Newfoundland Labrador

Muskrat Falls Project

Oversight Committee – Update to Cabinet

September 21, 2015

Update on Committee Actions

- Monitoring ongoing
- June report not released
  - monitoring/discussions with Nalcor indicated baseline was being reset
- Premier, Ministers of Finance and Natural Resources briefed
- Nalcor directed to provide update to Cabinet

Update (cont)

- EY directed to complete review of cost and schedule reporting system
  - Individual contractor reporting not fully integrated in Nalcors integrated project system;
  - Nalcor uses a relatively basic approach to contingency forecasting;
    - Thresholds for variance not defined; fully quantified risk/trend not documented

Building a better working world

Ernst & Young LLP
Atlantic Canada
ey.com

Dieppe
11 Englehart Street
Dieppe, NB E1A 7Y7
Tel: +1 506 853 3097
Fax: +1 506 859 7190

Halifax
1959 Upper Water Street
Suite 1301
Halifax, NS B3J 3N2
Tel: +1 902 420 1080
Fax: +1 902 420 0503

Saint John
Red Rose Tea Building
5th floor
12 Smythe Street
Saint John, NB E2L 5G5
Tel: +1 506 634 7000
Fax: +1 506 634 2129

St. John's
The Fortis Building
139 Water Street
7th floor
St. John's, NL A1C 1B2
Tel: +1 709 726 2840
Fax: +1 709 726 0345

Mr. Craig Martin
Assistant Deputy Minister of Finance
Muskrat Falls Oversight Committee
Government of Newfoundland and Labrador
1st Floor East Block Confederation Building
Prince Philip Driveway, P.O. Box 8700
St. John's, NL A1B 4J6

31 August 2015

Review of Muskrat Falls Project Cost and Schedule Management Processes and Controls

Dear Mr. Martin,

EY has completed its review of Nalcor's cost and schedule management processes and controls as related to the Muskrat Falls Project.

Please find attached our draft report outlining our observations and recommendations to the Muskrat Falls Oversight Committee ("Oversight Committee").

Before we finalize this report, we look forward to receiving the Oversight Committee's feedback. Please contact the undersigned if you have any questions related to this draft report.

Yours very truly,

Ernst & Young LLP

Ernst & Young LLP

Table of contents

A. Executive summary

Background

The Government of Newfoundland and Labrador ("Government") has initiated oversight protocols for the Muskrat Falls Project ("Project"), a significant component of the Lower Churchill Project. This included establishing the Muskrat Falls Oversight Committee ("Oversight Committee"), which provides regular Project oversight reports to Cabinet.

The Oversight Committee is accountable to Cabinet for providing reliable and transparent oversight on the cost and schedule performance of the Project. The Oversight Committee is relying on the summary cost and schedule information produced by Nalcor in performing this function.

EY's Major Capital Projects practice was engaged to bring additional experience to assist the Oversight Committee in meeting its mandate. This report presents the results of EY's review of Nalcor's cost and schedule management processes and controls.

Review scope

The scope of the review included an assessment of the:

- Adequacy of Nalcor's cost and schedule management processes and controls as it manages and reports on the execution of the Project;
- Consistency of Nalcor's use of those processes and controls in key areas of the Project; and
- Extent of reliance the Oversight Committee could place on Nalcor's management reporting for cost and schedule forecasts.

The field work for the review was completed in April and May 2015, and consisted of reviewing Project data and documentation, as well as structured interviews with Nalcor personnel. The Project reporting period under review spanned December 2014 to February 2015.

A sample of five key contracts (the "Sample") was selected in conducting procedures for this review, whose aggregate value exceeds $2.3 billion.

This report summarizes the work performed by EY, our key findings and recommendations for the Oversight Committee's consideration. This report does not include a management response from Nalcor, as EY has not been engaged by Nalcor. This serves to preserve EY's independent reporting relationship to the Oversight Committee. The intention is that Nalcor will provide their management response directly to the Oversight Committee.

Review limitations

The following areas were excluded from the scope of the review:

- The estimating processes and cost baseline process were not assessed. The Oversight Committee indicated it intended to rely on the results of the DG approval processes (DG2 having been reviewed by MHI Consulting and DG3 having been reviewed by the Independent Engineer) and the approval of the narrow scope cost adjustments in the 30 June 2014 update.

