

**From:** David Steele  
**To:** [Martin, Craig](#)  
**Cc:** [Richard Noble](#); [Khurana, Harman](#)  
**Subject:** Draft Report  
**Date:** Wednesday, August 12, 2015 10:10:00 PM  
**Attachments:** [Muskrat Falls Project - OC Cost Schedule Review Draft - 12Aug2015.pdf](#)

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Hello Craig,

Attached is the Draft report for your review. Please reach out to Richard or I should you have questions. We welcome your feedback.

Regards,

David

**David Steele** | Partner | Advisory Services

Ernst & Young LLP  
Office: +1 709 570 8264 | [David.Steele@ca.ey.com](mailto:David.Steele@ca.ey.com)

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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

12 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,

David Steele  
Partner  
Newfoundland Advisory Services Leader  
709 570 8264

Richard Noble  
Associate Partner  
Canadian Major Capital Program Leader  
416 943 3151

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# 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.

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 first review in supporting the Oversight Committee.

## 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 and 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 was satisfied with these areas as a result 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 schedules for the contractors or the Project as a whole.
- Change Management and Risk Management processes. The Oversight Committee indicated it intends to rely on Nalcor’s Internal Audit Department to assess these areas.

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 the Chartered Professional Accountants of 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 are being 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. The Project is not using a full Earned Value Management System, which would constitute a leading practice. However, project control procedures were identified, constituting a set of alternate conventional project control practices.

Nalcor Management indicated that it viewed cost and schedule management as a priority in the Project and is endeavouring to deploy an effective set of processes and controls.



However, the following key observations represent aspects of management processes and controls not fully developed and deployed at the time of our review:

### Key Schedule Management Process & Control Risks and Issues

1. For the Sample of Contracts selected, Contractor Control Schedule Baselines Documents (CSBD) and Schedule Development and Control Plans (SDCP), in certain cases are incomplete and/or fail the criteria defined in Nalcor's coordination procedures.
2. A majority of contractors' schedule updates included in the Sample were not systematically rolled up into the Nalcor Integrated Project Schedule (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 process is not fully documented.

Until such time that 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 & 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 estimating and forecasting, which in our experience is not consistent with the practices expected for a project of this scale and complexity. It is not clear if the cost contingency forecasts are adequate for the Project.
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 scale 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 challenges is not quantified in the summary reporting made available to the Oversight Committee.

Until such time that 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. Conduct assessments of the cost and schedule status of the program on an ongoing basis until Nalcor's corrective action addressing key risks and issues noted in this report is complete. This

ongoing assessment should include the basis, as well as the accuracy, of the forecasts for completion at the contractor level, as well as the quantification of cost and schedule risk.

2. Complete an assessment of Risk Management practices employed on the Project. This assessment should include the quantification methods and parameters used to forecast cost and contingency.
3. Complete reliance reviews on the work completed to date by Nalcor Internal Audit related to scope, change and risk management.



## B. Approach

The Oversight Committee requested EY to review the processes and controls for cost and schedule of the Muskrat Falls Project. This review included assessing the methods for calculating and reporting cost and schedule progress. This review included and 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 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 of Newfoundland and Labrador 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.

While not running a full Earned Value Management System, which would constitute leading practice, a reasonable set of alternate conventional schedule control plans, processes and procedures have been developed and substantially deployed. These include:

- An integrated Program Schedule (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 Project Execution Plan (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. 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, restricting ability 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. Logic relationships and delays in engineering, procurement or fabrication with construction are not reported. Without these logic relationships, it is not clear how such delays may impact construction and completion of the project.

