



NEWFOUNDLAND AND LABRADOR HYDRO

Lower Churchill Project

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April 23, 2007

SNC-Lavalin
Bae-Newplan Group Limited
1133 Topsail Road
St. John's, NL A1N 5G2

**Attention: Mr. Bert Peach
Project Manager**

Subject: March 15th Clarification Meeting Minutes

Dear Mr. Peach:

Please find enclosed one (1) original signed copy of the SNC-Lavalin Clarification Meeting (Technical Portion) and Commercial Clarification Meeting March 15, 2007.

Yours truly,

A handwritten signature in black ink, appearing to read "Lance Clarke", written over a horizontal line.

Lance Clarke
Commercial Service Manager
Lower Churchill Project

Encl. (2)

MINUTES OF MEETING

SNC LAVALIN Clarification Meeting (Technical portion)

Date: March 15, 2007 **Time:** 8:30 am – 1:00 pm

Attendees: Albert Williams - SNC-Lavalin (SNC)
 Ricardo Cumming - SNC
 Brad Chaulk - SNC
 Anthony Rattue - SNC
 Michel Tremblay - SNC
 Bert Peach - SNC
 Hassine Benjannet - SNC
 Jacques Fauteux - SNC
 Paul Harrington - Newfoundland & Labrador Hydro (Hydro)
 Lance Clarke - Hydro
 Jason Kean - Hydro
 Kyle Tucker - Hydro
 Dave Brown - Hydro
 Raj Kaushik - Hydro
 Bob Barnes - Hydro
 Dave Kiell - Hydro

Purpose: Technical clarification meeting to address SNC-Lavalin’s understanding of, and commitment to, the types of work outlined in the attachment to NL Hydro’s letter dated March 14, 2007 (ref. Attachment B).

Attachments:

- A - Attendance sheet
- B - Listing of Types of Work for SNC-Lavalin and General Questions
- C - SNC-Lavalin Slide Presentation
- D - Organization Chart

Item	Discussion	Action by:
1.	Bob Barnes welcomed everybody to the meeting and asked that each person introduce himself and identify his affiliation. An attendance sheet was circulated (ref. Attachment A).	
2.	<p>Kyle Tucker provided the Safety Moment for the meeting by way of explaining that safety moments are a part of Hydro’s Safety Management Program and are given at every formal meeting. He explained the principles of the safety moments and gave examples.</p> <p>Kyle also explained Hydro’s emergency evacuation plan and SWOP Program. The program’s motto is See It, Fix It, Report It.</p> <p>Bob Barnes explained that Hydro will expect all its contractors to comply with the SWOP Program and complete SWOP cards, as required, to report unsafe conditions.</p>	
3.	Bob Barnes reviewed the proposal evaluation process followed for the evaluation	

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	<p>of all proposals received in response to its RFP for Engineering Support Services for the Lower Churchill Project. He explained that the technical and commercial proposals were kept in separate locked rooms and only the technical and commercial evaluation teams were allowed access to the technical and commercial proposals rooms, respectively. It was only after extensive separate evaluations, and the technical proposals were short listed, that the two teams met. The technical evaluation team has little knowledge of the commercial evaluations, and vice versa.</p> <p>At this point the meeting was turned over to SNC to present their understanding of the work and their responses to the general questions provided with Hydro's letter of March 14, 2007. For this SNC used a slide presentation (ref. Attachment C).</p> <p>4. Brad Chaulk presented the agenda for this meeting, as follows:</p> <ul style="list-style-type: none"> • Opening Remarks • Safety • Logistics • First Nations Involvement • Organization and Management • Technical Scope <ul style="list-style-type: none"> ✓ Optimization ✓ Field Investigations ✓ Layout / Other • Document Control System • Business / Financial Discussion <p>5. Albert Williams thanked Bob Barnes for the opportunity for SNC to present its response and made a few opening remarks. He explained SNC's corporate commitment to the work and its commitment to bring all of the resources identified in its proposal and shown on the organization chart, to be presented this morning, to the Project, as required. He also noted SNC's corporate commitment to health and safety, explaining that a new VP was recently appointed with this corporate responsibility. He also noted that SNC (through BAE-Newplan and other work on the Labrador coast) has established working relationships with the Innu and Inuit people in Labrador.</p> <p>6. Dave Kiell explained that preparation for the Environmental Impact Statement (EIS) is ongoing and that a good working relationship between the Environmental group and the Engineering group is essential during 2007.</p> <p>7. Regarding General Question #1, Brad reiterated SNC's corporate commitment to Health, Safety and Environment (HSE) as being front and centre in everything SNC does, advising that SNC has a corporate HSE plan with policies for health and safety, health and safety at construction sites, and environment.</p> <p>He noted SNC's "We Care" program for which the goal is to achieve zero harm through:</p> <ul style="list-style-type: none"> • no lost time injuries, • no serious injuries, • no property damage, and 	