- The accuracy of the forecasted costs or schedule dates for the contractors or the Project as a whole.
- Change Management and Risk Management processes. The Oversight Committee indicated Nalcor's Internal Audit Department are assessing these areas and intends to assess Nalcor's Internal Audit reports for reliance purposes.

The services provided by EY as summarized in this report are advisory in nature. They are intended to provide insight into Nalcor's Cost and Schedule management processes and controls, and related reporting. EY is not rendering an audit, review, examination, or other form of attestation as those terms are defined by the American Institute of Certified Public Accountants or Chartered Professional Accountants Canada.

This report is prepared solely for use of the Government of Newfoundland and Labrador for the purpose of assessing cost and schedule management processes and controls for the Muskrat Falls Project. Ernst & Young LLP specifically disclaims any responsibility to any other party, and disclaims any responsibility for loss incurred through use of the report for any other purpose.

Summary of key findings

The following observations were noted:

1. Key project control processes have been developed, including:
   a. Core project management and control processes for cost and schedule, including the development of an Integrated Program Schedule (IPS) for the program, identification of baseline, committed and incurred costs as well as linkage of cost and schedule baselines to change management processes and controls;
   b. A Project Execution Plan defining the basis of the schedule and the estimate, and key assumptions supporting Project baseline cost and schedule; and
   c. Coordination procedures for administration, execution control and management of the contractors' cost and schedule.
2. Project reporting summarizing key information on construction cost and schedule, including:
   a. Schedule forecast and progress leveraging the IPS, including critical path and float review; and
   b. Cost forecasting, including Estimate To Complete, Estimate At Complete, variances and trends, as well as basic contingency forecasting.
3. Nalcor's continued efforts to work with contractors on maintaining a disciplined approach to project management, control and reporting.
4. Proactive measures taken to manage potential claims.
5. Active formalized management of cost and schedule issues and risks arising during the Project.
6. A matrix organizational structure has been established, responsible for managing the Project as a whole. Key roles in this organizational structure have been staffed with resources experienced in cost and schedule management.
7. Nalcor is using a set of conventional management processes and controls for the Project. While certain contractor Earned Value data is being collected, Nalcor is not reporting using a full Earned Value Management System across the whole of the project, which would provide additional useful data and information to the Oversight Committee on individual contractor and overall Project performance.

The following observations summarize key aspects of management processes and controls not fully developed and deployed at the time of our review:

Key schedule management process and control risks and issues

1. For three of five of the Samples selected, contractor Control Schedule Baselines Documents (CSBD) and Schedule Development and Control Plans (SDCP) were incomplete and/or did not meet the criteria defined in Nalcor's processes.
2. A majority of contractors' schedule updates included in the Sample were not systematically rolled up into the Nalcor IPS.
3. A completion date has not been established for finalizing an integrated baseline of contractor and IPS schedules to correct the issues noted in #1 and #2 above.
4. The IPS development and maintenance process is not fully documented.

Until such time as the noted management process and controls risks and issues are addressed, the completeness and accuracy of Project schedule status reporting to the Oversight Committee cannot be fully verified.

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.

The eight key observations noted above, along with several other observations, are detailed in Appendix C of this report.

Key recommendations

We recommend that the Oversight Committee:

1. Work with Nalcor to obtain management response for each of the findings noted in this report with defined corrective action, responsibility and anticipated completion dates. Given the volume of Project activity (burn), timeliness of action is critical. Therefore, the Oversight Committee should actively monitor status and verify completion of management response to its expectations.
2. Consider conducting detailed assessments of the cost and schedule status of the Project on an ongoing basis until Nalcor's corrective action addressing key risks and issues noted in this report is complete to the Oversight Committee's satisfaction. This ongoing assessment should include the basis and accuracy of the forecasts for completion at the contractor level, as well as the quantification of cost and schedule risk.

