

From: [Martin, Craig](#)
To: [David Steele](#)
Subject: RE: Revised SOW
Date: Monday, April 27, 2015 1:30:25 PM
Attachments: [Review of Project Controls for Cost and Schedule.pdf](#)

David,

Please see the attached signed copy. Please countersign and return a copy to my attention.

Thanks

Craig

From: David Steele [mailto:david.steele@ca.ey.com]
Sent: Friday, April 24, 2015 12:39 PM
To: Martin, Craig
Subject: Revised SOW

Thanks Craig.

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Muskrat Falls Oversight Committee
Review of Project Controls for Cost and Schedule
Statement of Work

This Statement of Work, dated March 9, 2015 (this "SOW"), is made by Her Majesty in Right of Newfoundland and Labrador as represented by the Executive Council (the "Client") and Ernst & Young LLP ("EY" or the "Consultant") pursuant to the Agreement, effective October 31, 2014 between HER MAJESTY IN RIGHT OF NEWFOUNDLAND AND LABRADOR as represented by the Executive Council and EY (the "Agreement") as outlined pursuant to the third paragraph of Schedule "A" to that Agreement.

The terms and conditions of this SOW shall apply only to the advisory services covered by this SOW and not to services covered by any other agreement or statement of work pursuant to the Agreement. This SOW incorporates the Agreement by reference and capitalized terms used, but not otherwise defined, in this SOW shall have the meanings in the Agreement.

Scope of Work:

The scope of the work is to review Nalcor Energy's ("Nalcor") Lower Churchill project controls for cost and schedule. This will include assessing the methods for calculating and reporting cost and schedule progress.

Background/ objective

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

The objective of this review is to assess the project controls for cost and schedule against leading practices and standards (PMBOK) commensurate with projects of the scale and complexity of Lower Churchill project. The review will be tailored to the Muskrat Falls project and the requirements of the Oversight Committee. This will provide the Oversight Committee with an assessment of the Cost and Schedule management processes and controls.

EY shall disclose its working papers and reports ("Reports") to Nalcor's Internal Audit upon Nalcor's execution of an access letter substantially in the form EY prescribes.

Scope details:

- Perform an assessment of Cost and Schedule management processes and controls, and related reporting
- Assess methodology for calculating and reporting Cost and Schedule

Scope exclusions:

- The estimating and cost baseline process will not be assessed. This would have been satisfied as the 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 June 30, 2014 update.
- This scope will not include a review of the Scope (Change Management) and Risk Management processes or the completeness and accuracy of the logs/registers generated, nor the

methodology/calculation of risk and change order impacts. Nalcor's Internal Audit Department has completed reviews of these processes and are in their reporting phases. The Internal audit reports will be made available to Committee representatives when completed for review for reliance purposes.

- The scope of the consultant's work will require access to logs/ registers relating to Scope (Change Management) and Risk Management for the purposes of evaluating management processes and controls with respect to Cost and Schedule forecasting and reporting.
- The services described in this scope of work are advisory in nature and will report on the Cost and Schedule management processes and controls, and related reporting. The Consultant will not render an assurance report or opinion under the scope of work, nor will the Services constitute an audit, review, examination, or other form of attestation as those terms are defined by the American Institute of Certified Public Accountants or the Canadian Institute of Chartered Accountants. The scope of work will not constitute any legal opinion or legal advice. The Consultant will not conduct a review to detect fraud or illegal acts.

Approach

Our review will be conducted in the following phases:

1. Initiation and planning
2. Current State Assessment
3. Gap Analysis, Risks and Issues Identification
4. Findings Verification and Reporting

The work plan of the review is shown in Appendix A.

The review will be conducted through a series of interviews and data review which will include, but are not limited to:

- Interviewing staff from the Project Controls Team;
- Data review of material contracts/work packages (tentatively Astaldi, Vallard, Andritz Hydro) with regard to cost and schedule. A sample of cost and schedule data/reporting will be reviewed; and
- Interview of Project Controls' interfaces including Project Managers of selected contracts/ work packages.

Timetable:

The timeline below includes the activities that in our experience are required to conduct the review.

Timely access to data and respective stakeholders determines the amount of time required to conduct these reviews. The work plan is based on timely access to data and Nalcor's personnel as well as timely feedback during the reporting phase.

