the 2015 bid evaluation of package CH0009, two in particular refer to the IKC-ONE outstanding claims:

- Mr. McClintock emailed John Mulcahy, Ed Over and Scott O'Brien on May 23, 2015, close to the time that he joined the bid evaluation team, and attached notes taken from the week just ended; Mr. McClintock used the heading "Need to develop a business model that addresses the following . . .", under which he lists "outstanding claims" as one of the H.J. O'Connell items (P-02778, p. 3)
- Mr. Over replied to an email on July 21, 2015, with edits to an outline that Mr. McClintock had written in preparation for the PMT meeting of July 24, 2015; under H.J. O'Connell and "Other Considerations," Mr. McClintock wrote "Local JV member continues to have claim from previous contract" (P-02800, p. 5)

Mr. McClintock testified that the references had no bearing on the evaluation and that they were either for discussion purposes only or "just put on the table and then left because it had no bearing on what our job was" (May 14, 2019, transcript, p. 27). Both Mr. Over and Mr. Snyder testified that they did not recall discussions regarding IKC-ONE's outstanding claims.

### **Award Recommendation of August 14, 2015**

The final "Bid Evaluation and Award Recommendation" document was reviewed and approved between August 10 and 14, 2015 (P-01870, p. 1). Some issues arose on finalizing the award recommendation in August 2015:

- It is unclear from the evidence whether all bid evaluation team members reviewed the final award recommendation document ultimately submitted to and approved by Nalcor's PMT
  - Mr. Snyder did not recall reviewing the final document
  - Mr. Over confirmed that he reviewed a draft of the recommendation document but did not review the signed final document

- Mr. McClintock's evidence is that Mr. Snyder and Mr. Mulcahy did review the final award recommendation document
- The cover sheet of the final award recommendation document has several signatures, but some appear to be by people signing on behalf of other team members
  - Mr. McClintock confirmed that he signed for Mr. Over on the final award recommendation document dated August 10, 2015; when asked why, he indicated that Mr. Over "wasn't there that week" and that Mr. Over "certainly would've seen this document and allowed me to sign on his behalf"
  - Mr. Over testified that he was not aware at the time that Mr. McClintock had signed for him, but that signing for others was a "practice on the project" (June 20, 2019, transcript, p. 8)
- On August 12, 2015, Mr. McClintock sent an email to Scott O'Brien, attaching a revised award recommendation document and noting (P-02813): "Here is the new wording I have put into the Award Recommendation. You may need it to discuss our position and for follow-up with Bidder 3 [H.J. O'Connell-Dragados]. The most important piece is Section 2"; the email was sent two days after the proxy signatures for Ed Over and Carlos Fernandez were signed
  - Mr. McClintock could not recall whether Mr. Over or Mr. Fernandez reviewed the changes made to the document after August 10, 2015; Mr. McClintock indicated that the changes were minor in nature, but that the document should have been re-circulated (May 14, 2019, transcript, p. 24)

## **Conclusion**

After considering all of the relevant exhibits and the testimony of the witnesses, I am left with some concerns about the adherence to the theory and process of the Bid

Evaluation Plan in the bid evaluation process for package CH0009. However, I cannot conclude that the recommendation and award to Barnard-Pennecon was improper. There is little in the way of definitive evidence that would reasonably allow me to conclude that H.J. O’Connell-Dragados was wrongly denied this contract. In the circumstances, I am satisfied that, although the bid evaluation process raised some concerns, particularly after hearing the evidence of Mr. Turpin and Mr. Mulcahy, I am unable to reject the evidence of Mr. McClintock and others about the awarding of this contract. I am, however, left with a lingering question—why was a bid that reduced the labour risk for Nalcor not accepted? I am also satisfied that the decision to reject a hard-money bid contributed to the cost overruns for contract CH0009 to a significant degree.

## CONSTRUCTION AND EXECUTION

The winning contractor—Barnard-Pennecon—was a joint venture between Barnard Construction Company Inc. (based in Bozeman, Montana) and Pennecon Limited (based in St. John’s, NL). The joint-venture agreement was structured as a limited partnership: Barnard was the 65% managing partner and Pennecon the 35% limited partner. Barnard is an American construction company with experience in heavy civil projects, including dams, reservoirs and roller-compacted concrete structures. Its experience encompasses several projects completed in cold climates. Pennecon offered expertise and experience in earthmoving and aggregate processing.

The Commission heard from two Barnard witnesses, Derek Tisdell and Aaron Rietveld—who are both Vice-Presidents/Operation Managers at Barnard. Mr. Tisdell was involved with the Project during the bid proposal phase and particularly in the bid-proposal price negotiations and clarifications.

Mr. Rietveld’s association with the Project began in September 2015 after the LNTF for this contract was issued and he was involved in the execution of the work. Mr. Rietveld indicated that he was at the Muskrat Falls site full-time for the first year that he worked on the Project and on a monthly basis in 2017. Mr. Rietveld had previously worked on other dam projects, including the Saluda dam in South Carolina and Gilboa in upstate New York. In 2017, he was promoted to Vice-President/Operations Manager at Barnard, at which point Koehler Anderson assumed the role of Project Manager for CH0009.

As noted earlier, contract package CH0009 was awarded to Barnard-Pennecon in August 2015. The company began mobilization the next month. The contract's largest components were the north and south dams. The north dam (450 metres long, 39 metres high) was built across the original channel of the Churchill River, and was connected to a rock knoll at one end and the spillway structure at the other. It is one of the largest roller-compacted concrete dams in Canada.



*Figure 3.23: The Muskrat Falls North Dam*

RCC is a type of concrete blend that uses more fly ash and less cement than conventional concrete mixtures. Because the mix of ingredients in RCC is drier than in conventional concrete, it can be placed in layers (“lifts”) using earthmoving equipment, be spread with bulldozers, and then be rolled using compactors—and it does not need the high heat required to set conventional concrete. Once compacted, RCC is stronger and, because of the qualities of the fly ash, less prone to cracks. RCC costs less than conventional concrete because of the lower component costs of the RCC mixture and because it can be placed continually, without forms or finishing.

As Figure 3.23 shows, the north dam has a stepped-face design. The downstream slope of the dam has tiers rather than a smooth face (a “battered-face” design). The RFP for CH0009 contemplated a stepped-face design. Barnard-Pennecon’s proposal included

a stepped face as well as a battered-face alternative design, at a potential cost savings. Ultimately, Nalcor elected to execute the stepped-face design for the north dam.

The south dam is an earth-filled dam located on the far side of the powerhouse from the north dam. As noted in the scope of work, the top of the south dam is wide enough for a one-lane road that provides access to the top of the powerhouse.



*Figure 3.24: The Muskrat Falls South Dam*

The construction activities for CH0009 were both equipment- and labour-intensive. Mr. Rietveld indicated that for some activities, such as the construction of the upstream cofferdam, the work was more equipment driven. Some elements of the north dam construction were also equipment-intensive, but most of its construction was labour driven. Its significant labour-intensive activities included forming, cleaning the foundation area and placing the concrete.

### **The Roller-Compacted Concrete Mix**

One of the first work activities on this contract was designing the RCC mix for the north dam. Several different mixes were developed and then tested in a laboratory over

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time to determine whether they would meet strength requirements for the structure. According to Mr. Rietveld and Mr. Tisdell, Nalcor began the mix design work and did some testing before CH0009 was awarded. Then Barnard-Pennecon was given the contractual responsibility for developing the final mix design as part of the CH0009 contract. They took up the mix design work, refined the mix and proposed a final design for acceptance by Nalcor's engineers.

Developing and testing the mix design took several months and lasted into early 2017. Despite the lengthy duration of the mix design program, Mr. Rietveld confirmed that the time frame did not affect the ultimate schedule for the completion of the work. The final mix design was selected and approved in July 2017, shortly before Barnard-Pennecon began placing the RCC.

### **The Construction Process**

In September 2015, workers and equipment were mobilized to build the intake cofferdam, situated upstream of the powerhouse intake, and also the south abutment of the spillway bridge, which involved some concrete work. Construction was completed at the end of December 2015, before the winter shutdown. The intake cofferdam was built to manage increased water levels over the winter (caused by ice) and ensure watertight protection of the powerhouse. Building the south abutment for the spillway bridge was a preparatory step for the construction of the bridge itself in 2016. According to Mr. Rietveld, “[T]he onset of winter, we knew, was right around the corner, and so we didn’t have ambitious plans for, you know, the very end of 2015, but there were a few things we wanted to get accomplished before the onset of winter to set ourselves up for the 2016 construction season” (April 4, 2019, transcript, p. 18).

Barnard-Pennecon constructed the bottom portion of the south dam in 2016 and completed the dam in 2017. There were some issues with the first season of construction on the south dam. Mr. Rietveld testified (April 4, 2019, transcript):

We had always contemplated constructing—excavating for the foundation and then building back the embankment [on the south side of the spillway] and, you know, in a continuous unobstructed fashion. And there was a haul road through that footprint that we had contemplated cutting off and then access would be by other haul routes around that.

We were directed to maintain the haul route, the existing haul route, through that South Dam footprint and so, consequently, it required us to excavate

and build that South Dam in kind of a staged or sequenced manner. You'd build half of it and then move the haul road over on to that half and then do the other half kind of thing. So it complicated our approach to building the South Dam. (p. 28)

Work was also done in 2016 to set up the batch plant and crusher for concrete production.

Between March and July 2016, Barnard-Pennecon built the spillway bridge. This structural steel bridge became the primary access route to and from the north dam.

Barnard-Pennecon also completed the upstream cofferdam in 2016. This work required heavy equipment to push rock fill out into the river, forming two groins (long wall-like structures). The groins were positioned into the river channel, one from each side, with 50 metres between them. The space between was then filled with till (claylike material), cutting off water seepage through the resulting cofferdam. The completed upstream cofferdam diverted the water toward and through the spillway channel, allowing the north dam to be built. The lower portion of the upstream cofferdam, which diverted the water, was completed in September 2016. The upper portion, which provided protection, was completed in October 2016.

Completing the river diversion in 2016 was dependent on Astaldi's progress on the spillway—the two aspects of construction had to be coordinated. In the preceding months, there was some uncertainty about whether river diversion would or could be achieved in 2016. Mr. Rietveld testified (April 4, 2019, transcript):

Again, the goal was to do that [divert the river] in 2016. Well, there was—Nalcor and us had contemplated the consequences of whether that would—might be pushed to 2017, and there were commercial implications. Ultimately, at the end of the day, we were able to proceed as planned, with river diversion in 2016. (p. 19)

River diversion was originally planned for mid-July 2016. It was achieved a few weeks later.

In October 2016, with the upstream cofferdam completed, Barnard-Pennecon began preparation for laying the foundation for the north dam. This involved preparing the foundation surface by excavating deteriorated rock, cleaning the rock, filling cracks with grout and filling large fissures and foundations with levelling concrete. The foundation cleaning included removing any debris on the surface of the rock foundation so that nothing remained between the concrete of the dam and the rock foundation.

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The preparation work also required that all larger foundational openings be filled with conventional levelling concrete until the area was open enough to start RCC placement.

The preparation works led to significant labour overruns. Mr. Rietveld confirmed that the volume of concrete required to fill in the fissures in the rock was almost triple the estimate. Additionally, he confirmed that the labour cost to perform foundation cleaning was more than Barnard-Pennecon had anticipated. In his testimony, Mr. Rietveld explained that geotechnical or bathymetric surveys generally have limited ability to accurately assess the conditions of a riverbed, in other words, to predict how porous the rock will be, how many cracks and fissures will be found in the rock that will become the dam's foundation. Mr. Rietveld confirmed that it is therefore difficult to mitigate the risks of additional required labour and concrete. He gave the following explanation of how Barnard-Pennecon had arrived at its estimates for this aspect of the work (April 4, 2019, transcript):

[W]e bid off of the quantities for levelling concrete, dental concrete, slush grout, all the different work items that go into preparing the foundation, you know, presuming all the bidders bid off the same quantities that were given to us from Nalcor and I would guess they would have just made an educated guess of what those quantities should be. (p. 24)

Mr. Rietveld also pointed to the significant amount of forming that was needed for the levelling concrete, which had not been identified in the contract documents. The levelling concrete work was a unit-price item, thus Nalcor was ultimately responsible for the direct costs to place the additional concrete. The additional work led to corresponding schedule delays.

In October 2016, advancement of the foundation preparation work was also affected by protests at the site, discussed in more detail later in this Report, which eventually led to site closure. Barnard-Pennecon was formally directed to cease operations as a result of these protests. Mr. Rietveld testified that the work that Barnard-Pennecon was unable to complete in 2016 was deferred to early 2017 (April 4, 2019, transcript, p. 21).

In November 2016, the upstream cofferdam began to leak. Mr. Rietveld indicated this was caused by rock fill and clay materials failing to adequately seal the bottom of the cofferdam. The spillway gates were opened to reduce water levels and leakage flows. Mr. Rietveld indicated that this was a known risk of constructing the cofferdam in wet conditions.

Barnard-Pennecon had included an option in its CH0009 bid proposal for jet grouting work on the cofferdam in the event that a leak did occur. Mr. Rietveld testified that in November 2016, the jet grouting option was discussed with Nalcor. Nalcor selected a different type of grouting, however, and issued a change order to Barnard-Pennecon to perform remedial grouting and civil works to stabilize the cofferdam. The cofferdam was successfully repaired after this work was done (February and March 2017). Barnard-Pennecon then resumed foundation preparation activities for the north dam. According to Mr. Rietveld, “there was never any disputes or any discussions about who was responsible for the cofferdam leakages. We worked with Nalcor to, you know, identify the problem and address it” (April 4, 2019, transcript, p. 22).

On May 20, 2017, following severe flooding in Mud Lake (downriver from Muskrat Falls), local residents formed a protest blockade and blocked the gate to the Muskrat Falls site, which delayed the arrival of workers. According to a letter to Scott O’Brien that Mr. Rietveld wrote on May 23, 2017: “The blockade was formed as the protesters believed that the Company’s [Nalcor’s] recent release of water or failure to properly manage the downstream flows resulted in flooding of the Mud Lake community” (P-02973, p. 1).

Nalcor claimed that the blockade was a *force majeure* event. Barnard-Pennecon’s position was that the event was within Nalcor’s control and therefore was not a *force majeure* event.

On July 28, 2017, Barnard-Pennecon began placing the RCC for the north dam and continued until October 2017, when it switched to placing conventional concrete for the access ramp. Conventional concrete was placed until November 2017 when activities wound down for the winter season. In April 2018, construction resumed on the north dam. Placement of the RCC on the north dam was completed in August 2018. In October and November 2018, some conventional concrete placement was completed at the crest of the dam.

Some foundation drilling and grouting work remained to be done on the north dam’s gallery (a tunnel that runs inside the structure). The extent of the borehole drilling, grout pressures and grout volumes was dictated by Nalcor engineers. Mr. Rietveld indicated that the foundation drilling and grouting were scheduled to take three or four months. As it turned out, it took from June 2018 to January 2019 to complete. Mr. Rietveld indicated that he was unsure whether the drilling and grouting delays affected the overall

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schedule. The unanticipated additional work resulted in grout quantity overruns and delays.

Under Barnard-Pennecon's original schedule, the CH0009 scope of work was to be substantially completed by August 2018. With Nalcor's agreement, Barnard-Pennecon was given an extension. At the time of Mr. Rietveld's testimony, the remaining scope of work left for Barnard-Pennecon to complete included removal of the intake cofferdam and demobilizing the remaining workers and equipment.

Overall, Mr. Rietveld acknowledged that Barnard-Pennecon experienced some of the labour productivity issues that had been identified as risks during the contract bidding stage. Specifically, he pointed to the difficulty of accessing enough skilled workers. According to Mr. Rietveld, biweekly labour productivity meetings were conducted with Nalcor during the latter half of the CH0009 contract work to discuss key performance indicators. Nalcor conducted labour audits and engaged a third party to evaluate Barnard-Pennecon's management. Mr. Rietveld did not recall any major improvements that came from that effort.

Mr. Rietveld also testified that the relationship between Barnard-Pennecon and Nalcor changed over time. In 2015 and 2016, several letters were exchanged and "frustrations arose" from what Barnard-Pennecon felt was a lack of attention from the senior leadership at Nalcor during the first year (April 4, 2019, transcript, p. 32). This changed in early 2017, when Nalcor and Barnard-Pennecon began regular executive-level steering committee meetings (April 4, 2019, transcript):

[W]e all agreed in 2017 that—you know, to kind of reset the relationship. They did acknowledge that they had been somewhat, you know, sidetracked in 2016 with some of the other things that were happening on site. But then, moving forward, in really 2017, 2018, all the way up 'til now, it was—I mean, I think the relationship has been fine. It's been good. The communication improved, and so I think that was kind of the turning point, early 2017, for us. (p. 32)

Once again, I would note that Barnard-Pennecon has outstanding claims to be resolved with Nalcor. As a result, I have attempted to ensure that the content of this Report does not influence the resolution of those claims.

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## CHAPTER 16: THE GENERAL ELECTRIC CONTRACTS

Alstom Grid Canada Inc. and Alstom Renewal Power Canada Inc. (collectively, Alstom) were awarded three major contracts related to the Project's transmission component. These contracts, collectively referred to as "HVdc specialties," involved:

- The supply and installation of converter stations and transition compounds (CD0501)
- The construction of AC substations (CD0502)
- The supply and installation of synchronous condensers at Soldiers Pond (CD0534)

These three packages required facilities to be built at several sites, including at the:

- Churchill Falls generating station
- Muskrat Falls generating station
- Soldiers Pond converter station
- Forteau Point and Shoal Cove transition compounds

As will be discussed later, this contract included software development and installation for transmission purposes.

Alstom is a multinational company based in France that today operates primarily in the transportation sector. During its transition to this focus, Alstom sold its power and grid divisions to General Electric (GE). GE, in turn, transferred the Project's HVdc specialties contract packages (acquired through that sale) to its new subsidiary, Grid Solutions Canada ULC (Grid Solutions). The announcement of GE's acquisition of Alstom's power and grid divisions was made in June 2014, after the awarding of the HVdc specialties contracts, and the arrangement was completed in November 2015. For simplicity, in this chapter the contractor for the HVdc specialties packages (both before and after GE's June 2014 acquisitions from Alstom) is referred to as "GE."

### CD0501: CONVERTER STATIONS AND TRANSITION COMPOUNDS

Nalcor awarded package CD0501 on March 31, 2014 (P-03199). The contract was originally in two parts: equipment (valued at \$372 million) and related civil works (valued

at \$107 million). The civil works for this package and for package CD0502 were later combined and transferred to a new package, CD0504 (more discussion of this follows).



Figure 3.25: The Soldiers Pond Converter Station

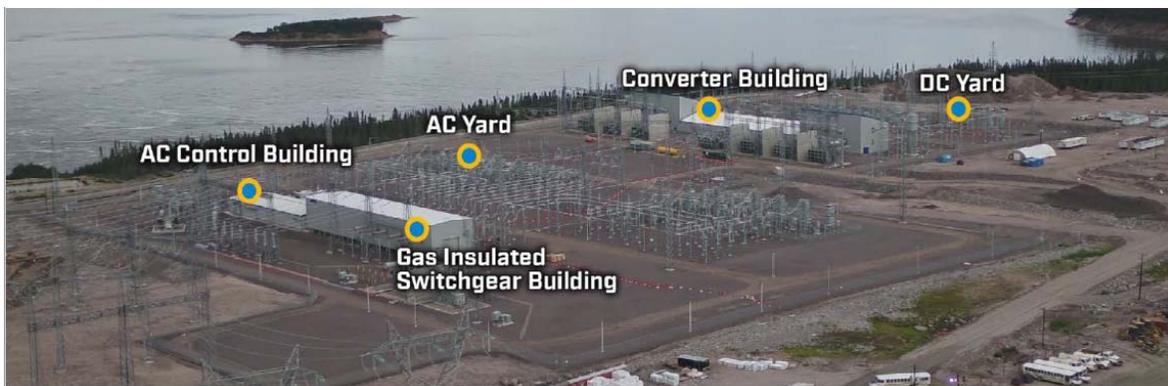


Figure 3.26: The Muskrat Falls Converter Station

The converter station constructed at Muskrat Falls as part of package CD0501 includes the converter, valve hall and transformers. This equipment converts the low-voltage alternating current (AC) electricity produced by the generating station into high-voltage direct current (DC) for transmission to Soldiers Pond, where it is reconverted into AC power for distribution to Island customers.

The original plan for this contract package had two main components:

1. A 350 kV 900 MW bipole HVdc system comprised of two HVdc converter stations. These were to be built based on line-commutated conversion technology, one at Muskrat Falls and the other at Soldiers Pond. Each station was to have:

- A control building
- Transformers with concrete foundations, containment systems, firewalls and oil/water separators
- Concrete supports and foundations for the outdoor switchyard equipment.

A bipole HVdc system has two lines (or “conductors”) and it provides greater transmission reliability because if one line goes down, the system immediately reconfigures to operate as a monopole system, which can avoid a power outage.

2. Two transition compounds—one in Forteau, the other in Shoal Cove.

Protection and control software (P&C software, by which the power transmission and conversion is managed) was also included in package CD0501.

### **CD0502: AC SUBSTATIONS**

Nalcor and GE signed the contract for package CD0502 on November 7, 2014 (P-01858). It had an effective date of August 15, 2014, when a Limited Notice to Proceed had been issued. This contract was also in two parts: equipment (valued at \$187 million) and related civil works (valued at \$80 million). CD0502 was for the construction of three AC substations (P-01858):

- 735–315 kV AC substation at Churchill Falls
- 315 kV AC substation at Muskrat Falls
- 230 kV AC substation at Soldiers Pond (p. 4)

Each site included interfaces or connections related to telecommunications, protection and control, transmission lines and associated equipment and works.

### **CD0534: SYNCHRONOUS CONDENSERS AT SOLDIERS POND**

Contract package CD0534, which was awarded to GE on November 14, 2014, was valued at approximately \$160 million. It was managed by a different division of GE than contract packages CD0501 and CD0502. The scope of work for contract package CD0534

included the fabrication and installation of three synchronous condensers, the construction of a condenser facility at Soldiers Pond and the installation of all auxiliary equipment required for the facility. My understanding is that the synchronous condensers serve to maintain stability and reliability on the electricity grid and maintain voltage on the AC system (P-00136, p. 78).



*Figure 3.27: Synchronous Condensers at Soldiers Pond*

Three witnesses who were directly involved in these contracts testified at the hearings: Darren DeBourke of Nalcor and Thierry Martin and Laszlo von Lazar of GE. In addition, several Nalcor PMT and members of the executive also testified about matters concerning the HVdc specialties contracts, including Stan Marshall, John MacIsaac, Gilbert Bennett, Paul Harrington and Ron Power.

Mr. DeBourke was Nalcor's Project Manager for HVdc Specialties from September 2011 to November 2016. He is a professional engineer with experience working on large oil and gas projects including Sable Island, Terra Nova and Hibernia. Mr. DeBourke had no prior experience or expertise with contracts related to HVdc specialties when he took up this work for Nalcor.

Thierry Martin was GE's Project Manager for CD0501 and CD0502 from November 2014 to May 2016. Prior to 2014, he had worked with GE for approximately 29 years, starting as a commissioning engineer and moving on to project management and operations. Based in Europe, Mr. Martin remains an employee with GE's power transformer group.

Mr. von Lazar is a senior GE executive responsible for large and complex projects. He worked for Bechtel for approximately 11 years in construction project development and moved to GE in June 2014 when it acquired Alstom. Mr. von Lazar started work on the Project in April 2016. In January 2017, he was appointed Senior Executive at GE with responsibility for the Project. He discontinued work on the Project in December 2018 and at the time of his testimony was engaged in large gas projects for GE.

As noted earlier, in its *Construction Phase* report Grant Thornton reviewed six work packages that represented approximately \$3 billion (77.5%) of the \$3.9 billion of cost variances for the Project as of March 31, 2018 (P-01677). The three GE packages, although over budget, were not reviewed by Grant Thornton because they were not part of this group. However, because of the potential for the HVdc specialties component to significantly delay the scheduled completion of the Project, the Commission decided to investigate these three packages (CD0501, CD0502, CD0534).

The table in Figure 3.28 summarizes how the cost of the GE contract packages increased over time.

Package	Contract Value			Variance to DG3	
	At DG3	At Award	At Dec-2018	At Award	At Dec-2018
CD0501 <sup>1</sup>	\$ 441,819,337	\$ 479,213,971	\$ 532,847,003	8%	21%
CD0502 <sup>1</sup>	236,202,235	267,464,423	274,886,299	13%	16%
CD0534	115,534,123	159,659,586	157,751,848	38%	37%
<b>Total</b>	<b>\$ 793,555,695</b>	<b>\$ 906,337,980</b>	<b>\$ 965,485,150</b>	14%	22%

<sup>1</sup> Includes the amounts transferred into CD0504.

Figure 3.28: Summary of General Electric Contract Packages  
(Source: P-03152, p. 2)

As the amounts in the table suggest, there were some problems with contract package CD0534 (synchronous condensers). However, because of the impacts that

CD0501 and CD0502, including the P&C software issues, had on the Project, the next sections focus on these two packages.

**CD0501: THE BID EVALUATION AND AWARD**

On December 21, 2012, Nalcor issued an RFP for contract package CD0501 to three bidders: GE, ABB Inc. and Siemens Canada Limited. All three submitted fully compliant proposals. Nalcor opened the bids on June 27, 2013, and evaluated them using the weighting outlined in Figure 3.29.

<b>Criteria</b>	<b>Weighting Percentage</b>
Commercial	60
Technical	30
Execution and Schedule	10
<b>Total</b>	<b>100</b>

*Figure 3.29: Bid Evaluation Criteria for the Converter Stations and Transition Compounds (Source: P-03145, p. 5)*

All three bids exceeded the DG3 estimate for CD0501. According to the bid evaluation team (P-03145):

The four month exercise that followed, in an effort to close the gap between the budget and the bid amounts and to identify opportunities to reduce costs, concluded with receipt of the November 12th revised bids. The commercial evaluation of these revised bids . . . concluded that:

- Alstom [GE] was still well below the other two bidders in terms of evaluated costs
- Alstom was 5% over the LCP budget
- The four month exercise had reduced prices by about 20%
- Siemens price was still indicative only. (p. 5)

Revised bids were submitted on November 12, 2013. GE’s bid was well below the other two. Although GE had reduced its bid by approximately \$115 million since it first submitted a proposal, its revised bid amount was still approximately \$21 million higher than Nalcor’s DG3 estimate (P-03145, p. 7).

On December 20, 2013, Nalcor identified GE as the preferred bidder for CD0501. GE and Nalcor continued to negotiate cost-saving measures before signing the contract. Transferring the civil works scope from contract package CD0501 to CD0504 was the main source of cost savings. Under the new arrangement, GE would continue to be responsible for engineering, design support and the overall execution of the civil works scope for CD0501, but Nalcor would be responsible for the issuance of the contracts and the payment of the civil works contractor's invoices. This reduced GE's profit from managing the civil works subcontractor and thereby offered savings to Nalcor. On March 24, 2014, Nalcor's bid evaluation team recommended the award of contract package CD0501 to GE at a contract value (excluding the amount transferred to CD0504 for civil works) of approximately \$353 million (P-03145). This recommendation was approved by Nalcor's PMT in April 2014.

Mr. DeBourke testified that he visited various project work sites of the three bidders, including a Siemens project in New Jersey and GE's SouthWest Link Project in Sweden. He also noted that he had visited Germany and, although he did not visit the site, he met with the clients for GE's DoWin3 project. He testified that the purpose of these visits was to understand the risks associated with the work and to establish how to mitigate those risks. Mr. DeBourke explained that during the site visits in New Jersey and Sweden, Nalcor observed issues involving information flow, site presence and quality. As a result, Nalcor added commercial terms to the contract that were related to liquidated damages and payment items. Mr. DeBourke added that Nalcor maintained communication with GE's client in Sweden throughout the Muskrat Falls Project and was given updates on that client's issues with its P&C software. However, Mr. DeBourke and his team did not visit any GE sites that were at the commissioning stage or that had been completed (May 10, 2019, transcript, pp. 12–13).

## **CD0502: THE BID EVALUATION AND AWARD**

Nalcor hired PowerAdvocate Canada Ltd., a subsidiary of a consulting firm based in Boston, to study the best contracting approach for contract package CD0502. PowerAdvocate submitted its report to Nalcor on September 7, 2012. It began (P-03464):

The purpose of this assessment is to provide decision support to the Lower Churchill project team around the optimal contracting approach for the AC substations – in particular whether to use the EpCM approach currently in place for most work packages or to use an EPC [Engineer, Procure and Construct]

approach that is currently contemplated for a small set of work packages. This assessment includes:

- an analysis of EPC premiums and trends;
- insights on what makes a given project well suited for an EPC, fixed price approach;
- an analysis of the pros and cons for both the EpCM and EPC contracting approaches;
- thoughts on how to maximize the benefits and minimize the disadvantages of each approach;
- PowerAdvocate project case studies;
- lessons learned by a North American utility that is currently executing a major substation project on an EPC basis; and
- PowerAdvocate's recommendation as to the optimal contracting approach for the AC substation. (p. 3)

In its report, PowerAdvocate advised that “an EPC, fixed price contract approach for the AC substations is recommended” (P-03464, p. 16). Upon receiving this report, Nalcor decided to make the CD0502 a lump-sum EPC contract. In early November 2012, Nalcor informed SNC of its decision to change the contracting strategy.

On May 10, 2013, SNC submitted a report assessing Nalcor's new CD0502 contracting package. SNC concluded that the EPC approach would “minimize to great extent the interfaces related to Switchyards and the risk associated with that” (P-02985, p. 12). However, SNC also argued that there would be a \$33 million premium with the EPC approach as well as an increased schedule risk (P-02985, p. 11).

Nalcor elected to proceed with a lump-sum EPC package for CD0502. The scope of work included design, engineering, manufacturing, supply, delivery, construction, erection, commissioning, trial operation, turnover and training for the substations at Churchill Falls, Muskrat Falls and Soldiers Pond.

Nalcor issued an RFP to seven potential CD0502 bidders on July 16, 2013. The RFP was closed on November 22, 2013, and the bids opened on November 25, 2013. In March and April 2014, Nalcor issued several post-proposal bulletins and held bid clarification meetings with the bidders. On April 23, 2014, Nalcor announced it had shortlisted GE and Valard for this contract package. GE's price increased during the bid clarification process but it remained lower than Valard's bid throughout.

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As with many other contract packages, the bids received for CD0502 were higher than the DG3 estimate. As a result, Nalcor asked the bidders to identify cost-saving measures or areas that would reduce the contract award price. GE proposed the following two cost-saving measures:

1. **Implementing gas insulated switchgear (GIS) technology:** GE's proposal for an alternate substation design using GIS technology was accepted by Nalcor. According to the award recommendation (P-03232):

As a separate alternative, Alstom [GE] proposed to use Gas Insulated Switchgear (GIS) at Churchill Falls and Muskrat Falls as opposed to Air Insulated Switchgear (AIS) as specified in the RFP. GIS equipment is more expensive than AIS equipment; however, GIS requires much less land and significantly less civil works (less foundations) than AIS. (p. 16)

With GIS technology, the major substation structures would be more compact and much of the equipment would be contained in an enclosed environment and would use sulphur hexafluoride gas as the insulator. In contrast, the traditional AIS technology uses air insulation and requires a much larger area for its structures. Since the civil works for the substations were a large part of the Project cost, GE proposed using GIS technology at the Muskrat Falls and Churchill Falls sites as a way to significantly reduce the substation footprint and thus reduce civil works costs. Since the overall savings in civil works were greater than the increased equipment cost, GE was able to propose an overall cost savings of approximately \$7 million this way (P-03232, p. 16).

Darren DeBourke and Thierry Martin both testified that the GIS alternative had schedule advantages as well, because GIS construction and equipment installation is performed in an enclosed building and therefore is not weather dependent. Both also indicated that the GIS alternative had maintenance advantages, since it fully encloses and environmentally seals the GIS equipment. For all these reasons, Nalcor elected to implement GIS at the Muskrat Falls and Churchill Falls sites. Nalcor determined, however, that the GIS option was not economically viable at Soldiers Pond and stayed with the AIS option for that site.

2. **A joint cost-saving initiative for the civil works scope:** GE proposed a division of the contract similar to its proposal in CD0501.

GE's revised CD0502 bid also demonstrated how its role as the contractor for package CD0501 could be leveraged to advantage for CD0502. Cost-saving opportunities included a shared project-management organization, economies of scale for subcontractors, shared site facilities, shared project offices in St. John's, reduced interfaces and savings for design reviews and factory acceptance testing.

Valard's bid also had some advantages, including an ability to perform the majority of the engineering, procurement and construction services internally through its parent company, Quanta. Valard also proposed to use subsidiaries for the civil and electromechanical engineering as well as for the process and control engineering, manufacturing and commissioning.

On July 24, 2014, Nalcor's bid evaluation team recommended the award of contract package CD0502 to GE at a contract value (excluding the amount transferred to CD0504 for civil works) of approximately \$188 million (P-03232). This amount did not include the civil works scope, which was estimated to be approximately \$79 million (P-03232, p. 3). The final recommendation was to award the contract to GE based on using the GIS alternative at Churchill Falls and Muskrat Falls. This recommendation was approved by Nalcor's PMT in July or August 2014.

#### **CD0504: A JOINT COST-SAVING INITIATIVE**

Mr. DeBourke testified that it was GE who suggested the Joint Cost-Saving (JCS) initiative for the civil works aspects of CD0501 and CD0502 (May 10, 2019, transcript):

[W]hen the bidders came in with their bids and we evaluated them, we could see that the civil works component was drastically over our budget and we wanted to understand the makeup of that. And I guess through discussions and—with GE or Alstom at that time, we understood there was quite a bit of risk money that they added to the civil works just due to their, I guess, their experience or lack of experience, I guess, in working in Newfoundland and Labrador, unfamiliar with some of the local contractors, et cetera.

So what this initiative was really to do was that if Nalcor put the civil works contracts on their paper, then we could save the overhead in profit and not, you know, not having—have the contract in GE's name. (p. 7)

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Mr. DeBourke testified that the purpose of the JCS initiative was to reduce the high cost of the civil works by carving off that scope of work from contract packages CD0501 and CD0502. The subcontracted amount for civil works under a new contract CD0504 would be deducted from GE's offer and the associated contracts would be placed directly by Nalcor. In essence, GE would be responsible for design and execution of the civil works scope (including quality, schedule, cost and risk) and Nalcor would be responsible for issuing the civil works contracts, dealing with the change orders and paying the civil works contractors (P-03215, pp. 2–3). The target cost reduction for this arrangement was approximately \$20 million. GE reduced its profit and overhead margin for the civil works by approximately \$16 million (P-03215, p. 3).

The JCS initiative also stated that if the total contract awards came to less than the civil works baseline, Nalcor and GE would share the savings equally. If, on the other hand, the cost exceeded the civil works baseline because of an overage not covered by a change order, GE would be responsible for reimbursing Nalcor (P-03215, p. 6).

The JCS initiative also required Nalcor and GE to jointly evaluate submitted change orders and claims requested by GE or one of the civil works contractors. Nalcor would then issue the change order to the contractor, pay the price of the work performed and issue another change order to GE for reimbursement to Nalcor to cover the payment. If a contractor made a claim for additional compensation, Nalcor and GE agreed to jointly evaluate that claim. How all of this worked out in practice is discussed below.

In selecting the contractors for the civil works, Nalcor and GE agreed to jointly review the technical specifications to decide on the type and quantity of civil works services required. As well, they would have to jointly agree on the form of the RFP to be issued to potential contractors and jointly evaluate their responses. Nalcor also agreed to support GE in the management of any agreements made with construction trade unions (P-03215, pp. 4–5).

In its “Bid Evaluation Recommendation” for CD0502 presentation of July 4, 2014, Nalcor identified the risks involved in adopting this JCS initiative (P-02990):

- To avoid schedule bust, civil works has to be completed during 2015 construction season.
- Alstom [GE] has told us it will take 6 months to finalize the civil engineering  
...

- This only allows 3 months to issue RFP, evaluate, award, and mobilize the civil works contractor. This may set up LCP for potential claims if RFP process is delayed (or extra costs for winter work to meet schedule).
- Carving out of civil works scope. If contract is not clear on delineation, it may lead to further claims. (p. 15)

Mr. DeBourke testified that Nalcor recognized these schedule risks caused by the additional RFP and bid award process. Nevertheless, in this July 4 presentation, Nalcor recommended that contract CD0504 be awarded by July 31, 2014. The contract was ultimately awarded on August 15, 2014.

### THE CIVIL WORKS PACKAGES COMBINED

As described above, the civil works scopes for contract packages CD0501 and CD0502 were isolated, removed from the two packages, combined into one and awarded as a separate contract under package CD0504. That package's components included the construction of:

- Structures at the HVdc converter stations at Soldiers Pond and Muskrat Falls
- Structures at the AC substations at Soldiers Pond, Muskrat Falls and Churchill Falls
- Various foundations, containments and connections for the structures and equipment in the converter stations and substations

I note the following about package CD0504:

- RFPs were issued on February 13, 2015, with a proposed closing date of March 23, 2015
- H.J. O'Connell Construction, Johnson's Construction, Pennecon Ltd. and Pomerleau Ltd. responded to the RFPs
- Bid evaluation was narrowed to two bidders, H.J. O'Connell and Pomerleau
- The final bid closing date was May 11, 2015
- GE performed the bid evaluation and award recommendation with the assistance of Nalcor

- In mid-2015 Pomerleau was awarded the contract for the Muskrat Falls and Churchill Falls sites and H.J. O’Connell was awarded the contract for the Soldiers Pond site
- The contractors were mobilized in 2015 and works were performed into 2016

Mr. DeBourke testified that H.J. O’Connell’s work was exceptional and he considered that firm to be one of the better performing contractors (May 10, 2019, transcript, p. 11). He testified that Pomerleau, on the other hand, had several issues with the execution of its contract. Confidential exhibits were submitted to the Commission that touched on arbitrations between Pomerleau and Nalcor/GE and illustrate some of these difficulties. Because arbitrations are ongoing, I am not delving deeply into this area but I briefly outline some of the issues below.

Concerns with Pomerleau started early in its involvement with the Project. The bid evaluation for CD0504 noted that Pomerleau “did not have a clear understanding of the difficulties of working in a live substation” (P-02995, p. 13). By the second bid clarification meeting, Pomerleau seemed prepared and ameliorated the issues that had arisen in the first meeting. When asked about issues with Pomerleau, Mr. DeBourke testified (May 10, 2019, transcript):

The—initially, it was their delay in mobilizing to site. That was the first thing. It was their plans as well, so safety management plans or construction management plans; the resources assigned, so the—you know, from a construction management standpoint, they were deficient and lacking, also from a quality control side. So that were the big things that stood out in their performance. (p. 11)

Thierry Martin agreed, stating (May 3, 2019, transcript):

In fact, in term of issues with Pomerleau, in fact they started—their mobilization was very slow to start with, so in term of people, material and equipment. Second, in term of schedule management as well, they have difficulties, I will say, to proper, I will say, set all the sequence of works and to maintain, I will say, the contracts schedule. And then as well, issues with the site management, especially in Muskrat Falls and to be able as well to ramp up in term of resources and have the necessary resource to execute the works. (pp. 8–9)

In December 2015 and January 2016, quality and safety issues arose on the Muskrat Falls site related to Pomerleau’s work on CD0504. During formwork removal on the GIS building, GE identified issues with construction quality and instructed Pomerleau to cease

work immediately. According to a letter from GE to Pomerleau dated January 21, 2016 (P-03005):

- Three of the six support columns for the building appeared to have been missed during pours
- Three columns were found to be hollow as the concrete did not pass through the beam and slab rebar
- Other defects were also noted after the GIS slab and beams were stripped (p. 3)

Thierry Martin indicated that the pouring and vibration of the concrete had been poorly done, which had resulted in structural issues with the pillars and the slab's flatness. In his opinion, the root cause was a lack of quality control and the incompetence of the workers. In his testimony, Laszlo von Lazar stated that the GIS building problems were related to the skill of the workers. He felt that the workers performing the pour should have noticed that the concrete was not properly poured (May 3, 2019, transcript, pp. 8–9).

GE attributed the early problems with this contract to lack of site management and supervision, lack of decision-making and leadership, and a lack of supplier capability to execute the work in compliance with good industry practices (P-03005, p. 4). Mr. DeBourke agreed that Pomerleau's problems arose because of poor management rather than craft labour. He testified that Pomerleau seemed overly focused on claims (May 10, 2019, transcript):

[T]hey were claim focused from day one and always looking for an excuse to, you know, point fingers or claim delay and/or cost impacts on the project. So instead of focusing on solutions and overcoming those challenges, their focus was delay claim. That was it. (p. 12)

Mr. DeBourke went on to point out that GE's delays in dealing with change orders had made the situation worse (May 10, 2019, transcript):

It's unfortunate that, again, when change orders arose, either due to late engineering by GE and they weren't dealt with, then obviously, you know, towards the end of that contract, things got, I guess, a little tense just due to the number of change orders outstanding and the monies owed in accordance with the changes that occur in that contract. (p. 12)

Mr. DeBourke further testified that Nalcor was not the cause of the change order delays. He indicated that, if change orders were submitted properly, Nalcor would have turned

them around promptly. He testified that there was a backlog of civil works contract change orders that GE did not manage appropriately (May 10, 2019, transcript, p. 10).

GE saw this differently. For example, Thierry Martin testified that carving off civil works complicated its management of that scope and that the process of having to jointly approve change orders was a cause of delay. He indicated that the arrangement added a second layer of approvals for changes, which included additional validations and discussions on technical aspects and impacts. Mr. Martin indicated that this caused disruptions that could take “days, weeks, sometimes months” to resolve (May 3, 2019, transcript, p. 7). He also advised that his preference would have been to stay with the typical arrangement of having GE manage the civil works scope.

On April 8, 2016, Nalcor issued a project change notice by which the remainder of the civil works scope of CD0504 was transferred back to GE as part of its CD0501 and CD0502 contracts (P-03008, p. 2). Mr. von Lazar testified that, by then, H.J. O’Connell and Pomerleau had mostly finished their respective work scopes and GE awarded the remaining civil scope of work primarily to Pennecon. He noted in his testimony (May 3, 2019, transcript) that the reason GE took back the civil works scope was because

fundamentally the structure of having the contracts directly with the—with Nalcor, but then us having to manage the contracts led to misalignment and we couldn’t execute the work successfully. So we wanted to be able to control the work, be able to execute more productively, execute to a schedule, and make it clear who direction and responsibility was for the performance of the work.

So, we wanted certainty of outcome, from that point forward, because this situation was not productive, and if we continued with it, the delays would’ve kept occurring on the project. (p. 8)

Mr. von Lazar also indicated that, in his experience, he had never encountered this type of joint management arrangement in a lump-sum project contract.

### **THE IMPACT OF CAMP CAPACITY AT MUSKRAT FALLS**

In 2016, issues arose between Nalcor and the contractors about camp capacity and they were severe enough to ultimately affect Nalcor’s scheduling. In order to accelerate construction activities in the wake of the problems with the Astaldi contract, extra worker teams were brought in. The number of labourers at the Muskrat Falls site peaked in 2016,

which caused camp capacity issues. For example, Christian Hébert, a Pomerleau manager, emailed Nalcor's George Cain on May 9, 2016, noting that (P-03011):

- The camp manager had advised that there were no rooms for some workers
- Nalcor had instructed Pomerleau to continue bringing workers on site
- Mr. Hébert had spent the previous day arranging hotel rooms, was unsuccessful in securing rooms that day and he needed some assistance in securing nine rooms
- He had been instructed by Nalcor to cancel one roofing crew because the camp did not have room for them
- There were not enough rooms for the Pomerleau workers (p. 1)

On May 10, 2016, Joel Laflamme, Pomerleau's Project Manager, wrote to Thierry Martin advising (P-03012):

*As per Section 5 of Exhibit 12 of the Agreement: "An accommodation Complex will be made available to the CW Contractor at the Muskrat Falls site. The Accommodation Complex is located approximately 10 km from the Muskrat Falls site. Company will provide room and board free of charge at the Muskrat Falls Accommodation Complex for the use by CW Contractor's Personnel, as Approved by CW Engineer"*

On May 7, 2016 CWC [Pomerleau] received a notice that as of Monday May 9, 2016, the camp will be at full occupation: *"We are not able at this time to confirm all of your reservations for next week. Accordingly, within 24 hours we will advise you the name of your guests that we cannot provide a reservation for."* Despite this notice we were instructed May 8, 2016, by CWE [GE] to continue our mobilization as per schedule.

On the evening of Sunday May 8, 2016 CWC was obligated to send workers to the town of Happy Valley – Goose Bay because no rooms were available at camp. Presently due to the non-availability of camp accommodations and appropriate lodging in the area, CWC had no other choice than to postpone the arrival of our roofing subcontractor's 2nd crew, electricians for conduit installation at the Valve Hall and Control Building, and other trades needed on site as per CWC's planned activities. Furthermore, other critical trades such as reinforcing steel are currently lodged in hotel rooms in HV-GB but hotel rooms are no longer available starting mid-week. These workers will be demobilized

from site. These demobilizations and mobilization cancellations have a snowball effect on all activities.

Despite the fact that we raised our concerns consistently since the notice was received, no contingency action plan, nor instruction was provided in order to address the situation.

The rotation and turn around system in place cannot work with a 24-hour notice. Presently this situation is causing delays on planned activities and it is also impacting productivity of CWC's crews. CWC expect that it will take us a minimum of 2 weeks to get back on track with the planned rotations.

CWC would like to inform CWE that the total cost incurred by CWC for accommodations, transport and nutrition will be computed and billed to the Company [Nalcor]. (pp. 3–4)

On May 18, 2016, Stephen Hall, GE's interim Project Manager, wrote Mr. DeBourke to advise that Pomerleau was having difficulty finding accommodations for workers and staff on site. Mr. Hall indicated that the camp facilities were at full capacity in May 2016 and there was an overflow of workers from camp staying in Happy Valley–Goose Bay private accommodation facilities. On May 20, 2016, Mr. DeBourke responded, advising that (P-03521):

- Nalcor expected that the camp at Muskrat Falls would be near or at capacity for the remainder of 2016
- He took exception to GE's claim that Nalcor gave instructions to cancel mobilization of additional resources
- He disagreed with GE's position that it could not add additional management resources due to a lack of availability of accommodations
- He outlined some actions that Nalcor had taken to alleviate the camp capacity issues, including the provision of \$116 per day to workers to obtain their own accommodations or \$58 for workers who volunteered to occupy a bunk bed in a shared room
- He claimed that GE failed to provide forecasts in accordance with Nalcor's processes (pp. 1, 2)

Thierry Martin testified that the shortage of camp facilities impacted the execution of GE's contracts. Mr. von Lazar testified: "[T]his situation went on for quite a while, and we had cases where we had buses of crafts show up and then got turned around at the

gate and we had to fly them back home” (May 3, 2019, transcript, p. 10). In addition, Mr. von Lazar outlined several impacts that camp capacity caused:

- Managers and workers housed off site in Happy Valley–Goose Bay spent additional time driving to and from the site, which affected productivity and presented safety issues
- There was considerable added cost for providing off-site housing and transportation to and from the job site

Mr. von Lazar testified that the extra cost of transportation and accommodations caused by camp capacity amounted to approximately \$1.6 million (May 3, 2019, transcript, pp. 10–11).

Mr. von Lazar also recalled that GE submitted monthly forecasts to notify Nalcor of the number of craft labourers needed at the site. This enabled Nalcor to prioritize the work, advise the contractors in advance about how many beds were allocated and assess the cost and schedule impact. The advance notice was needed to avoid situations where craft labour was flown to Labrador only to be turned around because there were no accommodations available.