B. Approach

The Oversight Committee requested that EY review Nalcor's cost and schedule processes and controls for the Project. This review included assessing the methods for calculating and reporting cost and schedule progress, as well as an assessment of:

- Schedule and cost management processes, controls and reporting against leading practices and standards (PMBOK); and
- Implementation of and compliance with schedule and cost processes and controls for a sample of contractors.

The review activities included:

- Interviewing key staff from Nalcor's project controls team and senior management;
- Reviewing Project controls cost and schedule processes and procedures, and comparison with leading practices and standards; and
- Reviewing cost and schedule data and reporting for a sample of contractors.

The field work for the review was completed in April and May 2015, and consisted of reviewing Project data and documentation, as well as structured interviews with Nalcor personnel. The Project reporting period under review spanned December 2014 to February 2015.

The Sample of five key contracts was selected in conducting procedures for this review, whose aggregate value exceeds $2.3 billion.

The list of data obtained in conjunction with the review is contained in Appendix D of the report.

EY would like to thank the members of the Government and Nalcor who participated in this assessment process. The list of individuals interviewed is contained in Appendix E of the report.

C. Detailed findings

The 'Detailed findings' section of the report is organized as follows:

- Schedule management process design
- Schedule management process compliance
- Cost management process design
- Cost management process compliance

i) Schedule management process design

Effective schedule management, monitoring and control processes allow the user to maintain an effective baseline plan and compare with progress to identify variances from that plan and corrective actions taken.

A range of conventional schedule control plans, processes and procedures have been developed. These include:

- An IPS document, including a description of the IPS structure, schedule assumptions, baseline as well as IPS progress/updating/reporting and critical path determination and IPS bar charts;
- A PEP, where the function and structure of Project controls are defined;
- A PEP, which includes a summary of forecast schedule and the basis of that schedule forecast, including key assumptions, driving logic and project milestones;
- A Project Control Management Plan with a detailed section dedicated to planning and scheduling, including:
  - General strategies for achieving Project planning and scheduling objectives;
  - Schedule reporting and alignment requirements; and
  - Integration of detailed schedules of various contractors and suppliers.
- Planning and schedule process work flows. While the process steps remain at a high level, the map demonstrates functional responsibilities and handoffs. These work flows include key steps for:
  - Controlling the schedule at component level (i.e., Muskrat Falls Generation, Labrador Transmission Asset, Labrador Island Transmission Link), from contract award up to contract close out;
  - Developing components schedule baseline;
  - Updating the IPS; and
  - Reporting.
- Coordination procedures for administration, execution control and management of contractors' schedules (and cost);
- Trend analysis and change management processes used for forecasting time (and cost);
- An IPS focused on completion of the physical construction of the plant. However, management also indicated that schedules had been prepared for operational readiness and commissioning; and
- Project monthly reporting capturing key information to manage work on schedule, including:
  - Planned/earned/forecast progress;
  - Variance;
  - Critical path(s);
  - Float watch; and
  - IPS summary and construction progress.

However, we observed that:

Detailed observations
1. The process used to update the status and recorded progress of the Project is not fully documented in the IPS. The process is complex and uses a number of manual inputs, tools (i.e., LCP database, IPS progress spreadsheet "Rosetta Stone") and monthly processing.
2. Variance thresholds for monitoring schedule performance are not defined. Control thresholds are used to indicate predefined scale of variation permissible before a documented corrective action plan must be put in place and the issues escalated to key stakeholders Use of these thresholds would better inform the Oversight Committee.
3. The IPS Gantt charts do not show percent complete at the activity level, this limits the ability of the Oversight Committee to cross-check progress and forecasted end dates.
4. The IPS focuses on three domains, namely construction, commissioning and operations start-up. The IPS does not include information on three other domains, namely engineering, procurement and fabrication. The logical relationships and the impact of delays in engineering, procurement or fabrication on construction schedule are not included in the IPS. Without these logical relationships between dependent activities and the construction schedule, it is not clear how such delays may impact construction and completion of the Project.

While contractor Earned Value data is being collected, Nalcor is not using a full Earned Value Management System for its reporting across the whole of the Project. While at this point it may not realistic for Nalcor to implement a full Earned Value Management System, such a system would have provided additional useful data to the Oversight Committee on both Project and individual contractor schedule performance.

ii) Schedule management process compliance

Nalcor has established a conventional organizational structure to support Project management and execution of processes and controls. Key roles in this organizational structure have been staffed with resources experienced in schedule management, monitoring and control.