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	<ul style="list-style-type: none"> • no environmental spills or releases. <p>He noted that SNC would develop a project specific HSE plan. The persons responsible for this will be Gaetan Morneau, Corporate HSE representative, and Woodrow French, Project HSE Officer. This plan could be integrated with Hydro's existing HSE program. He noted this plan will cover all employees, subconsultants, subcontractors and trainees and will include emergency preparedness and response.</p>	
8.	<p>Brad also noted that SNC has a comprehensive quality plan.</p>	
9.	<p>In elaborating on SNC's plan for logistical support (General Question #9), Brad explained that SNC has nominated the following subconsultants:</p> <ul style="list-style-type: none"> • Minaskuat / Jacques Whitford, Goose Bay, for health and safety and logistics personnel, and • Innu Project Management / Serco, Goose Bay, for office space, computer support, support staff, ground transportation and accommodations. 	
10.	<p>In elaborating on SNC's plan for aboriginal input to the work (General Question #8), Brad noted that SNC has nominated the following Innu companies as subconsultants:</p> <ul style="list-style-type: none"> • AMEC / Amishu as the main geotechnical consultant, • Minaskuat / Jacques Whitford for logistics and geotechnical support, and • Innu Project Management / Serco for support services. 	
11. a)	<p>Albert Williams noted that SNC (BAE Newplan) has good working relationships with the Innu but they have never formed an Innu company.</p> <p>In response to General Question #4, Bert Peach explained that SNC's project team will be headquartered in St. John's and specialist support will be drawn from SNC's Hydro Division in Montreal, as appropriate. Also, other technical support will be drawn from a group of designated local consultants and field support will be provided by Labrador based contractors, most of whom have Innu involvement. Bert tabled an organization chart for reference (ref. Attachment D).</p> <p>Bert explained that he, as the dedicated Engineering Services Manager, will be the main coordinator for WTOs. He will oversee the progress and costs of the WTOs.</p> <p>He also explained the technical team will be headquartered in the BAE Newplan office in St. John's but some key technical packages will be done in Montreal. He noted the key managers to be located in St. John's are:</p> <ul style="list-style-type: none"> • Gull Island – Dave Robinson • Muskrat Falls – Bertrand Masse • Infrastructure – Brad Chauk <p>He noted that Hassine Benjannet will coordinate the work in Montreal.</p>	

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<p>b)</p>	<p>Bert noted that the group of designated local consultants are:</p> <ul style="list-style-type: none"> i) Newfoundland Design Associates ii) Quadratec iii) FGA Consulting Engineers iv) Terra Lab Engineering Group v) AMEC vi) EDM Consultants vii) Sikumiut Environmental Management <p>SNC has MOUs in place with consultants a), b), c) and d), agreements in place with consultants e) and g), and SNC already owns EDM Consultants. Bert noted that there are no commitments to these consultants on the amount of participation that each may have but he anticipates that 12 or 13 people from these local companies could be involved in the WTOs depending on the scope of work approved.</p> <p>c) Bert went on to explain that the site work will be led by experienced personnel based in Newfoundland and Labrador. Key managers will be:</p> <ul style="list-style-type: none"> • Field Investigations – Brad Chaulk (SNC) • Geotechnical – Calvin Miles (AMEC) • Surveys Coordinator – Charlie Hunt (SNC) • Site Office Coordinator – Terry Pardy (IPM, Goose Bay) <p>Field support will be provided for:</p> <p>Office support – Innu Project Management (IPM) Geotechnical – AMEC/Amishu and Minaskuat/Jacques Whitford Logistics – Minaskuat and IPM/Serco</p> <p>Other services will be procured through competitive tenders or RFPs.</p> <p>Bob Barnes noted that Hydro will have staff (students) that it may wish to incorporate into the field work. SNC agreed to accommodate Hydro's staff.</p>	
<p>d)</p>	<p>Bert explained SNC's procurement strategy for subcontract services as:</p> <ul style="list-style-type: none"> 1st choice – First Nations organizations (including Innu, Inuit, Metis) 2nd choice – other Labrador firms 3rd choice – other Newfoundland based firms 4th choice – out-of-province contractors. 	
<p>12.</p>	<p>Michel Tremblay explained SNC's understanding of the hydrotechnical aspects of the work, as follows:</p> <p>a) Powerhouse optimizations – number and size of units:</p> <p>He noted this would require updating the 2000 study with latest information on operational strategy from Hydro for the Churchill Falls, Gull Island and Muskrat</p>	