When asked if he had experienced similar issues on any other project he had worked on, Mr. von Lazar testified (May 3, 2019, transcript):

I was a project director for a project where we had 9,000 beds, and . . . managing the beds was always one of the most important things on a project. And we would run into situations where . . . we would have more work than we could perform based on the number of beds.

. . .

[W]hat I would say is the last thing you can be is in a situation where you have to turn around workers because that sends a message to the—to all the workforce. . . . [T]he last job I was running . . . we never had that situation. I’ve never had that situation where we’ve had to turn around people. (p. 11)

Contrary to the testimony of Mr. Martin and Mr. von Lazar, Mr. DeBourke testified that none of the craft labour had been rejected or turned away from site because of insufficient accommodations. He indicated that only GE’s and Pomerleau’s project management teams had to be housed off site and that this was a common arrangement for all of the Project’s contractors. He also explained that there was an overflow camp that was available to support peaks in labour. Although he could not recall what the cost

impacts were for camp capacity issues, Mr. DeBourke advised that they were not significant (May 10, 2019, transcript, pp. 15–16).

I am satisfied that there were issues with camp capacity that adversely affected the execution of GE's contracts. However, not all of these issues were solely the fault of Nalcor.

## TRANSFORMER SHIPMENTS AND PERSONNEL CHANGES

The shipment of the transformers to be installed at Muskrat Falls was significantly delayed because protest activity blocked access to the site in 2016. As a result, Nalcor was required to make alternate arrangements to store the transformers in Bay Bulls, Newfoundland, over the winter of 2016–17. It also had to demobilize the special equipment needed to transport the converter transformers from Cartwright, Labrador, to Muskrat Falls, then remobilize it in 2017. Mr. von Lazar described the events in his testimony (May 3, 2019, transcript):

So the transformers would move by barge from Newfoundland over to Cartwright. And then once they were off-loaded there, then they would be transported by, basically self-propelled, multi-axle trailers. So you'd have a large trailer with six axles that can handle a heavy load that would move these and take them from there to the—from Cartwright to the job site.

And—so what happened was we were directed not to ship the transformers, and we kept 'em in Bay Bulls. And then—and this was in the fall of 2016. And then in the spring, there was the issues with the protests, and there was a—I would say a series of plans that were put together that we—we worked with Nalcor and with our subcontractor, Mammoet, which was responsible for transporting the transformers and eventually—and it just so happened that at that year was the heaviest sea ice, so we weren't able to eventually move the transformers until July.

And then we stuck with—eventually we went to the original plan. So it was multiple plans that were put in place and changes and everything like that, but we eventually went to the original plan of how we were going to move them and what the order was. And we successfully moved them to the job site in July, but, of course, it was a delay of over half a year. (p. 12)

GE claimed that the cost impacts of this delay included additional expenses related to accommodations, transformer heating, storage and preservation. The estimated schedule impact was 57 days.

Not surprisingly, Nalcor and GE disagreed over which party would be responsible for the additional costs incurred by these events. Nalcor's position was that the protests were beyond its control and therefore constituted a *force majeure* event. Scott Bianchi, GE's Project Director at the time, advised Mr. DeBourke on October 20, 2016, that GE did not agree that the protests were a *force majeure* incident, noting that the local population's resentment toward Nalcor had been increasing for some time and Nalcor had not appropriately managed the situation (P-03016, p. 1).

In his response to Mr. Bianchi, dated October 26, 2016, Mr. DeBourke said that Nalcor "has at all times acted in good faith with regard to the Project and any impact of the Project on the environment, the local community and the province of Newfoundland and Labrador" (P-03530, p. 1). He maintained that the situation was beyond Nalcor's control and was not foreseeable. At the hearings, however, Mr. von Lazar testified to the contrary (May 3, 2019, transcript):

And Nalcor's focus here was to say it's a force majeure. So all they're concerned honestly is—to me, okay? This is Laszlo looking at—is to argue the contractual issues rather than focusing on the fact that this is something that's been known for months. Everybody knew about it. There's no one that didn't know about it and—so they were trying to take a contractual position rather than focusing on how do we do this safely and make sure nobody is hurt and that we keep the job site going. (p. 12)

The issue was eventually resolved in 2017 with the signing of an Amending Agreement for both contract packages (CD0501 and CD0502). The total cost of delivering and installing the converter transformers to the site was \$12 million, which included \$7 million for the delivery of all seven transformers to the Muskrat Falls site and \$5 million for the installation of three converter transformers on pads at the site (P-03017, p. 9).

John MacIsaac testified (June 11, 2019, transcript):

So we had to remobilize all of that gear from across Canada and into the US, we had to make road improvements, we had to make bridge provisions. We brought in additional provisions with regard to security and got ourselves to a place where in July and August, with support and agreement from the community stakeholders, we successfully moved the transformers through Cartwright.

So that's the \$7 million, but that included demobilization, storage, remobilization and all of the extra provisions taken around ensuring that we had a successful outcome in moving the transformers.

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The \$5 million is due to the fact that we had previously planned to ship the transformers in the fall of 2016 and we would then work on them in series. We now had lost half a year—more than a half a year. And we didn't want to lose time on the schedule so we brought in additional crews to work three transformers in parallel as we required three to get the first pole in service. (p. 65)

Another concern Nalcor expressed about GE's work was its lack of resources and high turnover in personnel and management. In his testimony, Mr. DeBourke indicated that there was a "revolving door of people from the CEO level down" and the personnel that were brought to the Project were disappointing (May 10, 2019, transcript):

There was a large turnover of people, especially on the site teams, you know, site managers—those things. But also, as I mentioned in my interview, on the CEO—or I would say at the senior exec level, there were—the steering committees, there always seemed to be a new face at the table of someone either, you know, either getting promoted or newly added to the organization. (p. 18)

It was noted that four different GE project managers worked on contract packages CD0501 and CD0502 within a five-year span. When asked to comment on the number of project directors, Mr. von Lazar explained that different director skill sets were needed at different times and timely transfers were made.

Furthermore, Thierry Martin indicated that turnover was caused in part by Nalcor asking for changes in GE's team. For example, during Mr. Martin's tenure as Project Director for GE, Nalcor asked that GE replace two project managers that it felt were not performing. Thierry Martin testified that he had not agreed with Nalcor's assessment of the managers' performance and indicated that he had initially challenged Nalcor. However, he ultimately decided to replace them. Both Thierry Martin and Mr. von Lazar noted that the requests to change personnel occurred more often than they were accustomed to based on their previous experience. Mr. von Lazar testified about the implications of such changes (May 3, 2019, transcript):

If you wanna remove that person, well then, you know, you're telling me that you wanna choose the pitcher who's gonna pitch for my team, right. You can't be effective doing that. You're gonna lose. . . . you're gonna have impacts and those impacts are gonna be the game is gonna be longer and we're probably not gonna do as well. (p. 14)

For his part, Mr. DeBourke maintained that replacing personnel was always jointly discussed and agreed to by Nalcor and GE. He noted that after Thierry Martin left the

Project, GE reached out to Bechtel to deliver the skill sets needed for the work. According to Mr. DeBourke, this resulted in improvement “for a period of time” (May 10, 2019, transcript, p. 18).

Stan Marshall, Nalcor’s CEO, attributed GE’s lack of human resources to struggles at the parent company level. Early on in his tenure as CEO, Mr. Marshall had discovered that GE had removed all the key personnel who were working on developing Nalcor’s P&C software in Stafford, England, and assigned them to a project in Germany. In a May 2019 report prepared for the Public Utilities Board by The Liberty Consulting Group (referred to in this Report as the “Liberty Report”), the situation was assessed like this (P-04354):

It also appears that GE’s current financial troubles have resulted in high staff turnover rates, making it difficult to retain competent personnel. Management reported that GE is attempting to secure other third party support to assist in the development process. This situation will continue to threaten its work on the LIL, as GE management allocates limited resources among multiple clients who, like Nalcor, will pressure them for delay mitigating efforts. (p. 6)

GE’s issues with providing adequate personnel and staff for P&C software development continue to be problematic.

## THE NALCOR/GE RELATIONSHIP: PROJECT BIFURCATION

The impact of the new management structure at Nalcor that Stan Marshall established when he became CEO is noteworthy. That change in management structure had a positive effect on the Nalcor/GE relationship temporarily.

In his testimony, Mr. von Lazar outlined three distinct phases in GE’s relationship with Nalcor (May 3, 2019, transcript):

- From the start of GE’s involvement on the Project until the end of 2016, when both Thierry Martin and Mr. DeBourke were managing the contracts; this period was marked by “conflict and misalignment”
- The period that followed, when Greg Fleming and Steve Follett stepped in to manage the contracts for Nalcor; Mr. von Lazar felt that this was a period of alignment and progress and he commented that

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at this point GE and Nalcor were aligned on how the work was going to be performed

- The period starting in May or June of 2018, which has been marked by misalignment over the functionality of the P&C software and the monopole operations (p. 14)

In general, GE noticed an improvement in its relationship with Nalcor when Stan Marshall assumed the role of CEO and the Project was bifurcated. This bifurcation provided the dedicated management focus on the Project's transmission component that had previously been missing. Mr. Marshall had appointed John Maclsaac as Executive Vice-President, Power Supply (transmission), and focused Paul Harrington's and Ron Power's roles on the generation component. As noted earlier, Mr. Maclsaac then brought in Greg Fleming to be Project Director of the transmission component. Mr. Fleming had previously been the Project Manager for the SOBI, a successfully executed project component. Mr. DeBourke and Deputy Project Manager Trina Troke were then required to report to Mr. Maclsaac and Mr. Fleming.

Mr. DeBourke did not agree with the decision to bifurcate the Project. From his perspective, several issues did not get the necessary attention under Mr. Fleming and Mr. Maclsaac's management. Mr. DeBourke cited a few examples of this when he clashed with Mr. Fleming and Mr. Maclsaac. For example, Mr. Fleming did not give approval for Mr. DeBourke to meet with GE's management in November 2016 to discuss delays with the P&C software. On another occasion, Mr. DeBourke received meeting minutes from other Nalcor employees that noted Mr. Maclsaac had suggested that GE would be removed from the Project (May 10, 2019, transcript, pp. 20–21).

Mr. DeBourke eventually decided that he could not support the change in management and the new approach to managing the GE contracts. He (and Ms. Troke) left the Project in late 2016. Mr. DeBourke testified that, since his resignation, he thought that Nalcor has been "throwing money at the problem" and paying for things that were already covered by the contract (May 10, 2019, transcript, p. 23).

Despite the tension caused by bifurcation, Stan Marshall went forward with Project team changes. Mr. Marshall testified that he felt that the PMT under Edmund Martin's leadership did not fully appreciate the complexity of the transmission system and had focused too heavily on the generation side of the Project. He stated that the generation component was more akin to an oil and gas project. Mr. Marshall further testified that he

still believes that the decision to separate and refocus on the transmission side of the Project was correct: “[H]ere we are today, three years later, the transmission is on the control path despite the escalation we did. So if we hadn’t done that, we’d be in a hell of a mess” (June 28, 2019, transcript, p. 38).

From GE’s perspective, the added focus on transmission was a positive change. As an example of how things improved, Thierry Martin and Laszlo von Lazar commented that there had been a plan for quarterly steering committee meetings involving Nalcor and GE management after the contracts were signed. These meetings were intended to provide an opportunity to discuss and resolve issues. In the period before mid-2016, however, only three or four steering committee meetings had been held. It was not until late 2016 that meetings began to be held regularly. They were then held monthly, not quarterly.

Even with Mr. Maclsaac leading the transmission side of the Project, however, GE continued to struggle, particularly on contract package CD0501. Mr. Marshall testified that his first meeting with the CEO and senior management of GE took place in Paris. He further observed (July 2, 2019, transcript):

At times it was almost in disbelief in that sense that, you know, they didn’t seem to be aware of what was really happening on the ground. They had made commitments and, you know, we did everything we could to help them; we were making progress bit by bit. . . .—but they had serious problems. (p. 7)

Mr. Marshall’s general impression was that GE’s tendency was to over-promise and under-deliver. Given that approach, his focus was to get the contracts back on track and reset the strained relationship with GE.

### **THIRD-PARTY ASSISTANCE: ATCO AND GROWLER ENERGY**

As part of Nalcor’s efforts to find an improved approach to completing GE’s contract packages, Nalcor engaged third parties to assist with GE’s work, with particular focus on supporting the P&C software development and site services. According to John Maclsaac, Nalcor first engaged ATCO, and later Growler Energy, to oversee GE’s factory acceptance tests in its testing facility in Stafford, England. Factory acceptance testing involves testing the P&C software on equipment at the factory to ensure that it is working properly before it is deployed.

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Mr. Maclsaac indicated that Nalcor engaged ATCO for its expertise and support in the completion, commissioning, energization and early operation of the Project's HVdc assets. In 2016, several people from ATCO and Nalcor, including Greg Fleming, formed a new company, Growler Energy Inc. In November 2016, Nalcor engaged Growler on an as-needed basis.

Nalcor did not issue an RFP for the services provided by Growler until 2018. Mr. Maclsaac indicated that this delay occurred because Nalcor wanted to minimize distractions when there was critical work to be performed. The DG3 estimate did not foresee the extent of the engagement with HVdc experts (such as Growler) that was needed. While Mr. Maclsaac could not speak to whether there was budget allocated to these types of services before he came to Nalcor, he indicated that the engagement of Growler was "in compliance with the approved AFE" (June 11, 2019, transcript, p. 72).

Mr. Maclsaac also testified that ATCO and Growler were retained for two reasons:

- To provide expertise on HVdc technology, which was new to the province
- To supervise the contractors' testing activity so that Nalcor was not entirely dependent on GE's word; Mr. Maclsaac explained that Nalcor did not have the expertise to properly monitor GE's progress on the P&C software

Stan Marshall also believed that the hiring of Growler assisted in getting the P&C software developed and on track. He testified (July 2, 2019, transcript):

For example, they'd say, well, what's the dispute here? You know, the—your software is tested at the factory and then we'd point out, yes, but it failed. So, you know, that's a big difference. So there seems to be what John Maclsaac referred to as a data discrepancy here. You know, you couldn't even agree on the facts.

So, going forward, we wanted to make sure that, you know, someone could validate whatever was actually happening so that when we met, between ourselves and GE, somebody would be there to say, no, you've done this or you haven't done this. And so we initially proposed that there'd be sort of an arbitrator—someone to arbitrate the things. (p. 9)

Growler was engaged near the time when Mr. DeBourke left Nalcor. Mr. DeBourke testified that he did not think the hiring of Growler was necessary. He felt that Growler

was just a “go-between” and that GE was of the same view (May 10, 2019, transcript, p. 45). Growler worked closely with GE in Stafford, testing the P&C software.

Mr. von Lazar testified that Growler’s involvement did cause some confusion, delays and conflict, at times, but his overall impression was that Growler added value to GE’s work (May 3, 2019, transcript, p. 18). He testified that Growler had “competent people who knew what they were doing, and they would work with us in terms of developing the testing, what the snags were” (May 3, 2019, transcript, p. 17).

## AMENDING AGREEMENTS

Ultimately the efforts of Nalcor to take a different approach to the relationship with GE culminated in two Amending Agreements: No. 5 for CD0501 and No. 2 for CD0502. Under these agreements, both dated April 13, 2017, Nalcor paid GE \$40 million. The agreements accomplished the following (P-03152):

- Settled outstanding change requests and claims for CD0501 and CD0502 (\$18 million)
- Settled the issue about transportation and installation of the converter stations (\$12 million)
- Introduced a phased approach to the engineering for CD0501 (\$5 million)
- Introduced a phased approach to the design, supply and installation of control cubicles (\$5 million)
- Created a Mutual Release and waiver of claims up to and including February 2, 2017

According to Mr. Maclsaac, the waiver of claims portion of the agreements was important because it covered both parties from both known and unknown claims up to and including February 2, 2017. He testified (June 11, 2019, transcript):

So the opportunity inside of that agreement is to put the cards on the table and not treat them punitively. If you’re trying to achieve a reset inside the relationship, you have to be prepared to demonstrate that we’re prepared to hit the reset button here. And there’s not going to be treatment by us of yourselves in a punitive fashion. (p. 64)

## MONOPOLE/BIPOLE LINKS AND THE P&C SOFTWARE

The April 2017 Amending Agreements also introduced the “phased approach” concept to completing the substation work. In essence, Nalcor and GE agreed to get the transmission system working using a monopole conversion link first and then developing the bipole system, rather than the original plan to implement the (more complex) bipole system first.

In his testimony, Thierry Martin explained the difference between monopole and bipole DC transmission systems (May 3, 2019, transcript, p. 16). In a bipole system, two poles drive power along the transmission line. In a monopole operation, only one pole transmits power. The monopole system’s ability to deliver power and reliability is more limited because, with only one pole, there is no capacity to switch to a second if an interruption occurs. During a converter pole outage, the HVdc system will immediately and automatically reconfigure to operate as a monopole. Thierry Martin also agreed with John Maclsaac’s characterization of a bipole system being analogous to a two-lane highway, with traffic being able to change lanes and continue to move if there is a stoppage in one of the lanes.

After Stan Marshall became Nalcor CEO and John Maclsaac was made Lead on the transmission component of the Project, it became clear that GE would not meet the original scheduled dates of mid-2017 to early 2018 for the bipole system’s commissioning. Mr. Marshall’s examination of GE’s work revealed several problems, among them that GE did not have the necessary resources for developing and testing the required P&C software in Stafford and it was experiencing problems at the parent company level that had an impact at the Project level.

Under the “phased approach” identified in the April 2017 Amending Agreements, GE’s engineering design was changed to first deliver a functioning monopole system on or before December 31, 2017, and then to deliver a functioning bipole system ready for low-power testing by January 31, 2019 (P-03017). The Amending Agreements set out the priorities for the work that was critical for monopole operation in this revised plan.

Mr. Maclsaac testified that he had advocated for this phased approach. He also acknowledged that it was “an imperfect proposal to what was originally proposed,” but he believed that it was an opportunity to get the transmission line working as soon as possible (June 11, 2019, transcript, p. 66).

In his testimony, Stan Marshall explained his rationale for the phased approach as follows (July 2, 2019, transcript):

Rather than try to go for the whole enchilada—you know, bipole, one-time start-up and try to sort out all the problems—we went to a separate package for monopole for pole one.

If I was dealing with this, I would say that's a natural way to progress, you know, energize your line, start sorting out your problems, going from the simple to the more complex; however, that's not the way they proceed. GE is now changing their process, by the way, that they're going to a more generic software package.

...

So by allowing—using the monopole system, like I say, we were able to energize. We went four weeks without interruption at one point; bring power in. You know, at full load we could save about \$330,000 a day bringing power in to displace oil at Holyrood.

But it allowed us [to] identify a lot of hardware problems, a lot of software problems, which now are incorporated into the new package. So it's a great benefit, not only in terms of if you—if it operated properly to save on power, but it also allows you, in the early stage, to sort out those problems and address them early and—so they will have the benefit of that in the bipole package now of identifying certain problems. (p. 8)

Using the phased approach gave Nalcor the ability to take advantage of Churchill Falls' recall power to save money, so there were benefits to getting the monopole operating first. The value of that power, according to Mr. Marshall, was significant. He testified (June 28, 2019, transcript):

I asked the question well, is there an opportunity here? Can we use this line to bring in power from the Upper Churchill? And so I asked our electrical engineers to have a look at it, and they came back very quickly and said that with a \$10 million piece of equipment at Muskrat, we can use that to bring in the power from the Upper Churchill and potentially save, you know, tens or hundreds of millions of dollars in the interim if it works properly.

So I said order that piece of equipment, let's get on with it. (pp. 37–38)

Mr. Marshall also testified that the savings were approximately \$36 million, which included power from Churchill Falls and a small amount from the Maritime Link (July 3, 2019, transcript, p. 25).

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Mr. DeBourke testified that he had not agreed with the phased approach because, at the time, GE would not commit to a bipole completion date. In his view, the phased approach enabled GE to deliver only monopole software and presented a risk to Nalcor of GE not completing the bipole (May 10, 2019, transcript):

So, lo and behold at the steering committee meeting they come forward with a solution that basically says we're only gonna deliver half of the work, right?

So, we have a bipole in our agreement, and yet they feel success is delivering a monopole, you know, later than planned, which doesn't give the province or the project a redundancy that's necessary to reliably transmit power from Churchill Falls to the Avalon Peninsula.

So I was dead against it, and obviously that was something that John and I were completely misaligned on. And, anyway, as I understand it today, these challenges exist. There is no clear solution and path forward to having that resolved. And through my review of the documentation that's been provided, there's been additional monies paid to support the change in software configuration from bipole back to monopole. Again, you know, . . . —that would not have happened under my watch. (p. 24)

As an aside, counsel for Edmund Martin raised an issue at the hearings as to whether the financial benefit of the recall power was Stan Marshall's idea or part of the original plans for the LIL under Edmund Martin. Darren DeBourke's and Jason Kean's testimony indicates that the ability to bring power from Churchill Falls was always in the original plans for the Project's transmission component. Stan Marshall maintained that no one he had spoken to had any awareness of that plan when he brought it up. In my opinion, the fact that there may have been a plan to bring recall power from Churchill Falls at some time is not important. The relevance here is that, as a result of Mr. Marshall's direction, a financial benefit ensued to the Province. The decision to move to monopole transmission when the bipole was not available was a good one.

Nalcor and GE agreed to proceed with the phased approach in April 2017. Less than a year later, Nalcor and GE had to renegotiate the target dates. On December 15, 2017, Nalcor and GE signed two new Amending Agreements: No. 6 for CD0501 and No. 3 for CD0502. These settled the outstanding change orders from 2017 and moved the monopole date from December 31, 2017, to March 31, 2018 (P-03018).

In 2017 and 2018, GE developed and delivered Version 15 of the P&C software. On May 22, 2019, The Liberty Consulting Group issued its *Sixth Quarterly Monitoring Report* to the PUB, in which it noted that first power was transmitted on June 11, 2018

(P-04354, p. 3). Although this marked the start of dynamic commissioning of Version 15 of the P&C software, many problems and bugs were exposed during the commissioning process. In the first quarter of 2019, the monopole operation tripped seven times. The report also indicated the following (P-04354):

Based on our experience, a typical commissioning effort would require about two months, followed by a two-month trial operation period. Despite a duration of some nine months, by the end of the first quarter of 2019, the process still appears far from completion.

...

The LIL transferred recall power from the Churchill Falls converter station to the Island during the first quarter, 2019. Power transfers over LIL Pole 1 reached a maximum of 150 MW - - well below the anticipated 225 MW transfer limits. (p. 5)

Mr. von Lazar testified that the monopole was capable of transferring 225 MW but that Nalcor had limited the transfer to 150 MW because of functionality issues (May 3, 2019, transcript, p. 19).

In 2018, disputes about the functionality of Version 15 of the monopole software occurred. One of the major disagreements between Nalcor and GE was over the software's ability to automatically switch between lines in the monopole, a fundamental feature that Nalcor felt was "critically required" for monopole operation under Priority 1 of the April 2017 Amending Agreements. Without the automatic switching feature, the monopole operation required manual switching, which was not instantaneous and resulted in longer interruptions.

GE argued that automatic switching was always a Priority 2 item, and was not "critically required" for the monopole operation. Mr. von Lazar pointed out that the monopole had been operating since the line was first energized. He added GE's delays were caused, in part, by Nalcor indicating that GE was "impacted because what Nalcor kept saying they wanted first or wanted as a second priority or a third priority kept changing" (May 3, 2019, transcript, p. 21). This disagreement led to further Amending Agreements, which were signed on January 31, 2019 (No. 7 for CD0501 and No. 4 for CD0502). Mr. von Lazar testified (May 3, 2019, transcript):

[W]e're saying: We're done. Nalcor says: You're not done. And all of a sudden, everybody gets focused on that rather than executing the work. So, all the

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people who are supposed to be doing the software are sitting down across from each other, arguing about why we're done or why you're not done. Right?

And very unproductive—led to a very unproductive period where progress wasn't being made. And so, the purpose of this agreement was, again, do the same thing, let's put something down that will be the plan the project will execute to until the end which, again, the goal—which was the goal with amendment 5 also—have a plan, have a goal, and then go execute to that.  
(p. 19)

He further stated that the January 2019 Amending Agreements refocused on completing the bipole system. The bipole dynamic commissioning date was moved from January 31, 2019, to October 31, 2019.

On May 1, 2019, an updated Version 17C of the monopole software (which included an automatic switching feature) was installed and commissioned on pole one over a four-week period (P-04414, p. 26). Mr. von Lazar testified that Version 17C of the software update had been delivered to Nalcor in December 2018, but because the system had to be taken offline to install it, Nalcor chose to delay the installation of Version 17C until after the period in which it needed to use the monopole to transmit recall power (May 3, 2019, transcript, p. 23).

According to an Oversight Committee presentation dated June 27, 2019, GE's plan was to deliver the bipole software by the end of August 2019.<sup>7</sup> The dynamic testing of this version of the bipole software was planned for September and October 2019. The Oversight Committee's presentation also indicated that the final version of the bipole software was expected to be delivered to Nalcor in early 2020. It also noted, however, that "Bipole software completion and dynamic commissioning remains the largest risk for Power Supply. As of the end of March 2019, there is little if any schedule float remaining in the project schedule" (P-04414, p. 27).

At the time of his testimony, Mr. von Lazar indicated that the bipole system would be installed, tested and available for use in October 2019. He further indicated that at the time he left the Project, in January 2019, he was not aware of any extraordinary issues but "there's always issues on a project. There's never not issues" (May 3, 2019, transcript, p. 24). Mr. von Lazar was asked about what would happen if the bipole software was not ready when the first turbine at Muskrat Falls comes on-line. He stated that he believed that, if that occurred, the monopole software would be able to reliably send 206 MW via the LIL.

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<sup>7</sup> A subsequent Oversight Committee report has been issued and is available at [www.gov.nl.ca/MFOversight/](http://www.gov.nl.ca/MFOversight/).

Thierry Martin stated, however, that monopole software is limited and the bipole software would be needed when two generation turbines came on-line.

In July 2019, Stan Marshall testified that he remained optimistic about GE's progress (July 2, 2019, transcript, pp. 10–11). He stated that the risk of a completely non-operational system in the winter of 2019–20 was very low because the earlier versions of the software are capable of delivering power with manual switching operations. He added that, in addition to having the option of using earlier versions of the software, Nalcor had contingency plans in place for wheeling Muskrat Falls power through the Upper Churchill transmission line and exporting it through Québec.

In October 2018, Nalcor prepared the presentation deck “GE Global Performance” (P-03019). It contains updates on GE projects in other countries, including the SouthWest Link in Sweden, Champa-Kurukshetra in India, DolWin3 in Germany, Konti Skan between Denmark and Sweden, and Rio Maderia in Brazil. The presentation reported some major delays and problems on some of these projects, including:

- The South West Link Project is 4+ years behind schedule: “GE pushed the scheduled [*sic*] forward in small step [*sic*] – 1 to 4 months at a time. Delays are a result of consistent problems with technical solutions from GE”
- The dynamic commissioning of the bipole for the Champa-Kurukshetra Project was 6 to 7 months late and the bipole was not fully functional and experienced regular trips
- Delivery of the Rio Maderia Project was two years late and there had been several revisions of software (pp. 3, 6, 8)

Mr. von Lazar's response to the delays on the SouthWest Link and DolWin3 projects, cited in the Nalcor presentation, was that these projects used different technology from that used at Muskrat Falls, so they were not comparable. However, he made little comment on the other projects and their problems. When asked at the hearings whether GE's performance on these other projects presented any issues about its ability to complete the Muskrat Falls transmission line and deliver the P&C software, both Mr. von Lazar and Thierry Martin answered that they did not believe that it would (May 3, 2019, transcript, p. 27).

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## CONCLUSIONS

I find that the early problems in the execution of the GE contracts are directly linked to the low DG3 estimates. As was the case with most of the Project's major contracts, the bids for the HVdc specialties contracts came in significantly higher than the estimated cost at DG3. As a result, Nalcor was forced to negotiate with bidders to find ways to decrease the price. In the case of these contracts, several attempts at cost-saving measures complicated the management of contract execution and that, in turn, translated into additional delays and costs. Further problems were caused by the Astaldi delays, by protests at the Muskrat Falls site and by insufficient bed space for workers at the site camp.

I have significant concerns about GE's performance to date, and also about its ability to deliver the P&C software. It appears that the potential for further delays in the delivery of this software still exists beyond the Oversight Committee's updated milestone date of March 2020. GE has experienced problems in timely delivery on other projects and its pattern of delays in delivery does not instill confidence. It is entirely possible that the Muskrat Falls generation turbines will come on-line before the LIL is fully operational with functional P&C software.

Nalcor has, to its credit, been attempting to work with GE on this. If Nalcor had continued with the conflictual style displayed early on in the management of this contract continued, it is likely that the completion of both contracts would be further delayed. There was a good reason to use the phased approach, in my view. It is evident to me that the move to bifurcate the Project so as to provide more focus on transmission was absolutely necessary.

After the Commission's hearings had concluded, there were public reports of possible problems with the synchronous condensers at Soldiers Pond. The Commission did not investigate this issue and cannot provide any comment on it.

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## CHAPTER 17: THE ANDRITZ CONTRACTS

Andritz Hydro Canada Inc. (Andritz) is a Canadian corporation headquartered in Pointe-Claire, Québec. Its parent company is Andritz A.G., a global corporation headquartered in Austria that develops production systems and industrial process solutions, including electromechanical equipment and services for hydropower plants. Andritz has extensive experience and has had success on projects around the world. The company has worked on many projects similar to Muskrat Falls, including the Wuskwatim generating station in Manitoba and the Lower Mattagami River project in Ontario.

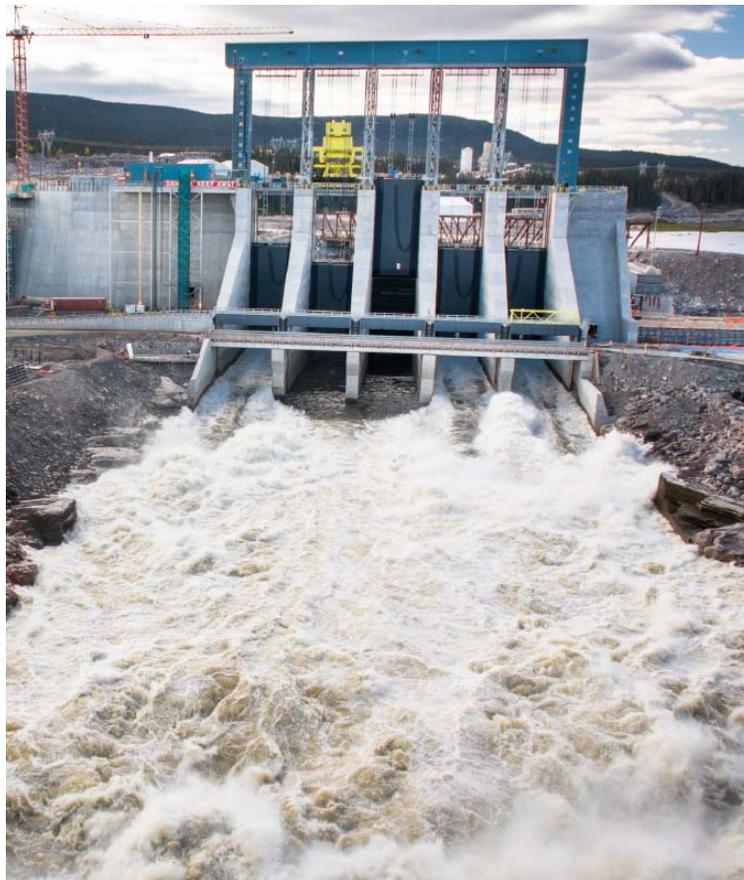
Nalcor awarded Andritz two contract packages for the Muskrat Falls Project:

- **CH0030** for the design, supply and installation of turbines and generators: These components consisted of four Kaplan turbine and generator units, each with a capacity of 229 megavolt amps; this contract was signed with Andritz on January 2, 2013, to ensure delivery of these long-lead items in time to meet the Project schedule for first power
- **CH0032** for the design, supply and installation of the powerhouse and spillway hydro mechanical equipment: This contract was signed with Andritz on December 18, 2013, shortly after Financial Close

Package CH0032 included the following components:

- **Spillway:**
  - The spillway is built into the dam and is the structure through which water not used for power generation is released from the reservoir into the downstream area
  - The spillway at Muskrat Falls has five bays, each with a spillway gate and hoist, four sets of gate guides, and stop log guides
  - The gates and guides regulate the flow of water; the hoists open and close the gates and are operated using hoist bridges

- Stop logs adjust the water level and divert water during construction and operation; their guides are heated to enable year-round operation
- The spillway includes mechanical and electric auxiliaries and architectural interior works
- The spillway electrical building is located in the central transition dam; it houses a transformer, AC distribution for the spillway equipment, spillway gate controls and a backup diesel generator



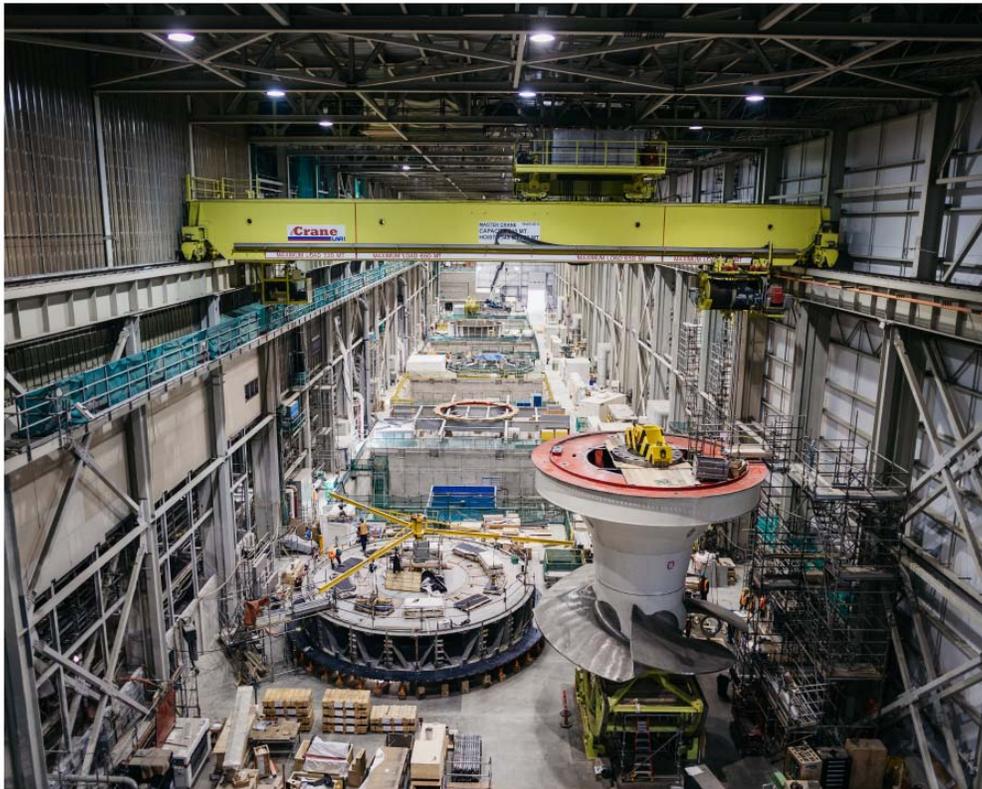
*Figure 3.30: The Muskrat Falls Spillway and Gates*

- **Powerhouse:**

- The Muskrat Falls powerhouse (the generating station) has four turbine generator units; each unit has three intake bays

and each of those have trash racks and guides, bulkhead gate guides and an intake gate and guides

- The powerhouse components also include draft-tube hydro mechanical equipment and handling equipment; each of the four turbine generator units has two draft tube outlets that connect to the turbine exit and tailrace, and each outlet has stop log guides that can isolate turbines for maintenance



*Figure 3.31: The Muskrat Falls Powerhouse*

- **Trash-cleaning system:**

- This system cleans the trash that collects in front of the powerhouse intake; it includes an arm that travels on rails and that is used to clean trash racks, floating service debris and the upstream debris and sediment trap

Contract package CH0030 (turbines) did incur cost overruns, but because Grant Thornton identified contract package CH0032 (powerhouse and spillway mechanical

equipment) as one of the six work packages that contributed most significantly to the Project's total cost overruns, my primary focus in this chapter is on contract package CH0032. The value of this contract was \$204,938,732 (P-01884, p. 1438).

### CH0032: POWERHOUSE AND SPILLWAY MECHANICAL EQUIPMENT

The bulk of the work under CH0032 on the spillway and the powerhouse hydro mechanical equipment was performed by the following four subcontractors of Andritz:

- **CRT Construction (CRT):** A civil subcontractor, CRT did the secondary concrete scope, installing the imbedded mechanical works for the guides
- **Canmec Industriel Inc.:** A mechanical subcontractor, Canmec installed the gates, stop logs, trash rack cleaner and other mechanical parts
- **Grimard:** A construction subcontractor, Grimard built the spillway electrical building and supplied some electrical components
- **Iskueteu Limited Partnership:** An electrical subcontractor

Andritz coordinated and managed the work of these subcontractors, ensuring that specifications were met. Andritz had a full management team on site and brought in a specialist to coordinate the Canmec and CRT installation work.

### Cost Overruns

The DG3 base estimate for CH0032 was \$102 million and the contract was awarded for approximately \$205 million, more than twice that amount. The difference was largely because of price escalation over time and work transferred into this contract from other work packages. According to Grant Thornton, the balance of the variance was due to air travel and a labour rate difference (P-01677, p. 59).

My ability to provide a full account of the financial and cost information pertaining to this contract in this Report is restricted. Much of the relevant information in the Grant Thornton *Construction Phase* report was redacted because the outstanding claims under this contract had not been settled during the time of the hearings. However, it seems clear that the significant overrun on work package CH0032 was attributable to the contract

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being awarded in excess of the revised estimate, approved change orders (totalling \$91 million) and unallocated budget (P-01677, p. 59).

The scope changes for this package that contributed in large part to the revised estimate of its cost included:

- Full scope transfer from package CH0046, for the supply and installation of the spillway hydro mechanical equipment
- Transfer of the spillway electrical work from package CH0031 (the supply and installation of mechanical and electrical auxiliaries)
- Transfer of spillway and intake secondary concrete work from package CH0007 (this involved the construction of the intake powerhouse, spillway and transition dams)
- Transfer of air transport services from package CH0032 to package SM0709
- Change orders on the optimization of the spillway gates

Of the \$91 million in Project change orders for contract CH0032, \$78 million was attributable to Change Order No. 5 (for \$20 million) and Amending Agreement No. 1 (for \$58 million). Change Order No. 5 was issued for the addition of secondary concrete work to CH0032. Amending Agreement No. 1 covered the settlement of delay claims and extension of time claims caused by Astaldi's slow progress on the Project.

### **Bid Evaluation Process**

For this contract, the RFP was issued to six pre-authorized bidders on December 7, 2012. They were:

- Alstom Power & Transport Canada Inc.
- Andritz Hydro Canada Inc.
- Black & MacDonald Ltd./AFI/Hatch
- Ganotec/Canmec Industriel Inc.
- Korea Hydro/Daewoo International Corp.
- HMI Construction/LAR/Sunny Corner

The bid proposals deadline was February 19, 2013, with a date of April 16, 2013, for revised bid proposals. Revised proposals were received from four of the six proponents at that time. Black & MacDonald/AFI/Hatch and HMI Construction/LAR/Sunny Corner did not submit a further proposal. Following a series of bidder clarification meetings, the evaluation began to focus on Andritz as the preferred bidder.

At the end of October 2013, the bid evaluation team submitted an award recommendation for Andritz, which was subsequently approved by Nalcor's PMT.

### **Contract Execution**

In the early stages of this contract package, it was apparent that Astaldi's slow progress on the spillway structures would impact the commencement of Andritz's work. Andritz also experienced some initial start-up problems of its own. On February 28, 2014, just over two months after signing the contract, Andritz and Nalcor met to discuss Andritz's team performance, the turnover of personnel in key roles, the late start of some key personnel, passive leadership, design and quality management, and communication problems (P-02876, p. 5).

These issues persisted into 2015. In a presentation deck summary of a meeting on January 20, 2015, held in Linz, Austria, Nalcor identified several issues with Andritz's performance including (P-02885, p. 8):

- Project team misalignment between the Andritz project team in Linz and the Andritz project team in Montréal, which was causing issues with fabrication
- The lessons learned in quality control process from the CH0030 package that were not being applied to package CH0032
- Quality control issues that were occurring in China, where components were being fabricated without the proper quality controls in place

### **Change in Project Manager**

In February 2015, Bill Mavromatis was appointed Andritz's Project Manager for contract package CH0032, replacing Mathieu Bertrand. Previously, Mr. Mavromatis had been assisting and coaching Mr. Bertrand. Mr. Mavromatis testified that, at the time,

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Mr. Bertrand did not have the experience in project management that was “required or appropriate” to deal with the issues that were arising (April 5, 2019, transcript, p. 7). Mr. Bertrand continued to work on the Project as Andritz’s Installation Coordinator.

Mr. Mavromatis testified that the main issue he faced after being appointed Project Manager was the quality of the manufacturing occurring in China and the management of the fabrication of some of the CH0032 components. In addition, Andritz had ordered the fabrication of the spillway roller gates and other components before receiving final approval on the design from Nalcor. A further issue involved the manufacture of the skin plates used in the gates and stop logs—they were considered to be too thin and new material had to be ordered. This, in turn, caused a delay in the manufacturing schedule. Because there were additional manufacturing quality issues, Andritz had to re-test all structural materials in a lab after their arrival on site to verify they had the proper chemical and mechanical properties.

There was also an issue with the paint coating on some of the components manufactured in China. Mr. Mavromatis testified that, in his experience, the Chinese factories tended not to focus on the appearance or coating thickness of paint. Painting quality was a concern for Andritz and Nalcor, so a more robust process control on the painting was implemented. It included close monitoring and inspections by Nalcor. Mr. Mavromatis testified that the paint issue was largely resolved after “great pains” were taken (April 5, 2019, transcript, p. 10).

### **Key Change Orders and Amending Agreement No. 1**

**Change Order No. 5:** In July 2014, Andritz subcontracted with Canmec Industriel to perform the installation work on the powerhouse and spillway. On November 24, 2014, Nalcor issued Change Order No. 5. This transferred additional contract work to Andritz worth \$20 million. The secondary contract work included placing concrete for the intake and the tailrace guides for the gates and the stop logs. This scope of work was performed by an Andritz subcontractor, CRT.

**Change Order No. 6:** During the first year of the contract’s execution, it was evident that the schedule in the contract package was not being met. The original plan was to complete the spillway works in 12 months. According to Mr. Mavromatis, a 12-month cost-optimized schedule was established to provide enough schedule flexibility to enable Andritz to perform its work at a low cost.

Prior to Change Order No. 6, Andritz had been preparing for mobilization. It had selected Canmec as its installation coordinator for the mechanical scope of work and Andritz employees and management at the site had been monitoring the quality of the primary imbedded parts that Astaldi was installing. It became clear to Andritz that the rate of progress on these and other civil works was not going to allow it to work on the upstream side of the spillway in February 2015, as had been planned.

Consequently, on September 10, 2014, Mr. Bertrand wrote Scott O'Brien advising that it was apparent to Andritz that the upstream spillway work and mobilization date of February 15, 2015, could not be met and that there would be resulting impacts on cost and schedule (P-02878). Two weeks later, Mr. O'Brien replied that Nalcor was looking at the dates and would follow up.

Nalcor finally issued Change Order No. 6 on March 18, 2015, more than six months after Andritz's letter and a month later than the original upstream spillway mobilization date. The effect of this change was that the milestone dates set out in Exhibit 9 of CH0032 for the spillway mobilization (February 15, 2015) and the downstream mobilization (August 1, 2015) were removed. They were replaced with a "60-day notice" for mobilization, meaning that Nalcor would provide notice to Andritz at least 60 days ahead of the required mobilization. The reason for the change was that Astaldi's slow progress was delaying site availability for Andritz to do its work. It appears that Nalcor was unable to provide Andritz with any solid mobilization dates until it could gain more certainty about Astaldi's progress. Nalcor later agreed to change the notice period for mobilization to 90 days, in order to give Andritz and its subcontractors more time to prepare for mobilization.

On March 31, 2015, Scott O'Brien wrote Mr. Mavromatis stating: "We are not requesting you to alter your manufacturing and delivery schedule for your equipment and materials. . . . Please continue to respect these delivery requirements" (P-02892, p. 1). Mr. Mavromatis testified that the delays at the site did not ultimately have an effect on manufacturing and deliveries, and he confirmed that Nalcor never requested Andritz to adjust its manufacturing plan or to hold off on manufacturing or deliveries (April 5, 2019, transcript, p. 13). It was Mr. Mavromatis' opinion that, as a result, Nalcor assumed the risk of the extra storage cost once the components were delivered earlier than necessary (that is, before the site was ready for their installation). On May 26, 2015, Nalcor gave Andritz a 90-day notice to mobilize for the purposes of work on the upstream spillway (P-02894).

**Change Order No. 10:** In mid-2015, Nalcor and Andritz were in the midst of meetings and workshops related to contract package CH0032. According to Mr. Mavromatis, in June 2015, Andritz was advised that Nalcor intended to meet the river-diversion objectives for construction purposes in 2016 and requested that Andritz prepare proposals with plans that would allow Nalcor to achieve the 2016 date for river diversion despite the delay in Astaldi's civil works.

Nalcor clarified these dates in a letter dated July 10, 2015. It specified that the new mobilization date for the downstream spillway components was to be September 1, 2015, and that the new mobilization date for the upstream spillway components was to be November 1, 2015. Mr. Mavromatis explained that this letter presented the option for Andritz to begin the downstream spillway work before the upstream spillway work was done.

Astaldi's lack of progress on the spillway continued to delay the upstream work. As a result, Nalcor gave Andritz the option of starting on activities that would not adversely affect the critical path and might even provide some advantages. Since the downstream spillway work would not impact river diversion, it would benefit Andritz to start on that site earlier, refine its processes, gauge productivity and calibrate its productivity assumptions before beginning on the upstream spillway activities, which were on the critical path for the schedule. Andritz discussed this suggestion with its subcontractors and ultimately decided to proceed with the downstream activities first.

Mr. Mavromatis testified that in the first week of September 2015, Andritz's subcontractor arrived at the downstream spillway site to discover that Astaldi was still working in the area and causing obstructions on the site. As a result, Andritz and its subcontractor had insufficient space to offload equipment on the downstream channel. The subcontractor reported that site obstructions made it impossible to start on the downstream works. Furthermore, the subcontractor indicated that there would be possible claims for the cost of mobilization it had performed in anticipation of starting this downstream work. Mr. Mavromatis further testified that Andritz then implemented a workaround by offloading its equipment in a different laydown area, pre-assembling the components in that area and transporting them to the downstream location. He testified that this resulted in a delay in its downstream spillway activities.

On November 2, 2015, Nalcor issued Change Order No. 10. It directed Andritz to accelerate the spillway installation schedule to meet river-diversion requirements by

June 15, 2016. Specifically, Andritz was to accelerate the upstream spillway work because its completion was needed to achieve readiness for river diversion. This change order was for a lump sum of \$3.37 million based on Nalcor's estimate. The change order also provided a \$2 million incentive payment if Andritz was able to complete the work by June 15, 2016.

At the time, Andritz had only completed about 30% of the downstream spillway work. Mr. Mavromatis indicated that Change Order No. 10 effectively introduced two milestones, one for river-diversion readiness (upstream work) and the other for completion of the remaining work for head-pond-readiness before the winter freeze. Mr. Mavromatis testified that it was his understanding that Nalcor was committed to river diversion in 2016 and that there would be "serious commercial consequences" if it did not meet that date (April 5, 2019, transcript, p. 16). Mr. Mavromatis estimated that, as a result of this directive, about 85% of Andritz's upstream spillway work was compressed from 12 months into a 4-month schedule. The downstream spillway work remained on a 12-month schedule.

