From:	Bechard, Normand
To:	Thon, Scott; Gagné, Bernard
Cc:	Guerette, Serge; Tremblay, Jean-Daniel
Subject:	FW: Envoi d"un message : Lower Churchill Risk assessement SNC-Lavalin Method April 2013.doc
Date:	Sunday, April 21, 2013 10:07:12 AM
Attachments:	Lower Churchill Risk assessement SNC-Lavalin Method April 2013.doc

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Hi Scott and Bernard

Here a 1st draft of the report that we will discuss Tuesday morning on the conference call.

Any comments will be appreciated.

-----Original Message-----
From: Mackay, Michel
Sent: Saturday, April 20, 2013 17:11
To: Bechard, Normand; Vidal-Andrews, Antoine
Subject: Envoi d'un message : Lower Churchill Risk assessement SNC-Lavalin Method April 2013.doc

Messieurs
Premier Jet pour commentaires à demain je suis invité dans une fête.

Bonne lecture

nalcor energy	**Lower Churchill** **Risk Report**	SNC·LAVALIN
	Project 505573	

RISK ASSESSMENT SNC-LAVALIN

METHOD FOR NALCOR .

LOWER CHURCHILL PROJECT

APPROVALS

PREPARED BY	**TITLE**	**Signature**	**DATE**
Michel Mackay	Project Risk Manager		April 23, 2013
APPROVED BY	**TITLE**		**DATE**
Normand Bechard	Project Manager		
Marc O'Connor	General Manager		
Claude Létourneau	Senior Vice President		
Dale Clarke	Executive Vice-President		

TABLE OF CONTENTS

1. INTRODUCTION

The project under development is comprised of the Muskrat Falls Hydroelectric Plant and associated transmission lines and DC specialties. It is comprised of three discrete physical Components, as follows:

- Component 1: Muskrat Falls Hydroelectric Development
- Component 3: High voltage direct current transmission system specialties
- Component 4: High voltage overhead transmission lines (ac and dc) including:
  - Sub-component 4A: HVdc overhead transmission lines Muskrat Falls to Soldiers Pond
  - Sub-component 4B: HVac overhead transmission lines Muskrat Falls to Churchill Falls

Component 2 is the subsea cable across the Strait of Bell Isle and is not part of the SLI scope.

This Risk assessment has been made solely by SNC-Lavalin Experts at the demand of SNC-Lavalin Project Director on Lower Churchill Project. The actual situation developing with the bids received the Project Director asked the Corporate to conduct a risk assessment with SNC-Lavalin method applied on all SNC-Lavalin projects. Risk assessment was conduct By Montreal Risk Director at M&M how as and experience in Hydro power project from Baie James Society.

This review was conduct at SNC-Lavalin cost for the foreseen events that will arm the project cost and schedule to deviate more that 25% of the original budget.

2. KEY ELEMENTS OF THE LCP RISK MANAGEMENT PROCESS:

- We have review the Risk Register in force on the project, It doesn't give a clear dollar value of each risk that can be add to give the overall picture of the risks that the project is facing;
- As per the Project Execution Plan the template used to present the view of how is supposed to be managed (Figure 14.2 Sample Risk Report) and the Risk Register in force there is a big differences;
- The qualitative assessment before and after give the impression that we are reducing the risk by our actions and those action cannot be measure in project execution;
- The addressing action doesn't give the result of what was done, the conclusion and when the action was performed;
- To assess the qualitative assessment after mitigation give an impression of control;

- The very high consequence risks will be presented to SNC-Lavalin senior management and Nalcor for their review and discussion;
- Risks (both threats and opportunities) that could arise during and/ or after project execution were considered;
- Risks are managed through the SNC-Lavalin standard management tool, MOINS – RISC – LESS (based on Dyadem International's Stature platform).

3. MANDATE

Appoint a task force dedicated to produce a risk review on Lower Churchill project and assess high lever mitigation and action plan with SNC-Lavalin methodology.