If timelines persist beyond the estimated 8 weeks effort due to extended validation and reporting revision activities, additional effort and fees will have to be negotiated.

	Mar 9 to 13	Mar 16 to 20	Mar 23 to 27	Mar 30 to Apr 3	Apr 6 to 10	Apr 13 to 17	Apr 20 to 24	Apr 27 to May 1
Activities	wk1	wk2	wk3	wk4	wk5	wk6	wk7	wk8
Meet with Nalcor IA to plan and review documentation/ reports for potential reliance and identify areas where IA could leverage the work to be performed in this engagement								
Planning and review initiation								
Conducting Kick Off Meeting								
Perform fieldwork including interviews and analysis								
Validate results with Nalcor								
Perform additional review as required								
Write and present draft report								
Finalize and issue the final report								

EY Resources, Fees and Expenses:

The estimated EY resource requirements are as follows:

Resource	Grade	Rate (\$/hr)	Estimated hours	Fees
David Steele	Partner	\$ 341	24	\$ 8,184.00
Richard Noble	Partner	\$ 390	64	\$ 24,960.00
Aman Gill	Senior Manager	\$ 268	40	\$ 10,720.00
Emiliano Mancini	Manager	\$ 219	340	\$ 74,460.00
Total			468	\$ 118,324.00

The estimated professional fees for our services are \$118,324, with a 5% contingency to a ceiling of \$125,000. This fee does not include applicable taxes or expenses. Actual out-of-pocket expenses will be invoiced at cost.

Signed:

Name: _____

Ernst & Young



Name: Craig Martin

Government of Newfoundland and Labrador

**Appendix A
Workplan Focus Area - Schedule and Cost Management**

1.0	Plan & Schedule Management and Maintenance
1.1	How the schedules of Nalcor major contractors and work packages are monitored and controlled
	<p>Review:</p> <ul style="list-style-type: none"> - Monitoring and controlling processes in place - How work performance data are provided from the various sub projects / outside vendors to update the schedule. This refers to information on project progress such as which activities have started, their progress (e.g. actual duration, remaining duration, physical percent complete) and which have finished - Process to ensure schedule is accurate and realistic - How the integrity of project schedule is performed / what the criteria are (project set-up, activity details, schedule logic and constraints, scheduling method, critical path/float, resource management, progress, P6 compliance) - Resources/interfaces involved in schedule monitoring process
1.2	How schedule performance is reviewed for major contractors and work packages
	<p>Review:</p> <ul style="list-style-type: none"> - What metrics are used to measure schedule performance (Schedule Performance Index...) - How performance data are collected and reviewed - How often schedule performance is reviewed - If a process for documenting lessons learned from inaccurate scheduling is in place
1.3	How schedule variance analysis is conducted for major contractors and work packages
	<p>Review:</p> <ul style="list-style-type: none"> - How current project status / data to conduct variance analysis are gathered and assessed - How often schedule variance analysis is conducted - How float and critical path are assessed and how often
1.4	How project schedule is forecasted
	<p>Review:</p> <ul style="list-style-type: none"> - How trend analysis is used for schedule forecasting purposes - What information is used for schedule forecasting - What is the basis for schedule forecasting - How risks and mitigation actions are taken into consideration during forecasting process (compare with risk register)
1.5	How schedule variations at level 4, 5, 6 are integrated in the project control schedule
	<p>Review:</p> <ul style="list-style-type: none"> - How schedule integration between different contractors/subcontractors is assessed - How the application of consistent standards and expectation with contractors/subcontractors is assessed