From Andritz's perspective, Change Order No. 10 was an "invalid directive" that raised several issues (April 5, 2019, transcript, p. 18). Andritz's position was that Nalcor could not unilaterally impose milestone date changes without Andritz's agreement. It did not accept or commit to the river-diversion date specified in Change Order No. 10 (June 15, 2016). In his testimony, Mr. Mavromatis said: "[W]e were concerned it was very tight. There was no float, no schedule flexibility, very difficult to achieve" (April 5, 2019, transcript, p. 17). He further explained that without float, any delay would directly postpone the river-diversion date.

Andritz also disputed Nalcor's change order price. Mr. Mavromatis stated that leading up to Change Order No. 10, Andritz had submitted proposals for the accelerated work and was in communication with Nalcor's management about the change order price. Andritz had proposed \$10 million for the acceleration (P-02948, p. 10). Nalcor rejected that proposal and relied on its own \$3.37 million estimate. Andritz acknowledged that the contract allowed Nalcor to direct it to accelerate the work. However, without an agreement on price, Andritz took the position that it would proceed on a cost-reimbursable basis. Nalcor was not in agreement with Andritz's view on this.

Regardless of this dispute, Andritz reverted to the original baseline plan, which involved completing the upstream spillway work first. Equipment that it had been using in its downstream work had to be moved to the upstream area. Under Change Order

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No. 10, costs increased because of the amount of work that needed to be completed in the compressed time frame. Mr. Mavromatis indicated that more workers were required to complete the job over a shorter period of time and some productivity losses occurred. Additional management staff, coordination staff and equipment were also needed. Andritz began submitting time sheets and invoices for all this to Nalcor. Nalcor acknowledged receipt of the time sheets but did not approve payment.

Mr. Mavromatis also testified that the acceleration change order made it more difficult to manage Andritz's subcontractors. The subcontractors were concerned about cash flow issues and were uncertain that they would be compensated fairly. Andritz negotiated an agreement with Canmec, the mechanical subcontractor, in which it guaranteed payment for all work hours logged so that Canmec would continue to work. For its civil subcontractor, CRT, Andritz committed to a fixed-price purchase order. According to Mr. Mavromatis: "[B]asically, we had to fund the acceleration to make sure that . . . we were proceeding with the work, to a certain extent" (April 5, 2019, transcript, p. 22).

On March 4, 2016, Nalcor sent a Performance Default Notice to Andritz (P-02920), threatening to draw on Andritz's Letter of Credit "to pay for Company's [Nalcor's] losses caused by Contractor's [Andritz] failure to complete by June 15, 2016, the work required for river diversion. Those losses will exceed \$15 million." The letter further stated (P-02920):

Company wishes to express, in the strongest terms possible, our total dissatisfaction with Contractor's performance with specific respect 'inter alia' to a number of crucial obligations which have been ongoing and remain unresolved since late 2015 as follows:

1. Failure to execute the works in a timely manner;
2. Failure to provide and maintain appropriate site management and craft resources and managing the requirements of the day-to-day site activities;
3. Failure to manage and control Contractor's sub-contractor;
4. In addition, Contractor has also failed to
5. Promptly respond, appropriately address and resolve Company identified concerns and site issues thereby directly impacting the schedule and placing the river diversion date of June 15, 2016 in jeopardy.
6. Comply with formal issued instructions and change orders (with particular respect to change order No 10) irrespective of any

disagreement regarding commercial terms as per Article 26.5 & 26.6 of the Articles to the Agreement. (p. 1)

Scott O'Brien testified that Nalcor was forced to issue the default notice because Andritz was refusing to perform the work despite Nalcor's repeated appeals and efforts to negotiate with Andritz. In his testimony, Mr. O'Brien said: "[I]t wasn't until that notice of default was issued that the contractor actually came to the table and performed the work as required" (May 31, 2019, transcript, p. 21).

In response to the filing of the default notice, Andritz filed a court application (May 16, 2016) to prevent Nalcor from drawing on its Letter of Credit. Mr. Mavromatis acknowledged that the notice of default was a more severe action than the letters he had been receiving from Nalcor, and he believed that Andritz had strong arguments against the notice. He added that he also believed the notice was sent to apply more pressure on Andritz to achieve river diversion in 2016.

On May 25, 2016, as a result of the Andritz court application, Nalcor sent Andritz a letter stating that the defaults had been rectified and that Andritz was no longer in default. Andritz ultimately discontinued its court application on February 7, 2018, after the parties settled on Amending Agreement No. 1, which related to cost compensation for the acceleration.

As the preceding list of events suggests, many strongly worded letters were exchanged between Nalcor and Andritz, several of which were entered into evidence. In a letter dated April 13, 2016, Nalcor wrote (P-02928):

Contractor is incorrect in asserting that it is performing the work on a cost reimbursable basis rather than a lump sum. Under no circumstances has Company suggested or agreed that Contractor would be reimbursed for its failure to manage, plan, coordinate, control and execute the works in a timely manner. (p. 1)

Numerous other letters indicated Nalcor's dissatisfaction with Andritz's efforts to accelerate the spillway work. The volume of letters and correspondence between Nalcor and Andritz is notable. Mr. Mavromatis testified that, although he had only worked on four projects as the project manager, there was more formal correspondence between Nalcor and Andritz than he had experienced before. For example, as project manager on the Lower Mattagami project, only 20 letters were exchanged between the owner and Andritz. The volume of letters for this Project required Mr. Mavromatis to hire a support

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person to manage the correspondence with Nalcor—the first time Mr. Mavromatis had ever had to implement this process.

Mr. Mavromatis testified that despite the tone and volume of the letters, Andritz's objective was to complete the work and resolve the commercial issues later. Throughout ongoing discussions and meetings with Nalcor, Mr. Mavromatis indicated that he had been given assurances that Andritz would be treated fairly regarding the price of the acceleration works. For example, Mr. Mavromatis pointed to the conciliatory tone from Nalcor in a letter dated May 25, 2016, that stated (P-02971):

[O]ur meeting of 19 May 2016, has provided a basis for continued performance to achieve Company's objectives for river diversion. In addition, Company and Contractor have agreed to an approach to resolve commercial issues relating to Change Order No. 10. (p. 1)

In his testimony, Scott O'Brien said that Andritz wrote more letters than Nalcor did. He noted that Andritz had a dedicated team responsible for "preparing the letter correspondence that they deemed necessary to manage their commercial positions" (May 31, 2019, transcript, p. 21). Mr. O'Brien further testified that this was the normal practice for all contractors on the Project and across all major projects. When asked about his impressions of the execution of contract package CH0032, Mr. O'Brien indicated that there were challenges but there was "nothing that I would characterize as out with the realm of normal commercial, contractual, technical issues" (May 31, 2019, transcript, p. 19). He further testified (May 31, 2019, transcript):

The approach of commercial letter writing is very normal, it's the way that projects are run. It's critically important that letters be written to document issues, that letters be written to document deficiencies, that letters be written to document and refute the assertions that are being made by the contractor organizations.

Those letters become the project record, they become the vehicle by which to address claims. In the future, they come—they become the vehicle by which to address commercial closeout. And it is the way projects work. It's—there are groups within the project teams who support that, work through that.

And it's not a distraction but rather the normal course of business. (p. 21)

The river diversion occurred on July 26, 2016, just over a month later than had been contemplated by Nalcor when Change Order No. 10 was issued. Andritz successfully achieved the execution of the accelerated activities. Mr. O'Brien noted that some of the

milestone definitions were scaled back in order to allow Andritz to complete the acceleration work.

**Amending Agreement No. 1:** Andritz and Nalcor entered into mediation in October 2017 and eventually settled their disputes regarding Change Order No. 10 by negotiating Amending Agreement No. 1. The mediation also directly involved Canmec and CRT, Andritz’s major subcontractors.

Amending Agreement No. 1 came into effect on November 21, 2017 (P-02958). In addition to settling the claims that arose from Change Order No. 10, the agreement also satisfied claims for costs related to the extended milestones. The total settlement amount was \$58 million, \$24 million was for acceleration and change-of-site conditions on the spillway, \$34 million was for delays caused by Astaldi. In Amending Agreement No. 1, Nalcor and Andritz also agreed on a new schedule for the powerhouse and draft tube scopes of work.

Mr. Mavromatis testified that after Amending Agreement No. 1 was signed, the contract ran more smoothly (April 5, 2019, transcript):

[W]e had a plan. . . . we agreed on a schedule; we agreed on this cost, we agreed on what changes to the site conditions we would seek. And so we were better prepared, we had a better plan with fixed dates.

At the same time, I think Nalcor improved their coordination of their contractors at the site. The handover process was greatly improved. (p. 37)

### **CH0030: THE STORAGE AND PRESERVATION OF TURBINES AND GENERATORS**

Construction delays on the site had implications for the timing of the fabrication and delivery of the turbines and generators. The plan was to ship the components in pieces and assemble them during installation. Nalcor had instructed Andritz to continue with fabrication and delivery of Project components as scheduled, pursuant to contract package CH0030, notwithstanding the delays. As a result, the turbines were delivered well before the powerhouse was ready for their installation.

A January 2017 Nalcor presentation (“CH0030 Preservation and Storage”) noted that as early as 2013 Nalcor had recognized that “there would be a storage requirement” for the turbines and generators, and that “CH0030 and CH0007 milestone schedules did not

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align” (P-02950, p. 4). Consequently, work began on the development of a packaging and preservation system for the parts to be stored.

Andritz provided a storage proposal plan in the fourth quarter of 2014. It specified that indoor climate-controlled storage was needed for critical components, such as electrical equipment, instruments and bearings. Less critical parts, such as nuts, bolts and small crated items, required simply indoor storage. As well, according to the Andritz plan (P-02950, p. 5), large mechanical and structure components could be stored outside.

In January 2015, a change order was issued for rental of a hangar in Goose Bay for some of the components requiring indoor storage. The second and third shipments from China arrived in August and November 2015. In January 2016 another change order was issued for heated storage in Montréal. The last shipment of components from China arrived at the Project site’s marshalling yard in August 2016.

Nalcor performed storage audits in 2015 and 2016 and sought assistance from a third party to review the preservation system and plans for the parts in storage (P-02950, p. 4). The 2015 inspection of the components stored outdoors in Labrador found that their tarp coverings had been damaged. Inspections in March/April 2016 discovered that the protective coating on the surface of the machines stored outdoors was not performing as well as expected. An August 2016 inspection indicated water damage, corrosion and rust on some components, including the stay ring and head cover. Repackaging of components stored outdoors occurred in November and December 2016.

Perry Snook, a Quality and Inspection Coordinator for the Project at the time, testified that workers on site questioned why the CH0030 components were brought to the site so early. Mr. Snook recalled that Nalcor initially paid significant amounts to Andritz for storage. He also recalled that there were issues with the preservation system (a layered protection system) and the failure of the preservation coating (the first layer of protection) that was applied to parts of the equipment (March 15, 2019, transcript, p. 25).

A Nalcor presentation dated January 11, 2017 (“Status of CH0030 and CH0032 Packages”) stated (P-02976):

- Delays in the civil construction has resulted in a delay in the execution of the T&G [turbines and gateways] installation phase by approximately two years. This along with changing site conditions versus the original contract (i.e. powerhouse staged erection, wash cars, etc.) would result in additional costs.

...

- Change orders have been put in place to cover storage, inspections and increased preservation. Storage and preservation is an area which will require continued focus. (p. 5)

I understand that there is an ongoing commercial dispute over liability for storage costs and damage to the equipment while it was stored. This dispute involves contractual terms relating to title transfer and liability for the failure of the preservation system.

I will not make findings on the management and execution of contract package CH0030. However, it is clear that there were significant delays and costs incurred as a result of Astaldi's poor performance that greatly affected the execution of package CH0030. The components for this scope of work were fabricated and shipped well before they could be installed. The resulting costs, including additional storage, transportation, preservation and refurbishment, are matters that are still in dispute.

## CONCLUSIONS

It is clear that the DG3 base estimate for contract packages CH0032 and CH0030 were too low. I find that the overruns on these packages were primarily caused by delays in the Astaldi contract (CH0007). They hampered and restricted Andritz's access to work sites and impeded its work progress.

Further, I am satisfied that Nalcor made a reasonable decision on contract package CH0032 to provide for a lump-sum price in Change Order No. 10 in order to accelerate work, rather than accept Andritz's position that it be paid on a cost-reimbursable basis. In these circumstances, it was also a reasonable strategy for Nalcor to encourage Andritz to focus on completing the work with the assurance that the commercial issues would be resolved at a later date through appropriate dispute resolution mechanisms.

I accept that it is normal that a certain level of conflict between owners and contractors on large construction projects will occur. However, I find that, as with other contracts, Nalcor's strategy did not provide for the level of collaboration necessary for this work to be executed in a less adversarial manner.

## CHAPTER 18: THE CAHILL-GANOTEC CONTRACT

In its *Construction Phase* report (P-01677), Grant Thornton identified the Cahill-Ganotec contract as one with significant cost overruns. However, it should be noted that a substantial portion of these cost overruns resulted from transfers from other work packages. The DG3 base estimate prepared by SNC for package CH0031 (“supply and install mechanical and electrical auxiliaries”) was \$92 million and the contract award was \$193 million. The work covered such items as mechanical piping, the heating, ventilation and cooling (HVAC) systems, and auxiliary electrical systems for the powerhouse, intake, dams and spillways (P-01820, p. 4). CH0031 is commonly referred to as the “balance of plant” contract.

There remain outstanding claims on this contract at the time of the preparation of this Report. Certain amounts were redacted from the related public exhibits, but I have had full access to these unredacted amounts. In view of the outstanding claims, I will limit my remarks on this contract.

### THE BID AND ESTIMATE PROCESS

On June 10, 2014, a request for proposals for this contract was issued to eight companies with a closing date of January 16, 2015. Three bidders responded:

- Black & McDonald Limited
- Cahill-Ganotec Joint Venture
- Lorneville Mechanical Contractors Ltd. and Sunny Corner Enterprises Inc. Joint Venture (LASC)

Proposal clarification began in February 2015 and all bidders participated. After LASC dropped out, bid clarification continued with Black & McDonald and Cahill-Ganotec until June 2, 2017 (P-01820, pp. 3–5). Evaluation of the two remaining bids then began.

Following the bid evaluation process, the contract was awarded to Cahill-Ganotec for approximately \$193 million (P-02324, p. 192).

Cahill-Ganotec is a 50/50 partnership between G.J. Cahill & Company (1979) Limited, a Newfoundland and Labrador-based construction company, and Ganotec Inc., a Québec-based construction company that is a division of Kiewit Corporation, a multinational

corporation. The partnership was established to bid on packages for the Project and Cahill acted as the managing partner (March 20, 2019, transcript, p. 15).

The Cahill-Ganotec contract included the following scope of work (P-01820):

- The design, supply, installation, registration and completion of mechanical piping systems and HVAC systems
- Auxiliary electrical systems
- Assembly and installation of major electrical equipment, cabling, site testing
- Completions of all electrical and mechanical installation
- Removal and disposal of all temporary electrical and mechanical installations (p. 4)

Tim Harrington was the project manager for the partnership. In his words, Cahill-Ganotec were “the powerhouse outfitters.” He testified that Cahill-Ganotec would “operate outside the pit” (the area where turbines are assembled and installed) and be responsible for electrical, mechanical, architectural systems and details required for full operation of the powerhouse (March 20, 2019, transcript, p. 14).

## THE CONTRACT STRUCTURE AND EXECUTION

Before contract details were finalized, Nalcor issued three LNTPs to Cahill-Ganotec (June 16, June 30 and July 7, 2017), in order that work could commence. When the contract was finally executed, it was backdated to the date of the first LNTP—June 16, 2017 (P-02324). The contract had three components: a fixed-fee portion, which covered management staff, site infrastructure pieces and some of the mobilization and demobilization expenses, plus a unit-price component and a reimbursable-labour component. Tim Harrington described the reimbursable component as follows (March 20, 2019, transcript):

**MR. T. HARRINGTON:** Right. So the way the contract is structured is that any personnel that falls under unionized collective agreement-type labour—or PLA labour is what we kind of term it within the contract—is a reimbursable component with certain exceptions. There’s a clause in our exhibit two, compensation section, that basically outlines certain work activities that are not allowed to be conducted on site, and those are not reimbursable, but generally

speaking any of the main work—bulk work—we do it is reimbursable based on cost with a mark-up of—an overhead mark-up component on top of it, right?

**MS. O'BRIEN:** . . . So you just spoke to there for—all of your labour is reimbursable with some exceptions. And am I understanding correctly that this section here that's—this definition of disallowed items—that is on this page—continuing into the next page, those would be the labour that is not reimbursable, the disallowed items?

**MR. T. HARRINGTON:** So if our client identifies any cases that we're operating under one of these specific criteria here—if we're building—fabricating pipe of a certain size, like a large bore pipe, for example, which is more efficient to be done off site, obviously, and that's agreed and established prior to signing the contract, then he can obviously opt not to pay us.

**MS. O'BRIEN:** Okay. And PLA labour—I know it's actually defined in the contract itself, but is that another way of saying the union or craft labour?

**MR. T. HARRINGTON:** Yes, any personnel that's being paid under the collective agreement of the project. Yeah. (pp. 17–18)

An important aspect of the contract was the “Target Cost of Labour” of approximately \$64 million. This was not a fixed amount and could vary with the issuance of change orders as required over the duration of the contract. Under the contract, Cahill-Ganotec could be charged liquidated damages for each day that it failed to meet a defined milestone (P-02324).

As part of the contract, Cahill-Ganotec was obliged to conduct a series of cold-eyes reviews at various stages (P-02308, p. 32). The first cold-eyes review was completed on September 28, 2017. It found (P-02308):

The relationship is pretty good. However, not to the level required for this project. There are some areas of concern:

- Currently the PM [Tim Harrington] has limited communication with the Owner's project manager (Scott O'Brien) named as the point of contact in the contract.
  - The relationship/communications have been very contractual rather than an open communication looking at best for project solutions.
  - Need the Owner point of contact when the project mobilizes to site.
- (p. 33)

Tim Harrington testified about the relationship between Nalcor and Cahill-Ganotec at the time of mobilization (March 20, 2019, transcript):

**MR. T. HARRINGTON:** Sure. I guess the reference there to it being very contractual, I think, the project, in terms of the dynamic, the relationship up front was a little bit rocky. I'm not sure exactly why, but we did feel as the project was kicking off, we were getting closer and closer to mobilizing for construction, there—some head-butting started; there was letters kind of flying back and forth. I think a lot of people felt that we weren't really getting off on the right foot.

We hadn't really started construction yet and it's—I guess our impression was that perhaps the client was being a little bit too overcautious on some of the provisions within the contract and some of the language there and certainly pushing hard. And I think they were certainly just—in the best interests of how they felt that, they wanted to make sure that we were off to a good start. But certainly, it was causing a bit of a clash there. (p. 31)

Cahill-Ganotec experienced delays in mobilizing to the site because it did not have access to the work areas the contract detailed. As a result, Nalcor and Cahill-Ganotec held discussions to re-establish a baseline schedule. This did not, however, lead to a resolution of the disagreement over the revised interface and milestone dates for the schedule. Nalcor prepared a change order (Change Order No. 17) on September 14, 2018, with revised interface and milestone dates, but Cahill-Ganotec did not accept it (P-02363). It felt that it was not a comprehensive enough amendment, particularly given the provision with respect to liquidated damages.

On February 11, 2019, Cahill-Ganotec sent a letter to Scott O'Brien placing Nalcor on notice that it would be pursuing an extension of time claim. It outlined the basis of Cahill-Ganotec's claim as follows (P-02315):

Contractor cannot overlook and dismiss that the evolving project schedule will result in a substantial back-loading of planned construction and commissioning activities due to deferred availability of key work areas and outstanding engineering. As detailed within Contractor letter LTR-CH0031001-0263, the actual access dates have moved substantially from those committed under the original Exhibit 9 and subsequent revision provided within CHO-CH0031001-0017. As of the issuance date for this letter, several critical interfaces remain outstanding which have been summarized within the supporting letter Attachment document.

Based upon discussions with Company, it is understood that the balance of key interfaces will experience further delays, Contractor has taken appropriate actions to mitigate where possible by reducing its workforce and adjusting shift schedules to prolong turnaround days off as a means to promote retention of Personnel. Current preliminary forecast histograms reported by Contractor

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detail a substantial extension of resources into the later part of 2019. This situation will result in several impacts that will increase project costs for Contractor Including:

- Extension of staff resources to manage the Work past planned finish dates.
- Prolonged assignment and utilization of construction equipment and site infrastructure.
- Indirect trade crews required to operate the site and support the permanent works will be extended well past the planned demobilization date. Consideration for adjustment to the Adjusted Target Cost of Labour (“ATCL”) will need to be addressed accordingly.
- Impacts to direct trade productivity due to workforce reductions and hiring untrained replacements at a later date. Finalizing the balance of remaining engineering also continues to increase productivity risk as well. Again, this labour cost impact will also need to be resolved through an adjustment of the ATCL threshold.
- Increase to the trade travel budget to account for growth of forecasted direct and indirect trade expenditures. (pp. 1–2)

In other words, delays on other aspects of the Project (over which it had no control) impeded Cahill-Ganotec’s ability to do its contracted work within its time/cost parameters (knock-on effects), and so it notified Nalcor that extra funds for labour would be required. As of March 20, 2019, when Mr. Harrington testified, CH0031’s \$64 million target cost of labour had increased by \$5.8 million and the total contract amount had increased to \$201.7 million. At the time of his testimony, discussions were still ongoing with respect to this change order. These discussions were thus commercially sensitive for both parties, so I will not comment further.

Tim Harrington testified that Cahill-Ganotec was nevertheless tracking to complete the contract under budget, since its productivity was better than anticipated. For example, in its February 2019 monthly cost report, Cahill-Ganotec was forecasting to complete the contract at \$201.3 million, approximately \$400,000 under budget. This amount does not include any costs for delays and knock-on effects (March 20, 2019, transcript, p. 22).

## PRODUCTIVITY

As noted above, Cahill-Ganotec's higher-than-expected productivity assisted it in recovering the schedule slippage that had started during mobilization. Tim Harrington testified (March 20, 2019, transcript):

**MR. T. HARRINGTON:** Several reasons, I guess. Fundamentally, I think it begins—we have an excellent management team. Cahill-Ganotec, well, we have a really good blend of experience, you know. You've got up-and-coming engineers that have worked in powerhouses. Me, myself, I mentioned my experience with—on the Wuskwatim project in Manitoba. We have a lot of personnel from the Ganotec side that had previously worked on the Lower Mattagami Project a few years ago. So, we've had a really, really good blend of experience levels, like I said, and we managed to establish a really, really high-performing management team.

I think another reason is, just our understanding and knowledge of the local labour markets. The Cahill Group has been operating out of Newfoundland and Labrador for decades now. We've have a good sense of who the good supervisors are, union supervisors particularly. So we were very selective when we're utilizing the name-hire provisions within the collective agreement on who we were choosing as our foremen or GFs [general foremen] and obviously they—with that comes other name hires in terms of who we're bringing in to work on our crews.

And I think that we know generally who we want there to be driving productivity and know that they have been proving themselves in terms of making sure the workmanship is good and understanding of the technical requirements. And having that knowledge has really helped us even on the Ganotec side as well. Even though they're Québec-based, where they're a part of the Kiewit umbrella, they have a lot of our key management staff was—is based out of Newfoundland and worked on past projects: Long Harbour, Hebron. And they also bring a lot of experience in local labour market to the table. So having that—to be able to leverage that in terms of how your management team, it's paid a lot of dividends for us.

Also, I think our—we have really superior controls mechanisms within our—in terms of our project controls IT computer system.

So, basically, the way that we do our time management on site, it's all tracked daily; we use tablets. That gets entered into our computer-based management systems. Our progress is updated along with our labour productivity; we get a daily report every morning. When I come in I have an email telling me what my—whose productivity was the day before, based on what cost code, based on the discipline.

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So, we're able to react; we don't wait until, you know, a month until we get a monthly report to look at our, you know, productivities and performance. We're very reactive to that, and we drive the productivity, so it's—and also, I think, you know, the client has been very focused on it as well.

So, up front, they were very, very aggressive in making sure that we established a firm productivity program on site. There was requirements within exhibit 3 that established that. All—and ultimately we have a weekly meeting where we review our productivity numbers with the client, you know, talk to them about things that were going well, things that are not going so well. So I think that helps as well. I think, you know, it has to be coming from all fronts—being from management right down to the supervision, from your client as well; it all has to be driven.

So I think that's been—allowed us to be pretty successful. (pp. 26–27)

Mr. Harrington described his management style as providing “positive motivation” and also described senior management’s participation in “toolbox talks”—gatherings of foremen and workers at the start of each daily shift. He stated that these talks were an opportunity to meet foremen and the workers and that this activity likely contributed to Cahill-Ganotec’s success because it ensured that the company had an on-site presence (March 20, 2019, transcript, p. 29).

On cross-examination, Tim Harrington agreed that Scott O’Brien’s role, though he had a title of Project Manager, could be more akin to the roles of Cahill-Ganotec’s project sponsors—John Henley and Mike Buckle—who visited the site once a month. He also testified that he communicated more with Kumar Kandaswamy (Nalcor’s Project Lead, stationed in St. John’s) than he did with Scott O’Brien. He testified that, in his experience and compared to other projects he had worked on, Nalcor’s project managers spent slightly less time on site (March 20, 2019, transcript, p. 35).

Despite the delays and cost overruns, Cahill-Ganotec is one of the success stories of the Project in terms of contractor performance. While there were initial delays that prevented Cahill-Ganotec from commencing its work, I am satisfied that it managed to offset this, to some degree, with increased productivity. Tim Harrington’s evidence as to how he executed his job as Project Manager exemplifies the type of work in which a project manager should be engaged. I am persuaded that Mr. Harrington’s initiative to attend toolbox talks and become familiar with the foremen and workforce had a positive impact on Cahill-Ganotec’s productivity and performance.

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## CHAPTER 19: UNION INVOLVEMENT

Three collective agreements were signed for unionized labour on the Project:

1. A single union agreement with the Laborers' International Union of North America 1208, for reservoir clearing.
2. A single union agreement with the International Brotherhood of Electrical Workers (IBEW) 1620, for construction of the transmission line.
3. A multi-union agreement with the Resource Development Trades Council (RDTC), for various types of work at the Muskrat Falls generation site.

David Wade is a former Executive Director of the RDTC. He testified that the RDTC is a council of 16 different building and construction trade unions (May 27, 2019, transcript, p. 2). The collective agreement the RDTC negotiated for union workers at the generation site (P-03739) was made with the Muskrat Falls Employers Association (MFEA). This contract is the main focus of this chapter of the Report.

The number of collective agreements was determined by the issuance of a Special Project Order (SPO) for each of the three areas of activity. An SPO issued by GNL under s. 70 of the *Labour Relations Act*, RSNL 1990, c. L-1 is intended to provide labour relations stability on large construction projects in the province. SPOs can be applied to projects undertaken to develop a natural resource or to establish a primary industry and that have a construction period lasting more than two years. They establish a specialized labour regime for the project's duration. Under an SPO, all employers must have a single agreement with all unions, rather than each union having its own collective agreement. This is intended to reduce jurisdictional disputes among the unions. Importantly, an SPO also prohibits strikes, lockouts and other types of work stoppages. SPOs have existed in Newfoundland and Labrador since 1968, when amendments were made to the *Labour Relations Act* to authorize an SPO for the Churchill Falls project.

Until June 27, 2012, the definition of "special project" in the *Labour Relations Act* was:

- (u) "special project" means an undertaking for the construction of works designed to develop a natural resource or establish a primary industry that is planned to require a construction period exceeding three years, and

includes all ancillary work, services and catering within a prescribed geographic site relating to the undertaking or project.

On June 27, 2012, the definition of “special project” was amended to:

- (u) “special project” means an undertaking for the construction of works designed to develop a natural resource or establish a primary industry that is planned to require a construction period exceeding two years, and includes all ancillary work, services and catering relating to the undertaking or project.

For the Muskrat Falls Project, these changes meant that separate SPOs could be issued for the reservoir clearing and for the transmission line and the generation-site components of the Project. This legislative amendment was sought by Nalcor and enacted against the recommendation of the RDTC. When the consultations on the proposed changes were taking place, the RDTC was under the impression that the amendment was intended to allow multiple SPOs at Nalcor’s Bull Arm Fabrication site. However, Nalcor documents show that the company’s motivation was connected to realizing its desired labour model for the Project.

According to the RDTC, as noted in its final submission to the Commission, Nalcor’s and GNL’s decision to pursue and enact the legislative amendment that would allow three collective agreements on the Project had a negative impact and “circumvented the basic intention of labour union rights.” In the RDTC’s view (*Final Submission of RDTC*):

The RDTC was formed to ensure a stable and steady labour supply for special projects, which occurs when workers can be confident they are being treated equally and fairly and when there is congruency across an entire project. The legislation allowing the implementation of the three agreements circumvented the basic intention of labour union rights and negatively impacted the union members and labour environment, and possibly the Project. (p. 3)

Muskrat Falls clearly qualified as a “Special Project” under the Act. The collective agreement for the generation site was negotiated with two co-chairs representing labour: Mr. Wade and Robert Blakely, the Executive Director of the Canadian Building Trades, who was Mr. Wade’s national counterpart (*May 27, 2019, transcript, p. 2*). According to Mr. Wade, the main negotiators for Nalcor were PMT member Lance Clarke and legal counsel David Clark. Lance Clarke testified that he was not directly involved in the negotiations. Rather, he had assembled a team (David Clark and Catherine Rowsell, assisted by John Mulcahy) to conduct the negotiations (*May 23, 2019, transcript, p. 4*). According to Mr. Wade (p. 11),

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Mr. Mulcahy was the only member of the Nalcor negotiating team with direct experience and knowledge of a construction project. The negotiations began in April 2012.

Mr. Wade testified about some of the issues that arose in connection with the negotiating process. One was Nalcor's decision to give only five of the 16 trade unions a seat at the negotiating table. That prevented 11 unions from having a direct role in shaping the agreement by which they were ultimately bound. Additionally, the negotiations began in St. John's but early in the process were moved to Ontario. The RDTC submission stated that this move "solidified the exclusion of the other member unions." When Mr. Wade returned to St. John's during the breaks in the negotiations, he relayed information from the negotiations to the other 11 unions (May 27, 2019, transcript, pp. 8–9). In its final submission, the RDTC further stated: "The RDTC submits that the manner in which negotiations took place impacted the cohesiveness of the RDTC and ran contrary to the purpose of union councils to provide a broad but united labour force" (Final Submission of RDTC, p. 4).

After negotiations concluded, a vote on the proposed collective agreement was held (December 21, 2012). The five unions that had been directly involved in negotiations voted to approve the agreement. Of the remaining 11 unions, two voted to approve the agreement with an appendix, six voted against it, and three were not present. The agreement was thus approved by a seven-to-six vote of the union leadership and subsequently went to the membership of all 16 unions for their vote. Members approved it with a majority of 57% (May 27, 2019, transcript, p. 18).

The RDTC also expressed the following concerns about the makeup of MFEA (Final Submission of RDTC):

The Muskrat Falls Project was impacted by the unique composition of the MFEA. Unlike other employers' associations formed for other special projects in the province, the MFEA was controlled by the owner, Nalcor. Other employer associations are made up of the contractors working on site with each contractor having an equal voice in the employer association. This gives contractors the flexibility to settle grievances, negotiate compromises, work directly with the workers and the union representatives, and troubleshoot concerns before those concerns elevate to a level where association involvement would be necessary. (pp. 6–7)

At Muskrat Falls, contractors were able to elect only five of 12 directors on the MFEA. Nalcor had the right to elect the remaining seven. This enabled Nalcor to decide how the MFEA conducted its business (p. 7).

The RDTC submitted that Nalcor's control over every contractor's ability to negotiate had a negative impact on the Project, leading to micromanagement and a large number of grievances. The RDTC further submitted that David Clark, who was also Nalcor's on-site labour relations representative and one of the directors of the MFEA, exercised control over every dispute and attended many of the arbitrations held with different contractors, leading to protracted disputes, additional arbitrations and unnecessary confusion. There was also a suggestion that Mr. Clark was in a conflict of interest. In making this suggestion, the RDTC referred to a comment by David Clark that seems to indicate that contractors were required to abide by direction from the MFEA or risk being expelled from the employers' association, as per its bylaws. This effectively gave contractors no choice but to allow Nalcor to guide or make decisions in contractors' disputes with unions or workers.

The RDTC's position was that this arrangement was unusual and resulted in Nalcor being directly involved in arbitration and settlement negotiations even though it was not a party to the collective agreement. Further, the RDTC believed that the abundance of arbitrations and the inability of contractors to conduct their own settlements led to increased labour tension on the site, which had an adverse effect on the overall Project (Final Submission of RDTC, pp. 7–8). As of April 2019, approximately 300 grievances had been filed at the Muskrat Falls site (P-03819, p. 2). Despite what the RDTC final submission stated, in his testimony Mr. Wade said 300 was a "fair amount" (May 27, 2019, transcript, p. 28). In my view, this does not appear to be an exceptionally large number of grievances for a project of this size.

In a letter to the Commission dated May 3, 2019, counsel for the RDTC emphasized the close relationship between the MFEA and its lead member, Nalcor (P-03875, p. 4). Nalcor's counsel responded to this suggestion in a letter of its own, acknowledging its ability to control the actions of the MFEA and stating that the structure was chosen for the purpose of managing the risks of labour productivity, stability, cost and availability. Nalcor denied that it controlled each contractor's management of grievances and stated that it was not uncommon for contractors to disregard Nalcor's requests or recommendations. Nalcor also maintained that no contractor had ever been threatened with expulsion from the MFEA for not complying with a request or recommendation related to labour situations (P-04557, p. 4).

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Patrick McCormick and Tom Walsh also testified at the hearings. Mr. McCormick has been the Business Manager for the Hotel and Restaurant Workers Union Local 779 since 1982 and was the President of the RDTC between 2013 and 2017. Mr. Walsh is a Site Representative for the RDTC at the Muskrat Falls site. As such, he is responsible for ensuring that the collective agreement is followed (May 27, 2019, transcript, pp. 41–42).

Mr. McCormick visited the Muskrat Falls site three to five times a month, mostly in his capacity as Business Manager for the Hotel and Restaurant Workers Union. Both Mr. McCormick and Mr. Walsh spoke extensively about two longstanding issues at the accommodations facility: poor cleanliness and insufficient cleaning staff. They testified that these issues were never resolved and resulted in many complaints from workers. Mr. McCormick stated that at peak labour force, conditions at the camp were “terrible” (May 27, 2019, transcript, p. 45).

Mr. Walsh echoed many of the concerns expressed by Mr. Wade about the process for resolving disputes through the MFEA, noting that “it was a very slow, dragged-out process within the labour relations side of things up there” (May 27, 2019, transcript, p. 57). Both Mr. Walsh and Mr. McCormick singled out David Clark as a major reason that disputes were excessively dragged out. Mr. McCormick stated: “My opinion, there was no MFEA, other than it being on paper. Nalcor controlled MFEA and fair to say that Mr. Clark was the one that done the controlling” (May 27, 2019, transcript, p. 59).

However the RDTC also made these comments (Final Submission of RDTC):

The RDTC states that other than labour relations tensions resulting from the structure of the MFEA and the increased number of grievances which proceeded to arbitration, and the morale issues that resulted from the prolonged disputes and problems with the camp, generally the experience of the RDTC workers on site was positive. (pp. 12–13)

Nalcor and GNL’s decision to proceed with three SPOs rather than one was intended to reduce labour costs. The union view of this approach was summed up by Mr. McCormick, who stated that “it was a way to weaken the strength of the RDTC.” He testified that this caused friction among the workers by creating a situation in which, for example, IBEW members received bonuses for their work on the LIL but other union members received none and missed out on transmission line work (May 27, 2019, transcript, pp. 63–64). I accept that this approach likely led to tension among workers but I am unable to determine whether it had any impact on the Project’s overall cost or schedule.

Nalcor intended that the structure of the MFEA would give it more control over the Project's labour costs. The RDTC's position is that this approach led to protracted processes and increased tension. While this seems to be consistent with other complaints about Nalcor's tendency toward micromanagement and excessively antagonistic relationships with contractors, the evidence is insufficient to decide whether Nalcor's approach to labour relations, through the MFEA, had any impact on Project costs.

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**CHAPTER 20: THE CHANGE IN NALCOR CEO**

As I have noted, a new provincial government led by Premier Dwight Ball was elected on November 29, 2015, and sworn in on December 15, 2015. Shortly afterward, the Ball Government sought updates from various Crown corporations and agencies, including Nalcor. As part of its update to GNL, Nalcor shared information about problems with Astaldi's performance on the Project. By this time, Astaldi was well behind schedule and its lack of progress and financial difficulties were major concerns.

The evidence establishes that after forming the government, the Ball administration steadily lost confidence in Nalcor and its leadership. Mistrusting the information Nalcor was providing, GNL engaged Ernst & Young to undertake a full review of Project costs, schedule and risks. EY had already been engaged by GNL's Oversight Committee but, up to then, had limited ability to conduct a review of Nalcor's work.

The evidence of various witnesses confirmed that Nalcor resisted the appointment and work of EY and that, for its part, EY found Nalcor unco-operative (P-03328). For example, Craig Martin, Executive Director of the Oversight Committee, testified that "Nalcor never ever welcomed EY with open arms, I can say unequivocally" (June 3, 2019, transcript, p. 27).

Edmund Martin testified that, on or about January 18, 2016, he advised Premier Ball that he would be commencing negotiations with Astaldi and that he felt he had a mandate to negotiate a settlement to a maximum of \$500 million (June 12, 2019, transcript, p. 8). Premier Ball testified that he had never given Mr. Martin a mandate to negotiate with Astaldi and that he did not want Mr. Martin to negotiate with Astaldi on his own because Mr. Martin had been one of the main architects of the Astaldi contract.

As it turned out, Mr. Martin only had a few more months as Nalcor's CEO. The circumstances under which Mr. Martin's tenure ended are detailed in the Auditor General's February 2017 report, *Review of Severance Mr. Edmund J. Martin*. The report summarized the sequence of events as follows (P-04306):

- In January 2016, the Province engaged a consultant to assess the reasonableness of the cost and schedule forecast of the Muskrat Falls project, and identify opportunities to address any material/critical risks. The consultant's interim report was released on April 12, 2016
- There were concerns with the performance of the main contractor at the Muskrat Falls site. Nalcor was preparing to negotiate a resolution with the

contractor and the Province had asked the consultant to assist Nalcor management with the process

- In March 2016, the Minister of Natural Resources requested a copy of the Employment Agreement between Mr. Martin and Nalcor from the Chair of the Board. The Employment Agreement was provided and was forwarded to the Premier's Chief of Staff
- On April 14, 2016, the Province tabled its 2016–17 budget (the **Budget**). The Budget speech had commentary related to Nalcor regarding the level of the provincial investment in the corporation, the lack of payment of dividends, its organizational structure, and the growth of its compensation and benefits
- Subsequent comments from Government representatives, in response to questions from the media related to the Budget speech, did not indicate support for Mr. Martin (emphasis in original, p. 21)

At a meeting between Mr. Martin and Premier Ball on April 17, 2016 (with Natural Resources Minister Siobhan Coady and the Premier's Chief of Staff attending), the options related to Mr. Martin's employment as CEO of Nalcor discussed were (P-04306):

1. Mr. Martin would remain as CEO of Nalcor, provided the Premier would publicly support Mr. Martin and his leadership team
  2. Mr. Martin would leave Nalcor
  3. Mr. Martin would stay on for a year to enable transition to a new CEO
- (p. 22)

Premier Ball testified that he and Edmund Martin had a “frank” discussion at that meeting and that “there was no doubt that Mr. Martin was concerned about some of the things that he'd heard about Nalcor.” Premier Ball felt that Mr. Martin wanted him to be a “cheerleader” for Mr. Martin and Nalcor, which he was not prepared to be at that time. The Premier also felt that if he did not publicly support Mr. Martin and Nalcor, a change of leadership at Nalcor would be required (July 4, 2019, transcript, p. 23).

In late March or early April 2016, Premier Ball had preliminary discussions with Stan Marshall about Nalcor. On April 18, 2016, the Premier met Mr. Marshall at the Confederation Building. According to the Auditor General's report, Mr. Marshall confirmed at this meeting that he would accept the position of CEO of Nalcor if Mr. Martin were to leave. However, Mr. Marshall testified that he and Premier Ball had a discussion only about the name of a possible replacement for Mr. Martin at that time. It was in a later

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telephone call, during which Mr. Marshall said he did not know of anyone who could take the position, that the Premier asked him if he would consider it (June 28, 2019, transcript, p. 34).

The following day, Edmund Martin and the Premier had another meeting, after which the Premier and Mr. Martin “understood that Mr. Martin’s employment had come to an end” (P-04306, p. 23). Premier Ball testified that he told Mr. Martin that he would not “be the cheerleader that he was expecting me to be.” It is clear that Mr. Martin understood that he had been terminated and the Premier understood that Mr. Martin had resigned. However, Mr. Martin did not provide any notice of his resignation nor did he receive any notice of termination. The Auditor General’s report stated: “The only explicit decision made by the Premier at the April 19, 2016 meeting was that he could not provide the public support asked by Mr. Martin. This did not, by default, constitute choosing that Mr. Martin leave his employment” (P-04306, p. 25).

On April 20, 2016, the Premier contacted Ken Marshall, the Chair of Nalcor’s board, with respect to Mr. Martin’s employment status. The board then dealt with the issue of Mr. Martin’s compensation arising from his departure, even though by that time the board members felt that GNL had lost confidence in their ability to continue as directors.

The finer points aside, Mr. Martin was finished at Nalcor effective April 20, 2016. On the same day, Mr. Martin held a press conference at Nalcor’s offices while Premier Ball and Minister Coady held a separate press conference at the Confederation Building (July 4, 2019, transcript, p. 24).

In my review of the evidence, I find nothing inappropriate arising from Edmund Martin’s departure. I have not, however, conducted a review of the circumstances related to Mr. Martin’s severance package. This matter was reviewed in detail by the Auditor General. What is clear, however, is that the relationship between GNL and Nalcor had been deteriorating for some time. It is understandable that GNL, the sole shareholder of Nalcor, could not confidently endorse the Project or Mr. Martin’s leadership at that time. It is also clear that a change in leadership was an appropriate solution to this situation.

On the same day that Mr. Martin left Nalcor, April 20, Nalcor’s board of directors held a board meeting, after which the entire board resigned. Premier Ball testified that these resignations came as a surprise. Board member Ken Marshall testified that, on April 15, 2016, he had met with Premier Ball to discuss several issues. On April 14, between the date the meeting was arranged and the date it occurred, the Government delivered

its Budget speech. The statements about Nalcor that it contained caused concern for Ken Marshall and other board members. Mr. Marshall testified (October 16, 2018, transcript):

[T]he Budget speech was . . . extremely critical of the organization and it essentially was constructively dismissing the CEO and negating the good, hard work of 1,400 people around the province to keep the lights on, to get the project over the finish line. It sent shock waves throughout the organization and through the board, through everybody associated with it.

And I was quite shocked, particularly given that—and I had some dealings with the Minister of Finance for that piece because we had been—in unprecedented fashion the CEO and I were called in to some Treasury Board meetings over the previous two months and we—and in my 12 years on the board I had never been to a Treasury Board meeting so—but clearly we took that as a sign that the new administration just wanted to get up to speed on the project and we went in there open and willing to provide whatever information was necessary to continue to run the organization and to get the project through. (p. 2)

Ken Marshall testified that there was discussion of the impact of the Budget speech at the board meeting on April 20, 2016. The consensus was that it would be difficult for the CEO to negotiate with Astaldi in light of the Minister of Finance’s comments in the Budget speech. Mr. Marshall further testified that he advised Premier Ball that he thought that the Budget speech had “cut the legs out from underneath the CEO” (October 16, 2018, transcript, p. 3).

According to Ken Marshall’s testimony, the board members did not support Mr. Martin’s departure. Mr. Marshall also stated that GNL’s decision not to support Mr. Martin made the Nalcor directors feel as though GNL also did not have confidence in the board.

The board meeting on April 20, 2016, was called to discuss three pressing issues the board felt the Budget remarks had precipitated (P-00408):

1. Contractual obligations that would arise from Edmund Martin’s termination of employment.
2. A short-term incentive plan for 2015.
3. The board’s en-masse resignation. (p. 1)

In an email to Premier Ball and Minister Coady dated April 20, 2016, Ken Marshall stated (P-00408):

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Clearly, by reaching directly through to the CEO and deciding employment continuation, and from the recent Budget speech, government does not have proper confidence in the Board to continue in its duties and role. I can speak for all individuals on the Board that to a member, all have acted with proper and due care for the long term benefit of the organization and the people of this province. (p. 1)

At the meeting, the board discussed Mr. Martin's severance package and the short-term incentive plan. With respect to the latter, the minutes of the April 20 board meeting state (P-00409):

The Chair reported to the Board that discussions had been held over the previous few weeks with representatives of the Government of Newfoundland and Labrador with respect to the payout of the 2015 performance contract payments. He stated that Government requested that the Board not approve the payout on these contracts.

[redacted]

The Chair stated that he advised the Government that [redacted] and in the absence of a written directive from Government not to make the payments, the Board would proceed with approval of the payout of the 2015 performance contract payments.

The Board discussed the amount of the payouts and it was agreed that given the fact that there were some performance issues in 2015, specifically with respect to financial performance and safety, that there would be a 25% reduction in each employee's payout. The Board were of the opinion that it is within their discretion to reduce the payments in this manner given these performance issues. With respect to Mr. Martin, it was agreed that his payout would be based on an average of the level of performance achieved versus targets by all other employees who entered into a Performance Contract for 2015.

...

The Chair reported that he had had a discussion with a representative of the Government of Newfoundland and Labrador and it was confirmed that there was an agreement between the Government and Mr. Martin that he would receive severance payments upon the cessation of his employment with the Corporation. The severance payment was to be in accordance with his employment contract as if he had been dismissed at the discretion of the Board. (pp. 1-2, 3)

I question the judgment of the board members to make decisions with respect to Mr. Martin's severance and the short-term incentive plan for 2015, given their decision to

resign immediately. These decisions should have been left to a new board, members of which would have had time to seek additional advice and to bring a fresh perspective. The board's decision to compensate Mr. Martin under the short-term incentive plan was in direct contravention of a clear direction from GNL. The board made these decisions after deciding to resign en masse and knowing of GNL's loss of confidence.

The board members submitted their resignations at the meeting on April 20, making them effective two days later. An interim board of directors, comprised largely of senior civil servants, was quickly appointed. GNL then went through a process of appointing new board members through an Independent Appointments Commission that it had established.

Stan Marshall was appointed the Nalcor CEO on April 21, 2016. He had been president and CEO of Fortis from the mid-1990s until his retirement in 2014. Mr. Marshall testified that, during his time with Fortis, the company had acquired several utility companies, for which he had served as President, Director and/or Chairman of the Board. Mr. Marshall was retired at the time the Premier contacted him about Nalcor. He testified that he was initially hesitant to take on the CEO role (June 28, 2019, transcript):

The meeting went on for about, I suspect, an hour and a half, which is the longest I've ever been in the Premier's office, anywhere. And it was a general discussion again, discussion about, you know, how I could help. For the most part, it centered on governance and, describe it generally, I would say that, Premier, you don't have a governance problem. You have a leadership problem and maybe at some point I could help you, but I'm not looking for a job, don't want to be on the board.

And from there, I'm not sure what happened between Monday morning and Thursday morning when we made the announcement—it's almost a blur—I just remember several things about what went on. I know at one point there were several phone calls. At one point he said, well, can you recommend anybody to be CEO? And I said, no, I can't. And he sort of indicated, well, if you can't, then the choice is you. And I indicated I was prepared to talk to him about that, but I couldn't possibly start before the end of—beginning of June because I had commitments all through May and I was heading back to Belize at the end of the week in—Friday.