We noted that:

- Nalcor regularly updates and maintains the IPS as its core schedule management tool and basis of reporting. IPS updates are performed using the established tools (IPS progress spreadsheet "Rosetta Stone", LCP database);
- Nalcor is working towards systematically integrating contractor schedule updates as a basis for the IPS updates. Contractors' schedules are regularly (i.e., monthly) reviewed by the Project Controls team and comments are made;
- The Project Controls team is well aware of the established processes as well as the planning and schedule workflows;
- Nalcor is making an effort to work collaboratively with contractors to encourage them to comply with project requirements; and
- An onsite Nalcor quantity surveyor validates contractor quantity and supports progress reporting for the IPS.

However, we observed that:

Detailed observations
1. The process for integrated maintenance of the IPS and contractors' schedules is not fully deployed or consistently executed. Specifically: a. SCBD and SDCP are incomplete and/or fail criteria, as per Nalcor's coordination procedures. These key documents describe the approach to planning and schedule control, including schedule development, analysis, forecasting, reporting, progress measurement and corrective actions; b. Of the contractors from the Sample, only two had complete SCBDs and SDCPs. The status of control schedule baselines, as per contractors' monthly December 2014 and January 2015 progress reports are illustrated in Appendix A; and c. The updated schedule control baseline from the Sample of contractors is not rolled up in the IPS. A timeline had not been established for completing the plans and finalizing an integrated baseline of contractor and IPS schedules.
2. From the Sample, one key contractor's [Astaldi] most recent approved schedule (dated October 2014) does not fully comply with Nalcor's Coordination Procedure: a. More than 10% of the contractor's scheduled activities have negative float. A significant number have a negative float of more than 80 days. Negative float indicates the inability to meet schedule milestones/deadlines including the required project completion date. As of 21 May 2015, schedule non-compliances remained to be rectified; and b. The contractor's monthly progress report has not been approved since July 2014. This typically indicates potential significant disputes between a client and contractor regarding the schedule forecasts and the accuracy and/or quality of their reporting. Consequently, such matters may not be included in the IPS and reported to the Oversight Committee.
3. Contractor's schedule corrective actions are not all implemented within the monthly reporting period following their identification by Nalcor. Appendix C captures the results of a corrective action test performed on three contractors in the Sample.
4. Reasonability checks revealed instances where progress reported in the IPS differed from the progress reported from contractors in the Rosetta Stone (refer to Appendix B for more detail). Although the differences are not in themselves material, the reported progress may be viewed as subject to interpretation and not wholly objective.
5. A target date for completion of corrective action on the schedule management and reporting challenges at the contractor level has not been established.

In EY's experience, challenges with contractor schedules and their management are not uncommon in the major construction industry in Canada. However, the corrective action required is important for the Project as well as its oversight.

iii) Cost management process design

Project cost management typically includes processes for planning, estimating, budgeting, financing, funding, managing and controlling costs so that the Project can be completed within the approved budget. Cost control processes are set to monitor and report project performance against the cost baseline and identify variance from plan, and forecast potential impacts.

A range of conventional cost management processes have been substantially developed.

We noted that:

- Nalcor's LCP cost management processes are detailed in the PEP, Project Controls Management Plan and Procedure for Cost Control. These plans and procedures include a description of the:
  - Function and structure of the Project Controls group for cost management; and
  - Structure of the cost baseline, which includes the Project coding structure and work breakdown structure, Project commitment packages and packages dictionaries, and the Project process to establish and maintain budgets.
- A Project Control Management Plan with a detailed section dedicated to cost management, including:
  - Commitments and incurred cost monitoring process and cost/cash flow methodology;
  - Trending and forecasting processes used to calculate Forecast Final Cost (FFC) and assess variances. FFC is adjusted through a formal Forecast Change Notices mechanism. Early identification of potential variance is necessary to allow for an effective cost control system, and ultimately improve the accuracy of cost forecast;
- Cost control workflows have been drafted by the Project Controls team. These workflows describe the key steps at a functional level for each interface involved in the cost control processes. Workflows cover the following areas:
  - Commitments;
  - Incurred and cost flow; and
  - Forecast cost.
- Coordination procedures for administration, execution control and management of the contractors' cost (and schedule);
- Nalcor's monthly cost report captures key cost information, both at program and component level, including:
  - Original control budget (OCB);
  - Approved project changes;
  - Current control baseline (CCB);
  - Incurred cost;
  - Committed cost;
  - FFC, which is the sum of original commitment, approved changes, changes in progress, trends and unallocated budget/unawarded scope;
  - Variance from CCB and Trends; and
  - Contingency with related drawdown curve.
- An estimated contingency drawdown curve has been developed to forecast the usage of estimate contingency over the Project life.

However, we observed that:

Detailed Observations
1. Cost variance thresholds are not defined. These thresholds are used to establish a permissible variation from budget before documented corrective action must be taken. Variance thresholds are also used to define what constitutes a variance requiring escalation for senior management's attention.
2. The conditions and processes for rebaselining are not defined in the Project's control processes and procedures. Management indicated that rebaselining of the program was at their discretion and dependent on a variety of factors including forecast and rate of drawdown on contingency.
3. Detailed checklists have not been developed for the use of Nalcor cost controllers to validate contractor costs and ensure review consistency.
4. The shape of the contingency curve is conventionally defined by aggregation of the forecasted materialization of estimate uncertainties or tactical risks. The current basis of the forecast contingency drawdown curve did not include quantified material risks. This shortcoming significantly limits the ability to compare the rate of realized cost risks versus original forecast, and assess the need for additional contingency or the rebaselining of the Project's cost and schedule.

While contractor Earned Value data is being collected, Nalcor is not reporting using a full Earned Value Management System across the whole of the project. While at this point it may not realistic for Nalcor to implement a full Earned Value Management System, such a system would have provided additional useful data to the Oversight Committee on project and individual contractor cost performance.

iv) Cost management process compliance

Nalcor has established a conventional organizational structure to support the management of the Project and execution of the processes and controls. Key roles in this organizational structure have been staffed with resources experienced in management, monitoring and control of the Project cost.

We noted that:

- A Cost Control team has been established with the mandate to provide the Project Management Delivery team with timely updated information on the Project cost status for analysis and control to deliver the Project within budget;
- Major activities performed under this mandate include: budgeting, reporting commitments and actual status, trending and calculating FFC;
- The Project has been divided into manageable sub-projects with their own budget code for accounts, funding authority and funding release mechanism;
- A cost baseline has been established and maintained;
- The FFC is calculated using data from Nalcor's cost management systems (including PM+, LCP tracker and PRISM);
- Contractors' costs are regularly reviewed by Cost Control teams and comments made are reported back to the contractors;
- Reasonability checks and variance analysis are performed by cost controllers to validate contractors' cost figures;
- Processes for Deviation Alert Notices and Trends are implemented and reported; and
- The Project Cost Control team is well aware of the established processes and cost-related workflows (although some are still in draft version).

However, we observed that:

Detailed observations
1. A trend, quantified risk and/or early identification of potential material variance have not been raised for the challenges with one key contractor included in the Sample, particularly related to progress delays [Astaldi]. It is not clear how the quantification of the related cost risk has been communicated in reporting, limiting the understanding of the scale of the risk or issue.
2. Contractors' forecasts are not consistently used as a basis of the FFC. Alternative procedures are utilized including the use of a quantity surveyor who validates contractor quantity and supports progress reporting for the IPS.
3. FFC does not include trends for another contractor [Nexans] included in the Sample, as a different system is used to track costs.