4. EXECUTIVE SUMMARY REPORT

The first project risk register was populated on April 17th, 2013 by a group of selected members appointed by Senior Management at the Montreal, Panama and Newfoundland offices. A second project risk assessment review was also made on April 18th and 19, 2013 by selected team members from same offices. These reviews were conducted in light of the actual situation, of bids opening from several packages. We are realizing that the market respond to our tenders is limited to few players and the pricing are above our original budget. The pricing of the risk are more important than expected and the strategy foreseeing may not work and harm the project schedule and budget more than 25%.

The dedicated team has reviewed and discussed the actual project risk register and decided to do a new risk register base on SNC-Lavalin methodology. to reflect the actual project risk circumstances.

This review was approved by the Senior Management as per request of the Project Director of SNC-Lavalin at Lower Churchill project. It was facilitated by the Montreal Risk Director of Mines and Metallurgy how as and experience of Hydro Power Project.

The objective of identifying all the potential of the Lower Churchill Project was attained.

A quantitative risk assessment was performed base on the experience of the task force appointed. The calculated risk exposure for the Lower Churchill arrived to is 3,218 billion CDN (please refer to Risk Register Table 1). This figure represents an order of magnitude + or – 50% of our potential cost overrun.

This report is at its preliminary stage, since it has not been distributed to all the original participants for their perusal and comments, given the urgency to present this risk assessment to Executive SNC-Lavalin Management.

Out of the 47 risks originally identified, 5 were retired due to double dipping. Out of these 42 Project risks evaluated, 26 are considered to be Very High Risks, 5 High, 9 Medium and 2 Low.

The Very High represents 62% of the total identified risks, from on Lower Churchill project. The report shows the mitigation measures and actions plans that normally are part of the report. This Risk Review should be perform with Nalcor Energy representatives at a later stage.

Value-wise (quantitative assessment), 9 Very High risk represent 59% of the estimated risk exposure value, and evaluated at 1,914 Billion CDN.

Risk elements:

All of these 9 Prime Contract risks evaluated are considered to be Very High Risks given the context of the present situation.

The Very High Risks represents 2,918 billion and has been evaluated in regards of the actual contractual situation.

We highlight herein below the 9 major risks captured. They are:

1. N
2. N
3. N
4. N
5. N
6. N
7. N
8. N
9. N

a. Management assessment of risk exposure

We have used the experience of dedicated Experts to help the project team that identified 42 prime risks to be considered (see Attachment Table 1). These Very High risks are directly linked to actual situation. The approach was based on SNC-Lavalin risk matrix as recommended by our Corporate Guidance procedures.

We also have to consider and review the possible exposure arising from supplies and construction) and prepare ourselves to debate those issues with Nalcor Energy

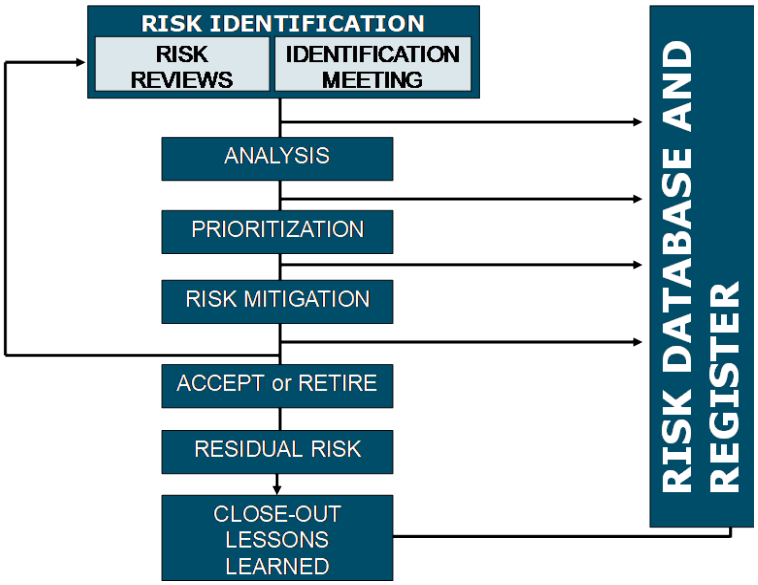
5. RECOMMENDATIONS

It is recommended that the Executive Management of SNC-Lavalin should be involve in discuss directly with Higher level of Nalcor Energy management in light of this risk report evaluating an **EXPOSURE OF 3,217 BILLION. We have a potential cost overrun of 52% at 20% project completion.**.