And he seemed to be content with that and by Thursday morning it had evolved to the point—but no, no, I had to start right away. So I did. (p. 34)

As described later in this chapter, the change in CEO directly affected the Project and all who worked on it in several ways. It was also an eye-opener for Stan Marshall, who

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described Nalcor as a company in crisis and in need of new leadership in 2016. He testified (June 28, 2019, transcript):

You have to understand that when I went in there the whole situation was in crisis. The company was in crisis, Muskrat Falls was in crisis, everything surrounding it was in crisis, so it wasn't a normal situation in any event.

And, quite frankly, when I went in there first, I didn't have an appreciation of how much of a crisis it was in. It was only when I got the briefing two weeks later that I realized how severe it was. (p. 35)

### THE BIFURCATION OF THE MUSKRAT FALLS PROJECT

One of Stan Marshall's first major acts as CEO was to split the organization of the Project into two parts: generation and transmission (this has been referred to as the "bifurcation" of the Project). It was a controversial decision for some people within Nalcor.

Under the restructuring, Gilbert Bennett became Executive Vice-President for the Project's generation component ("Power Development") and John MacIsaac became Executive Vice-President for the transmission component ("Power Supply"). Some PMT members continued to work on generation, while others became part of the transmission team. Mr. Marshall also directed Derrick Sturge, the Executive Vice-President of Finance, to become more directly involved in the financial management of the Project.

In his testimony, Stan Marshall explained his rationale for bifurcating the Project (June 28, 2019, transcript):

It was also apparent that Gilbert was overwhelmed. He was responsible for all these elements of the project; in addition to things like doing public relations and—he was carrying way too much of a load. No human being could carry it. So I just—I looked at how I could divide this project up. But the objective at that point in time was to get control—executive control of the project. I am used to functioning with a small team of executives who I rely upon fully, and as they run into difficulties I work with them one-on-one and give them support.

So really we divided it up and Gilbert was assigned the task of carrying on with Muskrat Falls. I was looking for somebody to take—I wanted to split transmission because—I'll come to that later—you know, it's substantially different in terms of its challenges than generation.

...

Part of that—part of the reason bifurcation wasn't—like I said, 'cause that—you have to imagine, part of it was getting things under control.

The other part was that it's a different—than the—different type of activity than building a big plant like Muskrat Falls. Muskrat Falls can be very much akin to building Hibernia; one site, a lot of putting things together, whereas the transmission component is spread out over 1,500 kilometres.

The other thing is I asked—I said, well, there's challenges here, different challenges. Two aspects of that: are we ready for—are we getting ready for transitional operations?

...

Everybody knew that Muskrat Falls was slipping, probably by about two years, so there was no word to say get on with the transmission line, because everybody said, well, when Muskrat's finished, we'll plug her in, and it'll work.

(pp. 36, 37, 38)

Stan Marshall also assigned some roles and responsibilities, such as public relations and human resources, to a smaller group of executives. As noted above, in his testimony, Mr. Marshall explained that his general management approach was to have a small group of executives report to him and have everyone else report to these executives. Under his management, Mr. Marshall made it clear that the PMT members were to report either to Gilbert Bennett or John MacIsaac and not directly to him. He had been informed that during Edmund Martin's tenure, Paul Harrington often bypassed Gilbert Bennett and reported directly to Mr. Martin.

Bifurcation focused Project activity into two distinct areas. Stan Marshall testified that, in effect, generation and transmission already were two distinct projects, each of them large in their own right. Mr. Marshall also felt, as noted earlier, that because the PMT's experience was mostly in oil and gas, there had been a disproportionate focus on generation. By allocating individual resources to each type of Project construction, Mr. Marshall helped bring focus to the transmission side of the Project. In his testimony he provided the following description of his assessment of the Project management focus he had found when he arrived (June 28, 2019, transcript):

**MR. S. MARSHALL:** Well, the generation part of it is more akin to the type of work they've been doing, you know, building on a big, massive assembly project and part—with a specific site. Don't get me wrong, you need good project managers, and these were good project managers. But their focus was on—as it should be—on building the project. But there's another aspect, which I referred to, and then there's, you know, we need to plug this thing it [*sic*].

**MS. MUZYCHKA:** Yes.

**MR. S. MARSHALL:** And it was there that I think that their—we didn’t have the right—I would say perspective on the thing, you know.

...

**MR. S. MARSHALL:** The differences I saw on the thing when I came on is I looked at transmission, and people were looking at—people—even here, the focus is on Muskrat Falls. The most challenging part was the transmission system. It is primarily, in fact, a transmission project. If you look at—add up the dollars going on the LIL, the Labrador Transmission Assets, Maritime Link, it exceeds what’s going into Muskrat Falls. And if you look at the initial estimate, more was going into transmission and generation.

So everybody was focused on Muskrat Falls, whereas in my mind, the most complex and challenging aspect was the transmission, where you’re going to tie in for the first time the Island of Newfoundland to Québec and to the Maritime provinces. And at the same time, you’re going to bringing on this massive new plant. It was hellishly challenging. And at the same time, you’re going to bring in HVDC technology, which no one in the province had experience with, because, you know, the demand for expertise in that area globally is horrendous, and so we were going to bring this on stream and—with no experience.

And so I was more content to leave the—more—my focus on the transmission side rather than on generation alone. Of course, I got to go from one to the other on an almost daily basis. (pp. 40–41)

Stan Marshall testified that bifurcation also created better accountability and clearer direction for management. John MacIsaac agreed, stating that bifurcation “allowed sharper focus and produced improved relationships that drove increased productivity” (June 11, 2019, transcript, p. 91).

Evidence was presented that the PMT was strongly opposed to Mr. Marshall’s decision to bifurcate the Project. In a letter to Stan Marshall dated June 6, 2016, Paul Harrington outlined the PMT’s concerns (P-01962):

Based on what I know of the changes you are intending, I feel there are some inherent risks and would like to discuss with [you] how those risks could be managed while at the same time supporting your objectives for moving forward.

...

I understand from some discussion with Gilbert Bennett and John MacIsaac that it is your stated intention to break up the integrated team and have two

separate and distinct teams reporting respectively to Gilbert Bennett (Generation) and John MacIsaac (LTA/LIL). I fully understand and support your desire to focus work in a different way. I do have concerns with the timing of implementing the organizational changes and suggest we do so in a more gradual manner. I respectfully request you consider my concerns regarding the timing of such a change in the Integrated Project Management organization. I am providing these concerns because I feel that the implications, consequences and increased risk to both project cost and schedule may not be fully appreciated. My primary concerns are as follows:

- Impact on organization – I know that a number of key leaders in the Transmission and HVDC project management team will feel that this organizational change will have a disruptive effect on the remaining work. I am concerned about loss of Project institutional knowledge and an overall demoralization of the remaining team. Productivity will be impacted and the Contractors will take advantage of the disruption and loss of Project knowledge to file Claims that without that knowledge will be more likely to be successfully prosecuted.
- Increased Risk LIL – the current QRA assumes that the integrated Project Management team is in place until Turnover of the facilities to the Operating entity. In my opinion and based upon my experiences in mega project execution, the LIL cost QRA P75 of \$300M will be increased and the current QRA P75 schedule of 7 months will be similarly increased by the disruptions and distractions to the Project teams.
- Increased Risk Generation – the impact of changes on LIL will also affect Generation. I am concerned about the potential loss of Project institutional knowledge regarding ongoing issues – for example the negotiation with Astaldi in an effort to seek a negotiated settlement could be severely compromised. If no negotiated settlement is achieved then the change-out and legal actions will require all our project knowledge and resources. (pp. 1, 2–3)

Mr. Harrington’s opposition to bifurcation was also expressed in an email, which I find to be inappropriate, that he sent on June 2, 2016, to Nik Argirov, Canada’s Independent Engineer, under the subject line: “I thought common sense would prevail but I was wrong” (P-02299):

It seems the splitting up of the project team into Generation and LTA/LIL is back with a vengeance. I am very concerned that there will be senior folks leave. You have stood up for the project team and I appreciate that but I am not sure that our new CEO cares about the team I don’t expect you to do anything more a simply wanted to let you know. (p. 2)

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Stan Marshall testified that Paul Harrington also spoke to him in person about these concerns. He told Mr. Harrington that he had made this decision and it was time to move on. Mr. Harrington's concerns regarding people leaving were realized when Jason Kean, Trina Troke and Darren DeBourke resigned.

Some members of the PMT not only struggled with the change in the organization brought about by bifurcation, they sometimes actively appeared to be working against it. For example, on July 22, 2016, John Maclsaac, Jason Kean and Lance Clarke met with Valard representatives with the objective of re-establishing a good working relationship. On the same day, Jason Kean sent a five-page letter to Valard, the tone of which was inconsistent with the message that Mr. Maclsaac had conveyed to Valard at the meeting. In his testimony, Mr. Maclsaac expressed the view that Mr. Kean's letter was an attempt to undermine his authority. In an email to Nalcor's James Keating dated July 26, 2016, Mr. Maclsaac wrote (P-03167):

See below in the body of Jason's note were [sic] he states " leading up to my having signed the letter in the Morning of July 22 " the same morning as our meeting with Vallard that started at Hydro Place at 9 , and Lance and Jason were at HP at 8.30 .

We met with Vallard first thing in the a.m. ,Friday the 22nd Jason signed it and issued it thru to document control Friday the 22nd as well .all seems tight in timeline , feels more than coincidence .

The sense on this end , smells of negating or undermining the value of the of a top to top meeting intended to take on the issues and move us forward .

Also now feels like Lance has left you with an impression that this letter was signed in the days leading up to / previous to the meeting and simply working it's way thru doc control, which is simply not factual . Signed the same day / same morning as the meeting .

Really Struggling with the behaviours here , more than a bit , being exhibited by these guys, seems there are transparency gaps with myself and now seems potentially mis informed you of the some key facts as well .

Insightful for sure , these are a couple of key people we are all counting on .

The concern I shared with Stan today, we have a big challenge ahead , one that I am committed to moving forward and accelerating delivery on , that becomes complicated when I have to be thinking about looking over my shoulder on an ongoing basis at the same time as well . (p. 1)

Lance Clarke, Nalcor's Business Services Manager, also testified about how the new management structure unsettled some PMT members (May 23, 2019, transcript):

To—well to Jason it did, yes. Yeah. No question, to guys like Jason and Darren DeBourke and, yeah. 'Cause they were—the changeover at that point in time also resulted in leadership changes that was very different approach, so one that didn't quite align with the way that we had been doing things, and essentially wanted to say that everything we were doing was wrong.

So, obviously, the guys had a limited desire to deal with that, and unfortunately they left. (p. 36)

Darren DeBourke, Project Manager for HVdc Specialties, thought that bifurcation had a significant impact on the Project as a whole. In his view, before bifurcation the PMT was a high-performing team. After its introduction, there was chaos and a loss of morale. He also lamented the loss of “support and guidance” from Paul Harrington. He found that his authority was undermined on the contracts for which he was responsible. Mr. DeBourke also testified that he could not get timely responses from John MacIsaac or Greg Fleming.

In his testimony, Jason Kean provided the following observations about bifurcation (May 6, 2019, transcript):

I think bifurcation brought extra leadership to the table.

You know, I think—there was a lot occurring in the period up through '14, '15, '16, and I would say that, you know, here we have a project that has some, let's say, risk that might've been identified that we thought were being mitigated are starting to materialize again. Then we have new, unexpected risk materializing, and of course with each—that you got increased costs. There was another review, an assurance activity, for, you know, for various reasons.

So of course there are a lot of challenges occurring within the project. Leadership, in that regard, Mr. Bennett, (inaudible) just, you know, single point. So having the project-split bifurcation brought extra leadership. I think that was beneficial. I think Mr. Marshall's intentions there were great and, you know, I had no problem with the bifurcation. My—two things: The aspect of why we're doing it, I think, could be explained more so. Secondly, I didn't agree with the management style of the incoming VP. So—and part of that was non—a lack of communication of why we were doing certain things or going to do things differently.

So, bifurcation was good. I think Mr. Marshall's intentions were good. There could have been various ways to actually have executed it, and it's all driven by the people. (p. 53)

It is clear that the PMT members had difficulty in relinquishing the control they had had up to that point and in working under the new management structure that had been established by Mr. Marshall.

### **Conclusions**

I am satisfied that Stan Marshall had a strong background in hydro developments and that he demonstrated excellent leadership in advancing the Project. Although members of the PMT did not like losing some of the control that they had previously held, the bifurcation of the Project was a good decision. I do not accept that bifurcation had any adverse impact on Project cost and schedule, as has been suggested by some members of the PMT.

I agree with Mr. Marshall's assessment that, prior to bifurcation, Gilbert Bennett's responsibilities were far too extensive. As well, there is no doubt that the transmission component of the Project required oversight by people with a higher level of experience. I find that, prior to the appointment of Mr. Marshall, there was insufficient focus on the transmission component of the Project. Mr. Marshall's different management approach also resulted in a more accountable chain of command and ensured greater participation in the Project by the Nalcor financial team.

### **STRATEGY CHANGE AND THE EFFECT ON CONTRACTOR CLAIMS**

It should be noted that many of the PMT members testified that, following the appointment of Stan Marshall, the focus at the top changed from the cost of the Project to its schedule. This shift was reflected in the change in strategy for dealing with contractor claims.

Darren DeBourke testified that, in his opinion, Nalcor began "throwing money" at the contractors, whereas prior to bifurcation there had been a rigorous process to approve change orders. Mr. DeBourke testified that he agreed that the PMT members were cost-conscious and "willing to enforce the contract to the letter" (May 10, 2019, transcript, p. 34).

Jason Kean testified that, when the management focus shifted to schedule over cost, "they threw money at contractors just to solve issues" (P-01823, p. 4). Here is some of Stan Marshall's testimony about his approach to claims resolution (June 28, 2019, transcript):

**MS. MUZYCHKA:** You were—but I think in the context of the discussion at the interview, you were saying that sometimes it’s better to pay a little extra for acceleration or for different changes in (inaudible)—

**MR. S. MARSHALL:** Yeah. That became more evident on the transmission side.

**MS. MUZYCHKA:** Yes.

**MR. S. MARSHALL:** You know, when we changed it—when we changed the focus there with new leadership on the transmission side, it became immediately apparent that they were fighting over things that they shouldn’t be fighting over.

...

Time was money. I mean if you’re late, you’re losing an opportunity. And here’s one of the big differences between the oil business and the hydro business: In the oil and gas business, if you don’t get the oil out today, they’re there tomorrow; if the water is not captured today, it ain’t there tomorrow. You’ve lost it.

**MS. MUZYCHKA:** Okay.

**MR. S. MARSHALL:** So there’s a different approach to these things and how we look at them.

And I think it got reflected in—like, one of the things I did when I started to give the cost update, for the first time ever I started incorporating finance costs. I mean that’s fundamental in the world I come from. So, before that, you just talk about the basic cost without finance, and I insisted that it would go in there with the finance cost included, it’s real. (pp. 42, 44)

In his testimony, Mr. MacIsaac also described the approach he followed when dealing with contractor claims (June 11, 2019, transcript):

**MR. SMITH:** The point being is that after bifurcation we can point to the fact that about \$200 million is added to the contracts [in reference to cost of transmission lines] based upon, essentially, the philosophy which was we got to reset this and we have to make sure we don’t spend more than we feel they’re entitled to and we don’t under spend. Is that—that was my understanding of your evidence.

**MR. MACISAAC:** Based on entitlement, based on collapsing the commercial risk and ensuring that there was value for money. Not more than what was the entitlement, not less than what was the entitlement, is the overarching premise. (p. 94)

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BJ Ducey of Valard also testified that there was a benefit to having John Maclsaac appointed the Executive Vice-President, Power Supply. In his testimony, he said (April 3, 2019, transcript):

**MR. DUCEY:** It was a benefit because one—you know, and it wasn't easy in the beginning—it was never easy, really, with—on this process but, you know, when John came in, he was, you know, a fresh set of eyes and ears and so—you know, and I think in any situation in life or business, you know, neither side is 100 per cent right or 100 per cent wrong. And so John was very interested in finding out, you know, the issues on both sides to bring them together to get, you know, to bring resolution, to bring—get the project completed successfully—

...

—and, you know, with a reasonable cost structure and things of that nature, from what the issues that we were facing.

**MR. LEARMONTH:** Yeah. So you saw that as an improvement, something that caused an improvement in your relationship with Nalcor.

**MR. DUCEY:** Yes.

**MR. LEARMONTH:** Mr. Maclsaac's presence?

**MR. DUCEY:** Yes. (p. 37)

Valard had longstanding claims related to delays on the Project (P-02857). Mr. Ducey testified that Mr. Maclsaac brought in a different approach to the settlement of claims. He brought more people into the field, an approach that Valard appreciated because it enabled Nalcor to see the issues first-hand. The approach implemented by Mr. Maclsaac eventually helped to settle the claims in the summer of 2017.

Stan Marshall disagreed with Mr. Kean's position that Nalcor was throwing money at the contractors to settle claims. In his testimony, Mr. Marshall stated (June 28, 2019, transcript):

**MS. MUZYCHKA:** . . . So, in terms of—just going back to the Valard claim and, again, you know, in terms of the settlement that was made, and Mr. Kean had expressed surprise at the amount of money that had been spent to settle that particular claim. But we'd heard evidence from John Maclsaac, recently, as well, that a lot of the claimed amount that was due to Valard arose out of the unit cost items. So, they were things, because of the geotechnical information and the fact that the foundations weren't adequate or improperly (inaudible)—

**MR. S. MARSHALL:** Right. That was what John expressed to me. That's what I interpreted was—the thing had been (inaudible) properly, and that the unit—that Jason was sitting on it. So, that is the issue. (p. 47)

As we have seen, issues with Astaldi were a major concern for the Ball Government. The change in CEO at Nalcor also had an impact on the “Astaldi problem.” According to Lance Clarke, the November 2015 general election affected the timing of the negotiations with Astaldi. He testified that, prior to the election, Nalcor had laid the groundwork for the settlement discussions with Astaldi and that settlement negotiations were conducted through January 2016. Mr. Clarke believed that GNL's instructions to discontinue negotiations with Astaldi adversely affected Nalcor's bargaining position, as it prevented negotiations taking place prior to the summer months of 2016. Nalcor felt that negotiating with Astaldi at that time provided it with greater leverage in its position.

GNL gave Stan Marshall the authority to lead the negotiations with Astaldi. Mr. Marshall kept GNL up to date on the progress of these negotiations. On July 27, 2016, a Bridge Agreement was finalized, which allowed for continued construction during the summer and fall of 2016.

## THE DECISION TO CONTINUE THE PROJECT

The change in government following the November 2015 general election and the appointment of Stan Marshall as CEO of Nalcor (April 21, 2016) provided an opportunity to review the Project with fresh eyes and to decide whether to continue with it or shut it down. On March 7, 2016, Nalcor prepared a Briefing Note for the Premier entitled “Implications of Cancelling or Significantly Delaying the Muskrat Falls Project” (P-03589). Premier Ball testified that this Briefing Note was prepared because he wanted to ensure that all options were considered. Based on all the information he reviewed, he determined that the option to cancel or delay the Project at that time was not reasonable. Not least among the reasons this was so were the outstanding commitments to Emera and Canada through the FLG. Premier Ball stated that, at this point, “[S]hutting the project down with . . . billions of dollars spent and committed, legal agreements in place with Emera was not seen to be an option” (July 4, 2019, transcript, p. 17). He further testified:

[W]ith the opinions and given the commitments, and the legal requirements and the legislative requirements that were in place, I think most people would agree that, you know, once we got past the sanction and now we're into a point

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where there's billions, you know, committed, it would've been very difficult to turn back. (p. 18)

Stan Marshall shared Premier Ball's view on this, as he testified on two different occasions:

**MR. S. MARSHALL:** I think it was too late. I think it was made clear—I haven't seen much of the Inquiry, but I think it's fully clear that once you entered into the financial close, you were committed. (June 28, 2019, transcript, p. 62)

...

**MR. S. MARSHALL:** Well, the drivers—

**MS. MUZYCHKA:** —a factor in—?

**MR. S. MARSHALL:** —was that you already have these contractual arrangements.

**MS. MUZYCHKA:** With the contractors who are building.

**MR. S. MARSHALL:** And also with Emera.

...

You had to supply them with, you know, 150 megawatts for 35 years and other things, and they were investing in a—in their Maritime Link. You had to come up with 500 megawatts to replace Holyrood, plus another 150 megawatts to give to Nova Scotia for long periods of time. So, what was the alternative then? You were locked in.

You had the federal government there with—which said that if you didn't complete the project, they would step in and complete it. So, it was no turning back. In my view, once you sign—what I know now, once you sign the federal loan guarantee, you were stuck. And, of course, the contract with Emera was in the same time frame. One was, sort of, dependent on the other.

...

I had a very quick look at it to find out what the contractual arrangements were, but beyond that, it didn't take rocket science to figure out you were stuck. (July 3, 2019, transcript, p. 58)

I am satisfied that, considering the extent of construction completed and the contractual and other obligations in place, the Project had clearly reached the point of no return when the Ball Government was elected. I conclude that the real point of no return was at Financial Close of the Federal Loan Guarantee in late 2013.

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## CHAPTER 21: DEALING WITH OPPOSITION TO THE PROJECT

At various times as the Project was developed and unfolded, individuals and groups expressed concerns about the actions of Nalcor and GNL. These people have sometimes been described as critics and naysayers. I would be remiss if I did not speak to their efforts. My focus is on the reaction of Project proponents when responding to critics of the Project, not on the merits or weaknesses of the critics' arguments against the Project.

I have not attempted to produce a comprehensive list, but some of the more notable public critics of the Project are or have been: Dennis Browne, Richard Cashin, James Feehan, Edward Hearn, Ed Hollett, Cabot Martin, Ronald Penney, Des Sullivan and David Vardy. I would also include members of the Grand Riverkeeper Labrador, the Labrador Land Protectors and Members of the Opposition in the House of Assembly at that time.

It is fair to say today that the Project cost has increased significantly over the estimate and the fuel price and load forecast assumptions made by Nalcor have not materialized. While these observations are made with the benefit of hindsight, many of the concerns raised about the Project by the people listed above have, in fact, been borne out. It is clear that many of the Project risks that were characterized in the past by Project proponents as unpredictable were actually correctly identified by the so-called critics, who tried repeatedly to draw attention to them in the public sphere.

That is not to say that these people were always flawlessly correct in either content or delivery. There were times and occasions when the tone of their commentaries was inflammatory and contained factual errors. Indeed, it would be difficult for anyone outside of the Project to fully understand its details as well as the people working for Nalcor did. However, the errors made or the strident tone were often taken by decision makers as proof that people critical of the Project were either unqualified to comment or acting in bad faith. This assumption contributed to a failure on the part of GNL and Nalcor to seriously address some fundamental concerns they raised, such as the magnitude of the Project in relation to the number of ratepayers on the Island.

It is understandable that Project proponents would become frustrated by criticisms that they felt were unfair or inaccurate. Their response to these criticisms, however, was at times unbalanced and disproportionate to the commentary. For instance, in January 2012, when David Vardy and Ronald Penney raised concerns about GNL's management of the Project, Danny Williams (Premier at the time) called their concerns

“garbage” and “nonsense” (P-00285). At the hearings, Mr. Williams expressed his views of people who criticized the Project (October 1, 2018, transcript):

So, the bottom feeders who go out and try and disparage our people and state that they're not world class, I think, do a serious injustice to the people in this province. We've proved at an international level on megaprojects, you know, with Hibernia and the others, that we can compete with the best of them. We're there. So, you know, I—and I'm conscious of the Commissioner's comment this morning on, you know, everybody's got a right to criticize, and I can fully accept that and I understand it, but I've also got a right to answer those critics. You can't have people out freelancing unanswered, unaccountable, not elected, just coming out and just throwing out conjecture and disparaging reputations for no reason. (p. 63)

This kind of extreme and derogatory language does not serve to advance reasoned public debate.

Based on comments he made both as Premier and at the hearings, Mr. Williams seems to regard most criticism of the Project as somehow being “disloyal” to the province. In a June 2014 address to the Newfoundland & Labrador Oil & Gas Industries Association, for example, Mr. Williams was quoted as saying (P-00235):

We own it. It's ours, folks. What are we out shitting on it in the public for? Why are we getting on with criticism all the time?

...

There is a group out there that every day just keeps pounding away . . . they've all got the same background, they all come from the same origination, for want of a better term, even though it's 30 or 40 years ago. And they're out there just pounding away at us just for the sake of pounding. Well I'm telling you, this was a good project when it was approved, it's a good project now, it will be a great project in the future.

...

This company is going to be making a lot of money. And it's your money, and it's for your benefit, it's for your schools, it's for your hospitals. And some of that money ultimately should go back to the ratepayers to make sure that their electricity rates are kept at a reasonable rate. (p. 1)

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In response to questions about the Project's critics, Mr. Williams testified (October 1, 2018, transcript):

So for some people—and I'm trying to be respectful here—but for some people to come around and try and disparage the project and disparage us and, you know, really make a fool of Newfoundland and Labrador, you know, by coming out with this kind of irresponsible showmanship which we can't attribute—I can attribute to only one person, but right now—but there are others. You know, it's terrible. You know it—you know, you don't see Québec doing this, right? That's why I say we could learn from the Province of Québec and the people of Québec. They don't trash their own projects. (p. 14)

During the testimony of Mr. Williams, I made the following observation (October 1, 2018, transcript):

[W]e're living in a democratic society. So you being a politician in the past would know that there's people who are going to agree with you and people who are going to disagree with you. So people have a right, I assume, to disagree; and while you may not exactly like the tenor of their statements, I would suspect that in a democracy we have to give people the opportunity to, basically, express their views. (p. 14)

In response, Mr. Williams conceded that people have a right to make comments but defended his own right to “tackle” his critics in the way he saw fit (October 1, 2018, p. 15).

By and large, the Project's most vocal critics were private citizens who were asking informed questions to the best of their ability and presenting their views about hydroelectric policy in the best interests of the people of the province. As the words of Mr. Williams and others indicate, they came to be treated by some Project proponents as obstructionists with ulterior motives.

Mr. Williams left the premiership shortly after the Emera Term Sheet was signed in November 2010. It would be fair to say, however, that the political culture and communications style established under his leadership was carried forward to a significant extent by his successors. To be fair, the Dunderdale administration, which took up the reins after Mr. Williams departed, did consider the concerns raised by David Vardy and Ronald Penney seriously enough that their views contributed to the decision to send a Reference Question to the PUB in June 2011. However, in a speech to the St. John's Board of Trade on January 31, 2012, Premier Kathy Dunderdale portrayed “the most vocal and ever predictable critics” as people who were “haunted by the infamous Upper Churchill contract” and for whom “no project will ever be good enough and no amount of scrutiny

will ever be long enough” (P-01615, p. 6). In the same speech, Ms. Dunderdale also characterized the critics’ concerns about potential cost overruns as “fear mongering” (p. 6).

If people assume that their critics attack for only political or psychological reasons, then it stands to reason that their arguments are unimportant except to the extent that they should be publicly refuted. When things as fundamental as concerns about cost overruns become tainted by such assumptions, government runs the risk of engaging in wilful blindness that can damage its ability to examine issues objectively.

Jerome Kennedy, the Minister of Natural Resources at the time of Project sanction, made similar comments about certain critics. For instance, the first Manitoba Hydro International report (January 2012) discussed the effect that a potential closure of the Corner Brook Pulp and Paper mill would have on the Island’s electrical load. In a February 2012 speech to the Corner Brook Board of Trade, reported in *The Telegram*, Mr. Kennedy attributed the concept of a potential mill closure to Mr. Vardy, adding: “It’s almost as if some of these critics want Corner Brook Pulp and Paper to close down so they can say, ‘I told you Muskrat Falls is not needed’” (P-01230, p. 1). To be fair, Mr. Kennedy did acknowledge in his testimony that these comments about Mr. Vardy were inappropriate and that, in retrospect, he should not have made them (December 4, 2018, transcript, p. 66).

It was not only politicians and their staff who were involved in making strong comments about critics of the Project. For example, on April 26, 2012, Robert Thompson (Clerk of the Executive Council at the time) emailed Premier Dunderdale with suggested messages for a dinner the Premier was having with the Nalcor board. One message was that she “won’t be deterred on MF by detractors pursuing narrow and petty agendas” (P-01113). In his testimony, Mr. Thompson stated that he personally did not feel that detractors from Muskrat Falls had narrow and petty agendas, rather he was simply “reflecting the tone of the time” (November 14, 2018, transcript, p. 69).

The approach of conflating critics with political enemies seems to have existed at the top levels of Nalcor as much as it did in GNL. In one rather significant exchange of emails on January 17, 2012, between Dawn Dalley, Vice-President of Corporate Communications at Nalcor, and Edmund Martin—Roger Grimes, Dennis Browne and Danny Dumaresque were referred to as “old, tired partisans” who were “trying to ‘kill’ the project for unsubstantiated, political reasons” (P-01541, pp. 1, 3). In this chain of emails, Mr. Martin also discussed a draft *National Post* opinion piece that would respond to a paper by economics Professor James Feehan about efficient electricity pricing, saying (P-01541):

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Also, need more balance on dissecting Feehan's pitiful thoughts before going to the high level messages. Use the hi level to put belts and suspenders on the foolish messages Feehan put out. He sept [sic] a full sabbatical semester preparing this foolish "one focus" nonsense, and we deal with much more reality "depth" on many more relevant, realistic perspectives with deeper, more informed analysis that he can comprehend. (p. 2)

With this kind of mindset at the upper levels of Nalcor management, it is clear that Nalcor saw public criticisms as more like attacks to fend off than as thoughtful considerations to take into account.

Evidence before the Commission further shows that Nalcor encouraged and developed partisan messaging for GNL about the Project. In an August 2012 presentation deck, for example, Nalcor gave sample messaging for the upcoming House of Assembly sanction debate that could be delivered by a "hit squad" of MHAs. One slide said: "The Liberals have no credibility when it comes to the Lower Churchill, and neither do the NDP. Their own federal parties support it. They are just interested in opposing for the sake of opposing it" (P-00926, p. 34). The deck also includes suggestions about attacking the Liberals about the development of the lower Churchill River, an earlier deal that had been proposed by Premier Roger Grimes (P-00926, p. 34).

In my view, this kind of communication coming from a Crown corporation is inappropriate. It clearly conflicts with Nalcor's often-stated core values of open communication, respect and dignity, and honesty and trust. But, again, it illustrates the highly politicized and partisan process through which this Project developed. Nalcor and GNL were closely aligned on communications to promote the Project; by 2012, this included a joint effort to actively stoke political divisions and portray discussion of the Project in starkly "you are either with us or against us" terms. There was no room for any middle ground or criticism.

It should be noted that the politicians did not perceive their actions as dismissing the critics—they felt they were actually making a genuine effort to address their concerns. An example of this is the series of reports GNL released to the public in late 2012 to address questions about possible alternatives to the Project. In her testimony, Kathy Dunderdale stated: "[S]ometimes people say—you didn't appreciate or you didn't pay attention to the naysayers. Pay attention to the naysayers? We spent hundreds of thousands of dollars getting reports on the points that they raised so that you could have

an independent source of information to judge the information that was in full public discussion” (December 18, 2018, transcript, p. 16).

In my view, this response demonstrates a fatal disconnect. It is true that a great deal of time and money was spent explaining how the critics might be wrong. That is different from putting time and money toward trying to understand if or how they might be right. Of course, since some of the issues raised in 2011 and 2012 went to the heart of the business case for the Project, it would not be possible for GNL to recognize their validity and simultaneously push the Project ahead confidently and urgently, which it was doing. The dismissive treatment of critics is thus more a symptom than a cause of the political atmosphere. However, it does go a long way toward explaining how the Project unfolded as it did.

The Project’s critics have been vindicated to a significant degree by the subsequent course of events, but this is no cause for celebration. Rather, it should be a cause for serious introspection on the part of politicians and public institutions about how they view, respond to and participate in public discourse. The broader question of how governments should respond to criticism is far more complex than can be adequately addressed in this Report, but there are some obvious takeaways from the lessons of Muskrat Falls:

- Private citizens have much to contribute to policy discussions
- Government should at least start from the perspective of recognizing and respecting citizens’ right to criticize their policies and actions
- Governments should assess comments solely on their merits rather than on the speaker’s real or imagined affiliations or biases
- Governments should not assume that their critics’ motives are partisan or ill-founded

I would like to thank the private citizens who have spent considerable time and effort learning, thinking and speaking about the Project in a spirit of civic duty.

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**CHAPTER 22: INDIGENOUS PEOPLES, ENVIRONMENTAL MATTERS**

This chapter addresses both the Project's consultation process with Indigenous Peoples and the environmental assessment process. The topics are linked because the two processes are intertwined to some extent and because there is clear overlap between the environmental effects of the Project and many of the concerns of Indigenous Peoples. However, it is clear that the environmental assessment process, which is legislated, is distinct from the legal duty to consult with Indigenous Peoples based on their Aboriginal rights and title.

The Commission's Terms of Reference do not refer specifically to either Indigenous consultations or to environmental issues. However, I indicated in my Interpretation Decision of March 14, 2018, that I would investigate both of these matters to a limited degree. The topics that I stated I would consider included (Interpretation Decision):

- The consultations that occurred with Indigenous Peoples
- The assessments that were done regarding the concerns of Indigenous Peoples
- Whether these assessments were reasonable and appropriately considered
- Which measures, if any, were taken to address these concerns (pp. 17–18)

I also indicated that I would consider some environmental concerns related to the Project, including whether the environmental analysis and assessments were appropriate and reasonable, and the measures taken to address environmental concerns (Interpretation Decision, p. 20). I stated that I would also consider potential risks to the environment, human health and property related to the North Spur, and methylmercury levels (p. 15). In order to assess environmental matters, it is necessary to consider the concerns of both Indigenous Peoples and non-Indigenous individuals and groups.

It is important to state that, in considering the consultation with Indigenous Peoples that took place, I do so from a perspective of reasonableness and fairness and not based on any legal duty to consult as set out in the decisions of the Supreme Court of Canada, such as *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73, and *Taku River Tingit First Nation v. British Columbia (Project Assessment Director)*, 2004 SCC 74.

## BACKGROUND: FRAMING THE ENVIRONMENTAL ASSESSMENTS

On December 1, 2006, Nalcor registered the generation components of the lower Churchill River development, including both Muskrat Falls and Gull Island, for Environmental Assessment review with both the provincial and federal governments. This was required by legislation. On January 23, 2007, Clyde Jackman (GNL's Environment and Conservation Minister<sup>8</sup> at the time) directed that an Environmental Impact Statement (EIS) be prepared (P-00189). The generation components for Muskrat Falls and Gull Island were subsequently referred to an EA by a review panel. A Memorandum of Understanding was negotiated between the Province and Canada for a combined provincial-federal environmental review process by an independent panel. The resulting Joint Review Panel was to do its work under the authority of both the Canadian Environmental Assessment Agency (CEAA) and Newfoundland and Labrador's *Environmental Protection Act*, SNL 2002, c. E-14.2. It was necessary to ensure that the requirements of both the federal and provincial legislations were met because the Project was expected to cause significant negative environmental effects.

According to a Briefing Note (P-00189) prepared for Premier Danny Williams and dated December 10, 2007, the required EIS was to include

a comprehensive environmental review of a complete project description including alternatives, original research on the existing environment, socio-economic impacts, identification and evaluation of potentially significant environmental effects, an evaluation of proposed mitigation measures to minimize harmful effects and monitoring programs. **Under the *Environmental Protection Act*, when an EIS is required, Government shall provide EIS guidelines to the proponent identifying specific issues and concerns that must be addressed in the EIS.** (emphasis in original, p. 1)

The transmission component of the Project was separated from this review and registered for its own environmental assessment in January 2009. The guidelines for its EIS were finalized in May 2011 (P-00271, p. 7).

At Nalcor, Gilbert Bennett held the primary responsibility for the environmental assessment file. He testified that the generation and transmission components were registered as separate projects for environmental assessment because, at the time the generation components were registered, Nalcor was unsure about the final route that

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<sup>8</sup> This department has gone through several name changes since 2006; it is currently the Department of Municipal Affairs and Environment.

would be chosen for the transmission lines. He further explained that, although he was aware of the industry practice of “project-splitting” (dividing a large project into smaller components so that a lower level of environmental assessment is required), this was not the reason why Nalcor registered the two components separately (November 27, 2018, transcript, pp. 5–6). Mr. Bennett added that Nalcor was satisfied at the time that the generation components were already going to be subject to the highest level of environmental review (p. 6).

Not everyone saw the situation the same way, however. As Roberta Benefiel (Grand Riverkeeper Labrador/Labrador Land Protectors) pointed out in her testimony, some members of the public were concerned that if the generation and transmission components were not assessed together, cumulative effects of both pieces of the Project on the Environment would not be considered by the environmental review panel (October 11, 2018, transcript, p. 9). A related concern was expressed in a submission dated May 22, 2013, that was forwarded by counsel for the Innu of Ekuanitshit (Ekuanitshit), an Indigenous group in Québec who were consulted in the environmental review process (P-01731):

The Agency is preparing to recommend the approval of a project related to the Muskrat Falls project: the transmission lines, the environmental assessment of which was artificially split off from the assessment of the generating station, despite the fact that the two so-called projects are inextricably linked and neither is viable without the other.

...

We find it hard to imagine how it would still be possible for the Minister to reject “carrying out in whole” the transmission lines, which are an essential component of the project that the federal Cabinet has already decided to fund. Such a decision would be tantamount to cancelling construction of the Muskrat Falls generating station, which the federal Cabinet has already approved. (pp. 3, 4)

While the EIS Guidelines were being developed by the Province and Canada, GNL officials were directed to negotiate consultation agreements with the Innu of Labrador (Innu Nation) and the NunatuKavut Community Council (NCC), which was known at the time as the Labrador Métis Nation. The NCC was to receive a higher level of consultation than other stakeholders, but lower than the Innu Nation (P-00189, p. 1), which had its land claim accepted for negotiation at that time. GNL officials were further directed to

negotiate a consultation agreement with the Nunatsiavut Government (NG) in accordance with the Labrador Inuit Land Claims Agreement.

In December 2007, the draft EIS Guidelines for the generation component were presented to the various parties, including Indigenous Peoples, for feedback. The Innu Nation provided significant feedback, and comments were also submitted by the NCC (P-00271, p. 14). The draft Guidelines were not provided to the Québec Innu, an omission not explained in testimony or evidence (P-00189).

Public consultations on the EIS Guidelines were held between December 19, 2007, and February 27, 2008, following which the EIS draft Guidelines were finalized. They were then approved by the federal and provincial governments and the final EIS Guidelines were issued to Nalcor in (or before) July 2008 (P-00293). Their stated purpose and directions were (P-01323):

The purpose of this document is to identify for the Proponent [Nalcor] and interested parties, the nature, scope and extent of the information and analysis required in the preparation of the EIS. The Proponent will prepare and submit an EIS that will identify alternatives to the Project, alternative methods for carrying it out, the environment that will be affected, the important environmental effects associated with the Project, measures that are required to mitigate against any adverse effects and the significance of residual environmental effects. (p. 6)

The following year, in February 2009, Nalcor submitted its EIS to the Joint Review Panel. In preparing it, Nalcor had consulted various stakeholders, including Indigenous Peoples as per the EIS Guidelines' guiding principle for including "Aboriginal Traditional and Community Knowledge" in its considerations (P-01323):

Populations living in proximity to the Project may have substantial and distinct knowledge, which may be essential to the assessment of the effects of the Project, and their mitigation. Aboriginal traditional and community knowledge of the existing environment shall be an integral part of the EIS, to the extent that it is available to the Proponent.

In environmental assessment, Aboriginal traditional and community knowledge may be regarded as the knowledge, understanding and values that residents of Aboriginal and local communities have in relation to the environment and the potential environmental effects of the Project and proposed mitigation measures. This knowledge is based on personal observation, collective experience and/or oral transmission.

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Aboriginal traditional and community knowledge assists in understanding, including the inter-relationships, among such matters as:

- Ecosystem function;
- Resource abundance, distribution and quality;
- Social and economic well-being; and
- Use of the land and resources.

It also informs the development of adequate baseline information, identification of key issues, prediction of effects, and assessment of their significance, all of which are essential to the EIS and its review. (pp. 8–9)

At the same time, Aubrey Gover, then Deputy Minister for Indigenous Affairs, led the legal consultation process for Indigenous Peoples on behalf of GNL. Providing context, Mr. Gover testified that the degree of consultation engaged in with a particular Indigenous group was determined by the strength of that group’s settled or asserted claim to rights (October 3, 2018, transcript):

[I]t was clear, as a result of the seminal decision of the Supreme Court of Canada in *Haida and Taku*, that a duty to consult can arise at law whenever a government—be it the federal government or the provincial government—is contemplating an action which could adversely affect asserted or settled Indigenous rights.

By settled we mean settled by a historic treaty or a modern land claim agreement for the most part. Asserted rights are rights that haven’t been adjudicated in court and proven to exist, accepted by a government or defined by a treaty or a land claim agreement. They’re assertions.

As a result of the decision, contemplation to develop the Lower Churchill, it gave rise to considerations as to the engagement of that duty and the discharge of that duty. So, as often is the case, the duty to consult requires governments to solicit the views of Indigenous people on how the project may impact their settled and asserted rights. And often those considerations are very similar to the considerations that arise in an environmental assessment of a project. (p. 4)

He also stated that, in the case of the Muskrat Falls Project, government did not go through the process of determining the strength of each group’s claim.

Mr. Gover also explained the basis for selecting which Indigenous Peoples would be consulted. Initially, GNL identified three Labrador groups—the Innu Nation, the NCC, and the NG, as well as six Innu groups in Québec in the communities of Uashat Mak

Mani-Utenam, Ekuanitshit, Nutaskuan, Unamen Shipu, Pakua Shipi and Matimekush-Lake John (P-01323, p. 40). Of the Québec Innu groups only the Ekuanitshit took an active role in the environmental and consultation processes.

### NALCOR'S ROLE IN THE CONSULTATION PROCESS

Nalcor, as proponent of the Project, did much of the consultation with Indigenous and other groups during the environmental review process. Mr. Gover testified that, although GNL can delegate consultation to a proponent, GNL is ultimately responsible for ensuring that the consultation that occurs is performed adequately (October 3, 2018, transcript, p. 23).

Gilbert Bennett testified that Nalcor was assisting GNL in its duty to consult and that Nalcor carried out a significant portion of the activities related to consultations with Indigenous Peoples. Mr. Bennett further described how his role evolved into leading the Indigenous consultations (November 27, 2018, transcript):

**MS. O'BRIEN:** . . . Now, I understand that you were Nalcor's primary person on both Indigenous consultation—in particular, with the Innu Nation—and also on the environmental aspect in terms of going before the JRP. Is that right?

**MR. BENNETT:** Yes, that's correct.

**MS. O'BRIEN:** So why—who made the decision to make you the primary point person on both of those files?

**MR. BENNETT:** In terms of the project, that role evolved over a number of years. We knew that it was an issue of strategic importance, critical importance to the project and getting it through the environmental assessment process. So that was a role that evolved as part of my responsibility for the project. It was fully understood by Mr. Martin as we worked through our work plan over the years.

. . .

**MS. O'BRIEN:** Okay, but, I'm just—I'll put that question to you again, okay? Is it that you made the decision that you would be the primary point on those two files?

**MR. BENNETT:** Yes, that's fair. (p. 1)

Gilbert Bennett had no prior experience in Indigenous consultation and little or no experience working with Indigenous Peoples. It was Mr. Gover's responsibility, on behalf of GNL, to oversee Nalcor's consultation.

Mr. Bennett further explained Nalcor's role in the consultation process with Indigenous Peoples (November 27, 2018, transcript):

I guess if we look back in general, the duty to consult Aboriginal or Indigenous groups arises and it lies with the Crown. So either the province or Canada ultimately holds the duty to consult. From our perspective as the proponent of various projects, much of that activity in terms of explaining the project, trying to understand these issues, they get delegated to us.

And during the planning phase of the project, that happens through the environmental assessment. So our role, in terms of gathering information, developing an understanding of concerns and trying to explain what we have done to mitigate those, ultimately falls to us and has been discharged through the environmental assessment process. It continues past EA, it continues into the permitting process. And, certainly, both governments will have a long-term relationship with Indigenous groups and they've still maintained that obligation.

...

So, at a high level, our requirement was to gather information about historic land resource use, contemporary land and resource use, try to understand what we thought that the effects of the project would be on those activities—excuse me—to collect information about concerns that groups might have in various aspects of the project, and try to explain what our perspective was on those and then to help identify if there were an opportunity to mitigate those effects. At the highest level, that was our role. (p. 2)

## **HISTORICAL AND PRESENT LAND USE**

The issue of Indigenous Peoples' historical and present land use was particularly important for the environmental assessment process.

The members of the Innu Nation are Indigenous inhabitants of an area that comprises the eastern portion of the Québec-Labrador Peninsula. Labrador Innu primarily reside in two communities, Sheshatshiu and Natuashish (P-00271). Elder Sebastian Penunsi testified that he was born on the coast of Labrador ("in the country") and that the Churchill River was always known to the Innu people as Mishta-shipu. He stated that the Innu have

used and continue to use the Churchill River in their hunting and trapping activities. In the past, Innu men would sometimes leave their families on the shore while they went hunting and fur trapping. Mr. Penunsi testified that the Innu were nomadic people who travelled across Labrador: “[T]here was no boundaries back then” (September 18, 2018, transcript, p. 17). They hunted animals such as porcupine and beaver and fished for trout and other species. Most of their travel on the Churchill River was done by canoe. Families or groups of small families would travel together and share their provisions (September 18, 2018, transcript, pp. 17–19).

The Innu lived in tents when in the country. After Sheshatshiu was established, many of the Innu would go there only to obtain provisions and sell furs, then would return to the country. Mr. Penunsi testified that after the school was built in Sheshatshiu, people started staying longer in the community, but not every child went to school. At first the Innu resided in tents in Sheshatshiu, but they were eventually moved into housing. Mr. Penunsi stated that, over time, people (particularly young people) started staying in the community more and spending less time in the country. He also said (September 18, 2018, transcript) that the Innu people were more spiritual when they were in Mishta-shipu, noting that the land was important to the Innu because

they respected Muskrat. They respected the land and they used it for travelling back and forth to go to the country, because there was a trail there. People used to travel on the trail and on the water and—when they go up to the country, 'cause . . . the elders respected the land and was spiritual for them. (pp. 20–21)

Mr. Penunsi confirmed that the Innu still go to the country to hunt.

The Nunatsiavut Government represents Labrador Inuit who live principally along the coast of Labrador. Carl McLean and Rodd Laing testified on behalf of the NG. In his testimony, Mr. McLean said that, although the settlement area in the Labrador Inuit Land Claims Agreement does not include the Churchill River, the ancestors of the Labrador Inuit used the river “right up to the height of land” (September 18, 2018, transcript, p. 5). At certain times of year, he said, the Inuit would trap and hunt above the Churchill River valley and paddle and portage up to the trapping grounds by the end of September. They would trap animals (weasels, muskrats, beaver, fox and lynx) to provide for their families. Mr. McLean indicated that they would stay in tilts at these times. He described a tilt as a “log-type structure . . . that had one or two bunks . . . with a woodstove” (September 18, 2018, transcript, p. 5).

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Mr. McLean explained how his ancestors would at times travel as far inland as the present-day location of Labrador City, living off the land as they travelled, and that they made their living from the traplines. He affirmed that members of other Indigenous groups would trap in the same areas and the people would encounter each other, and that they had respectful and cordial relationships. In the spring, the Inuit would come out of the country to sell their furs at a trading post. Mr. McLean also spoke about how the flooding of the Smallwood Reservoir for the Upper Churchill development had affected trappers by flooding the area in which their tilts were located.