Appendix A: Status of control schedule baseline for the Sample of five contractors

Package / Contractor	Package Title	Contract Award Date	Status of Control Schedule Baseline
CH0007 Astaldi	Construction of Intake & Powerhouse, Spillway and Transition Dams	29-Nov-13	Rebaselining of control schedule required and underway. Contractor's monthly progress report not approved since July 2014.
CH0032 Andritz Hydro	Supply and Install of Powerhouse Hydro-Mechanical Equipment	19-Dec-13	Rebaselining of control schedule required.
CD0502 Alstom	Construction of AC Substations	07-Nov-14	Schedule control baseline under review.
CT0327 Valard	Construction of 350 kV HVdc Transmission Line – Section 1 (MF to SOBI to Deer Lake 610 km)	14-Nov-14	Rebaselining of control schedule required and underway.
LC-SB-003 Nexans	Submarine Cable Design, Supply and Install	29-Nov-13	Rebaselining of control schedule required and underway.

Appendix B: Variances between IPS bar chart and IPS progress spreadsheet

Code	Description	IPS Bar Chart of MFGen and LTA (Data Date End of Feb 2015)	% Complete as per IPS Progress Spreadsheet (Rosetta Stone) at the End of Feb 2015
MFG-3-1320	Construction Power – Muskrat Falls	Complete	90.8% complete
MFG-3-2330	MF South Dam	Not started	3% complete
LTA-6-6180	735kV AC Intercon CF	Construction started and ROW completed	0% progress

Appendix C: Implementation of corrective actions schedule for the Sample of five contractors

Package / Contractor	Corrective Action Test	Comment
CD0502 Alstom	Most recent available schedule is baseline with August 2014 data. No updated contractor schedule with current progress is available. Corrective action check could not be performed.	EY spot-checks on both schedules indicated a number of constraints (over 20) affecting the backward pass calculation of the network ("Finish on or before"). These constraints are to be strictly avoided, as per Nalcor's coordination procedures, unless approved by the Engineer. However, no Engineer approval was available.
CT0327 Valard		
LC-SB-003 Nexans	Corrective actions were identified in the contractor's Control Schedule Baseline issued 6 February 2015. However, corrective actions were not implemented at the time of the review fieldwork.	Nalcor advised that corrective actions will be implemented in the next schedule re-baseline expected at the end of May 2015.

Appendix D: Documentation reviewed

Documents reviewed as part of this engagement:

Monthly Progress Reports dated December 2014 and January 2015 for the following sample of contractors: - Alstom CD0502 - Andritz Hydro CH0032 - Nexans LC-SB-003 - Valard CT0327	Coordination procedures for the following sample of contractors: - Alstom CD0502 - Andritz Hydro CH0032 - Astaldi CH0007 - Nexans LC-SB-003 - Valard CT0327
- C1 Progress to IPS rollup – Reporting MF Gen (C1) Progress to IPS; - IPS Progress Roll-up 2015 05 05; - IPS Progress weight factors 2015 05 05	- LCP-LITL bar chart from IPS 2015 04 09; - LCP-LTA bar chart from IPS 2015 04 09; - LCP-MFG bar chart from 2015 04 09; - IPS LCP-PT-MD-0000-PC-SH-0001-01
Cost reports dated December 2014 and January 2015 for the following sample of contractors: - Alstom CD0502 - Andritz Hydro CH0032 - Astaldi CH0007 - Nexans LC-SB-003 - Valard CT0327	Schedule .xer file for the following sample of contractors: - Nexans LC-SB-003 with January and February 2015 data - Alstom CD0502 with August 2014 data - Valard CT0327 with August 2014 data
Control Schedule Baseline Document dated 27 January 2015 from Andritz Hydro CH0032	Control Schedule Baseline Document dated 06 February 2015 from Nexans LC-SB-003
Project Baseline Schedule dated 09 January 2015 from Andritz Hydro CH0032	LCP Monthly Progress Report dated December 2014 and January 2015
Integrated Project Schedule (IPS) – Monthly Schedule and Progress Analysis Project Based cut-off date 31 December 2014, 28 January 2015, 25 February 2015	- Sample of Draw Confirmation Certificate - Sample of Draw Request and Funding Request - Sample of Construction Reports
IPS Progress Rosetta Stone for the months of December 2014, January 2015 and February 2015	Material Contract Cost Summary dated December 2014 and January 2015
McInnes Cooper Reports dated January, February and March 2015	Contract Administration Plan_LCP-PT-MD-0000-CA-PL-0001-01
LCP-PT-MD-0000-PM-ST-0002-01_B1_Contracting Strategy	Decision Gate 3 Basis of Estimate LCP-PT-ED-0000-EP-ES-0001-01 Rev B2
Project Change Management Plan_LCP-PT-MD-0000-PM-PL-0002-01	Integrated Project Schedule_LCP-PT-MD-0000-PC-SH-0001-01
Project Control Management Plan_LCP-PT-MD-0000-PC-PL-0001-01[1]	LCP Assurance Framework May 2013
Project Control Schedule Baseline Document_LCP-SN-CD-0000-PC-SH-0001-01	LCP-PT-MD-0000-CS-PL-0001-01_B2 Construction Management Plan