1.6	How corrective actions and change requests are managed
	<p>Review:</p> <ul style="list-style-type: none"> - How corrective actions are identified - Approval process in place to make changes to the master schedule - How significant schedule delays get communicated to various package leaders/Component Managers - How roles and responsibilities for implementation of corrective actions are assigned / how implementation plan is monitored - How rectification of trends and improvement to project's schedule performance are done - How costs associated with schedule delays are quantified and how these costs are factored in the budget/forecast process
1.7	How data for schedule progress reporting (actuals, forecasts, performance measurements) are gathered and reviewed
	<p>Review:</p> <ul style="list-style-type: none"> - Sample of progress reports - How the weighting system factor is used for measuring progress - How progress is assessed (physical % complete, earned value...) for engineering, construction, supply chain, offsite fabrication. - How the quality of information in the report is assessed and validated - How progress versus baseline is tracked and reported - Process for compiling the monthly report (who prepares the report, who reviews/approves it) and average turnaround for its issuance - How progress reports compare to monthly project report - Other reports issued to senior management in between issuance of the monthly report / other reporting mechanism in place
2.0	Cost Management and Maintenance
2.1	How costs of major contractors and work packages are monitored and controlled
	<p>Review:</p> <ul style="list-style-type: none"> - Monitoring and controlling processes in place - How work performance data is provided (incurred costs, project progress) and controlled - How checks and balances were implemented to ensure that the budgeted funds approved via the AFE/DG3 estimate were entered in Prism and PM+ correctly. Any documentation supporting this reconciliation. - Consistency of data entered at a CCA (Cost Control Account) level with the WBS - Mapping of task in WBS to cost element - Sample reconciliation report that outlines changes to actual costs, CCB (Current Control Budget) and FFC (Final Forecast Cost) that is provided to the scope/area manager - Coordination procedures for contractors that outline cost reporting requirements and review a sample of these reports - Type of information requested to contractors to support their cost reports - How reconciliation process are performed to ensure incurred costs get updated to actual

	<p>costs for a contract closeout</p> <ul style="list-style-type: none"> - How reconciliation with invoice costs/report from Finance is done
2.2	<p>How cost performance is reviewed for major contractors and work packages</p>
	<p>Review:</p> <ul style="list-style-type: none"> - What metrics are used to measure cost performance (Cost Performance Index...) - How performance data are collected and reviewed - How often cost performance is reviewed - If a process for documenting lessons learned from inaccurate budgeting and/or forecasting is in place
2.3	<p>How cost variance analysis is conducted for major contractors and work packages</p>
	<p>Review:</p> <ul style="list-style-type: none"> - How current project status / data to conduct variance analysis are gathered and assessed - How often cost variance analysis are conducted
2.4	<p>How changes to cost baseline are managed</p>
	<p>Review:</p> <ul style="list-style-type: none"> - Process and approvals required to make a change to the Original Control Budget - Approvals required for moving approved budget funds between CCA codes.
2.5	<p>How project costs are forecasted</p>
	<p>Review:</p> <ul style="list-style-type: none"> - How trend analysis is used for cost forecasting purposes - What information is used for cost forecasting (work performance...) - Process to calculate Estimate At Completion, Estimate To Complete - What the basis for cost forecasting are - How risks and mitigation actions are taken into consideration during forecasting process (compare with risk register) - Cash flow forecasting process - Process for updating the final forecast cost. Authorization/approval required. Frequency.
2.6	<p>How data for cost progress reporting (actuals, forecasts, performance measurements) are gathered and reviewed</p>
	<p>Review:</p> <ul style="list-style-type: none"> - Sample of progress report. - How the weighting system factor is used for measuring progress - How progress is assessed (physical % complete, earned value...) for engineering, construction, supply chain, offsite fabrication - How the quality of information in the report is assessed and validated - How progress versus baseline is tracked and reported - Process to assess incurred costs (resources involved, inputs used in addition to contractor reports, monthly cut off to capture costs...) and what assumptions are made to estimate and report these costs - Working papers/electronic files maintained each month to support the incurred balance - Process to adjust prior month incurred balances to actuals

	<ul style="list-style-type: none"> - How accurate incurred inputs are. Volume/size of the adjustments to actual costs required month over month - Process for compiling the monthly report (who prepares the report, who reviews/approves it) and average turnaround for its issuance - How progress report compare to monthly project report - Other cost reports issued to senior management in between issuance of the monthly report / other reporting mechanism in place
<p>2.7</p>	<p>How reserve analysis to monitor status of contingency is conducted</p>
	<p>Review:</p> <ul style="list-style-type: none"> - Process / approvals required to use funds from contingency - How contingency requirements are tracked/reforecasted/updated and reported - Forecast change notice process that is used to draw down funds from the escalation and contingency control account