Mr. McLean further testified that some Inuit carried on this way of life into the 1960s and 1970s. Then, for the most part, people ended up taking jobs in Goose Bay. Currently, the Lake Melville area is an important source of country food for the Inuit who reside around the lake, right out to Rigolet. They hunt migratory birds and seals and they fish in Lake Melville and pick berries along its shores. The Inuit also use Lake Melville as a transportation route in summer and winter (September 18, 2018, transcript, pp. 8, 9, 10).

Todd Russell is with the NunatuKavut Community Council, which represents Inuit living primarily in central Labrador and along its southern coast. In his testimony, he described the history of the NCC and its territory. He said that the Inuit occupied the shores of Lake Melville in the Groswater Bay and Upper Lake Melville areas, and that they had a presence along the Churchill River as well. He indicated that they travelled on the river following the caribou, that they engaged in trapping and snaring and gathering of medicines along the main waterway as well as the tributaries and streams of the river (September 18, 2018, transcript, pp. 44–45).

Mr. Russell stated that the Churchill River was used as a transportation route and that his people would have used the land in the same way as the Labrador Inuit who are represented by the Nunatsiavut Government, in terms of travelling to the height of land during the winter and returning in the spring. According to Mr. Russell, hunting and fishing continue on the land today, as do snowmobiling, wood harvesting and seal hunting (pp. 48–49).

The Innu of Ekuanitshit reside in Québec. They were the only Indigenous Peoples from Québec who participated in the JRP hearings. The Ekuanitshit claim that the lands affected by the Project are part of their traditional territory. Chief Jean-Charles Piétacho testified that the Québec Innu canoed different routes, including the Mingan River, to

reach the Churchill River (p. 28). When they arrived, they would live in a shaputuan, an enclosure that can hold up to 15 people.

Describing the Innu of Ekuanitshit's traditional practices, Chief Piétacho said that they would hunt for food, fish and pick berries while on the river. Their main source of food was caribou, but they also ate porcupine, beaver, partridge, fish and rabbit. They spent the fall and winter in Labrador and returned to Québec in the spring, where they would sell furs from the trapping season. Chief Piétacho testified that this changed in the 1950s, when many children were taken away to residential schools. It changed further after the construction of the Churchill Falls power plant, when reservoir flooding affected the Innu of Ekuanitshit's ability to use traditional river trails (p. 33). He testified that he personally had never used the Churchill River area, but his parents and grandparents had (p. 33). He stated, however, that his people still hunted and fished in the area, though government policies may be affecting that, as well.

Chief Piétacho reiterated that the Innu in Québec had never recognized borders. They followed the caribou and treated all the land as theirs. Therefore, he did not feel any less connection to the Project area than he did to the land on which he lives in Québec (September 18, 2018, transcript, pp. 31–41).

## THE CONSULTATIONS

### Indigenous Peoples in Labrador

Mr. Gover gave the following testimony about the level of consultation that had occurred with Indigenous Peoples (October 3, 2018, transcript):

**MR. COOKE:** . . . [B]ut what I wanted to confirm, from your evidence, is when you talked about the consultation, what I took your evidence was that there was the same level of consultation with all of the Indigenous groups, is that correct?

**MR. GOVER:** That would be essentially correct. Because of the nature of the way this developed, there was engagement with Innu Nation earlier, and as a result, to the best of my knowledge, there were two differences in the Innu Nation consultation process as opposed to the other nine, but these differences were probably, especially one of them, inconsequential.

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The differences, to the best of my knowledge—I don't have the document in front of me, but one was that Innu Nation had the right to have one of its nominees as a member of the Joint Review Panel, whereas I think all other nine only had the right to nominate people.

Also, there was, I think, some documents, or at least one period of consultation, where Innu Nation, on the document where that consultation set, had 14 days longer than the other groups. (p. 46)

Although Mr. Gover testified that the level of consultation with each of the Indigenous groups was determined by the strength of their settled or asserted claims, as stated earlier, GNL did not actually determine the strength of each groups' claims. Gilbert Bennett testified that the level of consultation with Indigenous Peoples was determined while the EA process progressed. It was based on available information about each group's uses of and connection to the geographical Project areas, and by accepted land claims. It also seems clear from the testimony of Gilbert Bennett and others, and from my review of GNL's internal documents, that the Innu Nation was given a higher level of consultation than other Indigenous Peoples or groups (P-00310, p. 1).

Several applications for judicial review regarding consultation for the JRP process and the permits that were granted by GNL or Canada were filed following the EA processes for both the generation and the transmission components (P-00271, p. 9). They essentially challenged the adequacy of the consultation. All were unsuccessful.

It was important for the Indigenous Peoples that the Lower Churchill Project not unfold the same way the Upper Churchill project had. Evidence was given at the hearings, for example by Prote Poker, that the creation of the Smallwood Reservoir on the Upper Churchill flooded a large area and affected the Innu's ability to use the land (October 3, 2018, transcript, pp. 76–77). The flooding also caused an increase in the levels of methylmercury in Lake Melville, which, according to Carl McLean and others, may have long-term health effects (October 4, 2018, transcript, pp. 23–24, 26).

GNL and Nalcor began consultations with the Innu Nation as early as 1998, the year that the Innu Nation became aware that the Province and NLH intended to develop hydroelectric dams on the lower Churchill River (P-00271, p. 11). According to a submission prepared for the Commission by Prote Poker, the Innu Nation entered into a process agreement with NLH in 2000, through which it received funding to carry out the following (P-00266):

- (a) Community consultations about potential environmental impacts of the project, and to facilitate the Innu Nation leadership in getting direction from the Innu people about how to address the proposed project
- (b) Participation in technical review of the environmental, engineering and financial information in order to support and facilitate community consultations and planning for future EA work and to facilitate negotiations for an Agreement in principle about the project
- (c) Negotiations for an Agreement in principle to outline Innu Nation's potential participation in the project (p. 2)

By 2001, an agreement in principle for an Impacts and Benefits Agreement was drafted.

In 2006, when the Williams Government announced plans to develop the Lower Churchill Project, the Innu Nation advised GNL that it had three requirements (P-00266):

1. An IBA for the Lower Churchill project, ratified by the Innu membership
2. Resolution of outstanding major land claims issues with the Province
3. Compensation to the Innu people for the damages caused to our land rights because of the Upper Churchill project. (p. 2)

GNL was well aware that the Innu would not approve development of the lower Churchill River unless redress was provided for the Churchill Falls hydroelectric project (P-00266, p. 2). Ultimately, an IBA was negotiated with the Innu Nation, as was a Redress Agreement for the Upper Churchill and a comprehensive agreement in principle for the Innu Nation's land claim. These agreements collectively became known as the Tshash Petapen, or New Dawn, Agreement and were finalized in 2011.

Gilbert Bennett testified that when Nalcor began the consultation process, it was determined that the Innu Nation would be given a higher level of consultation because of its members' "proximity to the project—their land use in Labrador" (November 27, 2018, transcript, p. 3). The Innu Nation's submission to the Commission also included the following details about the consultations (P-00266):

While the negotiations for the New Dawn Agreements were underway, Innu Nation also participated extensively in the joint federal/provincial environmental assessment of the Lower Churchill project. That project included both the Muskrat Falls and Gull Island projects. We also participated in the environmental assessment of Labrador Island Transmission Link (LITL).

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Government and Nalcor Energy provided funding for that participation. We also had direct discussions with Nalcor Energy consultants and Nalcor Energy about mitigation and monitoring measures that we were seeking because of the importance of our land and waters to the Innu and because of our concerns about the socioeconomic impacts of the project on our communities. For example, the Innu Nation was very concerned about the potential impact of construction of the project on Manitu-utshu, a rock knoll at Muskrat Falls which is of considerable cultural importance to the Innu. Through our role in the EA and in discussions with Nalcor Energy, various mitigation measures to seek to minimize the impact of the project on Manitu-utshu were put in place, although initial proposals by Nalcor Energy had been to damage the rock by putting diversion tunnels through it. Land use and harvesting studies and Innu traditional knowledge studies were conducted by the Innu Nation and provided to Nalcor Energy. These contributed to the EA process and identification of mitigation measures.

It would not be correct to say that all of our proposals for mitigation and monitoring measures were accepted. However, the project as proposed by Nalcor Energy following our input through the direct discussions with them and through our participation in the EA, was acceptable to the Innu people in the context of the IBA we negotiated with Nalcor Energy, and given that, finally, compensation for impacts of the Upper Churchill project had been agreed to and key aspects of a land claims agreement with the Province had been agreed to in principle. That the project was acceptable is shown by the fact that the Innu people chose to ratify these agreements when we voted on them in 2011. (pp. 3–4)

Other groups were interested in developing consultation agreements with the Province, but GNL did not engage or respond to them until discussions with the Innu Nation were finalized (P-00189, p. 4). As noted above, no engagement with the Québec Innu occurred until after the final EIS Guidelines were developed.

The Innu Nation provided additional evidence at the hearings indicating that it continued to engage in consultations with Nalcor, Canada and GNL with respect to various permits required for the Project. The Innu Nation also continued to be consulted on mitigation measures at the time of the Commission of Inquiry (P-00266, p. 4).

The provincial and federal governments made equal contributions to a \$1 million fund that Indigenous Peoples could access to support their participation in the consultation process. These monies were transferred to the Canadian Environmental Assessment Agency, which then dispersed the funds. The Innu Nation received \$533,968 of the total CEAA allocated funding (P-00268, p. 5).

In his testimony, Gilbert Bennett explained the different focuses of the consultations that took place with the Innu Nation and the Nunatsiavut Government. He said that the Innu Nation's interests were in the Churchill River valley and the NG's interests were more about the downstream impacts of the Project. Nalcor shared some information with the NG, but it determined that there was no basis for signing an impacts and benefits agreement with it, given that the Project was not "on their land claim footprint" (November 27, 2018, transcript, p. 7). Mr. Bennett further testified about Nalcor's approach (November 27, 2018, transcript):

So, in terms of Nunatsiavut, I'll go there for a second. Their treaty area is, for the most part—and I'll simplify them, of course, there's detailed maps, and there's lots of information on the extent of their land claim. But for the most part, their treaty lands are on the Coast of Labrador and, generally, don't overlap with the project area, either in the case of the generation project or in the case of the transmission line which runs to the south.

From that perspective, the impacts of the project—the project and its immediate activity—on their treaty really focused around downstream effects and that was a more, I guess, a more specific issue for them as opposed to the general interest of having the project developed, what I'll say, on their land. (p. 7)

The main concern expressed by the NG was about downstream impacts, such as increased methylmercury levels in Lake Melville. Mr. Bennett testified that this concern was well known to Nalcor and GNL at an early stage in the Project. According to Mr. Bennett, Nalcor understood this to be an issue "from day one." This was discussed at the time of the EIS Guidelines and continued to be discussed throughout the development and construction of the Project. The NG was allocated \$23,471 from the CEEA fund.

At the time of the EA process, the NunatuKavut Community Council had put forward a land claim that had not been recognized by either the Government of Canada or GNL. Consultation with the NCC began in the spring of 2007 (P-00271, p. 14). In his testimony, Gilbert Bennett described Nalcor's approach to these consultations (November 27, 2018, transcript):

**MR. BENNETT:** NunatuKavut has asserted their land claim covered, at the time, a large portion of Labrador. The body of information supporting their land use was actually developed—was being developed—during the environmental assessment process and more information became available, but we didn't have a clear indication of the extent of their deep land use in the project area.

Much of that information was gathered through the environmental assessment. We're going to find that information was provided through the environmental assessment hearings on land use. Much of that information was accumulated directly through the EA process for us. We didn't get—again, we didn't reach a conclusion that accommodation in the form of an IBA was warranted for the project.

**MS. O'BRIEN:** Okay, so, even after that additional information came out during the JRP, you didn't believe that an IBA was warranted?

**MR. BENNETT:** That's right. (p. 7)

However, Todd Russell testified that the NCC was not part of the consultation process before 2012. This is confirmed by the documentary record. Mr. Russell also testified that he disagreed that all Indigenous Peoples were afforded the same level of consultation. He indicated that the NCC was not provided sufficient funding to enable it to participate in the EA process at the level it desired, nor to enable it to provide a “fulsome presentation” of its concerns and interests to the JRP (October 4, 2018, transcript, p. 4). He further testified:

And here we are, we're into consultation—supposed consultation before the project happens, and the testimony yesterday said you should be so happy that we bumped up the participant funding envelope to a million dollars so that 10 Indigenous groups could all participate, and as the process was described, we could participate with a Cadillac process, even if we only deserved a Lada.

And my reaction to that is that I don't buy it—first of all, that premise is not a good one. I'm pretty confident that this was not a Cadillac process. Secondly, regardless if it's a Cadillac or a Lada or whatever you're driving, you got to have a person to drive it.

...

Yesterday, we also heard testimony that when the provincial government gets into these consultation processes or these projects, they put together, like, an environmental committee they say, and then they say they bring in all this expertise—people who are scientists, people who are anthropologists or people with all kinds of expertise about facets or aspects of the project. We didn't have the resources to bring that kind of expertise to our particular participation in these particular processes.

So it seems a little bit—maybe unfair is the right word? Certainly, there was not a lot of balance in terms of the resources that we had to participate and what the government itself supposedly brought to this particular process. And certainly there was—there were inequities as well in terms of the participant funding envelopes, as can be attributed to the findings or the evidence that

was presented yesterday in terms of different funding amounts. You know, the highest being 500,000, I believe, in one instance to as low as twenty-something thousand for other Indigenous groups. (pp. 4–5)

Mr. Russell provided this testimony in response to Mr. Gover’s evidence about the level of consultation funding that was provided.

In a written submission to the Commission (P-00267), the NCC affirmed that the Project area included territory traditionally used by its people and expressed concerns that the Project would have significant impacts on its traditional activities, including hunting, fishing, harvesting, land use, and trapping. The NCC had experienced losses from the creation of the Smallwood Reservoir (for the Upper Churchill project) and was concerned that similar effects would occur from the Muskrat Falls flooding. In his testimony, Mr. Russell said (September 18, 2018, transcript):

Well people did have traplines. There were hunting areas. There were travel routes. And when—when of course the reservoir was created, it flooded that. So all of that changed. But it didn’t just change for us, it changed for the caribou. It changed for the wildlife as well. And once that changes the wildlife, it also changes us because of that relationship. You can’t go to the same place and hunt the caribou where you might have hunted them. Or you can’t go to the same place and trap where you once trapped. You can’t go to the same place and hunt where you used to hunt or to harvest the berries where you used to harvest the berries. (p. 51)

Mr. Russell further testified that members of the NCC had traplines in the Project area that would be destroyed as a result of the construction. The NCC was also concerned that clear-cutting would eliminate the animal species that were being trapped. The JRP recommended that, if the Project was approved, Nalcor should be required to establish a compensation program for all bona fide trappers who used territory along the lower Churchill River (P-00041, p. 181). However, it is appropriate to note that between 2014 and 2019 no actual work appears to have been done on creating a compensation plan, an observation that is based on GNL’s response filed with the Commission updating the status of the JRP recommendations. It is not clear whether community members are, or were, even aware they could be compensated.

Mr. Russell testified that the NCC’s longstanding position was that it wanted to be involved in any discussions about the development of the lower Churchill River. Mr. Russell felt that GNL and Nalcor never fully opened the door to the NCC for such discussions. In fact, he felt that there was a practice of shutting out the NCC, or of only

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offering it the bare minimum in terms of opportunities to participate and be heard (October 4, 2018, transcript, p. 2). In his words, the relationship with GNL and Nalcor was “rocky.”

Nalcor did enter into a Community Consultation Agreement with the NCC to facilitate the consultation process in the period from December 2009 to March 2010. In January 2011, another agreement was finalized for the second part of the environmental assessment with respect to the Project’s transmission components. These two agreements provided the NCC with some funding to support its participation in the EA process. The NCC provided a report to Nalcor that outlined its perspectives and concerns.

According to Mr. Bennett, Nalcor gathered information from the NCC and tried to understand the impacts the Project would have on its members’ land use. Nalcor received much of its information on the NCC land claim during the environmental assessment hearings. Nalcor determined, however, that further accommodations—such as the impacts and benefits agreement requested by the NCC—were not warranted. In his testimony, Mr. Bennett stated that the positions of Nalcor and GNL were aligned on this point. From the NCC’s perspective, the level of consultation provided by Nalcor and GNL was inadequate.

The evidence indicates that the NCC attempted to commence negotiations on the consultation process with Nalcor in the early 2000s (P-00288). The NCC’s final submission to the Commission states:

The documentary and testamentary evidence collected by the Inquiry clearly indicates that the Province and Nalcor both took an unduly narrow view of the engagement with NCC, and Indigenous generally, that was required to successfully develop the Project. The Province and Nalcor minimized the scope of their respective roles in accommodating NCC and implementing solutions to NCC’s concerns. This failed to foster a relationship between Nalcor, the Province and NCC built on mutual trust and respect.

This failure prevented the Province and Nalcor from fully understanding NCC’s concerns about the Muskrat Falls Project. Without a willingness to listen to NCC about the issues that needed to be resolved as a precondition to NCC’s support of the Project, the Province and Nalcor were unable to properly consider and mitigate the risks to NCC’s asserted rights both pre- and post-sanction.

Instead, the relationship between Nalcor, the Province and NCC became fractured and marred by litigation, protests, and distrust. (Final Submission of NCC, p. 7)

In the end, the NCC received \$133,000 in funding from the CEAA.

Mr. Gover stated that GNL was actively engaged in consultation with Indigenous Peoples. Of contrary opinion, Mr. Russell stated that he felt that GNL “abdicated its responsibilities” when it came to consultation (October 4, 2018, transcript, p. 7). He testified that he felt, by the end of the environmental assessment process, no progress had been made to address any of the NCC’s concerns.

### **The Innu of Ekuanitshit**

As noted earlier, Nalcor also engaged in consultation with Indigenous groups in Québec. Describing Nalcor’s approach, Gilbert Bennett testified that Nalcor “gathered information to varying degrees based on the level of co-operation that we had with the various groups” (November 27, 2018, transcript, p. 3). He further testified that the Québec Innu groups had some evidence of historical land use in the Project area but that Nalcor was not able to determine that there was any single impact that would warrant accommodation in the form of an IBA.

The federal government had accepted the Ekuanitshit land claim for negotiation in 1979 but, at the time of the Project’s EA, GNL had not accepted it. Mr. Bennett testified initially that he was not aware of the federal government’s acceptance of this land claim for negotiation. After this fact was pointed out at the hearings, Mr. Bennett stated it had “slipped my mind” (November 29, 2018, transcript, p. 32).

As part of the consultation and EA processes, GNL informed the Ekuanitshit of the environmental assessment process. Nalcor representatives met with representatives of the Ekuanitshit in 2009, 2010 and 2011. The Ekuanitshit expressed concern that GNL and Nalcor did not have enough information about their traditional land use in the area. When questioned by counsel for the Ekuanitshit on this point at the hearings, Mr. Bennett confirmed that the Québec Innu were not consulted on their traditional land use. Rather, the information on the Ekuanitshit’s traditional land use had come from the Labrador Innu (November 29, 2018, transcript):

**MR. JANZEN:** . . . But you would agree that the Joint Review Panel also concluded that, for Québec Aboriginal groups, there was—remained uncertainties regarding the extent of land and resource use?

**MR. BENNETT:** Yes.

**MR. JANZEN:** . . . You would agree with me that, from the time of the JRP report to sanction, Nalcor did nothing to address those uncertainties with respect to the Innu of Ekuanitshit?

**MR. BENNETT:** Yeah, I don't think there was any further planning information gathered after the JRP report.

**MR. JANZEN:** So you would agree with me that Nalcor didn't do anything to address those uncertainties from the time of the JRP report to the time of project sanction?

**MR. BENNETT:** I'm pretty sure that's the case. (pp. 43–44)

The first language of the Ekuanitshit is Innu-aimun and their second language is French. Consequently, the Ekuanitshit requested funding to translate the English-only materials supplied by Nalcor as part of the environmental review process. This request was denied. It was a major concern for the Ekuanitshit that more effort was not made to accommodate their language needs. Chief Piétacho testified that the 30-day deadline to respond to Nalcor's communications compounded their difficulties—it did not leave enough time to get documents translated and reviewed (February 18, 2019, transcript, p. 14).

Chief Piétacho provided evidence that, as part of the consultation process, Nalcor sent the Ekuanitshit a Community Consultation Agreement in English only and asked that they return two signed copies (P-01335). Nalcor sent a revised consultation agreement to the Ekuanitshit in the winter of 2010 (P-01333). It stated that the Ekuanitshit would be provided with \$87,000 to collect data and prepare reports on their community's land use and traditional knowledge (February 18, 2019, transcript, p. 28). Based on their experience of a similar process undertaken with Hydro-Québec, which cost approximately \$600,000, the Ekuanitshit were concerned that the amount Nalcor was providing would be insufficient to hire experts to do the necessary studies (P-01710, p. 6). In the end, the Innu of Ekuanitshit received \$55,850.25, which they used to prepare written submissions for the environmental assessment process (P-00268, p. 5). They were not consulted on their traditional land use.

In his testimony, Gilbert Bennett confirmed that documents were sent to the Ekuanitshit in English only, even though Nalcor was aware that English was neither their first nor their second language. Mr. Bennett added: "And I'm aware that the community has advisors and support resources, and if that were an issue, this could've been addressed" (November 29, 2018, transcript, p. 38).

The Ekuanitshit's concerns and questions about the Project also included the effects it would have on the health and viability of fish (particularly salmon populations) and the Red Wine Mountain caribou herd, the availability of economic opportunities and the protection of cultural heritage. In his testimony, Chief Piétacho indicated that the

Ekuanitshit were not satisfied with the consultation that they were given and they felt their concerns were not being heard. As well, Chief Piétacho testified that 30-day deadlines made it impossible to provide adequate responses and that the funding provided was insufficient. He testified that the Ekuanitshit wanted Nalcor to come to meet with them and that they wanted to be a part of the EA process.

In his testimony, Chief Piétacho noted the difference in the approaches to consultation exhibited by Newfoundland and Labrador and by Québec. For a project in Québec, Chief Piétacho indicated that Hydro-Québec, the Crown corporation involved in that development, took two-and-a-half years to consult and used the necessary resources to hear the needs of the community. He indicated, furthermore, that Hydro-Québec hired community members, developed a questionnaire and had 32 public meetings before the community held a referendum on the project. Chief Piétacho stated clearly that there was no comparison between that experience and the experience with Muskrat Falls. He indicated that the Ekuanitshit simply wanted enough time and resources to be able to respond appropriately to Nalcor with respect to their concerns—and they did not get it.

The Innu of Ekuanitshit continued to be consulted on permitting matters. However, as a letter dated May 2, 2012, from their counsel to GNL details, it appears that they were not given enough time and/or were not provided with material in Innu-aimun or French and so were unable to respond (P-00328). The Ekuanitshit were sent hundreds of plans and permit applications in English only and with 30-day deadlines they could not meet because of a lack of resources for expert research and the need for translations (P-00328).

### **The Grand Riverkeeper Labrador and Labrador Land Protectors**

The position of the Grand Riverkeeper Labrador and Labrador Land Protectors was presented by Roberta Benefiel, who referred to the following statements in the presentation provided to the Commission by these groups (P-00352):

It is difficult not to be cynical about Newfoundland's relationship with Labrador and its Natural resources. GRK participated actively in all aspects of the consultative processes leading up to sanction in good faith and believed that given the known significant and detrimental impact that the Project would have on the River, its ecosystem and the local residents who rely on it, such a project could not ever be sanctioned.

Dr. Rosenberg describes environmental impact assessment (“EIA”) in Canada:

I contend that environmental impact assessment has not progressed much in the past at least three decades that I’ve been a practicing scientist in Canada. It usually is a **rigidly defined bureaucratic process**. It produces large amounts of descriptive work that does little to predict the effects of the upcoming development. [Emphasis added]

To GRK and many Labradorians, the fact that the Government of Newfoundland was not required to comply with the recommendations of the Joint Review Panel prior to commencing construction meant that the process was nothing more than an illusion of consultation to justify a foregone conclusion. Perhaps the most cynical among us believe the EA was a distraction to keep us busy while the politicians and businesspeople made deals.

It was not until construction began and inundation was imminent that the community realized this process had been a sham. At that point, all formal legal avenues had been exhausted and the only way to stop the Project was direct action, which resulted in many Labradorians being subjected to the colonial justice system. (p. 61)

### **Proponent or Regulator?**

Another issue that arose during the environmental process was confusion about the process and who held responsibility for various aspects of it. It was not clear to some Indigenous groups, for example, whether they should go to GNL, as the regulator, or Nalcor, as the proponent, when they had issues or when they were trying to engage in the consultation process. Todd Russell described this lack of clarity in his testimony (October 4, 2018, transcript):

Well, I can also say that, during the JRP process or the consultation process, it was sometimes difficult to understand who we had to talk to, whether it was Nalcor or whether it was the provincial government, who was doing what aspect of what consultation.

. . . We would meet with a Nalcor representative, and they would say: well, we don’t make any decisions on this kind of thing, whether we should engage with you in this particular way or not. That’s up to the provincial government. And then if you go to the provincial government, at times they would sort of say to us: well, we have Nalcor sort of taking care of those particular issues. And so we would have to sort of move somewhere else.

So it wasn’t really clear, even during the consultation process, of what aspects of consultation were Nalcor responsible for and what was the province

responsible for. And so that persisted. And it was evident in at least two or three of the meetings I had with Nalcor and with the provincial government. And so, you know, it seemingly that that kind of structure or process was in place, certainly during the environmental assessment, but it continued afterwards. (pp. 6, 7)

On behalf of the Nunatsiavut Government, Mr. McLean shared similar observations (October 4, 2018, transcript):

**MR. MCLEAN:** . . . That happened in the end, because we weren't getting anywhere with the officials. Every time we spoke to Nalcor, they said—basic response was: we'll do whatever the regulators tell us. So we'd go back to the province to talk about some of the recommendations from the panel report that—they'd say: well, that's not us. That's directed at Nalcor or the federal government.

So we were—we felt a lot of things were getting bounced around with nobody really taking ownership, I guess, of trying to talk through mitigation with us, really. You know, the basic response from Nalcor was we'll do whatever the regulators tell us. And to them, the regulator was both the federal government and provincial government.

**MR. LEARMONTH:** Who were you dealing with at Nalcor?

**MR. MCLEAN:** At that time it was their environmental staff and Gilbert Bennett was their lead in those discussions during that period of time.

**MR. LEARMONTH:** And what was Mr. Bennett's attitude towards this from your observation?

**MR. MCLEAN:** From my observation it was pretty dismissive, for the most part.

**MR. LEARMONTH:** Dismissive?

**MR. MCLEAN:** Not—the tone was dismissive. You know, he certainly took time to listen to us, but in the end, there was no—we didn't—felt there was no action taken after that, other than, well, we'll do whatever the regulators tell us. (p. 30)

Such confusion appears to have been justified in the circumstances.

## THE JOINT REVIEW PANEL REPORT

After conducting extensive hearings on the LCP generation components, the JRP released its report and recommendations on August 25, 2011 (P-00041). GNL submitted its

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response to the report on March 15, 2012 (P-00051). The same day, GNL announced that the Project was released from EA with certain conditions (P-02702).

The JRP concluded that “the Project would have several significant adverse environmental effects on the aquatic and terrestrial environments, culture and heritage and, should consumption advisories be required in Lake Melville, on land and resource uses” (P-00041, p. 12). The report’s findings and comments with respect to Indigenous consultation indicated that, at least for some groups, further information was desirable and required. It stated that, ultimately, the decision about whether to proceed with the Project was GNL’s to make, after it had weighed all effects, risks and uncertainties (p. 12).

Carl McLean testified at the JRP hearings on behalf of the Nunatsiavut Government and was involved in more than 30 submissions to the JRP. The NG maintained that the Project area under consideration for environmental impact assessment had not been properly identified and that it should include Lake Melville since it was an important area for the Labrador Inuit, who were dependent on it for food, culture, health and their way of life. Nalcor did not carry out any work related to Lake Melville in preparation for the EIS (P-00269, p. 3). It had focused only on the Churchill River and did not include consideration of impacts on Lake Melville.

The JRP report noted the concerns of the Nunatsiavut Government and found that Nalcor’s prediction that consumption advisories for natural foods would not be required for people living downstream from the Project (Goose Bay and Lake Melville) was “less certain” because of the lack of baseline information. Therefore, the JRP report recommended that Nalcor conduct a further assessment (P-00041, p. 29).

The issue of possible downstream effects on Lake Melville was very important for the NG. If the Project negatively affected the food sources in the area as a result of methylmercury contamination or other adverse conditions, the Inuit would be forced to find alternatives, including having to rely on store-bought foods. The effects of that would be three-fold: it would impact Inuit culture and health and, as Labrador Inuit faced some of the highest food costs in Canada, it would be economically challenging for them.

The NG was also concerned about what it had learned from its experience with other large projects in Labrador. If the Project proceeded, there would be an influx of people and money, and that would lead to increased drug and alcohol use and high rental rates. Knowing that many of the Inuit were at the lower end of the economic scale (where such

circumstances are felt most severely), the NG suggested that a mechanism was required to examine those types of issues and to mitigate impacts where possible.

The NG expended much of its own resources and time to ensure that it was able to provide the JRP with comprehensive information about these important issues. NG representatives testified before the Commission that they had had a positive reaction to the JRP report when they read it and felt that their concerns had been heard.

The JRP report expressed uncertainty about the NCC's claim of land use, however, and assumed that further information would be forthcoming through continued consultation (P-00041):

The Panel concluded that, based on information identified through the environmental assessment process, there were uncertainties regarding the extent and locations of current land and resource use by the Inuit-Metis in the Project area. The Panel recognized that additional information could be forthcoming during government consultations. To the extent that there are current uses in the Project area, the Panel concluded that the Project's impact on Inuit-Metis land and resource uses, after implementation of the mitigation measures proposed by Nalcor and those recommended by the Panel, would be adverse but not significant.

The Panel also observed that many land and resource use locations reported to be frequented by Inuit-Metis are outside of the Project area and would remain unaffected and accessible. Measures considered to mitigate the effects of the Project on trapping activities and to compensate for losses of trapping income, property or equipment attributed to the Project may also be particularly relevant for Inuit-Metis. (p. 24)

The NCC's Todd Russell testified before the Commission that he could not understand what the JRP meant when it stated (P-00041):

To the extent that there are current uses in the Project area, the Panel concluded that the Project's impact on Inuit-Metis land and resource uses, after implementation of the mitigation measures proposed by Nalcor and those recommended by the Panel, would be adverse but not significant. (p. 24)

As of July 11, 2019, the status of the JRP's recommendation for compensation for trapping affected by the Project was that stakeholders were able to contact Nalcor at the Project office. In addition, the JRP recommended that boating guides/trappers who were active in the lower Churchill River valley should submit a claim for loss of income due to the Project. My understanding is that, as of July 11, 2019, no claims had been made

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(P-01969, p. 16). As stated earlier, it is unclear whether a formal compensation plan or fund has been finalized.

After the JRP report was filed (August 2011), consultations between the NCC and GNL about the transmission component of the Project began. Mr. Russell was concerned that the funding provided to the NCC was not sufficient to conduct land-use studies, cultural studies and anthropological studies. In addition, Mr. Russell testified that lack of funding prevented the NCC from bringing scientific expertise to the process, and lack of funding was one of the reasons why the NCC's presentation to the JRP was limited.

Regarding the Québec Innu, the JRP report also stated that it had not received much information about their use of land and resources. The JRP acknowledged that, because of time constraints, it was unable to visit each of the Québec communities. As a result, Innu representatives had to attend community hearing sessions held in Sept Isles. At these sessions, the witnesses indicated that information provided was incomplete because insufficient time and resources were available to provide a complete picture of Québec Innu land use in the Project area. The accuracy and completeness of the information provided by Nalcor was also challenged at these sessions. The JRP report made the following conclusions about this (P-00041):

The Panel concluded that, based on information identified through the environmental assessment process, there were uncertainties regarding the extent and locations of current land and resource use by Québec Aboriginal groups in the Project area. The Panel recognized that additional information could be forthcoming during government consultations. To the extent that there are current uses in the Project area, the Panel concluded that the Project's impact on Québec Aboriginal land and resource uses, after implementation of the mitigation measures proposed by Nalcor and those recommended by the Panel, would be adverse but not significant.

The Panel also observed that many land and resource use locations reported to be frequented by Aboriginal persons living in Québec are outside of the Project area and would remain unaffected and accessible.

The Panel recommended that Nalcor involve all Aboriginal groups in the design and implementation of its proposed community land and resource use monitoring program and include Traditional Knowledge. (p. 24)

The Innu of Ekuanitshit noted that Recommendation 11.1 of the JRP report—"Involvement of Aboriginal groups in the management and protection of historic and archaeological resources"—included these instructions: "Nalcor should also give

consideration to inviting participation by interested Aboriginal communities in Québec” (P-00041, p. 220). The recommendation did not define what form that “participation” should take.

When questioned by Ekuanitshit counsel at the hearings, Gilbert Bennett acknowledged that Nalcor did not communicate with any of the Québec Innu on this matter. It appears that the Innu Nation was the only group that was engaged by Nalcor on this recommendation.

The JRP report also found that there was no basis for Nalcor’s assertion that there would be no downstream effects on Lake Melville from the flooding required to create the Muskrat Falls reservoir. The JRP was not convinced by Nalcor’s assertion, as shown in the following recommendation from its report, which directs Nalcor to fully investigate the issue of downstream methylmercury impacts (P-00041):

**RECOMMENDATION 6.7 Assessment of downstream effects**

The Panel recommends that, if the Project is approved and before Nalcor is permitted to begin impoundment, Fisheries and Oceans Canada require Nalcor to carry out a comprehensive assessment of downstream effects including:

- identifying all possible pathways for mercury throughout the food web, and incorporating lessons learned from the Churchill Falls project;
- baseline mercury data collection in water, sediments and biota, (revised modelling taking into account additional pathways, and particularly mercury accumulation in the benthos) to predict the fate of mercury in the downstream environment;
- quantification of the likely changes to the estuarine environment associated with reduction of sediment and nutrient inputs and temperature changes; and
- identification of any additional mitigation or adaptive management measures.

The results of this assessment should be reviewed by Fisheries and Oceans Canada and by an independent third-party expert or experts, and the revised predictions and review comments discussed at a forum to include participation by Aboriginal groups and stakeholders, in order to provide advice to Fisheries and Oceans Canada on next steps. (pp. 318–19)

On January 9, 2013, as a result of this recommendation, the NG requested additional funding from GNL to enable it to conduct research and engage in a water-monitoring

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program. GNL refused this request, stating that there was no funding available (P-04119, p. 5). It should be noted that the JRP's report "encouraged" Nalcor to collaborate with the NG on such studies (P-00041, pp. 123–24).

Despite the negative response to their request, in 2014 the NG carried on and engaged a team of experts to conduct research on the downstream effects of methylmercury. The team included Professor Elsie Sunderland of Harvard University and members from Memorial University, the University of Manitoba and the University of Connecticut.

When asked at the hearings why GNL did not provide additional funding, Martin Goebel of the Department of Municipal Affairs and Environment testified that it was because GNL was satisfied with the work that Nalcor had conducted and did not believe that additional research was required (June 20, 2019, transcript, p. 32). It should be emphasized that the JRP report, as noted above and in contrast to GNL's opinion, found that Nalcor's work with respect to downstream effects of methylmercury was inadequate and that further work was required.

The research commissioned by the NG studied the effects of hydroelectric development on Inuit health and the effects of global climate change on the level of contaminants in country foods (P-04115). It took approximately three years to collect adequate data for this study, but NG began sharing its findings with GNL and Nalcor in 2015. When asked about this, Mr. McLean testified that, concerned about timing, the NG conveyed as much of the information to GNL and Nalcor as the scientists would allow to be released before peer review of the research was complete (October 4, 2018, transcript, p. 29). The data obtained by the Harvard researchers was published in a peer-reviewed journal subsequently.

To recap, this is how the JRP worded its conclusion on methylmercury in its August 2011 report (P-00041):

There was general agreement that Nalcor's predictions for the amount of methylmercury that would be released, and how it would concentrate through the different levels of the food web in the reservoirs, were reasonable. The Panel heard no evidence that suggested that the health of the fish themselves would be harmed by the mercury in their bodies. Nalcor's position was that there was no feasible way to substantially reduce the formation of mercury in the reservoirs and that any risks to people who might eat the fish could be handled through consumption advisories. Natural Resources Canada

challenged this, and recommended that Nalcor consider removing both vegetation and part of the soil layer around the new shorelines of the reservoirs. The Panel recognized that there were still many questions about this proposed mitigation measure but agreed that hydroelectric developers have a responsibility to find ways to reduce mercury at source if at all possible, and recommended that Natural Resources Canada and Nalcor collaborate to pilot test this approach. (p. 16)

As Carl McLean testified, however, the research done for the NG found that Lake Melville's ecosystem was "already extremely efficient at converting mercury to methylmercury" and that further effects caused by the flooding required for the Project would affect the food chain (October 4, 2018, transcript, p. 28). The research further predicted that methylmercury loading from the lower Churchill River into Lake Melville would be 25% to 200% higher than Nalcor's estimates (P-04193, p. 10) and it predicted that the effects of methylmercury would extend farther into Lake Melville than Nalcor had estimated in its EIS (P-04193, p. 12).

After the study was made public, the NG was dissatisfied with Nalcor's response. Nalcor maintained that the mitigation measures it had taken were sufficient to deal with the effects of methylmercury. The NG, however, wanted Nalcor to undertake full clearing of vegetation in the Muskrat Falls reservoir area before flooding (P-04116), as had been recommended by the JRP report. GNL's response to this recommendation was (P-00051):

The Government of Newfoundland and Labrador agrees with the principle of maximizing the utilization of the forest resource. With limited opportunities to use the resource, and the likely insignificant reductions in mercury levels associated with full versus partial clearing, the Government supports partial harvesting of the flood zone. (p. 3)

The Nunatsiavut Government continued to press Nalcor and GNL for a meeting to discuss the study's findings, which was finally held on October 30, 2015 (P-04117). On November 9, 2015, Darryl Shiwak, Minister of Lands and Natural Resources for the NG, wrote to Colleen Janes, GNL's Deputy Minister of Municipal Affairs and Environment, reiterating the NG's concerns and requesting that GNL direct Nalcor to do the following (P-04118):

1. **Fully clear the future Muskrat Falls reservoir** area of wood, brush and vegetation before flooding to reduce methylmercury inputs downstream into Inuit territory, consistent with recommendation 4.5 of the Joint Review Panel.

2. **Negotiate an Impact Management Agreement** with the Nunatsiavut Government before Muskrat Falls flooding and subsequent damaging downstream impacts occur, consistent with recommendation 13.9 of the Joint Review Panel.
3. **Establish an Independent Expert Advisory Committee** of recognized academic experts to advise on the design of and audit, a rigorous, credible, and predictive monitoring program for downstream impacts of Muskrat Falls on the environment and health, using the best available scientific and Inuit knowledge.
4. **Grant Inuit joint decision-making authority over downstream environmental monitoring and management** of the Lower Churchill project. (p. 2)

GNL did not respond to these requests until June 21, 2016, approximately eight months later, when Perry Trimper, then Minister of Municipal Affairs and Environment, advised the NG (P-04132):

Your requests and my response are outlined below.

### **1. Fully clear the future Muskrat Falls reservoir**

Please be advised, the provincial government indicated on March 15, 2012, in its response to recommendation 4.5 of the Joint Review Panel (the “JRP”), that *“the Government supports partial harvesting of the flood zone.”* The partial clearing plan for the reservoir proposed by Nalcor will result in effectively the same reductions of methylmercury as the “full” clearing scenario which was studied by the JRP. Nalcor’s clearing plan will see the removal of approximately 70 to 75 percent of vegetation. As regulator, I accept this clearing plan as the most practical and safe option.

With respect to the NG’s request for clearing including soil please be advised this was assessed, and was discussed by experts at the March 2016 workshop. Our assessment determined that soil clearing is inappropriate based on the following factors:

- Environmental concerns (i.e. sedimentation, erosion);
- Loss of fish habitat due to sterile reservoir;
- Stripping 25cm of accessible soil on half of the flooded area = 5 million m<sup>3</sup> would create additional environmental management challenges in terms of soil disposal.

In addition, even if such an extraordinary measure was taken, downstream monitoring for methylmercury in order to determine whether consumption advisories are needed as a result of the project would still be required.

## **2. Negotiate an Impact Management Agreement**

The NG requested an Impact Management Agreement “*consistent with recommendation 13.9 of the Joint Review Panel.*” The JRP recommendation referenced the need to engage with appropriate parties in the event of consumption advisories “*to reach agreement regarding further mitigation where possible and compensation measures, including financial redress if necessary.*” In 2012, the Government of Newfoundland and Labrador accepted the intent of recommendation 13.9 of the JRP, indicating that “*if consumption advisories are required as a result of the downstream mercury assessment, then Nalcor should consult with downstream resource users on further mitigation measures, including the potential for compensation.*”

The condition of my acceptance of the HHRAP [Human Health Risk Assessment Plan] addresses the intent of impact management and reflects the core elements of the JRP recommendation.

## **3. Establish an Independent Expert Advisory Committee**

The Government of Newfoundland and Labrador accepted the JRP’s recommendation, that Nalcor establish an “Environmental Monitoring and Community Liaison Committee” to provide feedback on the effects of the Project.

In accordance with the *Lower Churchill Hydroelectric Generation Project Undertaking Order (18/12)*, an Environmental Monitoring and Community Liaison Committee has been established by Nalcor. I understand the NG were invited by Nalcor to be a member of the committee, but unfortunately declined to participate. The Provincial Government considers that this Committee would have and still does provide an opportunity for discussion of the NO’s concerns on the downstream effects of the Project. I would encourage the NG to reconsider participation on this committee.

## **4. Grant Inuit joint decision-making authority over downstream environmental monitoring and management.**

As you are aware the JRP considered the issue of downstream effects and did not direct a recommendation to the Government of Newfoundland and Labrador to establish joint decision-making with the NG or any other Aboriginal organization. Both the Federal and Provincial Governments issued their respective responses to the JRP’s recommendations on March 12, 2013, after engaging the NG on that Report. The Provincial Government accepted the intent of JRP recommendations 13.9 to 13.13, which related to consumption advisories, human health and mercury monitoring, dietary surveys and country food.

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The Provincial Government has consulted, and will continue to consult, the NG on permits and other authorizations required for the Project. The NG is welcome to seek whatever expertise it considers appropriate to inform its response to Government authorizations, as it has done with the research from Harvard University (*Schartup et al. 2015*). The Provincial Government is committed to the full and fair consideration of all comments received during such consultations, including those of independent experts that provide advice to the NG and other Aboriginal governments and organizations. It is for that reason that I welcomed the NG's participation, with their expert researchers, at the recently held scientific workshop. As I have recently indicated to the NG and others, I remain committed to facilitating open dialogue amongst experts. If the NG and its researchers wish to participate in an expert discussion on methylmercury monitoring, mechanisms for exchanging and assessing information from such monitoring, processes for determining whether consumption advisories are required and their nature and extent, or other important aspects of the project related to methylmercury, I would be pleased to facilitate a further meeting of experts of the various agencies. (pp. 2–4)

It should be noted that even though GNL's position was that there were no alarming results from the Harvard study, Martin Goebel testified (June 20, 2019, transcript):

When I first came to know of this study—and I don't know if this would've been the first time I heard of it—I was very concerned. I read the study five times and I really couldn't understand all the processes that this particular study went through. But I was alarmed by the findings and the conclusions of the study that indicated that there would be much higher than anticipated methylmercury in Lake Melville, and that that methylmercury, of course, would then get into the biota and into the food web of the residents who were consuming food that they caught as country food.

There were quite alarming numbers there—alarming increases in both the methylmercury and the surface water of Lake Melville. (p. 33)

Mr. Goebel's testimony contradicts the positions of both Nalcor and GNL at that time.

The EIS Guidelines had anticipated that the Project was likely to cause an increase in mercury concentrations in fish. For this reason, the Guidelines directed Nalcor to assess the human health risk associated with methylmercury exposure and to consider the recommended consumption standards. The JRP recommended that Nalcor implement consumption advisories and monitor human health and mercury concentrations. The EA Release Order of GNL and Canada subsequently required Nalcor to submit a Human Health Risk Assessment Plan (HHRAP) to address three factors: methylmercury, contaminant levels in country foods and effects on human health (P-01323, p. 29). GNL's

Department of Environment and Conservation was tasked with reviewing the HHRAP and determining its acceptability (P-04128). The HHRAP was discussed at a scientific workshop held on March 22, 2016, and attendees were asked to provide comment. Ultimately, GNL accepted the use of an HHRAP, conditional on Nalcor being required to consult with relevant stakeholders and provide compensation should consumption advisories be required as a result of the Project (P-04129).

### THE “MAKE MUSKRAT RIGHT” CAMPAIGN

In November 2015, the Nunatsiavut Government initiated a “Make Muskrat Right Campaign.” It was the NG’s belief that there was a gap in the downstream data for methylmercury contamination in Lake Melville.

The campaign reiterated the four requests that the NG had made to GNL on November 9, 2015 (referred to earlier), and it was meant to be a public education program. At the hearings, the NG’s Rodd Laing and Carl McLean provided the following testimony about the campaign’s purpose (February 28, 2019, transcript):

**MR. LAING:** . . . I think the reality of a Joint Review Panel recommendations or any scientific evidence is—needs to be put in a form that the community and, generally, the public can digest. That’s a huge failing of a lot of scientific research as well as a lot of these megaprojects, is actually putting things in ways that the community can actually understand.

And we believe our campaign was very successful in doing that and making sure that this information got out to the public about the realities of the situation, about the interventions that were happening and about the pieces, based on scientific evidence, that were being recommended to both the provincial government as well as Nalcor.

. . .

**MR. MCLEAN:** . . . What we tried to do is, for example—I’ll just give you an example—one of the things that we heard and still hear sometimes today is that, you know, if you’re drinking the water it can cause you problems when, in fact, you can drink a swimming pool of Churchill River water and it really won’t affect you. The problem is, once that water gets into the biota and the environment, it biomagnifies and bioaccumulates up through the food chain.

So there was a lot of—a lot of this is to address not only what we—what the panel recommended, because at least three of these four came out of the panel report in some form or another. And we felt that if these four things were done,

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it would certainly help minimize the impacts to Labrador Inuit and the downstream environment.

So we felt, through the campaign, if we could stress these four points and try to get some movement and some acceptance of them, it would certainly address the issue of minimizing impacts to the health of Labrador Inuit. So that's what we tried to do. (p. 4)

In April 2016, further research findings were released by the NG, among them those of the “Calder Study,” described below (P-04171):

This paper was published in the peer reviewed Journal of Environmental Science and Technology. Its principle [sic] author (Calder R.) was a student under Dr. Amina Schartup (Harvard University) who a year earlier published a similar paper. This paper describes a probabilistic model which models the MeHg [methylmercury] enrichment in the reservoir following impoundment, the effect on Lake Melville downstream, then the effect on locally harvested country foods and the impact on Inuit communities. It showed a 10 fold increase in riverine MeHg and a 1.6 to 4 fold increase in the estuary's surface water. It predicted a 1.3 to 10 fold increase in MeHg in local species, which would cause a doubling of MeHg exposure in the Inuit population. (p. 2)

These findings contradicted Nalcor's position that there would be no methylmercury effects beyond the mouth of the Churchill River.

On June 27, 2016, a large protest was held in Happy Valley–Goose Bay to coincide with a visit from Premier Ball. The protest was attended by Innu, Inuit and NCC members and other concerned citizens. Afterward, the Premier committed to holding another scientific workshop that would include representatives from the Innu Nation, the NCC and the NG and their researchers and scientists, at which session both pre- and post-mitigation measures would be discussed (P-04134; P-04135; P-04136; P-04140).