**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
<p>1. The process for integrated maintenance of the IPS and contractors' schedules is not fully deployed or consistently executed. Specifically:</p> <ul style="list-style-type: none"> <li>a. Schedule Control Baseline Documents (SCBD) and Schedule Development and Control Plans (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;</li> <li>b. Of the contractors from the Sample, only two had complete SCBD and SDCP. The status of control schedule baselines, as per contractors' monthly December 2014 and January 2015 progress reports are illustrated in Appendix A; and</li> <li>c. The updated schedule control baseline from the Sample of contractors is not rolled up in the IPS. A timeline has not been established for completing the plans and finalizing an integrated baseline of contractor and IPS schedules.</li> </ul>
<p>2. From the Sample, one key contractor's most recent approved schedule (dated October 2014) does not fully comply with Nalcor's coordination procedure:</p> <ul style="list-style-type: none"> <li>a. The contractor's schedule includes more than 500 activities, some with negative significant float. Negative float indicates the inability to meet schedule milestones/deadlines. As of 21 May 2015, some schedule non-compliances have still not been rectified; and</li> <li>b. The contractor's monthly progress report has not been approved since July 2014, indicating a potential significant dispute regarding the quality and accuracy of their reporting.</li> </ul>
<p>3. Schedule corrective actions are not all implemented in a timely manner. Appendix C captures the results of a corrective action test performed on three contractors in the Sample.</p>
<p>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 gaps are not themselves material, the reported progress may be viewed as subject to interpretation and not fully objective.</p>
<p>5. A target date for completion of corrective action on the schedule management and reporting challenges at the contractor level has not been established.</p>

**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.

While not running a full earned value management system which would constitute leading practice, a set of alternate conventional cost management and controls have been developed and substantially deployed.

We noted that:

- Nalcor’s LCP cost management processes are detailed in the Project Execution Plan, 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.

Detailed observations
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.

**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 Forecast Final Cost (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 and 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 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. Waiting for revised Astaldi schedule, as Andritz activities on site are directly linked to Astaldi schedule.
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 Sample of five contractors

Package / Contractor	Corrective action test	Comment
CD0502 Alstom	<p>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.</p>	<p>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 Engineer. However, no Engineer approval was available.</p>
CT0327 Valard		
LC-SB-003 Nexans	<p>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.</p>	<p>Nalcor advised that corrective actions will be implemented in the next schedule re-baseline expected at the end of May 2015.</p>

## Appendix D: Documentation reviewed

Documents reviewed as part of this engagement:

<p>Monthly Progress Reports dated December 2014 and January 2015 for the following sample of contractors:</p> <ul style="list-style-type: none"> <li>- Alstom CD0502</li> <li>- Andritz Hydro CH0032</li> <li>- Nexans LC-SB-003</li> <li>- Valard CT0327</li> </ul>	<p>Coordination procedures for the following sample of contractors:</p> <ul style="list-style-type: none"> <li>- Alstom CD0502</li> <li>- Andritz Hydro CH0032</li> <li>- Astaldi CH0007</li> <li>- Nexans LC-SB-003</li> <li>- Valard CT0327</li> </ul>
<ul style="list-style-type: none"> <li>- C1 Progress to IPS rollup – Reporting MF Gen (C1) Progress to IPS;</li> <li>- IPS Progress Roll-up 2015 05 05;</li> <li>- IPS Progress weight factors 2015 05 05</li> </ul>	<ul style="list-style-type: none"> <li>- LCP-LITL bar chart from IPS 2015 04 09;</li> <li>- LCP-LTA bar chart from IPS 2015 04 09;</li> <li>- LCP-MFG bar chart from 2015 04 09;</li> <li>- IPS LCP-PT-MD-0000-PC-SH-0001-01</li> </ul>
<p>Cost reports dated December 2014 and January 2015 for the following sample of contractors:</p> <ul style="list-style-type: none"> <li>- Alstom CD0502</li> <li>- Andritz Hydro CH0032</li> <li>- Astaldi CH0007</li> <li>- Nexans LC-SB-003</li> <li>- Valard CT0327</li> </ul>	<p>Schedule .xer file for the following sample of contractors:</p> <ul style="list-style-type: none"> <li>- Nexans LC-SB-003 with January and February 2015 data</li> <li>- Alstom CD0502 with August 2014 data</li> <li>- Valard CT0327 with August 2014 data</li> </ul>
<p>Control Schedule Baseline Document dated 27 January 2015 from Andritz Hydro CH0032</p>	<p>Control Schedule Baseline Document dated 06 February 2015 from Nexans LC-SB-003</p>
<p>Project Baseline Schedule dated 09 January 2015 from Andritz Hydro CH0032</p>	<p>LCP Monthly Progress Report dated December 2014 and January 2015</p>
<p>Integrated Project Schedule (IPS) - Monthly Schedule and Progress Analysis Project Based cut-off date 31 December 2014, 28 January 2015, 25 February 2015</p>	<ul style="list-style-type: none"> <li>- Sample of Draw Confirmation Certificate;</li> <li>- Sample of Draw Request and Funding Request;</li> <li>- Sample of Construction Reports</li> </ul>
<p>IPS Progress Rosetta Stone for the months of December 2014, January 2015 and February 2015</p>	<p>Material Contract Cost Summary dated December 2014 and January 2015</p>
<p>McInnes Cooper Reports dated January, February and March 2015</p>	<p>Contract Administration Plan_LCP-PT-MD-0000-CA-PL-0001-01</p>
<p>LCP-PT-MD-0000-PM-ST-0002-01_B1_Contracting Strategy</p>	<p>Decision Gate 3 Basis of Estimate LCP-PT-ED-0000-EP-ES-0001-01 Rev B2</p>
<p>Project Change Management Plan_LCP-PT-MD-0000-PM-PL-0002-01</p>	<p>Integrated Project Schedule_LCP-PT-MD-0000-PC-SH-0001-01</p>
<p>Project Control Management Plan_LCP-PT-MD-0000-PC-PL-0001-01[1]</p>	<p>LCP Assurance Framework May 2013</p>
<p>Project Control Schedule Baseline Document_LCP-SN-CD-0000-PC-SH-0001-01</p>	<p>LCP-PT-MD-0000-CS-PL-0001-01_B2 Construction Management Plan</p>



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
<ul style="list-style-type: none"> <li>- Astaldi CH0007 Monthly Progress Report dated 25-July-2014;</li> <li>- 2014 10 10 – ACI-MFC-0143 – Issue Of Revised Construction Schedule;</li> <li>- CH0007-Muskrat Falls – Execution Detailed Schedule v8.2 DD 28 SEP14 Official Submission 09.10.2014;</li> <li>- LTR-CH0007001-0283 – Baseline Control Schedule Conditional Acceptance;</li> <li>- Astaldi Execution Detailed Schedule – MFA-AT-SD-0000-PM-A02-0001-01 dated 10-October-2104</li> </ul>	<p>Project Controls Workflow/Procedure:</p> <ul style="list-style-type: none"> <li>- LCP_Cost Control_Mar2015_DRAFT;</li> <li>- LCP_Planning &amp; Scheduling_Component Baseline_Mar2015_DRAFT;</li> <li>- LCP_Planning&amp;Scheduling_IPS_Mar2015_DRAFT;</li> <li>- LCP_Planning&amp;Scheduling_Mar2015_DRAFT;</li> <li>- LCP_Reporting_Mar2015_DRAFT;</li> <li>- LCP-PT-MD-0000-PC-PR-0005-01_Cost Control Procedure_DRAFT</li> </ul>
Organization Charts LCP-PT-MD-0000-PM-CR-0001-01	Project Cost Update to MWH – 22-Jul-2014
LCP Asset Schematic by Project	<ul style="list-style-type: none"> <li>- LCP_Monthly PC Meeting_25-Mar-2015;</li> <li>- LCP_PCMeeting_Bi-Weekly_Agenda_Feb2015</li> </ul>

## 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

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