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**To:** [rossbeckwith@nalcenergy.com](mailto:rossbeckwith@nalcenergy.com)  
**Cc:** [Lance Clarke](#)  
**Subject:** Re: LC-PM-082: Independent Engineer - Miniutes of Meeting  
**Date:** Monday, September 17, 2012 10:28:03 PM

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Ross - See my comments in **red** below



**James Meaney**  
**Corporate Treasurer & Chief Risk Officer**  
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You owe it to yourself, and your family, to make it home safely every day. What have you done today so that nobody gets hurt?

Ross Beckwith---09/14/2012 05:00:49 PM---Gentlemen Draft minutes for your review and comment are below. A bit hurried - got to run to airport

From: Ross Beckwith/NLHydro  
To: Lance Clarke/NLHydro@NLHydro, James Meaney/NLHydro@NLHYDRO  
Date: 09/14/2012 05:00 PM  
Subject: LC-PM-082: Independent Engineer - Miniutes of Meeting

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Gentlemen

Draft minutes for your review and comment are below. A bit hurried - got to run to airport. Do we need to mention Katima (????) model ?

Propose to issue to all participants. Copy to Pat ? Others ?

Ross

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Nik Argirov - Vancouver

Rey Hokenson - Seattle  
MWH Gobal

Thank you for attending a contract kick-off meeting in our offices in St. John's on Thursday (13th) Friday morning (14th) with Gerry germain. Our discussions can be summarized as follows.

Details September 13, 2012 (9:00 to 5:00)

September 14, 2012 (8:00 to 10:00)

Torbay Road SLI / Nalcor Project Offices

Participants MWH Nik Argirov – VP and GM

Gerry Germain - Engineering

Rey Hokenson – Project Manager

Canada - Natural Resources Canada (NRC) - Anoop Kapoor (Thursday; via phone Friday)

- Blair Franklin - David Pyper (via phone both days)

Nalcor Bob Barnes - Engineering Manager

Ross Beckwith - Commercial Coordinator

Lance Clarke - Commercial Manager

Darren Debourke - Project Manager - Component 3

Greg Fleming – Project Manager – Marine Crossing

Paul Harrington – Project Director

Jason Kean – Deputy Project Manager

Jim Meaney – Corporate Treasurer and CRO

Ron Power, Project General Manager (EPCM)

Scott O'Brien - Project Manager - Component 1

Kyle Tucker - Project Manager - Component 4

SLI Normand Bechard – Project Manager (EPCM)

Luc Chuasse - Project Manager - Component 3

Alfy Hanna - Project Manager - Component 1

Afzal Hussain – Project Manager - Component 4

Gokhan Saltan – Engineering Manager - Component 4

Purpose To enable key people to meet, to provide project update, to establish protocols, to start the process of providing required documentation to MWH, and to establish general timelines.

Visitors were welcomed; introductions were made; orientation and safety moment were provided. Key points can be summarized as follows.

It was noted that MWH was selected as independent engineer (IE) pursuant to a formal procurement

process by Nalcor, that Nalcor and MWH had executed a contract, ~~that the IE role is to be executed on behalf of lenders including the federal guarantor~~, that the contract will be transferred to lenders **and/or the federal guarantor** when required, that MWH must remain independent during the interim period when working for Nalcor, that financial close is expected in about one year, and that first power is expected in 2017.

It was noted the IE work involves the following phases with reports required accordingly.

- 1 - prior to financial close
- 2 - after financial close **up until the completion of construction**
- 3 - annual operating and maintenance (O&E) after completion of construction

It was noted the EPCM model was chosen because of the size of the project and with the objective of achieving a suitable balance between risk and cost. It was noted that expressions of interest (EOI), requests for proposal (RFP), and resulting contracts are issued by Nalcor rather than SNC-Lavalin Inc. (SLI) pursuant to an EPCM engagement. It was noted that total project staff exceeded 350 and a tour of the Torbay Road office was provided.

It was noted that work is organized along the following three components by both Nalcor and SLI and the teams for each component are working in a cooperative manner; the joint teams for each component provided a presentation and update:

- 1 - Muskrat Falls
- 3 - HVdc Specialities and Switchyards
- 4 - Overland Transmission

It was noted that the DG2 estimate was established in late-2010 based on as little as 5% engineering and design, that current work is at about 50% which has resulted in significant changes **including but not limited to** the following which result in greater material quantities but higher plant efficiencies [NTD - Jason/Lance to confirm below]:

- dam re-oriented by about 30 degrees
- five vertical lift gates rather than three
- DC transmission towers

It was noted that the DG3 estimate has been **internally** finalized based on the enhanced engineering and design but will not be **made publicly available until shortly before** project sanction by the Province which is expected in **Fall 2012**.

It was noted that the enhanced engineering and design was based in part on a finite element analysis performed on proprietary SLI software. The many geotech, seismic, and other studies that have been executed over the past number of years were mentioned. Model testing of turbines and generators and hydraulic gates to facilitate and expedite the procurement process were described.

It was noted that the camp site had been cleared, that a road was being constructed, and that construction power was being installed, that a number of contracts had been awarded for this work, that the T&G and subsea cable contracts were expected to be executed within days, that many other packages were at the

bid review stage, and that many other packages would be issued for quote in the near future.

Other execution and management issues discussed included the following:

- stage gate process
- performance guarantees, securities, and insurance programs
- integrated project manual, design hierarchy, and strategy documents
- bridging documents relative to Nalcor and SLI management plans
- design review board
- EPCM incentives / penalties
- multiple estimates, risk assessment, and de-risking strategies
- input from third parties such as IPA, MHI, and ?????????? [NTD - Westney and IPR]
- labour strategies
- impact of competing projects on labour and materials
- management of interfaces between various suppliers and contractors
- authorities and change management process
- nature of camp

Other construction and operational issues discussed included the following:

- scope of balance of plant (BPO) package
- RCC dams in cold climates
- interface between bulk excavation and concrete contractors
- size of Kaplan turbines
- suitability of Chinese manufacturing
- reservoir clearing / trash management
- frazil ice
- no permafrost along overland transmission route and no concrete tower foundations

Follow-up activities include the following:

- meet additional team members
- obtain Kaplan turbine details from Bob Besaw
- obtain reservoir clearing details from Marian Organ

It was agreed that Nalcor contacts are as follows and that e-mail correspondence to be copied to others for information purposes:

Contractual - Ross Beckwith

Financial - James Meaney

Execution - interim - Lance Clarke

- after - to be determined

**Blair Franklin indicated they would consult with their client, NRC, about the possibility of discussions with MWH without Nalcor participation and advise Nalcor/MWH accordingly to ensure concurrence. It was agreed MWH could meet with NRC and Blair Franklin without Nalcor participation subject to prior Nalcor concurrence.**

Action items:

MWH - advise availability, attendees, and expectations for initial site visit on or about October 22

**- In consultation with Nalcor, prepare action plan showing weekly activities for next 2-3 months with quarterly intervals thereafter (using activities/milestones found in detailed schedule provided in RFP response as the basis)**

~~-update base plan with date for draft IE report with two weeks~~

~~-develop detailed action plan with two months~~

~~-perform sensitivities on pro-formas~~

Nalcor - provide access to data room to MWH and otherwise provide all required

documentation with two to three weeks

- organize workshop to present DG3 estimate **and financial models**

- organize site visit which will include Blair Franklin and NRC personnel



Ross Beckwith

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