This second scientific workshop was held in early August 2016. The participants included representatives from GNL, Nalcor, Environment and Climate Change Canada, Health Canada, Labrador-Grenfell Regional Health Authority, the Nunatsiavut Government, the Innu Nation, Grand Riverkeeper Labrador and Labrador Land Protectors, the NCC and scientists from Memorial and Harvard universities.

Partial impoundment (flooding) of the reservoir was scheduled to take place in October 2016, so after the scientific workshop the NG continued to press GNL, requesting a follow-up meeting with the Premier. As planned, the October partial impoundment would raise the reservoir's water levels from 18 metres to 25 metres and affect a quarter

of the reservoir area. The meeting occurred in September 2016, and afterward the NG felt that some progress had been made—but the Premier would not direct Nalcor to fully clear the reservoir area before further flooding. However, GNL did agree to establish a water-quality monitoring program to assess the impact of the October partial impoundment (P-04145).

With partial impoundment of the reservoir imminent, protests and hunger strikes occurred in Labrador and St. John's in October 2016. The protesters had concerns about several issues, including methylmercury, aquatic and terrestrial habitat, flooding and the stability of the North Spur. No agreement had yet been reached about implementing the water-monitoring program the Premier had agreed to in the September meeting with the NG (P-04148).

Indigenous Peoples had significantly led the discourse when it came to raising environmental concerns, but they were not alone. Other citizens' groups in Labrador, whose members were both Indigenous and non-Indigenous, as well as individuals across the province and interested parties outside the province, were also voicing concerns. Protesters eventually shut down the Muskrat Falls site for a number of days (P-01687; October 11, 2018, transcript, p. 13).

The Innu Nation, the NG and the NCC all expressed concerns about the partial impoundment of the reservoir.

A paper submitted to the Commission by the Grand Riverkeeper Labrador/Labrador Land Protectors details the concerns of these groups (P-00352):

In our view, provincial and federal politicians have sacrificed the sustainability of the province's natural capital in exchange for short-term political gains, and economic gains for the province that may in fact never be realized. When the Project is completed, the waters of the Grand River [Churchill River] will be contaminated with methyl mercury, traditional trapping and portage routes will be submerged, winter travel will be more perilous, the people downstream will live in fear of the failure of the North Spur and the fish, water fowl, seal mammals and fauna that relied on the Grand River will be displaced, depleted or extinct; what will be left for Labradorians? (p. 8)

As a result of the protest and the shutdown of the Muskrat Falls site, GNL decided to establish an Independent Expert Advisory Committee. It also decided to defer a decision on an impact management agreement and to joint decision-making on downstream environmental monitoring (P-04149). GNL also agreed to direct Nalcor to

“remove as much forest cover as possible” from the reservoir area, to provide the NG with a draft framework for the IEAC, and to direct Nalcor to provide \$100,000 funding to the NG so it could complete further studies with Harvard (P-04150). These measures did not satisfy the protesters: they fell short of the full clearing of the reservoir that many were demanding.

On October 25, 2016, as a result of protests on site, a meeting was held between Premier Ball and Indigenous leaders that lasted into the early morning hours of October 26. The long negotiations led to a finalized framework for the IEAC. In addition, the Premier agreed to lower the water levels after partial impoundment, to allow for further mitigation measures. The Premier also agreed to provide Indigenous leaders with reports to justify the need for the partial impoundment (P-04156).

Following this meeting, the protests subsided. Partial impoundment did take place as scheduled. The Indigenous leaders appeared to be satisfied that partial impoundment was necessary to protect the dam. The NG was also satisfied that the partial impoundment would not promote methylmercury production. But the satisfaction of the Indigenous leaders was qualified by an understanding that the water levels in the reservoir would be lowered again, so that additional mitigation measures prior to full impoundment could occur.

In a press release on October 27, 2016, that summarized the recent events and developments, the Nunatsiavut Government stated (P-04157):

This has been a long and hard-fought campaign, and we realize there is still much work that needs to be done. However, we are confident the commitments made by the Government of Newfoundland and Labrador will allow us to achieve our goal of protecting our health, culture and way of life. That was what this campaign was all about, and those who played a role in the success we have achieved deserve to be recognized for their commitment, courage, patience and strength. (p. 2)

Some advocates remained skeptical about GNL’s commitments, in particular members of the Grand Riverkeeper Labrador and Labrador Land Protectors, as Roberta Benefiel made clear in her testimony (February 22, 2019, transcript, p. 10).

After the agreement of October 26, 2016, GNL and Indigenous leaders began working on the Terms of Reference for the Independent Expert Advisory Committee. Negotiations took much longer than expected and the Terms of Reference were not

completed until June 2017. According to the final Terms of Reference (P-04163), the IEAC's task was

[t]o oversee and provide independent assessment of the adequacy of mitigation, monitoring and management measures, and provide recommendations to the Responsible Ministers with respect to those and addition of any further such measures for the protection of the health of the Indigenous and local population impacted by the Lower Churchill Project, and in particular increases of methylmercury in country foods in the Churchill River near Muskrat Falls and downstream, all along the river and including Lake Melville. (p. 4)

Representatives from the NG, the Innu Nation, the NCC, Nalcor, GNL, the federal government and affected municipalities formed an Independent Experts Committee and an Oversight Committee (P-04164). The Innu Nation, the NCC, the NG and affected municipalities were to be the voting members (one vote per group), leaving GNL, Nalcor and the Government of Canada as non-voting members (P-04163, p. 6). Dr. Ken Reimer was appointed chair of the IEAC in August 2017, following which a subcommittee of scientific and traditional knowledge experts was formed (the Independent Experts Committee). This subcommittee was made up of six scientific experts and three Indigenous knowledge experts (P-01699).

The IEAC made two sets of recommendations. The first set, consisting of three recommendations, was released on September 26, 2017, and is summarized below:

- **Recommendation #1:** A feasibility study be undertaken by December 20, 2017, for the removal of soil and vegetation from the future reservoir area (P-01695)

Action taken: This feasibility study was completed and provided to the IEAC for consideration (P-01699, p. 4)

- **Recommendation #2:** Nalcor implement the changes described in the independent expert's report titled "Recommendations on changes to the scope and quality of the Muskrat Falls Aquatic Monitoring Program" (June 20, 2019, transcript, p. 47)

Action taken: This work was completed and resulted in changes to frequency of sampling at various sites (P-01700, p. 4; P-04167, p. 2)

- **Recommendation #3:** Nalcor expedite the finalization of its current methylmercury modelling project to provide to the IEAC by February 2018

Action taken: The model was not finalized in time to provide to the IEAC (P-01702, p. 1)

In April 2018, the IEAC made a second set of four recommendations for mitigation and monitoring, which are summarized below:

- **Recommendation #4:** Mitigation of methylmercury impacts through partial/targeted soil removal and wetland capping (P-01702, p. 2)

Action taken: As detailed below, this recommendation was never actioned

- **Recommendation #5:** Develop and implement an independent monitoring program that involves liaising with Indigenous groups about appropriate responses to results determined through the monitoring program (P-01702, p. 2)

Action taken: GNL accepted this recommendation but did not provide a formal response, instead proposing the establishment of a Monitoring and Health Management Oversight Committee; the evidence showed that proposed Terms of Reference for this committee were discussed, but there is no indication of any progress beyond that preliminary step (P-04228, p. 2)

- **Recommendation #6:** Nalcor create an impact security fund to be used in case of health-related consequences of dietary restrictions to local country foods caused by methylmercury contamination (P-01702, p. 3)

Action taken: GNL accepted this recommendation but there is no indication that any further action has been taken

- **Recommendation #7:** The development of communication, education and response plans with respect to increase in methylmercury in local food sources (P-01702, p. 3)

Action taken: GNL accepted this recommendation but there is no indication that any action has been taken

As part of the IEAC deliberations for Recommendation #4, SNC prepared a report outlining the targeted scenarios for soil and vegetation removal options (P-04226). The assumption was that soil removal and/or wetland capping—topping wetland areas with soil/rock—would be completed prior to reservoir flooding and that the work would start in August or September 2018 and be completed by April 2019 (P-04226, p. 59). The experts did not all agree on which mitigation measures should be taken, however. Some believed that no mitigation efforts were required, others thought a combination of both soil removal and wetland capping would be effective. Following deliberations, the IEAC presented the Oversight Committee with the following options for a vote (P-01702):

- Option 1: No further action for mitigation
- Option 2: Full clearing of soils and vegetation
- Option 3: Targeted removal of soils and vegetation
- Option 4: Capping of wetlands
- Option 5: Combination of Options 3 and 4 (p. 14)

The Oversight Committee voted for Option 5: both targeted removal of soil and vegetation and wetland capping. The NG, the NCC and the affected municipalities all voted for both targeted soil removal and wetland capping; the Innu Nation voted for just wetland capping.

It took GNL several months to respond to the April 2018 set of recommendations. There was a significant amount of correspondence among the NG, the NCC, Grand Riverkeeper Labrador and Labrador Land Protectors and GNL during this period.

On August 15, 2018, IEAC Chair Dr. Ken Reimer emailed GNL inquiring about whether a decision had been made about the recommendations. He received no response. Jamie Chippett, then GNL's Deputy Minister of Municipal Affairs and Environment, testified that the delay in replying was caused by Ministerial changes. He stated that each time a new minister was appointed, the Department had to orient him or her, which was time consuming (June 20, 2019, transcript, pp. 115–16).

Meanwhile, in July 2018, Nalcor applied to the Department of Municipal Affairs and Environment for a permit to carry out wetland capping that fall, when it would also be performing fish habitat enhancement work (P-04250). No decision was made on this application, an omission that Mr. Chippett testified was because the Department of

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Municipal Affairs and Environment “felt it was appropriate to wait until a decision was reached on the IEAC recommendations” (P-04250, p. 2). Mr. Chippett also testified that he believed at the time that the wetland capping could be done later—although he admitted that no feasibility study had been done on this option (June 20, 2019, transcript, p. 53).

An SNC report dated March 22, 2018, and provided to the IEAC stated that doing any excavation after impoundment would be “challenging” but that capping post-impoundment “could be considered” (P-04226, p. 13). Nalcor requested that SNC review the possibility of post-impoundment wetland capping. It later reported to GNL that it would not, in fact, be possible because of occupational health and safety concerns, given the instability of the banks of the reservoir in some areas (P-04250, p. 3).

GNL began considering its response to the second set of IEAC recommendations in or about December 2018 (P-04252). On January 14, 2019, according to Jamie Chippett’s testimony, GNL directed Nalcor to proceed with wetland capping as per Recommendation #4. It did not direct Nalcor to do targeted soil removal because that recommendation had not been made on consensus (P-04304, p. 16). Nalcor indicated, however, that by this point, four months after the proposed date to begin wetland capping and with impoundment scheduled for the summer of 2019 (July to September), the wetland capping could not be undertaken without delaying the Project (P-04250, p. 3).

On April 8, 2019, Premier Ball wrote the leaders of the Innu Nation, the NG and the NCC to request a meeting to discuss moving forward with the IEAC recommendations pertaining to monitoring and public health management and also to discuss the next steps with respect to an impact security fund and physical mitigation (P-04228). As noted above, there is no evidence of any further movement on these points following this correspondence. In August 2019, the Muskrat Falls reservoir was fully impounded. None of the promised further physical mitigation measures had been taken.

At the hearings, Premier Ball testified that GNL accepted the IEAC recommendation to carry out wetland capping (July 4, 2019, transcript, p. 5). He stated that he was first advised that wetland capping could not be completed in mid-January 2019. Premier Ball further testified that GNL had every intention of carrying out wetland capping, that it was a commitment that GNL wanted to meet, and that GNL did not intentionally delay directing Nalcor to carry out wetland capping.

During her testimony, Minister Siobhan Coady stated that there was no deliberate attempt by GNL to delay responding to the IEAC recommendations (June 27, 2019, transcript,

p. 34). Both Premier Ball (July 4, 2019, transcript, p. 6) and Minister Coady (June 27, 2019, transcript, pp. 31, 32, 39) stated that they believed gaps in communication and timing led to events unfolding as they had. Neither was aware that the window for wetland capping was closing.

As stated earlier, GNL began a water-quality monitoring program in December 2016 to obtain a comprehensive record of methylmercury concentrations before, during and after reservoir impoundment at Muskrat Falls. Martin Goebel testified that, following the partial impoundment of the reservoir, the increase in methylmercury production that the Calder Study predicted was not observed (June 20, 2019, transcript, p. 43-44). GNL and Nalcor interpreted this finding to mean that there would be no significant downstream effects of methylmercury in Lake Melville. Mr. Goebel admitted on cross-examination, however, that at full impoundment of the reservoir, there could be an increase in methylmercury levels because the water would be reaching levels at which the ground being covered would not previously have been “leached”—that is, covered intermittently in the past by water during annual flooding (June 20, 2019, transcript, p. 67).

## COUNTRY FOOD CONSUMPTION ADVISORIES

The JRP report had expressed the following concern about the potential effect of consumption advisories in the event of methylmercury increases (P-00041):

The consumption of country food contaminated with methylmercury poses risks to human health, particularly in pregnant women and young children. Consumption advisories may effectively mitigate this risk by dissuading people from eating certain food from certain sources, but can also have the effect of reducing confidence in all country food, which can also lead to negative health effects. (p. 29)

In relation to this, the IEAC’s Recommendation #7 stated: “It is imperative that standard advice is provided to pregnant women and the community at large that it is important and safe to eat country foods, including fish and seal, and to choose those that are high in important nutrients and low in methylmercury such as salmon, brook trout and smelt” (P-01702, p. 3).

In her testimony, Marjorie Flowers, a member of the Grand Riverkeeper Labrador and Labrador Land Protectors, expressed her concern about methylmercury (February 22, 2019, transcript):

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And the people that are in my community, the people that I hear in Goose Bay that are not here today that can't speak, children that can't speak—Inuit children that cannot speak, to say that: Why aren't we allowed to continue to eat in safety? And that's all we asked. That's all we ever asked of this project was to clear that reservoir, clear the vegetation, clear the topsoil. (p. 6)

After considering the evidence, I am unable to conclude that all country food will be contaminated to such an extent that none of it can be consumed. However, I accept that consumption advisories, if needed, will likely lead to reduced consumption by the Indigenous Peoples and Labradorians who presently rely on country food for their sustenance. Such advisories could lead not only to a shift in diet but also have possible cultural consequences.

### **IMPACTS ON THE RED WINE MOUNTAIN CARIBOU HERD**

The Innu of Ekuanitshit attempted to engage GNL and Nalcor on issues arising from the JRP report and the permitting process. The Ekuanitshit were particularly concerned about the effects of Project activities on the Red Wine Mountain caribou herd, which was then, and still is, in major decline. The herd's numbers have been reduced to fewer than 50 animals, by some accounts.

The JRP had concluded that the Project would not likely have any significant effects on listed species other than the Red Wine Mountain caribou herd. The JRP also mentioned the possibility that the Lac Joseph caribou herd, also in decline, could be affected, as well. Nalcor had concluded that there would be significant effects on the Red Wine Mountain caribou herd because some of its habitat would be lost. However, Nalcor also stated that hunting and predation, not just the effects of the Project, were limiting factors for the herd.

In its 2011 report, the JRP reached the following conclusion about the Red Wine Mountain caribou herd (P-00041):

The Panel agreed that the recovery of the Red Wine Mountain caribou herd would be uncertain with or without the Project but concluded that any adverse effect of the Project on individual animals within the Red Wine Mountain caribou herd would result in significant adverse effects. (p. 20)

As a result, the JRP recommended that the provincial Department of Municipal Affairs and Environment (Recommendation 7.6) ensure that adequate resources were available to

support all reasonable efforts to ensure the recovery of the Red Wine Mountain caribou herd (P-00041, p. 152).

In its separate and ongoing responsibility for species at risk, in 2004 GNL had created a recovery strategy document for caribou in Labrador, including the Red Wine Mountain caribou herd (following the Province's designation of the herd as "threatened" in 2002). The protocol called for an action plan to be drafted within two years of this step, with the recovery strategy updated and revised every five years (P-04258, p. 6). The JRP report noted that the recovery strategy submitted by Nalcor during the EA process failed to identify the critical habitat for the recovery of the Red Wine Mountain caribou herd. It stated that "without knowing whether the primary habitat to be flooded is critical habitat," it would be difficult for the JRP to assess the impact that the Project would have on the prospect for recovery of the herd (P-00041, p. 143).

As noted above, the JRP did agree with Nalcor's assessment that hunting and predation were the major contributing factors to the herd's reduced numbers and that its recovery was in doubt with or without the Project. A later report from the Canadian Environmental Assessment Agency also indicated that, with the exception of the effect on the Red Wine Mountain caribou herd, the transmission component for the Project was not likely to cause significant adverse environmental effects (P-04217, p. 4). However, during cross-examination of the representatives from GNL's environmental panel at the hearings, counsel for the Ekuanitshit made the point that identifying the critical habitat of the Red Wine Mountain caribou herd and having a recovery strategy in place would provide important information for those who were making decisions on land use and permitting.

In her testimony, Dr. Susan Squires of GNL agreed with Ekuanitshit's position (June 20, 2019, transcript, p. 99). In its 2019 updated response to the JRP recommendations, GNL had neither revised nor updated the recovery plans for the herd, however. When questioned further, Jamie Chippett and Martin Goebel of GNL could provide no explanation for why there had been delays in updating the strategy or how species at risk were considered when permits were issued (June 20, 2019, transcript, p. 100).

### **A KEY MATTER OF CONCERN: THE NORTH SPUR**

The North Spur is an enhanced natural feature on the north side of the lower Churchill River, located slightly upriver from the dams, generating station and spillway at

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Muskrat Falls. The name refers to the natural barrier spanning a pre-glacial valley that faces the river. As part of the Project works, the pre-existing rock and soil barrier of the North Spur was reinforced and raised, in order to safely contain the reservoir's waters once impoundment increased the water level in the river. In its natural state, the North Spur included layers of naturally occurring quick clay, an unstable material that has given some people concerns about the potential for landslides and dam failure (P-04207). The Commission heard from witnesses and from speakers at its public sessions, about the stability of the North Spur and worrisome downstream effects if it were to fail.

In this province, permits must be obtained before any alteration to a body of water is undertaken. Permits are issued under s. 48 of the *Water Resources Act*, SNL 2002, c. W-4.01. In his testimony, Martin Goebel explained how GNL issues permits and what a proponent is expected to do in order to obtain approval for that work (June 20, 2019 testimony, pp. 21–23). He further explained that the “key focus in terms of this permit . . . is how does the dam actually perform under extreme flood situations” (June 20, 2019, transcript, p. 21).

The Canadian Dam Safety Association creates guidelines that some jurisdictions have adopted in their regulations. The Association's members are provincial regulators, dam owners and representatives from private industry. Mr. Goebel testified that GNL has not incorporated the Association's guidelines in its regulations but that it does follow them (June 20, 2019, transcript, p. 21). He also explained that, because of a lack of resources, GNL does not go through all the calculations a proponent presents in its permit request. Its review is limited to considering the work that has been done, as submitted, and it cannot redo the design. GNL does, however, ensure that a proponent obtains independent verification of its work (June 20, 2019, transcript, p. 23).

I am aware that Nalcor was required to do geotechnical work to ensure that the North Spur would be sufficiently stable and safe to contain the raised water levels and withstand the increased pressure to which it would be subjected. Stabilization work on the North Spur began in March 2015 and was completed before impoundment (P-04207). Issues were raised about whether the work done was adequate, specifically the stabilization of the clay layer in the North Spur area.

In his testimony, Mr. Goebel indicated that GNL was well aware of concerns about the clay layer and he stated that a great deal of attention was paid to that aspect of the work (June 20, 2019, transcript, p. 23). Nalcor undertook several dam-break studies and examined dam failure scenarios that met the requirements of the Canadian Dam Safety Guidelines.

Mr. Goebel testified that North Spur dam monitoring is ongoing and a report is required at the two-year mark. If any issues arise before then, activation of an emergency response plan would be triggered (June 20, 2019, transcript, p. 60).

At the hearings, GNL witnesses who were members of the GNL environmental panel were asked why the provincial government had not contacted the individuals known to have researched the stability of the North Spur and/or expressed concerns about it, specifically Cabot Martin, Dr. Stig Bernander and Robin Dury. Jamie Chippett's response was (June 20, 2019, transcript):

So we're aware of those and—you know, but felt we had discharged our duty as a regulator through those Dam Safety Guidelines, particularly the hydrological portion of them. And we were satisfied to—you know, ultimately our part was to issue that permit to alter a body of water. So staff reviewed that for three months, and we're satisfied at the end of the day that it was safe to do so. (p. 64)

Mr. Chippett further explained that the Department of Municipal Affairs and Environment was focused on the hydrological portion of the dam permit. From a water resources perspective, GNL was confident that Nalcor had met the guidelines and that the permit was appropriate.

Stan Marshall testified that he, too, was satisfied with the stability of the North Spur based on his discussions with SNC senior geotechnical engineers, his reliance on the *North Spur Dam Break Analysis, Final Report* (P-00446) by Hatch and several cold-eyes reviews. He stated that the North Spur had been subjected to many comprehensive assessments and that its condition at the time the reservoir was partially impounded had not revealed any stability problems (July 2, 2019, transcript, p. 13).

Notwithstanding the views of GNL and Nalcor on the North Spur's stability, witnesses who live downstream from the Muskrat Falls generating station testified about their sincere concerns for their personal safety and the safety of their property. A definite lack of trust in GNL and Nalcor is currently felt by many people in the province and this extends to a lack of confidence in the stability of the North Spur. GNL has taken no further steps to address public concerns about the stability and safety of the North Spur.

I conclude that GNL and Nalcor have given appropriate consideration to the stability and safety of the North Spur and have responded to potential safety issues in a reasonable manner. I also conclude that the work and assessments carried out on the North Spur,

including external assessments, appear to be adequate and reasonable based on existing industry standards and practices. That said, I am not in a position to fully determine which of the conflicting opinions on the stability of the North Spur is correct.

A question remains about whether a further review should be conducted by an “independent expert panel,” as the Muskrat Falls Concerned Citizens Coalition suggested in its final submission to the Commission. Its suggestion illustrates that the science and investigations that relieved worries within GNL and Nalcor have not adequately been communicated to the public. I leave it to GNL and Nalcor to determine how best to dispel the concerns that continue to be expressed about the stability and safety of the North Spur.

## CONCLUSIONS

The environmental review process for the two Project components took more than five years, yet I find that it has not fully satisfied the related environmental, human health and safety concerns. Despite my confidence that Nalcor and GNL performed sufficient due diligence and research to be confident in the soundness of the North Spur, I cannot make any findings about the conflicting science that exists about dam stability. Similarly, I cannot resolve the conflicting science on methylmercury contamination and its implications. However, I can draw some conclusions regarding the consultation process with Indigenous Peoples as well as the environmental processes.

What follows are my conclusions about certain matters discussed in my Interpretation Decision of March 14, 2018:

- The consultations that occurred with the established leadership of the Indigenous groups and others
- The risk assessments and reports that were done about the concerns of Indigenous groups and others
- Whether the assessments and reports were appropriately considered by Nalcor and dealt with in a reasonable manner

First, I conclude that, generally speaking, GNL and Nalcor created an environment of mistrust and suspicion by not allowing all of the Indigenous Peoples and other concerned citizens to engage in a meaningful and transparent consultation process. This mistrust

and suspicion continues to this day and, in my view, led to protests that caused Project delays and significant cost overruns.

I want to emphasize that I am evaluating the consultation process from a reasonableness and fairness perspective. As stated earlier, I am not assessing whether the consultation with the Indigenous Peoples met the standards prescribed by law. I also recognize that groups such as the NCC, the Innu of Ekuanitshit, the NG and Grand Riverkeeper Labrador filed court applications regarding various aspects of consultation for the Project and these have been decided.

When I consider the issue of reasonableness and fairness, I am focusing on the people most affected by the construction of the Project and the people living in Labrador who, in my view and that of the JRP, required a significant degree of consultation. After my review of the evidence, I conclude that GNL did not adequately consider the concerns of most of the Indigenous Peoples, particularly the NG, the NCC and the Innu of Ekuanitshit. The inadequacy of the consultation process about the methylmercury issue is a glaring example of this—it began with Nalcor’s initial refusal to acknowledge and consider the impact and effects of the Project downstream and into Lake Melville, which the JRP directed it to consider. Nalcor clearly showed that it was not willing to work with the NG, the NCC and other groups to address their legitimate concerns about this impact.

Furthermore, despite a commitment made by GNL, Nalcor was unable to lower water levels after initial impoundment. On October 28, 2016, only two days after GNL made that commitment to Indigenous leaders, Nalcor received a report from SNC recommending against lowering the water levels (P-04158):

Finally, should the temporary head pond be drawn down to the natural conditions following a partial impoundment, this could trigger landslides of the reservoir rim that is already recognized as unstable. It may also lead to landslide generated waves that, due to the short warning time and the unpredictability of the intensity, could endanger the safety of the people working at the site. (p. 4)

However, in a letter dated almost two months later to the NG (December 23, 2016), GNL maintained that it “directed Nalcor to release water from the reservoir in the spring of 2017” without advising them of SNC’s recommendation (P-04161).

The following June, SNC again wrote to Nalcor advising that lowering the head pond level would increase the risk of landslides and recommending that the level not be

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modified. SNC offered an alternative—to lower levels by half a metre and wait seven days (P-02619). No mention was made of this SNC recommendation until July 2017, well after the NG had expected the reservoir to be lowered to its natural levels (P-04166). While it may have been reasonable for Nalcor not to lower the reservoir levels based on the dangers outlined by SNC, the deficiencies in its communication with Indigenous leaders to advise them of this was not reasonable. Furthermore, the failure to proceed with wetland capping despite GNL's assurance that this would occur has added to the frustration and mistrust of GNL and Nalcor by the Indigenous and non-Indigenous groups in Labrador whose lives will be affected by the Project.

Reasonable and fair consultation requires more than simply going through the motions. To be effective, a consultation process requires the sincere consideration of the concerns of the people being consulted.

When I consider the treatment of Innu of Ekuanitshit, I am satisfied that this group did not receive reasonable and fair consultation. This is clearly illustrated by GNL and Nalcor's failure to address the language needs of the Ekuanitshit. Without documents translated into one of the two languages they spoke, the Ekuanitshit were not able to fully participate in the consultation process.

In my view, many of the Indigenous groups were prevented from meaningful participation in the consultation process by inadequate funding and a lack of timely responses by GNL and Nalcor. Given the ongoing concerns of the Indigenous Peoples and other residents of Labrador, I believe that it is imperative that GNL and Nalcor work toward building trust with these groups.

I am also concerned by GNL's assumption of a minimal role in the consultation process and by its delegation of much of its responsibility to Nalcor without also providing sufficient guidance and oversight to Nalcor on how it was to carry out that responsibility. As a result of its approach, there was no clarity about who had responsibilities for different aspects of the related work and this confusion made it easier for GNL and Nalcor to volley responsibility back and forth. Furthermore, the environmental assessment process should have been conducted at arm's length, but this could not be achieved because Nalcor (the proponent) and GNL (the regulator) are, in reality, one and the same entity.

Finally, I am troubled by how GNL followed up on the recommendations of the Joint Review Panel and how it oversaw Nalcor's commitments during the environmental process and after the Project's environmental release. Documents submitted to the

Commission indicate that GNL performed little tracking of the JRP recommendations nor of Nalcor's commitments and related actions. After 2014, GNL recorded no updates on the status of the JRP recommendations until the Commission requested one. It is clear that GNL took no responsibility for tracking the JRP recommendations or the environmental commitments made by Nalcor.

For example, when asked for an account of the work GNL was doing to “quantify the impact of the Project to date on these endangered caribou herds,” GNL's Dr. Susan Squires testified that the environmental assessment process is proponent driven. That is, the proponent (Nalcor) is responsible for meeting the guidelines set out in the Act. She was not aware of any measures taken by GNL with respect to caribou but reiterated that it “would've been an onus on the proponent to do that level of work and follow-up as required” (June 20, 2019, transcript, p. 101).

I also find that GNL and Nalcor failed to act in a transparent, collaborative and communicative manner to ensure that reasonable environmental mitigation measures were taken. Consequently, the Indigenous Peoples and many Labradorians distrust and lack confidence in GNL and Nalcor. This is unfortunate, since many of these groups (including the NG and the Innu of Ekuanitshit) were not opposed to the Project.

The Innu Nation's input during environmental consultations did seem to be heard, but the level of consultation with other groups was not as meaningful, reasonable and fair. The concerns of these groups could have been addressed if GNL and Nalcor had demonstrated a reasonable level of co-operation and diligence. The result would have been a decrease in Project cost and delays caused by the protests and other actions taken during Project construction.

I observe that, unlike its predecessors, the Ball Government was concerned with and focused on oversight of Nalcor and the Project. However, GNL's increased focus did not extend into its own Department of Municipal Affairs and Environment, which in my view has failed in its oversight responsibilities. Hopefully, changes will be made to improve the approach to follow-up and oversight to ensure that outstanding commitments are actually honoured. At the very least, this is what is required to establish appropriate trust and confidence by those most impacted by the Project.

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## CHAPTER 23: WATER MANAGEMENT

The presence of two hydroelectric facilities on the same river, thus two generation plants drawing on the same waterway, introduces the possibility of conflict.

On the Churchill River, the hydroelectric facility at Churchill Falls has a far larger production capacity than the Muskrat Falls generating station. The Churchill Falls reservoirs are more than 500 times the size of the Muskrat Falls reservoir and, significantly, they are upstream from the Muskrat Falls facility. Water that has flowed through the Churchill Falls facility takes approximately three days to reach Muskrat Falls. Power generation there is dependent on the water coming from upstream.

“Water management” is thus integrally connected to the Project’s success. In this Report, the water management issue is considered in a general way. I am reporting my findings in a manner that will protect the legal position of the Province. I am also considering the impact of the water management issue on the Project and the generation of power from it.

At the hearings, much of the evidence on the topic of water management was presented *in camera*, which means in sessions that were closed to the public. *In camera* hearings were required because, during Phase 1, a Québec Superior Court decision related to the Upper Churchill Contract and affecting water management was under appeal. I was concerned that information about water management that was disclosed publicly at the hearings might in some way negatively affect the Province’s case before the Québec courts. I am satisfied that the Commission obtained full information on this important issue without jeopardizing the Province’s legal position. While that appeal has now been decided, there remain reasons why I must be careful in what I say on this topic.

In the document “Water Management Summary,” Commission counsel identified the following issues for consideration at these *in camera* hearings (P-01521):

1. Why did Nalcor and the Newfoundland and Labrador government choose this water management strategy? What other strategies were available—for example, a negotiated agreement or an early constitutional reference—and what were the costs and benefits of each? Was the strategic choice reasonable?
2. What risks did this water management strategy entail? Were these risks known and communicated to senior decision-makers or the public?

3. How might the declarations in the Québec litigation, if upheld, affect the operation of the Water Management Agreement?
4. Practically speaking, how might the various legal possibilities affect the energy and capacity of the Muskrat Falls Generating Station? (p. 8)

During the *in camera* hearings, I heard from witnesses and received the submissions of counsel in order to adequately assess the evidence on these questions. The Commission, GNL, Nalcor and the Consumer Advocate were all represented by counsel during these hearings.

Electrical energy is the output of a generation source, which can be measured over time. In a hydro generation facility, the volume of water passing through it impacts how much energy it can produce. As indicated earlier, the Muskrat Falls generating station is designed to produce 824 MW of power. If it operates for one hour at full capacity, it should produce 824 MWh of energy. A legal arrangement with the operators of the Churchill Falls facility is therefore necessary to ensure that Muskrat Falls receives enough water to function at maximum power production, when desired.

In 2007, GNL amended the *Electrical Power Control Act*. This amendment provides that, in situations where more than one party on a body of water possesses rights to produce power, the parties are required to reach an agreement to ensure efficient power production. Hydroelectric facilities on the same river must coordinate their operations, including reservoir management and power production, so as to maximize the electricity generation potential of the river as a whole. If the parties cannot reach an agreement, the PUB has the authority to impose an agreement on them (called an “order”).

Another important feature of this water management legislation is the requirement spelled out in s. 5.7:

A provision of an agreement referred to in section 5.4 or 5.5 shall not adversely affect a provision of a contract for the supply of power entered into by a person bound by the agreement and a third party that was entered into before the agreement under section 5.4 or 5.5 was entered into or established, or a renewal of that contract. (*Electrical Power Control Act*, S.N. 1994, c. E-5.1)

The amendment to the *Electrical Power Control Act* came into effect after the Province had provided Nalcor with water rights to the lower Churchill River.

The Upper Churchill Contract, which Churchill Falls (Labrador) Corporation Limited and Hydro-Québec entered into in 1969 for the Churchill Falls generation facility, had a

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renewal clause. The 2007 amendment to the *Electrical Power Control Act* recognizes that the Upper Churchill Contract and its renewal clause could not be adversely affected by any water management regime imposed by the PUB under the amended legislation.

Shortly after these legislative amendments had passed, Nalcor and CF(L)Co commenced negotiations about water management on the Churchill River. As referred to earlier, CF(L)Co, which operates the Churchill Falls facility, is jointly owned by Newfoundland and Labrador Hydro and Hydro-Québec, with NLH, a wholly owned subsidiary of Nalcor, owning 65.8% of the company's shares and Hydro-Québec owning the remaining 34.2%. Under a shareholders' agreement, Hydro-Québec has some veto rights on matters involving the operations of CF(L)Co under the Churchill Falls Contract.

In 2009, the management of Nalcor and the management of CF(L)Co completed their negotiations for a Water Management Agreement, but the agreement reached was not approved by the CF(L)Co board of directors. Approval required the consent of at least one of Hydro-Québec's representatives on the board, which was withheld (P-00032, p. 54).

As a result, Nalcor filed an application with the PUB (November 10, 2009) for an order that would establish the terms of a Water Management Agreement between Nalcor and CF(L)Co with respect to the Churchill River. Hydro-Québec did not participate at the PUB hearings on Nalcor's application. However, it filed a letter dated December 15, 2009, which stated (P-01467):

Hydro-Québec wishes to express to the Board its position that any Water Management Agreement to be established by the Board must recognize that the CF(L)Co/Hydro-Québec Power Contracts have the benefit of Section 5.7 of the EPCA.

We note that the Nalcor Application, as well as the Nalcor and CF(L)Co submissions of December 10, 2009, acknowledge that the CF(L)Co/Hydro-Québec Power Contracts are protected by Section 5.7 of the EPCA, as does the Water Management Agreement proposed by both Suppliers to the Board.

In such circumstances, Hydro-Québec has decided not to intervene in the Nalcor Application. (p. 2)

On March 9, 2010, the PUB ordered the establishment of the terms of the Water Management Agreement that had previously been negotiated by the management of Nalcor and CF(L)Co.

The 1969 Upper Churchill Contract's renewal clause was slated to take effect on September 1, 2016. It renewed the Contract from 2016 to 2041. Nalcor's interpretation of the renewal clause was different from that of Hydro-Québec. On July 22, 2013, Hydro-Québec filed an application in the Québec Superior Court seeking declarations that would have the effect of granting to Hydro-Québec all the energy produced at the Churchill Falls generation facility, during the period between September 1, 2016, and August 31, 2041, with some exceptions. The date of Hydro-Québec's filing was the same day on which Nova Scotia's UARB released its first decision on Emera's Maritime Link application.

Hydro-Québec's anticipated position on water management rights and the renewal clause had been discussed at a meeting of Nalcor's board of directors on November 5, 2012. The minutes of that meeting state, in part (P-00667):

The Board members asked for clarification on an issue raised by one of the opponents to the Project regarding water management rights and the impact on existing contracts and in particular the Power Contract between CF(L)Co and Hydro-Québec. Mr. Martin provided a brief overview of the discussions leading to the draft Water Management Agreement between CF(L)Co and the Corporation, noting that both companies had separate internal and external legal counsel and each obtained external legal opinions with respect to the contractual and legislative matters pertaining to the agreement. He advised that the person raising the issues with respect to the Water Management Agreement likely failed to take into consideration the renewed power contract between CF(L)Co and Hydro-Québec which comes into effect in 2016 and includes a continuous energy provision. The continuous energy clause restricts Hydro-Québec on what power it is entitled to demand on a monthly and yearly basis. (p. 2)

I note that in this characterization of the renewal clause, Nalcor CEO Edmund Martin made no mention of Hydro-Québec's position, which was contrary to that of Nalcor. However, based on the evidence, I find that Hydro-Québec's position on the renewal clause was well known to Nalcor and its officials at this time. There was also no evidence presented at the hearings to indicate that Nalcor advised GNL of the fact that Nalcor and Hydro-Québec had substantially different interpretations of the effect of the renewal clause.

Mr. Martin testified that he believes he did advise GNL on this matter in 2012, but he was unable to recall with whom he spoke about it and exactly when that discussion took place. On December 19, 2018, Kathy Dunderdale, Premier at the time of Project

sanction, was asked to state her recollection of information she received on water management prior to sanction (December 19, 2018, transcript):

**MR. BUDDEN:** Okay. Sort of a stand-alone question on water management, which is an issue that the Commission is going to be dealing with in a bit of a different way. But I really only have one question for you with regard to water management: What as of the time of sanction was your understanding of Hydro-Québec's position on that issue as of the time of sanction?

**MS. DUNDERDALE:** Hydro-Québec was taking issue through CF(L)Co particularly with just about every action we took with regard to development on the Churchill River. So water management was one more of those things.

**MR. BUDDEN:** So you knew at the time of sanction that Hydro-Québec could well have made an issue of the water supply to the dam.

**MS. DUNDERDALE:** I can't tell you what I knew at the time. You know, I was the minister that dealt with water management issues and had brought legislation through the House.

**MR. BUDDEN:** Of course.

**MS. DUNDERDALE:** And in due course was made aware of where issues might be, but I can't give you a timeline on it. (p. 58)

The decision of the Québec Superior Court on Hydro-Québec's application was filed on August 8, 2016. Generally, it recognized that under the Upper Churchill Contract and the renewal clause, Hydro-Québec was entitled to almost all of the energy produced at the Churchill Falls facility and that Hydro-Québec was entitled to exercise substantial control over the Churchill Falls reservoirs (P-01475). CF(L)Co appealed this decision to the Québec Court of Appeal, which filed its decision on June 20, 2019 (P-04486). The Court of Appeal's decision reversed several important declarations of the Superior Court and concluded (P-04486):

[175] For all these reasons, I would allow CFLCo's appeal in part and declare, first, that HQ's right to the energy produced by the plant is limited annually to the value of the *Annual Energy Base* (but, under sections 4.1.1/*Operational Flexibility* and 5.3/*Firm Capacity Schedules* of Schedule III, it has the right to an operational flexibility similar to that it enjoyed until August 31, 2016) and, second, that, since September 1, 2016, there is nothing preventing CFLCo from disposing of the power associated not only with the *Recapture* and *Twinco* blocks, but also with the energy produced over and above the energy contemplated by the concept of *Annual Energy Base*, provided, however, that CFLCo satisfies its commitments to HQ. (emphasis in original, p. 46)

The decision of the Québec Court of Appeal was favourable to Newfoundland and Labrador in many respects. In all likelihood, the Québec Court of Appeal decision will be the definitive interpretation of the renewal provisions of the Upper Churchill Contract. The time has expired for the filing of an application for leave to appeal to the Supreme Court of Canada. However, the effects of this decision on the operation of the Water Management Agreement are not completely clear.

The Water Management Agreement provides for the “banking” of water to occur in coordination between CF(L)Co and Nalcor. The evidence establishes that it is possible that Muskrat Falls may not be able to produce all the power that is required at all times because of water availability. I recognize that certain practical and other reasons exist that provide some assurance that the Muskrat Falls generating station will have sufficient water flow to produce power as required by Nalcor, for the most part. However, there remains a risk that it may be unable to do so at all times.

The ability to provide effective and predictable water management was only one of many factors that GNL and Nalcor should have considered before reaching the decision to sanction the Project. I am of the view that this important issue, which had the potential to present a large risk to the viability of the Project, should have commanded more careful review and consideration than it received. I conclude that GNL decided to invest billions of dollars in the development of the lower Churchill River before it had undertaken a comprehensive review of, and adequately dealt with, potential water management issues, rather than the other way around.

As noted above, there is no absolute certainty that there will be, throughout the year, a sufficient flow of water to maximize the potential production of energy at the Muskrat Falls facility. It is important to note here that any talk about export sales from Muskrat Falls, particularly for firm contracts, may well be impacted by this uncertainty. While there may be opportunities to bank power when it is not needed by Hydro-Québec or otherwise, there is uncertainty, in my view, about Nalcor’s right to withdraw power from that bank *when required*. Firm capacity from Muskrat Falls cannot be absolutely guaranteed unless an agreement is reached among CF(L)Co, Nalcor and Hydro-Québec. CF(L)Co may be faced with a legal challenge caused by a possible conflict between its obligations to its shareholders and its obligations to Hydro-Québec under the Upper Churchill Contract.

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**CHAPTER 24: POST-SANCTION RELIABILITY**

As explained in Chapter 6, the reliability of a transmission line is described by its “return period.” This is a measure of the likelihood of a weather event occurring that exceeds the line’s engineered capability to withstand. The Canadian Standards Association has divided Canada into weather-related zones, each of which has different estimates of wind and ice occurrence. The CSA weather estimates are used to determine how robust a transmission line in any given area should be to meet a desired return period. The CSA also encourages public utilities to refine their construction choices using more accurate, locally sourced weather data if available. Local data can sometimes show that the weather is more extreme than the CSA guidelines predict.

When Nalcor designed the Labrador-Island Link, it used weather data gathered from NLH’s experience in building transmission lines in the province. It chose to construct the line with a 50-year return period but it factored in local weather data, which resulted in a line that was more robust than it would have been had it used just the CSA standards. Newfoundland and Labrador weather conditions are generally harsher than the CSA standards predict, so overbuilding is required if a line in this province is to meet even the lowest CSA standards.

Nevertheless, as discussed earlier, in 2012 both the PUB and its consultant, Manitoba Hydro International, found the choice of a return period of 50 years for the LIL to be substandard and inadequate, especially because of the plan to replace the Holyrood plant as the primary source of electricity for the Avalon Peninsula. The PUB did not have the authority to force Nalcor to adopt a higher standard for the LIL, however, because GNL had removed its responsibility for oversight of generation and transmission of the power coming from the Churchill River.

Jason Kean testified that Nalcor had an “intention” to move toward a higher reliability period as DG3 progressed. However, no changes were made to the basis of design, which had been frozen by the end of 2011. Nor were costs firmed up to do this for the DG3 estimate. The transmission team had roughly estimated that changes that would upgrade reliability could cost an extra \$150 to \$200 million, but no detailed cost estimate was prepared and no contingency was added to the LIL estimate. Similarly, no other allowance was made in the DG3 estimate for the cost of these engineering upgrades. In his testimony, Mr. Kean acknowledged that the DG3 estimate did not reflect the intention to

increase the reliability of the line. He attributed that fact to “a disconnect internally” (May 6, 2019, transcript, p. 63).

If Nalcor had decided to move to a higher return period in 2012, that cost should have been included in its DG3 estimate. If Nalcor was planning to keep the same return period, then it probably should have accounted in some way for the possibility that the PUB would eventually require it to build backup generation for the LIL. Both scenarios are consistent with what I find was Nalcor’s pattern of underestimating likely costs prior to Project sanction. There is no evidence that a decision to increase the return period of the line was ever made—either in 2012 or later.

Mr. Kean testified that engineering refinements of the transmission line continued until 2015, by which time the engineering of the entire LIL was reported to meet or exceed a 150-year return period. In many sections, in fact, the LIL was engineered to a 500-year return period. Mr. Kean estimated that the costs associated with increased reliability after DG3 were about a third of the approximately \$900 million cost overrun on the transmission assets (May 6, 2019, transcript, p. 65). I find both of these statements to be dubious.

As noted previously, the PMT has demonstrated a tendency to categorize cost increases on the LIL as “reliability-driven changes.” This implies that the increases resulted from a conscious decision on Nalcor’s part to improve the line’s reliability. This tendency is evident in a waterfall chart in Nalcor’s “Post Sanction Briefing Note,” prepared for Nalcor’s counsel. The chart was created to explain the reasons for cost increases for the transmission line component of the Project (P-01769, p. 45). Poor geotechnical conditions, the building of all-season access roads, even the proud stranding and restringing of the conductor wire are all placed into this reliability-enhancing category. Most of these changes were clearly made for other reasons. Although the LIL’s reliability may have improved as a secondary effect of these activities, they are hardly “reliability-driven changes.” I find it misleading and self-serving that the PMT presented them as such.

The same PMT Briefing Note also advances the position that DarkNL, the widespread and extended power outages in January 2014, was an unforeseeable event that resulted in cost increases to the LIL. In support of this, the PMT noted that “[i]nternal Nalcor discussions following the Liberty Review report confirmed the need to continue with the further implementation of strategic reliability enhancement measures” (P-01769, p. 30).

While it may be true that some changes on the transmission line component were made for reliability reasons, there is no evidence that in 2014 Nalcor gave any direction

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to improve the overall reliability of the LIL. Indeed, by 2014 it would have been too late in the process to re-engineer the whole line to a higher return period. Again, the changes cited by the PMT seem to relate to other issues, such as access roads that were built primarily for the purpose of constructing the transmission lines, not for maintaining them. For these reasons, I do not believe that DarkNL resulted in significant reliability changes to the LIL, nor was that event a major contributor to capital costs.

What did happen after DarkNL was that Nalcor began to publicly describe the return period of the LIL as greater than it had previously described it. In 2014, Nalcor chose to present the transmission line return period based on the CSA weather zones, rather than the more extreme NLH weather data against which the line had been designed.

Nalcor filed its documents for the LIL environmental assessment process in 2013. In them, it presented the transmission towers as designed for a 50-year return period, just as it had earlier framed its presentation to the PUB when responding to the Reference Question (P-04291). In 2014, however, after DarkNL, Nalcor filed a document with the PUB that indicated that the glaze ice design criteria for some sections of the LIL met or exceeded the 150-year return period generally, and in Eastern Newfoundland they met or exceeded the 500-year return period, as determined by the baseline CSA standards (P-03188, p. 24). Nalcor made these claims based on either the design criteria or on field testing. In other words, this PUB filing implied that the return period for the LIL had been upgraded from 1:50-year return period to 1:150-year or higher. But this is not correct.

When considered together with the PMT's characterization of certain costs as "reliability-driven," this shift demonstrates an effort on Nalcor's part to imply that major reliability-driven upgrades were made that resulted in significant cost increases. I find this implication to be untrue and misleading. This point is also critical because, if the LIL is truly either 1:150 or 1:500, then there probably would be no need for backup generation. As discussed below, there remains a live question that must be assessed by the PUB.

Although the towers as built may be stronger than originally planned, Nalcor did not actually upgrade the return period of the transmission line. What changed, in fact, was the weather criteria to which the resilience of the line was compared and rated. Rather than using real weather data from NLH, as it had done at DG3, beginning in 2014 Nalcor referred to the more generic and less robust CSA weather zone criteria. This had the effect of raising the reliability period numbers—on paper, but not in fact.

According to the testimony of Gilbert Bennett, the CSA guidelines state that the ice-loading capacity of a transmission line should be increased by a conversion factor of 42% to improve a 50-year return period to a 500-year return period (June 25, 2019, transcript, p. 25). When applied to ice-load figures, that means that the Avalon segments of the line should be upgraded from a maximum ice loading of 75 mm to a maximum of 106 mm, to truly have a 500-year return period.