Project Execution Plan (Scope and Approach)_LCP-PT-MD-0000-PM-PL-0001-01_B3	Project Finance and Accounting Management Plan_LCP-PT-MD-0000-FI-PL-0001-01
Project Risk Management Plan_LCP-PT-MD-0000-RI-PL-0001-01_B1	Project Work Breakdown Structure and Code of Accounts_LCP-PT-MD-0000-PC-LS-0001-01
Revised Project Work Breakdown Structure and Code of Accounts_LCP-PT-MD-0000-PC-LS-0001-01_Rev B5	Work Planning Management Plan_LCP-PT-MD-0000-PM-PL-0003-01
- Astaldi CH0007 Monthly Progress Report dated 25-July-2014; - 2014 10 10 – ACI-MFC-0143 – Issue Of Revised Construction Schedule; - CH0007-Muskrat Falls – Execution Detailed Schedule v8.2 DD 28 SEP14 Official Submission 09.10.2014; - LTR-CH0007001-0283 – Baseline Control Schedule Conditional Acceptance; - Astaldi Execution Detailed Schedule – MFA-AT-SD-0000-PM-A02-0001-01 dated 10-October-2104	Project Controls Workflow/Procedure: - LCP_Cost Control_Mar2015_DRAFT; - LCP_Planning & Scheduling_Component Baseline_Mar2015_DRAFT; - LCP_Planning&Scheduling_IPS_Mar2015_DRAFT; - LCP_Planning&Scheduling_Mar2015_DRAFT; - LCP_Reporting_Mar2015_DRAFT; - LCP-PT-MD-0000-PC-PR-0005-01_Cost Control Procedure_DRAFT
Organization Charts LCP-PT-MD-0000-PM-CR-0001-01	Project Cost Update to MWH – 22-Jul-2014
LCP Asset Schematic by Project	- LCP_Monthly PC Meeting_25-Mar-2015; - LCP_PCMeeting_Bi-Weekly_Agenda_Feb2015

Appendix E: Interviews conducted

Interviews with the following Nalcor personnel were conducted:

#	Name	Title
1	Anthony Embury	Project Controls Manager
2	Carlos Fernandez	Deputy Project Controls Manager
3	Paul Harrington	Project Director
4	Jason Keane	Deputy General Project Manager
5	Ed Bush	Project Controls Lead – Muskrat Falls
6	Tanya Power	Project Controls Lead – HVdc Specialties
7	Nick Ternasky	Project Controls Lead – Overland Transmission
8	Georges Chehab	Lead Cost Controller
9	Brian Marsh	Sr. Cost Controller
10	Jill Hawkins	Cost Controller
11	Tara Dumaresque	Cost Controller
12	Tom Chudy	IPS Sr. Planner
13	Andrew Whitty	Planner
14	Craig Freake	Planner SOBI
15	Greg Fleming	Project Manager SOBI Crossing
16	Jennifer Grandy	Stewardship Reporting Coordinator
17	Scott Gillis	Change and Interface Management Lead

EY | Assurance | Tax | Transactions | Advisory

About EY

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization and may refer to one or more of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

For more information, please visit ey.com/ca.

ey.com/ca

[redacted]

2015/09/21

[redacted]-0374

NR/DM
Deputy Clerk
File

[redacted]-110.

A Presentation respecting Muskrat Falls Project Oversight Committee – Update to Cabinet was received from the Clerk of the Executive Council.

Clerk of the Executive Council