6. RISK WORKSHOP METHODOLOGY

The risk management approach used in this workshop is based on ISO 31000 guidelines that promote a culture where risk can be openly discussed and effectively managed. **The participants in the risk session each had an opportunity to express their concerns or perceived risks within the sections outlined in the scope above**. The following outlines the methodology undertaken in the risk workshop.

Risk Management Process



The first step in this process was to identify risks based on the components of the project (Muskrat Falls Hydroelectric Development, High voltage direct current transmission system specialties and High voltage overhead transmission lines (ac and dc))**Risk titles and concise descriptions were developed and agreed upon by the panel**. The risk was determined to be a either Component 1,3 or 4 or concerning all the project. We haven nane any risk owner but this should done at a later date.

The next phase was to provide a qualitative analysis that served to provide an order of magnitude basis of comparison for each risk. The objective of providing an order of magnitude was to be able to identify the most critical risks (+ or – 50%).

The panel was asked to select a consequence level (from VERY LOW to VERY HIGH), which is determined by a percentage scale based on the project's CAPEX or OPEX. In this case, the CAPEX was concluded to be $6100M, representing the dollar value of Lower Churchill project. The table below demonstrates the Consequence breakdown:

CAPEX Consequence Level

Consequence Level	Minimum (% CAPEX)	Minimum ($ M CAD)	Maximum (% CAPEX)	Maximum ($ M CAD)
Very High	1.00%	$ 61	5.00%	$305
High	0.75%	$ 45.75	1.00%	$ 61
Medium	0.50%	$ 30.50	0.75%	$ 45.75
Low	0.25%	$ 15.25	0.50%	$30.50
Very Low	-	$ 0.0	0.25%	$15.25

The following step included selecting the probability of the risk occurring and the manageability level. Similar tables are illustrated below:

Probability of Occurrence

Probability Level	Probability	Description
Very High	70% to 80%	Will probably occur in most circumstances
High	50% to 70%	Might occur under most circumstances
Medium	30% to 50%	Might occur at some time
Low	10% to 30%	Could occur at some time
Very Low	< 10%	May occur in exceptional circumstances

Manageability

Manageability Level	Probability	Description
Very High	80%	Can easily be managed
High	60%	In most circumstances can be managed
Medium	40%	Can be managed
Low	20%	In most circumstances difficult to be managed
Very Low	0%	Virtually impossible to manage

The risk software then computed the ***Probable Consequence*** and classified the average risk exposure based on the following calculation and table below:

Probable Consequence = Consequence x Probability x (1- Manageability)

CAPEX Probable Consequence

Probable Consequence Level	% CAPEX Value	Minimum ($ M CAD)	Maximum ($ M CAD)
Very High	0.65% and up	$39.65	-
High	0.35% to 0.65%	$21.35	$39.65
Medium	0.17% to 0.35%	$10.37	$21.35
Low	0.03% to 0.17%	$1.83	$10.37
Very Low	0% to 0.03%	$ 0.0	$1.83

Once the overall risk levels (probable consequences) had been identified, the panel was able to compare and prioritize the risks. The following step in the process was to create very detailed mitigations plans for each risk, including actions,. These items were developed in the action log tab of the software due dates and action owners show be develop at later date. This portion of the risk workshop was the most labour intensive in terms of time and overall discussion amongst the panel members.

The team was also able to provide several comments and revisions to all aspects of the elements in the software (risk title, description, mitigation plans, actions, consequence, probability & manageability) towards the end of the third workshops. In addition, several risks were retired due to the fact that they were included in other risks or they were perceived as double dip risk by the panel.

7. RISK REGISTER SUMMARY

8. TABLE 1