Asked about the suggestion that the LIL is, in effect, a 50-year transmission line, Mr. Bennett testified (June 25, 2019, transcript):

We will be able to make a final determination as to the meteorological conditions that the line will withstand once we have further operational information. And we're not in a position here today to say whether the CSA standard is an accurate depiction of loading conditions or whether Hydro's design criteria based on their almost—actually—their 50 years' worth of operating experience is the right number. I think what we are saying is that we compare it to both sources of information. It is a design—it is a line that's designed to robust conditions. We will need some more data and the passage of time before you can ultimately conclude which is which. (p. 26)

Mr. Bennett explained in his testimony that although the LIL was originally designed based on NLH's criteria, it was later compared to the current CSA standard for the sake of "completeness" (June 25, 2019, transcript, p. 27). This may be partially true but it seems to me that using the lower CSA standards is also a way of presenting the reliability of the LIL in the most favourable light, possibly as a response to concerns expressed by the PUB. Yes, it may be useful to examine both standards, but it should be clear that the 150- or 500-year description is based on a different metric than the original 50-year design. It should not be implied that the return period of the line was upgraded at any point.

As previously stated, this does not mean that the reliability of the line is no better than originally planned. But to reiterate: changes during construction made the line more robust, but these changes were mostly made for reasons other than reliability. For example, the foundation types of many of the towers were made stronger than anticipated because the geotechnical conditions encountered during construction were worse than predicted.

Nalcor has filed documentation with the Commission showing that the amount of steel used to build the LIL increased by about 5,000 kilograms in the period between contract award and final construction. This means that the towers as built are taller and heavier than originally expected (P-04264). Gilbert Bennett testified that additional

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strengthening enhancements also occurred, such as rerouting and tower repositioning (June 25, 2019, transcript, p. 27). Decisions to decrease tower spacing or revise locations were made to take advantage of or avoid environmental obstacles and thus strengthen the line against the effects of wind.

In addition to reducing how often a transmission line can be downed, another important measure of a line's reliability is how quickly it goes back up. The main change made during construction of the LIL with regard to maintenance is improved access roads. Built to enable the LIL's construction, they have the added benefit of providing easier access to the towers in the event of an emergency.

Newfoundland Power Inc. is the primary distributor of electricity on the Island. In its final submission to the Commission, Newfoundland Power advanced the point that Nalcor's assertion that all segments of the LIL meet either a 1:150-year or 1:500-year standard is misleading. It asserted that this claim is based on the base CSA standard, rather than actual weather data that has been collected for some of the zones. Newfoundland Power states that this data demonstrates that the line is designed to a lower standard than asserted by Nalcor—on the Avalon, for example, the rating is likely closer to 1:50 years (Final Submission of Newfoundland Power, pp. 17–18). As my conclusions stated above make clear, I agree with Newfoundland Power's position on this point.

Newfoundland Power's position is not necessarily that the line is under-designed, however, but that a worst-case weather scenario that causes the LIL to fail is fully within the realm of possibility. In the event of a failure, Nalcor has determined that a reasonable mean time to restore the LIL will be 14 days. It could be even longer, depending on the location of the failure. For example, if tower collapses occur in the Long Range Mountains of western Newfoundland, they will be significantly more challenging to access and repair.

Newfoundland Power also pointed to another portion of the line that is vulnerable to extreme weather. The Isthmus of the Avalon is a five-kilometre-wide strip of land connecting the Avalon Peninsula to the rest of the Island. The LIL route crosses the isthmus, as do some AC transmission lines that transmit power. After the Holyrood plant closes, which is what is intended once the Project is completed, the amount of electricity generated on the Avalon Peninsula will decrease from approximately 700 MW to just over 200 MW. That will not be enough to meet the load required for the Avalon Peninsula, where more than half of the province's population lives. Power customers on the Avalon

will become highly dependent on the energy supply delivered by the LIL and the three AC lines that cross the isthmus.

The isthmus has historically been subject to extreme wind and ice. The AC transmission lines on the isthmus are less robust than the LIL. A weather event on the Avalon Peninsula that is serious enough to threaten the LIL would likely knock out the AC lines crossing the isthmus, potentially resulting in power outages more serious than those that occurred during DarkNL. Such a weather event would probably also damage local distribution lines. To compound the situation, the operation of Soldiers Pond, where DC power from the LIL is converted to AC, is itself dependent on AC power. For all these reasons, any improved reliability of the LIL on the Avalon Peninsula might not in itself reduce the risk of major power outages.

The Maritime Link gives the Island access to greater generation resources through interconnection with the North American grid, which could be very helpful in the future. However, it cannot fully mitigate the risk to power reliability posed by a possible outage of the LIL. It is important to note that there is currently no contract in place that would guarantee electricity from Nova Scotia in the event of an emergency in the province. According to the testimony of Stan Marshall, there are also transmission constraints that limit the amount of power that can be brought from the Island's west coast to the Avalon Peninsula (July 2, 2019, transcript, p. 26).

Peter Alteen, the President of Newfoundland Power, testified that he believes there will be a need for some combination of additional backup generation and transmission line upgrades to ensure more reliable power on the Avalon in the coming years. This possibility was also acknowledged by Gilbert Bennett in his testimony. Nalcor and NLH have not yet made a decision on potential reliability-driven upgrades, however.

Stan Marshall also testified about the reliability of the LIL to support peak winter loads on the Avalon (July 2, 2019, transcript):

How reliable is reliable? That's the question.

I mean, let me put it this way: you're looking at the existing normal capacity, the—if not—if you lose the LIL on the coldest day in winter, you're gonna be short capacity as it now stands. There are constraints—if you don't have enough capacity on the Avalon, you can bring power in from Bay d'Espoir, we've upgraded the line from there, and you may be able to source 300 megawatts from the Maritimes. If you could get that in from Maritimes, you'd probably get through, you know. You're talking about a short period of

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time. The constraints on the transmission at that level, we're looking at how you can—might resolve those.

I mean, what you do in a normal situation of loading a line and what you do in an emergency are two different things. So you might be able to make some changes in—for short periods, in an emergency, to bring it in.

But, no, there's no question about—if you were to lose that line on the coldest day in winter, you have problems. (p. 26)

Mr. Marshall further testified that a failure of the LIL in the peak months of January and February would be improbable (July 2, 2019, transcript, pp. 26–27). He said such a failure would be more likely to occur in March or April, because spring is when Newfoundland sees the kind of weather conditions, a combination of high winds and sleet, that would threaten the LIL.

According to Mr. Marshall's testimony, if the PUB determines that the system is not reliable enough and orders NLH to build backup generation, the quickest way to accomplish this would be to install a 125 MW thermal turbine at a cost of approximately \$250 million (July 2, 2019, transcript, pp. 29–30). His preferred option, however, would be to defer the closing of Holyrood until at least 2021, by which time more information may be available about the industrial load and the sturdiness of the LIL.

I am unable to make conclusions about the reliability of Newfoundland's post-Muskrat Falls electrical system. It may be that the LIL is as robust as it needs to be or as can reasonably be expected. Ultimately, although the PUB is exempted from having oversight of the generation and transmission facilities of the Muskrat Falls Project, it has the authority to determine whether the overall power grid of the Island is sufficiently reliable. This is not a simple task and requires weighing costs, benefits and many other considerations. There are always tradeoffs in any such determination and no electrical system can ever be made impervious to outages. That said, concerns about the costs associated with increased reliability will be magnified in the situation that we now find ourselves in—where electrical costs are already going to be so high that they need to be mitigated by the provincial government.

I conclude that there is a reasonable likelihood that additional costs will be incurred to ensure that there is adequate reliability for Island ratepayers and, in particular, those who live on the Avalon Peninsula. It is clear that Nalcor did not communicate this reality to GNL and the public when it was seeking sanction for the Project. This is regrettable.

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**CHAPTER 25: THE 2013 SNC RISK REPORT**

In 2013, SNC prepared a risk analysis report for the Project entitled *SNC-Lavalin Risk Assessment: Lower Churchill Project* (referred to as the *2013 Risk Report*). During the hearings, a question arose as to whether and when this risk analysis had been provided to Edmund Martin or other Nalcor representatives.

In June 2017, the *2013 Risk Report* was released to the public. Prepared on April 23, 2013, this document identified 40 Project risks and evaluated the total risk exposure of the Project to be approximately \$2.4 billion (P-01977, p. 9). The report also concluded that the Project faced major issues, including scheduling delays and insufficient labour resources. The report was signed by five SNC representatives, including Normand Béchard, on May 17, 2013. Scott Thon, SNC's Executive Vice-President at the time, did not sign the document. The report is marked "Confidential for SNC-Lavalin internal use only."

SNC presented the *2013 Risk Report* to Stan Marshall after he became CEO of Nalcor. Mr. Marshall then provided the report to GNL. Minister of Natural Resources Siobhan Coady and Premier Dwight Ball spoke to the media about the *2013 Risk Report* shortly thereafter, alleging that Edmund Martin had known about the report but did not disclose it to GNL. On June 26, 2017, Mr. Martin issued a statement saying that he had never received a copy of the *2013 Risk Report*. Upon reading the *2013 Risk Report* at the time of its public release (2017), Mr. Martin indicated that Nalcor had been on top of the risks in 2013 and already had mitigation plans in place. At the request of the Commission, Nalcor's document storage system (Aconex) was searched and no record of the *2013 Risk Report* was found.

The *2013 Risk Report's* Introduction states (P-01977):

***This Risk assessment has been made solely by a selected team of SNC-Lavalin Experts at the request of the SNC-Lavalin Project Director for the Lower Churchill Project. Expecting a high market heat up on major strategic packages, the LCP Project Director asked that an internal LCP project risk assessment be conducted following the SNC-Lavalin risk assessment method typically applied on all other SNC-Lavalin projects. The Risk assessment workshop was conducted by the Risk Director, of North America Region of Global M&M [Mines and Metallurgy] Division, who has had previous experience in hydroelectric power projects at Hydro-Québec/Baie James Society (SEBJ).***

***This review was conducted at SNC-Lavalin's expense with the objective of preventing and or mitigating any unforeseeable risk events that could have a negative impact on the project's cost and schedule and could increase the project exposure by more than 30% from its original budget.***

(emphasis in original, p. 3)

Normand Béchar, who was the SNC Project Director, testified that he had commissioned the *2013 Risk Report* because he believed that SNC had an obligation to conduct a risk review. He explained this in his interview with Grant Thornton (P-01677):

So I was looking at what was going on and said, jeeze, some day for some reason if this project starts slipping, there is a big risk for SNC to get its reputation damaged. So I discussed with my boss at the time, Bernard Garner.

...

So we did the risk review and Michel issued a report with the conclusion. I handed the report to my boss, Bernard Garner at the time, Scott Thon, and Bob Card (SNC CEO). (p. 123)

To draft the *2013 Risk Report*, the SNC Mines and Metallurgy division assembled a panel of internal SNC experts to participate in a risk workshop, independent of Nalcor. The panel first identified risk titles and developed risk descriptions. Next, it performed a qualitative analysis to assign a relative risk magnitude to each risk and identify the most critical risks. That data was used in computer risk software to calculate average risk exposure values. Finally, SNC's team prioritized the risks, developed mitigation plans for each one and created a risk register. The team's conclusions were presented in the *2013 Risk Report* and read as follows (P-01977):

The present project execution schedule offers no float and critical activities could be delayed, such as the Dam, Spillway ("ice free" window time frame), long lead items, only to mention few of them. The actual problem to deliver the camps early, will affect the project downstream. Additionally, the specific manpower needed to realize these hydropower facilities will be difficult to find. Most important the expert committee believe that the manpower needed to fulfill the work should be in the neighbourhood of 2500 people and the project is presently working with 1500. This concern has to be reviewed and given proper consideration at once. The camps facilities into this difficult environment should be looked at carefully and compared with the camps facilities been provided presently in Alberta and Québec.

This exercise has to be further pursued and developed with the Team experts involving the Client, so that both Parties are aligned on how to best resolve these issues.

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Nalcor and the EPCM team have to carefully review their roles, responsibilities and contribution in this major project, since the challenges to be faced during the upcoming execution phase will be major. (pp. 8–9)

Grant Thornton interviewed Bob Card, Scott Thon, Normand Béchard, J.D. Tremblay, Paul Harrington and Gilbert Bennett about the *2013 Risk Report*. Grant Thornton reached the following conclusions (P-01677):

1. That it was possible nobody from Nalcor saw the draft SNC Risk Report in 2013;
2. Messrs. Bennett and Harrington (and possibly more people from Nalcor) knew the SNC Risk Report existed;
3. Messrs. Bennett and Harrington knew the contents of the report pertained to LCP project risks;
4. Mr. Harrington made a decision not to ask for the report and recommended to Mr. Bennett that SNC keep it as an internal document in draft form and not provide it to Nalcor;
5. Mr. Card remembered discussing the SNC Risk Report with Mr. Martin, however Mr. Martin has no recollection of it;
6. SNC's calculated risk exposure materially exceeded Nalcor's calculated risk exposure. (p. 136)

I agree with Grant Thornton's conclusions. In particular, there is no definitive evidence that Nalcor received the *2013 Risk Report* in 2013. However, it is clear that Nalcor knew of its existence in 2013 and deliberately decided not to obtain a copy of it.

In April 2013, the Project had moved toward an Integrated Management Team model, which required high-level meetings. Mr. Béchard testified that in April 2013 he picked up SNC's CEO, Bob Card, at the St. John's airport and drove him to Nalcor's office on Columbus Drive for a CEO-to-CEO meeting with Edmund Martin. Mr. Béchard provided Mr. Card with a copy of the *2013 Risk Report* prior to the meeting. Mr. Béchard remained in his car while Mr. Card met with Mr. Martin. Mr. Béchard testified that when Mr. Card returned to the vehicle afterward, Mr. Card told him that Mr. Martin had refused to accept a copy of the *2013 Risk Report*.

Mr. Card did not testify at the hearings. In an interview with Grant Thornton, however, he stated that although he did not recall physically providing the *2013 Risk Report* to Edmund Martin, he did recall discussing the risks in that report with him. Mr. Card did not fully concur with Mr. Béchard's recollection of the events on the day of

the meeting. He is quoted by Grant Thornton as saying: “It would be hard for me to conceive me handing Ed anything and him saying I don’t want that” (P-01677, p. 125). Scott Thon could not recall whether the *2013 Risk Report* was ever given to Nalcor. He did say, however, that SNC expressed to Nalcor the risks that were identified in the report. Edmund Martin testified that he had no recollection of ever discussing the *2013 Risk Report* with Mr. Card.

After Mr. Card’s meeting with Edmund Martin, Paul Harrington requested a meeting with Normand Béchard and J.D. Tremblay. He testified (June 5, 2019, transcript):

Well, I wanted to meet with Normand and J. D. Tremblay because I wanted to find out where we were going with risk. There was – you know, there were some discussions, I think, with high levels of SNC that I didn’t participate in with the— with Gilbert, perhaps, and Ed Martin, and they were talking about risks in the general sense. So I wanted to follow up with Mr. Normand—with Normand Béchard and Mr. Tremblay and find out what was going on ‘cause I really didn’t know at that time in time. (p. 62)

In J.D. Tremblay’s notes from that meeting, he states “PH met with Ed Martin (who’d met with Bob Card). Risk work performed by SLI-What’s the deal?” (P-01836, p. 1). “PH” is undoubtedly Paul Harrington. In my view, this contradicts the evidence of Mr. Martin that he had not discussed the *2013 Risk Report* with Mr. Card at their meeting.

In any event, on May 28, 2013, Paul Harrington met with Mr. Béchard and J.D. Tremblay to discuss SNC’s recent work on risk. Mr. Béchard testified that he offered the report to Jason Kean around that time but that Mr. Kean “didn’t want it” (March 26, 2019, transcript, p. 65).

Several emails also confirm that Nalcor management knew about the *2013 Risk Report*. In an email to Mr. Bennett on May 29, 2013 (which was copied to Lance Clarke, Jason Kean and Brian Crawley), Paul Harrington recommended that Nalcor decline any offer to be provided with the *2013 Risk Report* (P-03159):

The status is that a draft is with B Gagne and Scott Thon and they may be thinking about providing it to us. I would respectfully decline that offer because of a number of very important factors

...

So I recommend we talk to Scott and reassure him that we realize there was no mal intent here however given the above we would prefer if this remained as a draft internal document and not presented to us. (pp. 2, 3)

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In a follow-up email to Jason Kean the same day, Mr. Harrington wrote: “I want to be able to neutralize this by taking it head on” (P-03159, p. 1).

Gilbert Bennett testified that he had no recollection of ever receiving the May 29 email from Mr. Harrington. He stated that he found out about the *2013 Risk Report* when Stan Marshall brought it to his attention in 2016 or 2017. Mr. Bennett also testified that Nalcor’s IT division had searched his email records and had been unable to locate the May 29 email.

There is no evidence that the May 29 email to Mr. Bennett was sent to an incorrect address. Furthermore, the evidence indicates that Mr. Kean “replied all” to Mr. Harrington’s email, which had been sent to multiple recipients including Mr. Bennett. On this basis, Mr. Bennett should have received that email on two separate occasions that day. After considering all of the evidence, I conclude that it is more likely than not that Mr. Bennett received Mr. Harrington’s email of May 29, 2013. I do not accept Mr. Bennett’s evidence that he did not receive this email.

In various documents prepared between 2013 and 2017, Mr. Harrington maintained that there were justifiable reasons for declining to accept the *2013 Risk Report*. These reasons can be grouped into four areas:

1. **The 2013 Risk Report presented no new risks:** In his email of May 29, 2013, Mr. Harrington stated (P-03159, pp. 2–3): “Because the work was based on the same source data that Westney used there is nothing new here—Risk wise.” In his later recollections, he wrote (P-01975):

Nalcor and SNC carried out a risk identification workshop in 2012 and the risks that were identified in that workshop (which N Bechard and JD Tremblay attended) were used to carry out a Quantitative Risk Analysis (QRA) by the Project’s Risk Expert Advisor—Westney, the results of which were used in the Sanction decision. I was told that there were **no new risks** in the SNC Report. (emphasis in original, p. 1)

Mr. Harrington confirmed that he met with Mr. Béchard and Mr. Tremblay on May 28, 2013. He stated that they informed him at this meeting that SNC had prepared a draft risk report and was considering providing Nalcor with a copy. He recalled that Mr. Tremblay and Mr. Béchard said there were no new risks in the SNC report.

In his answer to a question from Grant Thornton, Mr. Harrington wrote (P-01910):

I was told there were no new risks, however I asked repeatedly for Mr. Tremblay to prepare a report to confirm that to be the case, i.e. review the draft SNC internal risk report and compare it to the 2012 risk register used for the DG3 decision to identify any discrepancies. Despite my requests to do so, a discrepancy report was never produced by Mr. Tremblay. However Westney did perform such a comparison and there were no new risks identified by SNC that Nalcor was not aware of and actively mitigating. (p. 4)

2. **The SNC process considered only unmitigated risks:** In the May 29 email, Paul Harrington wrote (P-03159):

The risk analysis shows the unmitigated risk and cost result and is not a probabilistic analysis using Monte Carlo sampling techniques—so the results will be subjective in interpretation and will not reflect the mitigations we have implemented or the cost result of the mitigations—i.e the results will be misleading and inaccurate (emphasis in original, p. 3)

Mr. Harrington noted that, in contrast, Nalcor's risk analysis did consider mitigation.

3. **Nalcor had no input or involvement in the 2013 Risk Report:** Mr. Harrington's email of May 29, 2013, states (P-03159):

We have had no opportunity to challenge the assumptions or factual accuracy of the input data and we really do not have the time or inclination to do so—we need to focus our efforts and resources on the risks going forward not spend time on some dated, incomplete analysis using techniques which are inferior to those used by Westney (p. 3)

He later noted that Nalcor had no participation in the cost ranges that SNC had used (P-01975, p. 1).

4. **The SNC processes did not follow Nalcor's risk management process:** Mr. Harrington stated (P-01975):

SNC used an internal process that did not use Monte Carlo sampling techniques and did not produce a probabilistic range of outcomes—SNC's process produced a simple risk number which, in my understanding would equate to what is known as a P90 result. (p. 1)

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Mr. Harrington further noted that SNC had produced the 2013 Risk Report not knowing that Nalcor had already performed a quantitative risk assessment. According to Mr. Harrington, once Scott Thon became aware of Nalcor's QRA work, he was satisfied that "Nalcor understood the Project potential cost and schedule risks and had communicated these to the Nalcor executive and GNL" (P-01975, p. 2).

After considering all the evidence, I conclude that Mr. Harrington's stated reasons for not accepting the *2013 Risk Report* are misleading and do not provide a reasonable justification for Nalcor's decision to decline receipt of the *2013 Risk Report*. The evidence demonstrates that, at the time when Mr. Harrington declined to receive a copy of it, SNC was not fully up to date on the Nalcor/Westney risk assessment work. Therefore, Mr. Tremblay and Mr. Bécharde were not in a position to properly assess whether there were any new risks that Nalcor had already identified. In my view, the most likely explanation for Nalcor's decision to decline receipt of the report was that Nalcor did not want a conflicting assessment of Project risk to be released to GNL or to the public.

Mr. Tremblay testified that he did not discuss the *2013 Risk Report* with anyone at Nalcor after the meeting with Mr. Harrington and Mr. Bécharde on May 28, 2013. At the hearings, Mr. Tremblay stated: "I had the distinct feeling that it was a taboo subject and I should never discuss that ever again." Mr. Tremblay further testified that Paul Harrington told him that "the report needs not to exist" (March 25, 2019, transcript, p. 86). In an interview with Grant Thornton, Mr. Tremblay explained this remark by saying that Mr. Harrington had been concerned that the *2013 Risk Report* was sensitive and that it could become public. Mr. Tremblay's notes from the meeting on May 28, 2013, indicate that Mr. Harrington had concerns that the report was subject to the *Access to Information and Protection of Privacy Act, 2015*, which meant that it could become a public document (P-01836, p. 2).

As will be explained later, SNC identified several risks in its *2013 Risk Report* that I find were either not captured at all or only partially captured by Nalcor's DG3 QRA assessment, which was based on the Westney report of September 20, 2012. If Nalcor had decided to review the *2013 Risk Report* when it was offered to them, the need to consider and discuss risks that Nalcor had not previously considered would have become apparent.

Ron Power testified that SNC gave the *2013 Risk Report* to Stan Marshall in 2016 in an attempt to become reinstated as the EPCM contractor on the Project. In his testimony,

he said: “Well, it came to light because SNC, in 2016, made a run at the project team to take over the job, is what happened” (May 22, 2019, transcript, p .21). On or about June 3, 2016, Stan Marshall met with senior SNC representatives and “discussed with them how they thought we should proceed, especially if they wanted to get more engaged in this” (July 2, 2019, transcript, p. 1). He invited SNC to present a proposal addressing this question, which he received a week later (P-02633). Mr. Marshall testified that he did not pursue the option of reinstating SNC as EPCM contractor because SNC would have required three months to mobilize.

I am unable to conclude that SNC’s motivation for providing Mr. Marshall with a copy of the *2013 Risk Report* in 2016 was an attempt to be reinstated as the Project’s EPCM contractor. I therefore reject Mr. Power’s evidence on this point.

After the *2013 Risk Report* was made public, Paul Harrington attempted to establish that it did not include any risks that Nalcor had not already considered at the time of the 2012 Westney QRA. On November 15, 2017, Mr. Harrington emailed Justin Dahl, a consultant with Westney, and asked him to review the *2013 Risk Report*, stating (P-03172):

I request Westney to review the SNC-L Risk assessment report and address specific issues that were raised when the report was released publically, these include:

I would like to understand if the risks identified in the SNC-L report were identified by the Project team Risk identification in 2012 (or earlier) and included in the DG3 QRA by Westney as either tactical or strategic risks and if certain risks were not included was there a valid reason?

I would also like to check if there were active mitigation efforts by LCP to reduce the impact of the risks that were identified by SNC-L—were any of the risks simply ignored by LCP?

The SNC-L Assessment also makes certain assertions regarding LCP’s risk management approach, I would like each of these to be considered and determine if the assertions are correct or not, supported by the facts.

The SNC-L risks are divided into sections from Very High to Low please cross refer to the LCP risk register available at the time and provide the LCP risk reference.

Check and report if the range of outcomes from the Westney QRA at DG3 inclusive of the results in the SNC-L Risk Assessment report?

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Considering the Top Risks, when were these risks first identified and mitigation efforts started?

Ultimately I want to understand if the SNC-L risks included in the assessment report would have been a revelation to LCP Project team at the time or were these risks already identified, understood, quantified and being actively managed. It is important to have these facts available. (pp. 2–3)

In his testimony, Mr. Harrington stated that before he engaged Westney to do this work, he also retained Jason Kean (who had resigned from Nalcor in 2017) to provide an “initial kind of viewpoint” on the *2013 Risk Report* (June 5, 2019, transcript, p. 68). Mr. Kean confirmed that he had provided only a cursory review of the very high risks that SNC had identified and found that they correlated with the key risks in Nalcor’s DG3 QRA.

Mr. Harrington felt that it would be beneficial to have Jason Kean’s input because Mr. Kean had been deeply involved in developing the DG3 QRA. Mr. Harrington indicated that Mr. Kean had assisted Westney with Nalcor’s QRA in the spring of 2017, but that Mr. Kean had had no involvement in the development of Westney’s assessment of the *2013 Risk Report* dated December 1, 2017 (P-01847). Mr. Kean testified that he became a consultant with Westney in 2018.

The 2017 Westney analysis of the *2013 Risk Report* reached the following conclusions (P-01847):

- Assertions made in the *2013 Risk Report* are not supported by the facts available
- All the risks identified by SNC were included in the Project risk register and considered in Westney’s 2012 risk assessment
- The range of outcomes from Westney’s 2012 risk assessment were included in SNC’s *2013 Risk Report*
- Nalcor had identified the top risks prior to sanction, with mitigations planned or already underway in 2013 (p. 4)

This Westney analysis purports to do several things—provide context for the *2013 Risk Report*, dispute several assertions from that report, and set out a timeline for other events. This analysis lists each of the 40 risks identified in the *2013 Risk Report* and cross-references them with risks identified in Nalcor’s DG3 QRA. The conclusion of the Westney analysis was that all the risks in the *2013 Risk Report* were included in Nalcor’s DG3 QRA.

On December 7, 2017, Mr. Harrington forwarded Westney's analysis to Scott O'Brien, Lance Clarke, Ron Power and Tanya Power (copying Gilbert Bennett). He noted (P-03172):

The results confirm that there is nothing new in the SNC assessment that all risks were already identified, quantified and were being actively mitigated. The allegation that LCP ignored these risks or otherwise dismissed them at the time is not supported by the analysis. (p. 2)

Mr. Harrington also forwarded the Westney assessment to Stan Marshall on December 18, 2017.

Three months later, on March 18, 2018, Mr. Harrington again forwarded the Westney analysis to Gilbert Bennett and also to Karen O'Neill (Nalcor Communications). He suggested that the Westney report be publicly released "because this misrepresentation of the facts by the media needs to be addressed" (P-03661, p. 1). Mr. Harrington testified that a decision was made not to release it to the media, however. In his testimony, Mr. Bennett confirmed that Nalcor made this decision because "we didn't see it to be productive to engage in public dialogue on this topic" (June 21, 2019, transcript, p. 78).

In a June 2018 presentation deck prepared by the PMT for Grant Thornton about the *2013 Risk Report*, the PMT wrote (P-00893):

- The Westney analysis clearly shows that there were no new risks in SNC's analysis or included in their report.
- The accusation of neglect is unfounded, the Project team had already identified the risks, quantified the risks in the QRA and were actively managing the risks and continue to do so.
- This is just one more example of the misinformation that is allowed to propagate by those who have an agenda and unfairly demonize the Project team. (p. 3)

Having reviewed the evidence, I have several concerns about the Westney analysis. First, I question the appropriateness of choosing Jason Kean and Westney to conduct the assessment. Mr. Kean and Westney were both heavily involved in performing Nalcor's DG3 QRA work in 2012. In fact, in Westney's analysis, there is no distinction between Nalcor and Westney's roles in producing that QRA. It would be highly unlikely that Jason Kean or Westney would find that there were critical errors in their own work. Not surprisingly, all of the conclusions from the Westney analysis supported the risk work performed by Westney and Jason Kean at DG3 and criticized the work of SNC.

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Furthermore, I conclude that both Jason Kean and Westney were in a conflict of interest when they agreed to assess the *2013 Risk Report*, since they were both, in effect, judging their own work. Westney's conclusions were exactly what Nalcor had expected. This conflict of interest and absence of any degree of independence is so obvious that no further elaboration is required.

I am also concerned by Mr. Harrington's response to this conflict of interest issue. When asked if he saw any conflict of interest in engaging Jason Kean or Westney to perform the analysis, Mr. Harrington testified: "I felt as though they would—they were a professional group, and they would give us a true answer. And, you know, I have no reason to doubt that they're providing me with accurate information" (June 5, 2019, transcript, p. 69).

I also note that Westney's analysis used an alphanumeric code to display the "Nalcor-LCMC reference" risk titles (P-01847, pp. 5–6). Even though the report clearly displays the *2013 Risk Report* titles, Westney presents Nalcor's risks using "KR" (key risk/strategic risk) and "R" (tactical risk) codes. In order to perform a comparison, the reader must locate Nalcor's DG3 QRA, find the appropriate tactical risk and key risk appendices and decode each individual key risk title. There is no easily accessible side-by-side comparisons of the risk titles. While I cannot conclude that this was an intentional effort to obscure the information, it is clear that the information, as presented, inhibits a reader from easily verifying Westney's conclusions.

A further concern that I have is with Westney's conclusion that the range of outcomes from its analysis were included in the results of the *2013 Risk Report*. Grant Thornton compared the inputs of the Monte Carlo simulation for the DG3 QRA (worst-case scenario) to the risk exposure outlined in the *2013 Risk Report*. It found that the *2013 Risk Report* allocated \$1.6 billion more in tactical risk exposure and \$647 million more in strategic risk exposure than did the Nalcor DG3 QRA. Specifically, Grant Thornton found that "SNC's calculated risk exposure materially exceeded Nalcor's calculated risk exposure" (P-01677, p. 136).

A comparison also shows that the *2013 Risk Report* contained risk qualifications (Capex Probable Consequences) that Nalcor had not quantified in its DG3 QRA. For example, in Nalcor's DG3 key risk register, the exposure for almost all the risks was deemed to be "low," "reduced," "mitigated" or "closed." Many of these risks were not allocated any value for risk exposure.

I also disagree with Westney's conclusion that all the risks that SNC raised in the *2013 Risk Report* were already identified in Nalcor's DG3 QRA. I further disagree with the evidence of Gilbert Bennett and Paul Harrington that the Westney analysis was an objective comparison of risk titles. The Westney analysis clearly exhibited a high level of subjectivity when comparing the risks.

Grant Thornton also compared the risks identified in SNC's *2013 Risk Report* to Nalcor's risk registers from the DG3 QRA. It noted that "some risks included in Westney's analysis may not directly compare to the risks included in the SNC risk report" (P-01677, p. 133). Having undertaken a more detailed examination of the risk titles myself, I agree that several risk titles are not sufficiently equivalent and cannot reasonably be considered to be the same risk.

For example, the *2013 Risk Report* describes this risk: "Powerhouse and spillway concrete works are planned on a three year duration (2 winter seasons) with a very tight and aggressive schedule providing little float, which might result in additional delays (possibly 6 months) and costs" (P-01977, p. 7). Westney equates this risk to Nalcor's DG3 key risk "availability of experienced hydro contractors," the description of which is (P-00130):

As a result of the strong demand for new hydro, industry consolidation, and a lack of hydro over the past 20 years, there is a limited availability of experienced hydro contractors, which could result in less than expected number of qualified contractors being interested. (p. 159)

In response to this example of risk comparison, Mr. Kean explained that unavailability of sufficient experienced hydro contractors could impact the ability to achieve the concrete placement rates that had been achieved on other projects. The PMT's post-sanction Briefing Note, prepared for Nalcor's counsel, also addresses this point (P-01769):

The aggressive schedule for powerhouse and spillway was acknowledged by LCMC in 2012 and was part of the 2012 DG3 QRA. . . . the Project schedule at Sanction was recognized as a target schedule with aggressive milestones. (p. 52)

Although I acknowledge that Mr. Kean and the PMT are not in a position to provide a complete explanation of Westney's rationale for its conclusions, I am not persuaded by either of their explanations. Speaking plainly, an "aggressive concrete schedule" is a separate risk from a "lack of experienced hydro contractors."

In another example, Westney matches SNC's identified risk "difficulty transitioning to an integrated team project delivery model" to Nalcor's KR 43 key risk. That is what was

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identified in Nalcor's DG3 QRA as R43, which is a key or strategic risk. The *2013 Risk Report* describes this risk as (P-01977):

Lack of proper delegation of authority, leading to an unsustainable authority structure as the site construction ramps up. Decisional team more familiar with the oil and gas industry than with heavy civil and hydro works, leading to mismatched processes and procedures, as well as to less than optimal value-plus decisions. (p. 16)

The Westney analysis paired "difficulty transitioning to an integrated team" risk with Nalcor's DG3 risk, R43 reference (P-00130, p. 171). But Nalcor titles R43 as "challenges attracting and retaining quality required Owner's team resources as a result of competing local mega-projects" and describes the risk like this (P-00130):

As a result of a number of competing mega-projects occurring locally, the Project has challenges attracting and retaining the quality of required Owner's team resources, resulting in the inability to adequately perform the Owner's oversight/management role. (p. 171)

This description does not strike me as addressing the same risk that SNC identified. Furthermore, the transition to an integrated management team did not occur until the second half of 2012 and was not announced until March 2013—but Nalcor's DG3 risk workshops were held in May 2012. In my view, it is highly unlikely that in May 2012 Nalcor would have been able to identify a risk relating to the Project model management that had not been implemented.

Given the questions raised about Westney's cross-referencing of risks and my finding that Westney was in a conflict of interest and not independent, I find that the conclusions in the Westney analysis are inaccurate and unreliable. I am aware that Nalcor decided not to release the Westney report and that the report, which involved a significant expenditure, does not seem to serve any real purpose in the future management of the Project. However, I am concerned by the PMT's resolute confidence in the Westney report. Once again, it calls into question the PMT's judgment in engaging consultants, as well as its capacity to critically evaluate the reports of those consultants. Most importantly, it demonstrates to me the inability of the PMT members to acknowledge any gaps or shortcomings in their management of risk, even when these are obvious.

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**CHAPTER 26: GNL OVERSIGHT AND REPORTING PRACTICES**

This chapter examines whether GNL applied appropriate measures to oversee the Project during its construction phase, including protocols for how and when it received reports from Nalcor. As previous chapters have illustrated, GNL put no formalized oversight process in place before Project sanction. That situation continued until the establishment of the “Oversight Committee” in March 2014, more than a year after Project sanction.

Thomas Marshall became interim leader of the Progressive Conservative party and Premier when Kathy Dunderdale stepped down from those posts on January 24, 2014. Mr. Marshall testified that, soon after he became Premier, Cabinet (with the assistance of Clerk of the Executive Council Julia Mullaley) brought forward an initiative to provide oversight for the Project. As a result, the Oversight Committee was established at the first Cabinet meeting in Mr. Marshall’s tenure as premier.<sup>9</sup> In his testimony, Mr. Marshall stated that, from the Cabinet’s point of view, “[W]e knew what we didn’t know and we were looking for professionals to review the oversight that was available out there, to identify gaps, to provide additional oversight that was appropriate and to advise—make recommendations to Cabinet, to report directly to Cabinet, and then Cabinet would give directions to the appropriate departments” (April 1, 2019, transcript, p. 48).

The first Oversight Committee was composed entirely of civil servants and reported directly to Cabinet. It was chaired by Ms. Mullaley and included senior representatives from several government departments (P-02049). Craig Martin, the committee’s Executive Director from May 12, 2014, to May 11, 2015, managed its day-to-day work (P-03905; June 3, 2019, transcript, p. 2).

Craig Martin was replaced by Paul Carter, but there was a 15-month gap between their tenures. Mr. Carter was appointed in August 2016. In his testimony, he could provide no explanation for this gap. He stated that he had a brief meeting with Craig Martin concerning his new appointment and that he would often speak to Mr. Martin as required. Mr. Carter also testified that Harman Khurana, a staff member with the Cabinet Secretariat, had supported the committee’s work until Mr. Carter’s appointment.

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<sup>9</sup> Mr. Marshall served as premier until September 2014, when Paul Davis was elected Progressive Conservative leader.

Julia Mullaley testified that the Oversight Committee was promised access to an expert consultant. She stated that this was “key,” adding (May 29, 2019, transcript):

[T]hat was a discussion I had with then-Premier Marshall at the time, that if we were going to do this Oversight Committee we needed this type of resource. . . . [I]t was very difficult budget times back then, but they [Cabinet] felt that that was correct as well and they gave us a budget for that.

So this premise that we would always have access to this was key for us—it was absolutely key. (p. 28)

A process was undertaken to obtain the services of an expert consultant. As referred to previously, Ernst & Young was retained in early March 2014. The initial contract for EY’s services had a maximum value of \$25,000 (P-03279, p. 4). The scope of work for this contract entailed advising the Oversight Committee on appropriate processes for its work and assessing whether the Oversight Committee was requesting all the information from Nalcor that it needed in order to fulfill its responsibilities.

EY and GNL held a kickoff meeting on March 11, 2014 (P-03280). EY envisioned a two-week period for completion of its report, but that report was not submitted to the Committee until July 25, 2014 (P-03293). Michael Kennedy of EY testified that the bulk of EY’s work was essentially completed within the first few weeks of the engagement and a draft report was prepared (May 13, 2019, transcript, p. 6).

Michael Kennedy further testified that EY’s initial engagement with the Oversight Committee did not guarantee its continued involvement. As events unfolded, however, five additional (and much larger) contracts were awarded to EY for its work with the Oversight Committee. In the following months and years, EY would be awarded four separate scopes of work and enter into two Master Services contracts covering general work from GNL. The particulars of these contracts are outlined in Figure 3.32.

<b>Date</b>	<b>Exhibit Number</b>	<b>Maximum Contract Value <sup>1</sup></b>	<b>Scope of Work (Summary)</b>
March 7, 2014	P-03279	\$ 25,000	Assist the OC to design its processes and assess whether it had requested all necessary information.
November 7, 2014	P-03296	250,000	Master services contract, authorizing the arrangement of specific scopes of work.
April 1, 2015	P-03325	342,000	Master services contract, authorizing the arrangement of specific scopes of work.
March 9, 2015	P-03326	125,000	Review of Project Controls for Cost and Schedule, including assessing the methods for calculating and reporting cost and schedule progress.
January 14, 2016	P-03833	1,250,000	Assess the reasonableness of the Muskrat Falls Project's cost and schedule forecast, and identify opportunities to address any material/critical risks.
June 2, 2017	P-03587	250,000	Assist the OC to assess the status of the implementation of recommendations from EY's Interim Report of April 8, 2016.

<sup>1</sup> Exclusive of HST and expenses.

*Figure 3.32: Summary of Ernst & Young's Contracts with the Oversight Committee*

From the outset of EY's involvement in Project oversight, it is clear that neither EY nor the Oversight Committee were well received by Nalcor. EY's Richard Noble described initial meetings between Oversight Committee members and Nalcor in an email sent on April 10, 2014 (P-03286):

The Nalcor team had received the government's detailed data request . . . and rebuffed the request stating that it was more than required by other interested parties, but also was "superficial" and at other times "too detailed, intrusive and requiring additional work" . . . and at other times "we already use that information." (p. 2)

In a separate email on the same day, Mr. Noble stated (P-03286):

Nalcor's resistance is bedded partly in an understandable desire to minimize the effort required to support the oversight . . . and also to reduce the potential for unwarranted red-flags and noise from what they view as "yet another third party reviewer."

Nalcor's Program Director Paul Harrington appears to be a seasoned program leader which in this scale of program requires technical depth, local charisma but also a hard edge with the occasional need to be an adept "street fighter". His dismissiveness bordering on rudeness to the Government and thinly veiled attempt at manipulation of the wording of the consensus from the meeting are not unusual tactics in one cadre of big ticket Programme Directors who seek to demonstrate both their credentials and Kahunas.

However, he can be overruled by the VP of the program . . . and this may be the most immediate route to building the consensus that takes this forward.  
(p. 1)

At the hearings, Ms. Mullaley testified that Nalcor "did not want any oversight committee in place. They did not want that added oversight or burden" (May 29, 2019, transcript, p. 25). She added: "We didn't want to get into an argument of what we wanted, when we want it. We wanted to establish it early . . . [but] there was some friction around even trying to agree to that initial list of what we would've wanted to see on a regular basis" (p. 25). Ms. Mullaley agreed with Mr. Noble that Mr. Harrington could "at times" exhibit some rudeness, which is "never what you hope for," and added: "I would say along the way there were mostly cordial [meetings], but I would also say that we had some really difficult meetings" (p. 25). She characterized the relationship between GNL and Nalcor as "complex" and that "the pushing and the shoving" would precede the receipt of requested information from Nalcor (p. 26).

The Terms of Reference for the Oversight Committee were released on July 29, 2014, shortly after EY submitted its first report to it. According to these Terms of Reference, the committee was established to provide oversight on three main questions related to the Project (P-02049):

1. Were cost and schedule being well managed?
2. Were the Project's cost and schedule objectives being met?
3. Were cost and schedule risks being reasonably anticipated and managed? (p. 1)

The Committee's stated objectives were to provide "reliable and transparent oversight on the cost and schedule performance of the Project and to establish a direct and effective communication channel to Cabinet and the general public" (P-02049, p. 1).

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The Terms of Reference also set out these definitions (P-02049):

**Accountability:**

The Committee is accountable to Cabinet for Project oversight and periodic reporting on the Project's:

- (a) cost and budget performance, b) schedule performance and
- c) cashflow requirements.

**Responsibility:**

Responsibilities include:

- Establish the information requirements for regular monthly reporting.
- Confirm frequency and scope of reporting protocol.
- Review and analyze the information provided by the Nalcor Lower Churchill Project Team ('Project Team') and other related parties.
- Liaise with Nalcor Corporate and the Project Team throughout analysis and reporting to confirm and validate facts.
- Formulate conclusions on the cost and budget performance, schedule performance and cash flow requirements and provide recommendations as necessary. (p. 2)

On July 29, 2014, Premier Thomas Marshall and Minister of Natural Resources Derrick Dalley sent a three-page letter (P-02048) to Edmund Martin and Ken Marshall, the acting chair of Nalcor's board of directors at the time, instructing Nalcor to make detailed information on Project progress available to the Oversight Committee. The list of required information was related to Project costs and schedule generally and also included many other specific items, including the catch-all category "Other information as the Committee may from time to time require" (p. 3).

The Oversight Committee's first report (P-02051) presented "the work completed by the committee since its appointment" (p. 3). The introduction to this July 2014 report went on to state:

To pursue its task with utmost effectiveness, the Committee has developed processes for systematic and efficient flow of information; established, by engaging an external consultant with expertise in major capital project oversight, the kinds of data needed to carry out the mandate defined in the Committee's terms of reference; and reviewed information on existing oversight mechanisms, which can be leveraged to avoid duplication of effort

and resources. With completion of this work, the Committee established an Oversight Framework to guide its future work and quarterly reporting. This report lays out that Framework, provides information on existing oversight mechanisms and highlights additional procedures that the Committee has commissioned to increase its oversight capacity. (p. 3)

The oversight framework the report set out included the Committee's Terms of Reference, a list of information needs, a reporting protocol and a list of existing "sources of oversight" (P-02051, p. 5). These sources of oversight were described as requirements needed "for the purposes of understanding the work and reports of other oversight providers" (p. 5) and included pre-sanction reports, reports by the Independent Engineer and Nalcor's internal and external auditors, as well as information about Nalcor's board of directors and the boards of directors of Nalcor's subsidiaries, Nalcor's management processes, Nalcor's quality assurance processes and the Office of the Auditor General.

The Oversight Committee's July 2014 report indicated that EY had made three main recommendations (P-02051):

1. The Committee should review cost and schedule performance, forecasts and risk management, in addition to the validity of the costs incurred;
2. The Committee should be supported by specialized skills; and,
3. The Committee should align its information requests with conventional project controls and assurance practices as well as Nalcor's reporting rhythm. (p. 5)

This report commented only minimally on the Project's costs and schedule. For this content, it simply included a June 2014 update from Nalcor.

In an email to other EY staff sent on November 27, 2014, Richard Noble of EY made the following observation about the Oversight Committee's July 2014 report (P-03300):

The data clearly is shaky. The process and controls have not been vetted... and the baseline appears not fully stable. Basically... their report is being built on untested sand... and all it is doing is restating management's assertion that "the project is going fine. (p. 1)

That is, the committee was taking assumptions and information from Nalcor at face value without any independent analysis. He further stated (P-03300):

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We will need to put this in writing... EY would not want to be associated (albeit loosely) with a public report that is clearly missing the mark... we will need to have our position clear and that position documented prior to the reports release. (p. 1)

Subsequently, GNL began developing another scope of work for EY, one that would allow it to assess Nalcor's processes more thoroughly. It would include a review of Nalcor's processes for managing, reporting and controlling schedule, costs, risk and scope.

Ms. Mullaley testified that she invited Edmund Martin and Charles Bown to her office for a meeting in December 2014, after the new contract with EY had been signed (P-03296). She informed Mr. Martin and Mr. Bown that EY would be auditing the methodology and accuracy of some of Nalcor's reports. She recalled that Mr. Martin became "very upset" and "very angry" at that meeting and asked, "[W]hy can't our internal auditors do that?" Ms. Mullaley told Mr. Martin that the Oversight Committee wanted a truly independent assessment given that Astaldi's progress on construction was slipping. Mr. Martin abruptly walked out of the meeting, followed by Mr. Bown (May 29, 2019, transcript, pp. 26, 27).

The next day, Joe Browne, the Premier's Chief of Staff, phoned Ms. Mullaley and informed her that Edmund Martin had asked the Premier whether Nalcor's internal auditors could fill EY's role. Ms. Mullaley stood firm. She testified that she told Mr. Browne that Mr. Martin's suggestion was not practical (May 29, 2019, transcript):

And I said, not on, there's no way, I'm not doing it. I cannot be a chair of this committee—we, you know—doing this. This is critical work for our committee, it's critical work for you as a government. We need to get in there and we need Ernst & Young, not—we cannot do that with internal audit. (p. 27)

EY had difficulty obtaining information from Nalcor throughout its early involvement in this phase of the Project review. As an email from Richard Noble dated January 22, 2015, indicates, for example, EY staff were taken aback by the limits placed on the information they could access from Nalcor. Mr. Noble wrote that there was a need to "clearly state the limitations of the work" EY was doing to assist the Committee. He noted that (P-03310):

We have never... repeat never... been refused access to change logs and risk registers and related process information in any major project review I have conducted over the last 16 years. And this includes reports on projects whose sensitivity and results materially impacted their Market Capitalization in the many \$billions. (p. 1)

In his testimony, Michael Kennedy acknowledged that rendering an opinion on costs and schedule without access to such documents was “far from ideal” (May 13, 2019, transcript, p. 15). He agreed with the following comment from an internal EY presentation deck entitled “Engagement Risk Profile Discussion” (P-03311):

Without access to Scope and Risk processes or access to related Scope and Risk registers, it is not possible to perform a scope of work that meets the objective of giving the OC [Oversight Committee] comfort over the completeness and accuracy of cost and schedule information reported to them by Nalcor. (p. 6)

The same presentation deck summarized concerns within EY that its affiliation with the Oversight Committee posed a possible reputational risk. The concern was EY might be blamed for a conspicuous failure by the Oversight Committee. Summing up EY’s progress to date, the presentation stated (P-03311):

Since our initial engagement report June of 2014 (Oversight Protocol), when we recommended the list of items related to #1 above [level of information provided to the Oversight Committee on a monthly/quarterly basis does not provide the ability to independently assess Cost and Schedule performance], the OC have not been able to obtain such information. They have been restricted to summary reports prepared for external stakeholders.

...

Due to the fact that the scope and risk management information is very sensitive and that Nalcor IA in the [*sic*] in the process of reporting on cost and schedule, the OC have requested that EY perform a scope that does not include Scope and Risk Management processes and does not include the provision of relevant scope (change management) and risk logs/registers. (pp. 3, 5)

Michael Kennedy was questioned about why the Oversight Committee sought a scope change for EY. He testified (May 13, 2019, transcript):

I don’t think I can explain why they elected to remove that scope. I would infer that that there was a strong request from Nalcor for that scope to be removed. And as a more general point, looking at the mandate of the Oversight Committee as representing the sole shareholder, I would expect the Oversight Committee to determine what was appropriate in terms of the scope of the review. (p. 16)

Mr. Kennedy confirmed that EY would have advised GNL to seek the documents related to risk. In fact, David Steele of EY emailed the Oversight Committee’s Executive Director, Craig Martin, with this advice on March 6, 2015 (P-03316):

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We believe there is an inherent limitation to the scope of the review as currently contemplated. In order for the Oversight Committee to meet its objectives of assessing the completeness and accuracy of cost and schedule information being reported to them, a review connecting the key elements of the Project's Risk and Scope Management processes to the Cost and Schedule reporting/processes needs to be completed. (p. 1)

A meeting on May 6, 2015, was attended by EY representatives (Richard Noble and Emiliano Mancini), Paul Harrington and Steve Pellerin of Nalcor, and Craig Martin. The minutes described the following event (P-03414):

As soon as EY prepared to formulate the first question, Paul Harrington interrupted the meeting and left saying that he was expecting a debriefing and was not prepared to respond to any question. (p. 6)

In his testimony, Craig Martin commented that he thought Mr. Harrington had made up his mind to walk out in advance of the meeting, or perhaps even “staged” the walk-out, since no particular precipitating reason for such an act was apparent to him (June 3, 2019, transcript, pp. 29–30). The meeting had been scheduled and was proceeding in a normal fashion.

I find it remarkable that Mr. Harrington acted in this manner, although it appears to align with the consistent theme of Nalcor resisting disclosure of information to third parties who were conducting reviews on behalf of GNL. In this particular case, one has to judge Mr. Harrington's actions in light of the fact that GNL was the owner of the Project, had instituted the Oversight Committee, retained EY as its advisor and that representatives of EY were at the meeting at the expense of GNL. It was clearly not appropriate for Mr. Harrington to challenge this process.

For his part, Mr. Harrington denied that he obstructed (or directed the obstruction of) the work of EY and the Oversight Committee. He stated in his testimony: “[A]s far as I was concerned, we were providing information to EY in the data room, and if they asked for that information, and it was available, we would provide it. . . . There was no attempt to withhold this type of information at all” (June 5, 2019, transcript, p. 52). When asked whether at any time he had refused to release information to the Oversight Committee or EY on the grounds of commercial sensitivity, he stated: “EY, maybe, but the Oversight Committee, no. EY specifically on the Astaldi thing, if I was instructed that that was a no-go area” (p. 53). He further stated that instructions about what was a “no-go area” came from “our CEO and by that meeting with the premier” (p. 53).

Craig Martin testified about EY's August 2015 draft report on Project cost and schedule, management, processes and controls (P-03420). EY made some positive comments in that report, but also identified risks:

**Key cost management process and control risks and issues**

1. The conditions and processes for rebaselining cost and schedule are not defined in the Project's control processes and procedures. The Oversight Committee's understanding of such conditions and processes is an important foundation, as it conducts its oversight activities.
2. Nalcor uses a relatively basic approach to contingency forecasting which in our experience is not consistent with the expected practices for a project of this scale and complexity. It is not clear whether the cost contingency forecasts for the Project are adequate.
3. The Project does not define thresholds for variance management, reporting, and escalation purposes. We would normally expect these to be in place as they assist in giving clear indications of the severity of issues and the need to escalate to key stakeholders, such as the Oversight Committee.
4. A fully quantified risk or trend has not been documented for the most significant challenges related to work performed by a key contractor included in the Sample. The scale of potential challenges is not quantified in the summary reporting made available to the Oversight Committee.

Until such time as the noted management process and controls risks and issues are addressed, the completeness and accuracy of Project cost forecasting status reporting to the Oversight Committee cannot be fully verified. (p. 6)

It should be noted that this report related only to EY's review of certain processes and procedures Nalcor was using that were related to cost, schedule and risk. It did not involve any actual review of the cost, schedule or risk themselves.

Craig Martin testified about the Oversight Committee's reaction when it received EY's report: "[R]ight away we know that we'd have issues with quantification, that costs are not being—or, pardon, risks are not being quantified and being included in the forecast" (June 3, 2019, transcript, p. 31). The Oversight Committee also felt that the report indicated there were issues related to the Project schedule.

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Craig Martin further testified that, although EY had informed the Oversight Committee of these problems as early as June 2015, its August report heightened committee members' concerns. Ms. Mullaley also testified about the Oversight Committee's reaction to EY's August 2015 report: "[T]he biggest concerns for us was, again, getting right back to that point on the risks were not being—basically the costs and associated scheduling packs were not being brought forward into the records" (May 29, 2019, transcript, p. 60).

The August 2015 EY report was not released to the public until after the provincial election on November 29, 2015. The following series of events is helpful in understanding what caused the delay in its release.

Nalcor was provided with EY's August 2015 report. On September 26, 2015, Paul Harrington emailed Dawn Dalley, Nalcor's Vice-President for Corporate Relations and Customer Service, with the following concerns (P-03650):

There are many commercially sensitive items in the [EY] Report . . . these types of issues we know about and is do [sic] no good to document them as action items to be addressed by Nalcor in the public eye when we are knee deep in discussions of a commercial nature with Astaldi. Anything which touches on cost and schedule with Astaldi is problematic because that is exactly what we are trying to delicately work out with Astaldi—putting it in a Report is pointless—we know already! (pp. 3–4)

In a separate email on the same day, Mr. Harrington wrote (P-03650):

I cannot stress enough the damage releasing this report can do, it can effect Astaldis share price negatively and ruin our hard worked relationship build with their negotiating team, also it will push this issue into the public eye at the worst possible time. I reiterate my recommendation that the OC revive a verbal report on EAndYs [sic] advice and not a formal report.

This is a critical issue to me (p. 2)

On September 27, 2015, Mr. Harrington emailed Gilbert Bennett, similarly outlining his concern (P-03650):

This is a very serious issue and unless we put a halt on the e and Y push to be a shadow IE we will be screwed. To be perfectly frank I believe this is a battle we have to win.

My position becomes untenable otherwise

Pile on by all means and help to stop this foolishness. (p. 1)

On September 28, 2015, Dawn Dalley emailed Mr. Harrington and others (P-03651), thanking them for their responses and indicating that GNL and the Oversight Committee had agreed to hold the EY report for the time being as a result of the concerns that had been expressed related to commercial sensitivity. She also indicated that Nalcor would be engaging with GNL and the Oversight Committee over the coming days.

On September 29, 2015, David Steele emailed Richard Noble with the subject line “2 report option,” stating (P-03337):

Attached is the report (for OC), most current version (final draft). Could you work from this one to establish a second report (for public consumption), recognizing some of the sensitivities (commercial) raised by Nalcor? (p. 2)

Richard Noble responded as follows (P-03337):

Sorry David... But we first need to qualify the commercial sensitivity with Nalcor  
We don't know what Nalcor's thinking is for a majority (10/11) of items requested to be removed by Nalcor and identified commercially sensitive . . . we can hypothesize . . . but it is not clear why they see them as such.

Their removal would substantially alter the quality of the content . . . if we don't understand their alleged point of sensitivity we will also get into a back and forth updates and reedits.

Keen to help . . . but we need Nalcor to qualify why/in what way they see the sensitivity in order for us to do the right thing in the report. (p. 1)

Despite the reluctance of Mr. Noble, EY eventually did redraft the report as two reports (P-03422).

At the hearings, Craig Martin was asked what caused the Oversight Committee to hold the report—was it direction from Cabinet or a discussion with Nalcor? He confirmed that it was direction from Cabinet that caused the Oversight Committee not to include the EY report in its September Oversight Committee report. He also indicated that his understanding was that the direction had come from Premier Paul Davis (June 3, 2019, transcript, p. 71). I find that Premier Davis' direction raises some question about whether this was influenced by the upcoming provincial election.

In her testimony, Ms. Mullaley recalled discussion of Nalcor's concerns about commercial sensitivity. She stated that “everyone” concurred with the concept of splitting the report in two (May 29, 2019, transcript, p. 68).

On November 29, 2015, a Liberal Government was elected under the leadership of Dwight Ball, who was sworn in on December 15, 2015. The following day, Paul Hickey of EY emailed some EY colleagues, including Michael Kennedy and Richard Noble (P-03340):

I just got off the phone with the Premier. He has asked Julia [Mullaley] to talk to David [Steele] about a full review of Muskrat. He needs solid information on the project to understand current state and to develop a way forward on it but also a plan to address risk factors as he goes to the bond markets. . . .

Ed Martin, CEO of Nalcor has said he will resist the full review. (p. 1)

At this time, it was clear to EY that a full review of the Project's cost and schedule was warranted. In an email to members of the EY team sent on December 18, 2015, Richard Noble wrote (P-03423):

I believe there to be no action/changes required as a result of the management responses from Nalcor. They acknowledged some of our findings and tried to soften others with wordy and at times tangential explanations... My favourite being:

“The approaches to contingency development contemplated by E&Y were undertaken at project sanction in December 2012. Our current approach, which we believe to be appropriate and prudent at this stage of project development, is to continue to engage in direct discussion on emerging risks and cost pressures and take management action when they have emerged.”...

Which in other words is

“We did it once... but haven't updated the quantitative contingency assessment in 3 years and are now managing by the seat of our pants... and living with the results” . . .

Bottom line... they blew their contingency allowances which were clearly inadequate and have the substantial overruns on cost and schedule as a result...hmmm... a reassessment is perhaps warranted now, wouldn't you think.  
(p. 1)

Ms. Mullaley recalled Edmund Martin's reaction to the proposed engagement of EY to conduct a full review of cost and schedule. She testified that Mr. Martin said: “[T]his is not the right time; it's going to take key resources—you know, all of our key resources are focused on the project execution; this is going to be a big disruption” (May 29, 2019, transcript, p. 70).

When asked whether she knew at that time that a review was required, Ms. Mullaley testified (May 29, 2019, transcript):

I think everybody understood that. . . . and it was just going from a timing perspective and Nalcor was heading into a full QRA assessment, and . . . I think this is the opportunity to absolutely go in because they are resetting, again, and this did not work before—you know, from the perspective of it kept getting reset, reset, reset—and so the confidence, I guess, in the numbers was not there. And so this was being a full QRA which had not been done since, I believe, 2012. So it was very essential that someone else was in there and did an independent analysis. When that was being fully re-baselined, government wanted to have confidence that this was the right number. (p. 70)

Ms. Mullaley agreed with the suggestion that GNL had decided to “do a serious review of the guts of the matter” (May 29, 2019, transcript, p. 73). She agreed that, all along, EY had wanted to conduct such a review.

On January 14, 2016, EY and GNL signed a contract under which EY would conduct a full review of the Project’s cost and schedule. The contract specified that EY stood to earn up to \$1.25 million from this engagement. EY brought in a new and larger international team to complete the work under this contract (P-03833).

After it had been re-engaged, the EY team met with the Nalcor team in St. John’s to discuss the upcoming in-depth review. In his testimony, Michael Kennedy provided an explanation of concerns he had at the time (May 13, 2019, transcript):

Let’s take “the culture and lack of transparency.” So we had a team that was put together of, you know, fairly senior practitioners, and we formed a view, through the different meetings, that we were going to that. While the Nalcor team was being, to a degree, responsive and co-operative, that there was also a very strong feeling that—that they were not forthcoming with information in terms of when we were asking questions and receiving answers. And the phrase that I was kind of using at the time was: We felt very—very managed in the way that our interactions were going.

And I would contrast that with our experience and my experience in major capital projects and having been on the other side of a, you know, fairly senior reviews. It was quite tense and it, certainly, wasn’t an approach of, you know, what can we tell you; what do you want to know?

It felt like there was—they were being very careful with what they were sharing with us. (p. 44)

On January 21, 2016, David Steele emailed other members of the EY team (P-03346) about a call he had received from Ms. Mullaley. He relayed that Nalcor had questioned her earlier that day about why EY was requesting Project briefings that had been made for the Premier and Nalcor board. She had said that Nalcor was reluctant to provide this information because it did not relate to the EY scope of work. Ms. Mullaley testified that Nalcor “was getting their back up and trying to understand why they [EY] were looking for that particular [item]—not that they shouldn’t be looking for anything they wanted” (May 29, 2019, transcript, p. 76).

In an email to David Steele on January 21, 2016 (P-03346), Michael Kennedy stated:

I feel pretty queasy about where we are at given the call to Julia from Nalcor and continued absence of data, which are again indicative of the culture and lack of transparency over there. None of this consistent with normal practice in major capital projects, let alone best practice. (p. 1)

EY was concerned about resistance from Nalcor in conducting its in-depth review.

### THE EFFECT OF THE “ASTALDI PROBLEM”

The Astaldi problem became more urgent as 2016 unfolded. As described earlier in this Report, Ms. Mullaley testified that she received a call from Edmund Martin in December 2015 about the possibility of a settlement with Astaldi. She recalled informing him that he could not go to the negotiation table unless he had a mandate from GNL. Ms. Mullaley recommended to the Premier that EY be retained to advise GNL on the Astaldi negotiations. This recommendation was accepted (P-03874).

On February 12, 2016, EY provided Ms. Mullaley with a report on the status of the cost and schedule review, which stated (P-03429):

- EY, to date, has had no visibility [on] Nalcor’s analysis and the potential outcomes of the Astaldi discussions, which currently presents the most material cost and schedule risk to the Project, and potentially has significant knock-on consequences.
- Nalcor is continuing to re-baseline its forecasts and this is not scheduled to be completed until the end of March.
- A relatively stable and current baseline is a key condition for success to achieve Government’s objectives for the EY review.
- The above presents the following implications:

- EY will not be able to provide a full assessment of current cost and schedule forecast and related risk by end of February/early March because Nalcor's re-baselining activities will not be complete by that time. This presents a scope limitation and will reduce the value of reporting to Government under existing agreed reporting timelines.
- Therefore, we recommend that we conduct a review of the reasonableness of the September 2015 AFE2 cost and schedule forecast for the Muskrat Falls Project, identifying opportunities to address any material/critical risks. A final report should then be produced after the re-baselining activities are completed by Nalcor. (p. 3)

This recommendation was accepted by Ms. Mullaley. She gave more detail about her reaction to this recommendation during her testimony: "What was happening here, unfortunately, is that they [EY] could not do their work in that time frame because the QRA was still ongoing in Nalcor and the Astaldi discussions, as you know now, went quite long—a lot longer. So the Project couldn't be re-baselined at this point" (May 29, 2019, transcript, p. 79). At this time, Nalcor had engaged Westney to do a new quantitative risk analysis.

Ms. Mullaley recalled that, as noted above, Premier Ball wanted EY to assist Nalcor in its negotiations with Astaldi. A meeting was held on February 25, 2016, to receive EY's views. Internal GNL notes of that meeting record the following discussion points (P-03086):

- EY's key conclusion from their work to date is the current cost estimate of \$7.65 billion is not reasonable, particularly as it relates to the Astaldi situation.
- EY's estimate is the problem with Astaldi is in the range of \$600–\$800 million. Nalcor has been referring to a \$650 million issue.
- . . .
- Specific to the Astaldi issue: EY is real surprised that discussions with Astaldi to resolve the \$600–\$800 million issue are still at a high level, even though the problem has been evident for 18 months. (pp. 2, 4)

EY also recommended that "the Premier call Ed Martin asking that he provide government with Nalcor's Negotiating Strategy" (P-03086, p. 5).

It is of significance that it was at this February 25 meeting that Julia Mullaley first became aware that no management reserve had been established for the Project. By that

time, Ms. Mullaley had been Chair of the Oversight Committee for almost two years and was GNL's senior civil servant. It is astonishing that Nalcor did not disclose this important information to GNL.

The February 25 meeting notes also state (P-03086):

- Not only was there no Management Reserve included in the budget, Nalcor's view is the amount of money available for the MF project is unlimited given that Nalcor believes Government will provide whatever funding is required. That has been the practice and experience until now. (p. 2)

Ms. Mullaley testified that she agreed with this notation and with EY's comment that they had observed a culture of "we know best" within Nalcor (May 29, 2019, transcript, pp. 82–83).

EY prepared a report entitled *Muskrat Falls Project: Review of project cost, schedule and related risks* (P-01984) and dated April 8, 2016, in which it made the following observations and recommendations:

- 1.2 The most recent cost forecast for the Project was set in September 2015. At this time the Project schedule was not updated but was described as "under review". This cost and schedule position ("the September 2015 Forecast") forms the basis for the EY review to date ("the Review") and is summarized in the table below:

Total forecast cost, including contingency	\$7.653b
Ready for sustainable power transfer Labrador to Newfoundland	November 2017
First power from Muskrat Falls	December 2017 <sup>1</sup>

- 1.3 The overall conclusion of the Review is that the September 2015 Forecast is not reasonable. The principal reasons for this conclusion are as follows:
  - the Muskrat Falls Generation ("MFG") contract for civil construction is significantly behind schedule in the Powerhouse and Intake areas. The direct and indirect consequences of this delay are expected to have material impacts on cost and schedule that are not reflected in the September 2015 Forecast;
  - the current contingency level representing 4.7% of the cost to complete, or 2.3% of total cost, is low for the current stage of

completion of the Project. More than 50% of work on the Project has now been completed, and just over 40% of the construction work has been finished. The majority of design, engineering and procurement work is complete; however, there is a significant amount of physical construction work remaining that will be followed by commissioning and integration. This construction work is challenging in terms of its scale, time and geography and as such is exposed to a wide range of execution risks; and

- there is a risk of multiple-month delay to completion of the HVdc transmission line contract as a result of a number of delivery challenges that have been experienced to date and the risks associated with the remaining scope, where full mitigation may not be possible.

1.4 Nalcor Energy Ltd. (“Nalcor”) has identified and documented contract risks including those above. However, the potential impacts of these risks on cost and schedule are not adequately reflected in the September 2015 Forecast. Nalcor is currently undertaking a risk assessment to evaluate the impacts of all Project risks, including the above, and will use the results of this process to prepare a revised forecast.

1.5 We have the following observations relevant to the conclusion in 1.3 above:

- risks defined by Nalcor as strategic are not allowed for in the financial forecast;
- the potential cost and schedule impacts of all individual risks are recorded in the Project’s risk register but are not systematically reflected in the overall reported forecasts for cost and schedule; and
- some anticipated material cost variances have only been reflected in the forecast cost when they are contractually committed.

1.6 From the above conclusion and observations, EY recommends that:

- the Project should revise its planning and forecasting processes to explicitly include the regular reporting of a fully risk-adjusted final forecast of cost and schedule;
- the Project contingency should make appropriate allowances for all risks, including strategic, at a confidence level reflecting stakeholders’ required cost certainty. EY recommends that consideration be given to the use of a more conservative confidence level for setting Project contingency, based on a thorough risk assessment;

- the sufficiency of the Project contingency should be reviewed quarterly to assess whether it appropriately covers all risks, taking account of the effectiveness of mitigation plans and the likelihood of risks crystallizing; and
  - there should be separation of the Project contingency into an amount to be managed by the Project team and an amount to be managed at a higher level of governance.
- 1.7 The scope of EY’s review did not include a formal review of the Project governance arrangements and we have not met with the members of the Board of Directors of Nalcor or its subsidiaries in this regard. However, in the course of conducting the Review, EY has observed that certain elements of governance and reporting arrangements have not been effective in respect of the Project’s cost and schedule forecasts to date. There is a need to strengthen Project governance and reporting to provide more effective oversight and constructive challenge to Project performance and execution, key decisions and forecasting.
- 1.8 From these further observations, EY recommends that:
- Project governance and independent oversight should be re-evaluated by the Provincial Government and strengthened at the Project, Nalcor Board and Provincial Government levels; and
  - Project reporting should be enhanced to support senior management focus on key risks and issues, to communicate more clearly how key risks are reflected in the forecast and to enable more effective Provincial Government oversight. (pp. 5–7)

On April 10, 2016, pursuant to a recommendation in the EY’s report of April 8, 2016, four new independent members were appointed to the Oversight Committee—James Feehan, Jason Muise, Sterling Peyton and Vanessa Newhook (P-03936). By April 20, 2016, as earlier noted, Edmund Martin was no longer Nalcor’s CEO. On April 21, 2016, Stan Marshall was appointed as his replacement.

Michael Kennedy testified that the work for EY’s final contract, signed in the summer of 2017, was to assess whether the recommendations from its report of April 8, 2016, had been implemented. He indicated that progress on this report proceeded differently and much more smoothly than it had in the past (May 13, 2019, transcript):

[F]irstly, I think it’s important to say that in both engagements, certainly, the mid-level managements of the project were helpful, co-operative, professional, et cetera. I think the difference with when we came back in—’cause the field work was done in July 2017—was there was—it was clearly a very—it was very

transparent discussions and conversations with the senior project leaders. What I'd say is that most of the—most if not all—well, most of the significant issues had been addressed and I think the project team now had a clear line of sight on the completion of the project with a reasonable degree of confidence on cost and schedule. (p. 65)

On August 31, 2017, EY delivered to GNL a further report entitled *Muskrat Falls Project: Assessment of implementation of EY Interim Report recommendations* (P-01892). This document was generally supportive of the initiatives that Nalcor had taken to implement the recommendations contained in EY's previous (April 8, 2016) report. EY observed substantial progress with respect to many of the preceding report's recommendations. The August 2017 report concluded with a series of comments and new recommendations (P-01892):

- 8.1 Recommendation 6 addresses project reporting:
  - Recommendation 6: "Project reporting should be enhanced to support senior management focus on key risks and issues, to communicate more clearly how key risks are reflected in the forecast and to enable more effective Provincial Government oversight"
- 8.2 The Project Team provided EY with a selection of key project reports produced by major subcontractors and Nalcor for internal project use and for reporting to project oversight entities. There are currently ten different reports each with different iterations depending on the intended recipient.
- 8.3 The Project Team advised that an improved level of data collection and analysis of performance data is being conducted by the Project Controls team, e.g., the re-establishment of the progress baseline document and the use of schedule analytics tools and contingency drawdown curves.
- 8.4 EY identified the reports being produced by the Project Controls group and mapped the monthly timeline for delivery of these reports to intended recipients.
- 8.5 EY found improvement in the control and oversight of project performance data and related reporting by the Project Controls team.
- 8.6 EY found that risks are more clearly communicated to senior project leaders and Project stakeholders than prior to the issuance of the Interim Report. Despite the improvements in reporting, issues remain in the following areas:
  - The timing of the delivery of reports can depend on the schedule upon which the stakeholder group meets. Sometimes the timing of delivery does not serve the needs of the stakeholder group.

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The Nalcor Board and the OC, in particular, have sometimes received information up to two months out of date;

- The level of detail provided in some reports may be excessive for an executive level audience; and
- The Project Team has progressively reduced the number of unique reports sourced from common data, yet a high number of unique reports remain.

8.7 The Provincial Government and Nalcor each require certain information related to the Project. Coordination and rationalization of the timing and content of the required reporting would reduce the administrative burden on the Project Team and improve the consistency and usefulness of information delivered to the various Project stakeholders. (pp. 26–27)

It is important to note that the work done to produce the EY report of April 8, 2016, was the first time that Nalcor had been subjected to a comprehensive, independent review of the Project's cost, schedule and risk. Nalcor did not fare well in that 2016 review, however EY found significant performance improvement in the report that was prepared in the following year (August 31, 2017).

Paul Carter was appointed Executive Director of the Oversight Committee in August 2016. On February 1, 2019, he replaced Charles Bown as the Committee's Chair. He testified that the Oversight Committee has a much more collaborative relationship with Nalcor today and that it no longer experiences resistance about disclosure of information, as had occurred in the past.

In his testimony, Mr. Carter advised that two of the independent members of the Oversight Committee, Vanessa Newhook and James Feehan, had resigned and had not been replaced at the time of his testimony (June 3, 2019, transcript, p. 116). I understand that new appointments have since been made to the Oversight Committee. It is obvious that any vacancies to the Oversight Committee should be filled as soon as possible.

At this stage, I am not able to determine whether the Oversight Committee has the appropriate expertise to carry out its work. Until 2016, all members of the Oversight Committee were civil servants. The engagement of EY as an expert consultant was an excellent choice that was required to fill gaps in the Oversight Committee's expertise. That expertise must be maintained until the Project is commissioned.

I have one further observation: the Oversight Committee's minutes are lacking in detail and therefore inadequate. Transparency would be enhanced if the minutes contained more detailed information.

I recommend that, in addition to the information it is now receiving, the Oversight Committee also consider in its current review of reliability issues and rate mitigation the evidence presented to the Commission and any information available from the PUB.

I find that Nalcor's initial approach to the work of the Oversight Committee was a further example of its reluctance to share information with GNL. Former Premiers Thomas Marshall and Paul Davis both testified that they had been informed by Julia Mullaley of the difficulties that she had experienced in receiving necessary and timely information from Nalcor.

I am satisfied that, until 2016, the effectiveness of the Oversight Committee's work was largely thwarted by Nalcor's ongoing attempts to withhold information. This resistance continued almost unabated until Stan Marshall was appointed Nalcor CEO in April 2016. Fortunately, there is now a strong indication that Nalcor has changed its attitude and is providing a reasonable level of co-operation to the Oversight Committee.

I find that in its reporting to GNL and the Oversight Committee (including its advisor, EY), Nalcor was never justified in withholding information by claiming commercial sensitivity. I find it improper that Paul Harrington habitually relied on commercial sensitivity as the justification to withhold information from GNL, the Oversight Committee and third-party reviewers.

The public understood that the Oversight Committee, to conduct its work, was receiving complete and timely information from Nalcor. This was not the case. As counsel for Ms. Mullaley put it in his final submission, the Oversight Committee was "getting reassurances but not specifics" in response to its questions. Nalcor's failure to provide the Oversight Committee with comprehensive and timely information about Project cost, schedule and risk made it impossible for the Committee to properly discharge its important oversight responsibilities, at least up to 2016.

I add that GNL must take some blame. Its support of the Oversight Committee's obligations and the requests of its consultant, EY, were not always evident. GNL had a responsibility to do more.

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**REPORTING TO GNL BY NALCOR AFTER THE CHANGE OF CEO**

After Stan Marshall's appointment as CEO of Nalcor, most of Nalcor's reporting to GNL has been through the Oversight Committee.

Mr. Marshall testified that when he came to Nalcor, there was a "mishmash of different types of report" going to the Nalcor board, to Nalcor subsidiaries and to the Oversight Committee (July 2, 2019, transcript, p. 97). He noted that before his arrival, the problem was not necessarily that information was missing but that it was portrayed inconsistently and was sometimes presented in formats that were difficult to understand. Now, information is compiled in standardized formats, largely introduced by John MacIsaac, which make that information more understandable.

With regard to the Project's cost estimate, Mr. Marshall's opinion is that "government should be entitled to rely on Nalcor" (p. 104). He also testified that it is unrealistic to expect GNL to have the expertise to verify the cost estimates. Regarding his relationship with the senior levels of GNL, Mr. Marshall testified: "If you got special items you've got to go in to see the Premier, or you got to go see the minister, or you got to go to the board. Those are special items, those occurred all the time" (p. 98).

In his testimony, Premier Dwight Ball expressed confidence in the information now being provided to him and to GNL by Stan Marshall and Nalcor (July 4, 2019, transcript, p. 26). On further questioning, he added that he was satisfied with the level and quality of the reporting from Nalcor:

[A]ny time you have, you know, nearly 30 per cent of your net debt of your province, you know, associated with one project, it's important that the premier of the day, you know, kind of have your finger on the pulse.

And so the relationship with Mr. Marshall is quite different. It's—he makes me aware of anything that could be on the horizon in terms of associated risk and, as I said, typically comes with a solution in hand. (p. 26)

It is clear that today GNL places significant trust and reliance on Nalcor and, in particular, on Stan Marshall. I am satisfied that since Mr. Marshall's appointment, GNL has been provided with timely and complete information on all matters related to the Project. Mr. Marshall's strong leadership has created an environment within Nalcor where appropriate and timely information is being provided to its board, to GNL and to the public.

Serious and significant challenges remain, in particular, with transmission and reliability issues prior to the commissioning of the Project. GNL oversight will continue to be necessary and the lessons of the past about inadequate oversight must be kept in mind.

## GLOSSARY

This list includes terms and their meanings as used in this Report.

<b>Term</b>	<b>Meaning</b>
alternating current (AC)	An electric current that periodically reverses direction. Alternating current power is typically the form of power delivered to households and businesses.
base estimate	An estimate that reflects the most likely costs for known and defined scope associated with the Project's specifications and execution plan.
bifurcation	A separation into two parts. When used in the context of the Project, it describes the establishment of distinct management teams for the generation and transmission components, as implemented in June 2016.
bipole (operations)	A bipole HVdc system has two conductors and allows for greater reliability for transmission than a single-conductor or monopole system. If one line goes down, the system immediately reconfigures itself to monopole operation to avoid power outages.
capacity	The maximum power that a generating unit, generating station or other electrical apparatus can supply. Common units for measuring capacity include kilowatt (kW) and megawatt (MW).
cofferdam	A temporary enclosure built within (or in pairs across) a body of water to allow the enclosed area to be pumped dry. This pumping creates a dry work environment so that the main dam (or other) work can be carried out safely. Commonly used for construction or repair of permanent dams, oil platforms and bridge piers built in or over water.
Conservation and Demand Management (CDM)	A range of programs and initiatives to encourage energy consumers to conserve electricity and use it more efficiently. It also includes efforts to decrease peak demand for electricity.
contingency	In an estimate, the provision made for probable variations in estimates of time or cost that cannot be specifically identified at the time the estimate is prepared.

Term	Meaning
converter station	Equipment used to convert alternating current to direct current (or direct current to alternating current).
critical path	A project management term for the entire sequence of steps or activities between the start and completion of a target, milestone or project.
Cumulative Present Worth (CPW)	The present value of all incremental utility capital and operating costs expected to be incurred to reliably meet a specified load forecast, given a prescribed set of reliability criteria. CPW is used for comparative purposes, as a measure of the total costs of a supply option.
DarkNL	A series of widespread and significant power outages that occurred on the Island of Newfoundland in January 2014.
Decision Gate (DG)	In the development of a project, a pre-defined moment when the Gatekeeper (see below) has to make appropriate decisions about whether to move a project to the next stage, to place a temporary hold or to terminate it.
direct current (DC)	An electric current that flows in only one direction. Direct current is used to transport power over long distances. Direct current has to be converted to alternating current before it can be used by homes and businesses.
dispatchable power generation	Sources of electricity that can be used on demand at the request of power grid operators, according to market needs. Dispatchable power generators can be turned on or off, or can adjust their output according to an order.
electrostatic scrubbers and precipitators	Pollution abatement equipment that reduces particulate emissions from thermal generating plants, such as Holyrood.
energy	The total amount of electricity that a utility supplies or a customer uses over a period of time. The energy supplied to electricity consumers is usually recorded as kilowatt hours, megawatt hours, gigawatt hours or terawatt hours.
Engineering, Procurement and Construction Management (EPCM)	A contracting model in which the EPCM contractor, acting as the owner's representative, is responsible for the engineering, procurement and construction management of suppliers and contractors.

Term	Meaning
escalation	In estimating, the provision for changes in price levels driven by economic conditions. Escalation includes inflation.
Federal Loan Guarantee (FLG)	The guarantee by Canada on a portion of the debt borrowed by Nalcor and Emera, enabling them to borrow at a lower interest rate than they would otherwise have been given.
Financial Close	The execution and delivery of several financing documents, the issuance of bonds and the advance of funds for the Project, pursuant to the Federal Loan Guarantee which took place in late 2013.
firm energy	Energy intended to be available throughout a specified period of time.
first power	The point at which power is first transmitted to the grid from a generating system.
<i>force majeure</i>	An event, condition or circumstance beyond the reasonable control of a party, and without fault or negligence of that party. Examples of <i>force majeure</i> events are natural disasters, environmental conditions, acts of war, court orders and strikes or lockouts.
full power	The first time the full capacity of a generating station is transmitted to the electrical grid.
Gatekeeper	The individual responsible for making decisions at each Decision Gate of a project's Gateway process. On the Muskrat Falls Project at DG2 and DG3, this was Nalcor CEO and President Edmund Martin.
Gateway process	A staged or phased decision-assurance process used to guide the planning and execution of the business opportunity presented by the development of the lower Churchill River.
geotechnical engineering	The study of the behaviour of soils under the influence of loading forces and soil-water interactions.
glaze ice	A smooth, transparent and homogeneous ice coating caused by freezing rain or drizzle.
grid	The layout of an electrical transmission or distribution system.

<b>Term</b>	<b>Meaning</b>
Integrated Resource Planning (IRP)	A method of least-cost planning that aims to properly compare the economic and environmental implications of alternative solutions for providing reliable electric power.
Interconnected Option	One of two options presented by Nalcor for the supply of electricity to Island ratepayers. It consists mainly of the Muskrat Falls Project and Labrador-Island Link, with thermal combustion providing reliability support.
Isolated Island Option	One of two options presented by Nalcor for the supply of electricity to Island ratepayers. It consists of a combination of thermal, small-scale hydro and wind generation projects on the Island.
Labrador Transmission Assets (LTA)	High-voltage cables transmitting power between Muskrat Falls and the Churchill Falls generating station.
Labrador-Island Link (LIL)	High-voltage cables transmitting 900 MW of power from Muskrat Falls through Labrador, across the Strait of Belle Isle and the Island to Soldiers Pond on the Avalon Peninsula.
Limited Notice to Proceed (LNTP)	A written notice that gives a contractor the go-ahead to begin work in a limited manner prior to the signing of a final contract.
LMAX	“Labour maximum cost,” or the maximum value of the reimbursable cost of labour that an owner will provide to a contractor. The intention of an LMAX is to make the contractor responsible for labour costs above the LMAX value.
load	The amount of electric power delivered at any specific point or at specific locations on a grid system.
Maritime Link (ML)	The 500 MW high voltage connection from Granite Canal, Newfoundland, to Woodbine, Nova Scotia.
Mass Hub Price	A measure of current market prices for electricity in New England.

Term	Meaning
methylmercury	A toxic organic form of mercury formed when inorganic mercury combines with a methyl group, which is composed of carbon and hydrogen. It can be absorbed by fish and marine mammals and, as mercury poisoning, affect the health of humans who the eat contaminated species.
mitigation	The adoption of special measures or techniques to minimize or neutralize the negative impacts of a particular event.
monopole	An HVdc transmission system with one conductor.
Monte Carlo simulation	A mathematical method using random sampling that can simulate the probability of various outcomes. It is used in engineering and construction as a tool for quantitative risk analysis, to help determine a range of likely cost outcomes.
non-dispatchable power generation	Sources of electricity that cannot be used on demand at the request of power grid operators, according to market needs. Examples are wind and solar generation, because their energy is not always available.
non-firm energy	A source of energy that is not guaranteed to be a continuous flow and reliably available.
North Spur	A feature of the landscape at Muskrat Falls that forms a natural dam.
optimism bias	The demonstrated tendency for people to be overly optimistic about the outcome of planned actions.
peak demand	The highest level of electricity consumption that a utility has to meet at any one time.
penetration (wind)	The amount of wind energy supplied to a power grid, often expressed as a percentage.
powerhouse	The structure that contains the turbine(s) and generator(s) of a power project.
price elasticity	An index or measure of consumers' responsiveness to a price changes. Simply put, more product will be bought when the price of a commodity is cheaper and less will be bought when the product is more expensive.

Term	Meaning
P value	The statistical confidence level of achieving specific cost and schedule forecasts. For example, a cost estimate with a P value of 75 indicates a 75% chance the predicted cost will be achieved.
Quantitative Risk Analysis (QRA)	A process that attempts to determine the probability of various cost and schedule outcomes. The cost risks can be separated into strategic and tactical risks.
Recall Block	The 300 MW block of power that can be recalled from Churchill Falls, under the existing power contract between Hydro-Québec and CF(L)Co. Also “recall power.”
reliability	The extent to which equipment, systems and facilities can be counted on to perform as intended.
rime ice	Opaque ice that forms when airborne drops of water freeze on contact with an object.
sanction	The milestone event at which a project’s scope, budget and schedule are authorized. Sanction for the Project occurred on December 17, 2012, marking the start of the execution phase.
S-Curve	A diagram that has an S-shaped curve, which in a cost analysis simulates the likelihood of achieving a capital cost. In a time risk analysis, the curve simulates the likelihood of achieving project completion at given times.
sensitivity analysis	Analysis of the impact on a project’s overall costs caused by variations in the key input parameters.
spilling water	Allowing water to pass through or over a dam, rather than using it to generate electricity.
Strait of Belle Isle (SOBI) crossing	A 30-kilometre underwater cable between Labrador and Newfoundland.
strategic misrepresentation	The planned, systematic distortion or misstatement of fact (lying) in response to incentives in a budget process.
strategic risk	Identified background risks that are outside of the control of the project team and that typically pertain to external issues.
Strategist	A software program that calculates and minimizes the cost of meeting anticipated energy demand for every hour of every year, suggesting which new generation assets should be built and when.

Term	Meaning
substation	A component of an electrical generation, transmission and distribution system where electricity passes through switchyards that transform it from high- to low-voltage electricity or vice versa.
synchronous condenser	A specialized machine, the unattached shaft of which spins freely. Its purpose is to assist in the voltage control of the transmission system to which it is connected.
tactical risk	The risk amounts associated with the base capital cost estimate and that result from uncertainties with the four components of that estimate: (1) project definition and scope omission, (2) construction methodology and schedule, (3) performance factors, and (4) price.
thermal generation	Electricity generated through the conversion of heat to electricity. Common thermal generating station types are coal, petroleum, geothermal, solar and natural gas.
watt	<p>The base unit of electrical power used to measure the generating capacity of an electrical system, or the maximum demand of electricity consumers.</p> <p>Equivalencies:</p> <p>1 kilowatt (kW) = 1,000 watts</p> <p>1 megawatt (MW) = 1,000,000 watts</p> <p>1 gigawatt (GW) = 1,000,000,000 watts</p> <p>1 terawatt (TW) = 1,000,000,000,000 watts</p>

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## ACRONYMS

<b>Acronym</b>	<b>Expansion</b>
AACE	Association for the Advancement of Cost Engineering International
AC	alternating current
AFE	Authorization for Expenditure
ATIPPA	<i>Access to Information and Protection of Privacy Act</i>
CDM	Conservation and Demand Management
CEAA	Canadian Environmental Assessment Agency
CEO	Chief Executive Officer
CF(L)Co	Churchill Falls (Labrador) Corporation Limited
CFO	Chief Financial Officer
COREA	Cost Overrun Escrow Account
CPW	Cumulative Present Worth
COS	Cost of Service
CSA	Canadian Standards Association
DG	Decision Gate
EA	Environmental Assessment
EAA	Energy Access Agreement
EIS	Environmental Impact Statement
EOI	Expression of Interest
EPCA	<i>Electrical Power Control Act</i>
EPC	Engineer, Procure and Construct
EPCM	Engineering, Procurement and Construction Management
EY	Ernst & Young LLP
FFC	Final Forecast Cost / Forecast Final Cost
FLG	Federal Loan Guarantee
GDP	gross domestic product

<b>Acronym</b>	<b>Expansion</b>
GHG, GHGs	greenhouse gas(es)
GIS	gas insulated switchgear
GNL	Government of Newfoundland and Labrador
GWh	gigawatt hour
HHRAP	Human Health Risk Assessment Plan
HVac	high-voltage alternating current
HVdc	high-voltage direct current
IBA	Impacts and Benefits Agreement
IBEW	International Brotherhood of Electrical Workers
ICS	integrated cover system
IE	Independent Engineer
IEAC	Independent Expert Advisory Committee
IMT	Integrated Management Team
IPR	Independent Project Review
IRP	Integrated Resource Planning
JRP	Joint Review Panel
kV	kilovolt
kWh	kilowatt hour
LCC	line commutated converter
LCMC	Lower Churchill Management Corporation
LCP	Lower Churchill Project
LiDAR	light detection and ranging
LIL	Labrador–Island Link
LMAX	labour maximum cost
LNG	liquefied natural gas
LNTP	Limited Notice to Proceed
LTA	Labrador Transmission Assets

<b>Acronym</b>	<b>Expansion</b>
MF	Muskrat Falls
MFC	Muskrat Falls Corporation
MFEA	Muskrat Falls Employers Association
MHI	Manitoba Hydro International
ML	Maritime Link
MOU	Memorandum of Understanding
MW	megawatt
MWH	MWH Canada Inc.
MWh	megawatt hour
NCC	NunatuKavut Community Council
NERC	North American Electric Reliability Council
NG	Nunatsiavut Government
NLH	Newfoundland and Labrador Hydro
NSPI	Nova Scotia Power Inc.
O&M	operating and maintenance
P&C	protection and control (software)
PAA	Project Assignment Authorization
PBR	Performance-Based Regulation
PMT	Project Management Team
PPA	Power Purchase Agreement
PPE	personal protective equipment
PUB	Public Utilities Board
QRA	Quantitative Risk Assessment
RCC	roller-compacted concrete
RDTC	Resource Development Trades Council
RFI	Request for Information
RFP	Request for Proposals
ROW	right-of-way

<b>Acronym</b>	<b>Expansion</b>
SNC, SLI	SNC-Lavalin Group Inc.
SOBI	Strait of Belle Isle
SPO	Special Project Order
TWh	terawatt hour
UARB	Utility and Review Board (Nova Scotia)

## NAMES AND AFFILIATIONS

This list includes the names and affiliations (as it pertains to the content of this Report) of people frequently referenced in this Report.

<b>Last Name</b>	<b>First Name</b>	<b>Organization</b>
Alteen	Peter	Newfoundland Power
Argirov	Nik	Independent Engineer
Bader	Georges	Astaldi
Ball	Dwight	Government of Newfoundland and Labrador
Béchar	Normand	SNC-Lavalin
Benefiel	Roberta	Grand Riverkeeper Labrador/ Labrador Land Protectors
Bennett	Gilbert	Nalcor
Blidook	Kelly	Memorial University
Bown	Charles	Government of Newfoundland and Labrador
Brewer	Donna	Government of Newfoundland and Labrador
Brockway	Tom	Grant Thornton, Expert Witness
Browne	Dennis	Consumer Advocate
Bruneau	Stephen	Memorial University
Cappe	Mel	University of Toronto, Expert Witness
Card	Bob	SNC-Lavalin
Chebab	George	Nalcor
Chippett	Jamie	Government of Newfoundland and Labrador
Clark	David	Nalcor
Chryssolor	Ken	Astaldi
Churchill	Jason	Cleo Research, Expert Witness
Clarke	Lance	Nalcor
Clift	Tom	Nalcor board of directors
Coady	Siobhan	Government of Newfoundland and Labrador
Colaiacovo	Pelino	Morrison Park Advisors, Expert Witness
Crawley	Brian	Nalcor
Dalley	Derrick	Government of Newfoundland and Labrador
Davis	Paul	Government of Newfoundland and Labrador
DeBourke	Darren	Nalcor
Delarosbil	Don	Astaldi

## Names and Affiliations

Last Name	First Name	Organization
Dodson	Keith	Westney Consulting
Ducey	BJ	Valard
Dunderdale	Kathy	Government of Newfoundland and Labrador
Evans	Jack	Westney Consulting
Fagan	Kevin	Nalcor
Feehan	James	Memorial University
Fleming	Greg	Nalcor
Flowers	Marjorie	Grand Riverkeeper Labrador/ Labrador Land Protectors
Flyvbjerg	Bent	Oxford University, Expert Witness
Goebel	Martin	Government of Newfoundland and Labrador
Goulding	A.J.	London Economics International, Expert Witness
Gover	Aubrey	Government of Newfoundland and Labrador
Greene	Maureen	Public Utilities Board
Hancock	Bernice	Community Education Network
Hanrahan	Denise	Government of Newfoundland and Labrador
Harrington	Paul	Nalcor
Harrington	Tim	Cahill-Ganotec
Hokenson	Rey	Independent Engineer
Holburn	Guy	Western University, Expert Witness
Hollmann	John	Validation Estimating
Humphries	Paul	Nalcor
Huskilson	Chris	Emera
Hussey	Patrick (Pat)	Nalcor
Jergeas	George	University of Calgary, Expert Witness
Kast	Mack	Manitoba Hydro International
Kean	Jason	Nalcor
Keating	James	Nalcor
Kennedy	Jerome	Government of Newfoundland and Labrador
Kennedy	Michael	Ernst & Young
Klakegg	Ole Jonny	Norway University of Science and Technology, Expert Witness
Knox	Leonard	H.J. O'Connell
Lemay	Paul	SNC-Lavalin
Leopold	Tim	Independent Project Review Team

<b>Last Name</b>	<b>First Name</b>	<b>Organization</b>
Lewis	Roy	Nalcor
Loucks	James	Independent Engineer
Maclsaac	John	Nalcor
Mallam	John	Nalcor
Manzer	Alison	Cassels Brock & Blackwell (legal counsel for Canada)
Marshall	Stan	Nalcor
Marshall	Ken	Nalcor board of directors
Marshall	Thomas	Government of Newfoundland and Labrador
Martin	Craig	Government of Newfoundland and Labrador
Martin	Edmund	Nalcor
Martin	Fred	Public Utilities Board
Martin	Thierry	General Electric
Mavromatis	Bill	Andritz
McClintock	Ken	Nalcor
McCormick	Patrick	Resource Development Trades Council
McLean	Carl	Nunatsiavut Government
Meaney	James	Nalcor
Michael	Lorraine	Retired, Member of the House of Assembly
Molloy	Donovan	Government of Newfoundland and Labrador
Morris	Paul	Government of Newfoundland and Labrador
Mulcahy	John	Nalcor
Mullaley	Julia	Government of Newfoundland and Labrador
Myrden	Paul	Government of Newfoundland and Labrador
Noble	Richard	Ernst & Young
O'Brien	Scott	Nalcor
Over	Ed	SNC-Lavalin
Owen	Derek	Independent Project Review Team
Paddon	Terry	Government of Newfoundland and Labrador
Palumbo	Mauro	Astaldi
Penney	Ronald	Muskrat Falls Concerned Citizens Coalition
Piétacho	Jean-Charles	Innu of Ekuanshit
Power	Ronald (Ron)	Nalcor
Power	Tanya	Nalcor
Raphals	Philip	Helios Centre, Expert Witness

## Names and Affiliations

Last Name	First Name	Organization
Rietveld	Aaron	Barnard-Pennecon
Russell	Todd	NunatuKavut Community Council
Schaufele	Brandon	Western University, Expert Witness
Shaffer	Scott	Grant Thornton, Expert Witness
Shortall	Gerry	Nalcor Board
Skinner	Shawn	Government of Newfoundland and Labrador
Snyder	Allen	Manitoba Hydro International
Snyder	Greg	SNC-Lavalin
Stanley	Todd	Government of Newfoundland and Labrador
Sturge	Derrick	Nalcor
Styles	Terry	Nalcor Board
Taylor	Brian	Government of Newfoundland and Labrador
Thompson	Robert	Government of Newfoundland and Labrador
Thon	Scott	SNC-Lavalin
Tisdell	Derek	Barnard-Pennecon
Tranquilla	Desmond	Nalcor
Tremblay	Jean-Daniel (J.D.)	SNC-Lavalin
Turpin	Mark	Nalcor
Vardy	David	Muskrat Falls Concerned Citizens Coalition
von Lazar	Laszlo	General Electric
Wade	David	Resource Development Trades Council
Walsh	Tom	Resource Development Trades Council
Warren	Auburn	Nalcor
Wells	Andy	Public Utilities Board
Westney	Richard	Westney Consulting
Williams	Danny	Government of Newfoundland and Labrador
Williams	Kelly	Valard
Wilson	Paul	Manitoba Hydro International
Young	Geoffrey	Nalcor