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	<p>Falls plants, including:</p> <ul style="list-style-type: none"> • Energy and power values • Peak energy requirement • Winter energy requirement • Expected future Churchill Falls plant operation • Minimum downstream flow requirements • Operational constraints <p>Michel noted that, based on daily flows from 1973 to 2004, a 4-unit plant would sometimes experience lost energy in the last half of a typical year.</p> <p>He noted that the type of unit is fixed for Gull Island (Francis turbines) but at Muskrat Falls, the number and type of turbines is to be confirmed.</p> <p>Bob Barnes questioned how the optimization for Gull Island would be done if the latest information (2007) is not available. Michel explained that the 2000 study would be reviewed and assumptions made for the energy and capacity values.</p> <p>Michel noted that 4, 5 and 6 units would be considered for Gull Island but there may be an electrical constraint that could eliminate the 5 unit option.</p>	
	<p>b) Optimization of reservoir levels:</p> <p>Michel noted that SNC will consider if 125 m is still the optimum reservoir level for Gull Island and will link the optimizations for Gull Island and Muskrat Falls to determine the optimum reservoir level for Muskrat Falls.</p> <p>He noted that in considering tailrace channel improvements at Gull Island, which would increase the head on the Gull Island plant and reduce the head on the Muskrat Falls plant, the lag time to the development of Muskrat Falls is important. The cost of the improvements would have to be weighed against the net increase in benefits of Gull Island and Muskrat Falls. A lag of only 2 – 3 years may not present a benefit, but a lag of 10 years may present a benefit. SNC would do a sensitivity analysis on the number of years lag. Consideration would also be given to doing the tailrace improvements for short term gain at Gull Island with a return to the original tailwater level of 39 m when Muskrat Falls is constructed.</p>	
	<p>c) Future unit(s) downstream of the diversion tunnels:</p> <p>Michel noted that this was not previously studied but confirmed that it could be reviewed. Hassine Benjannet noted that J. L. Gordon was previously opposed to having the diversion tunnels as a permanent (operating) structure.</p>	
13.	<p>Anthony Rattue explained SNC's understanding of the site investigations aspects of the work, as follows:</p> <p>a) For Gull Island, the principal objectives are to determine criteria on: cofferdam under seepage, dam foundation details, rock joint orientations, rock data for support design and penstock lining length, borrow sources. In particular, he</p>	

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	<p>noted there is a gap in the available information on the new dam alignment. He also noted that an early start on the investigations is essential. The end of October is considered to be the deadline for site investigations.</p> <p>b) For Muskrat falls, the principal objectives are to determine criteria on: groundwater levels in the spur, soil properties at the spur, rock depth and quality for the tunnels and dam alignment, rock elevations for the cofferdam at the upstream rapids, rock elevations and quality at the powerhouse and spillway, and borrow sources.</p> <p>Anthony noted that inclined holes will be required at the dam because of the rapids.</p> <p>He noted that Dave Matheson is named in the organization chart for dam and foundations.</p> <p>c) Anthony reviewed the different considerations for the central earth core dam and the concrete faced rockfill dam (CFRD) alternatives. He noted that while the CFRD with a deep cut-off has precedent, the seepage under the cofferdam may have significant impact on the schedule and cost as the foundation area in the plinth has to be kept dewatered until the completion of the embankment. Only at that time may concreting of the face slab be started. This is necessary to minimize deformation of the slab.</p> <p>d) He discussed seismicity and noted that tectonic (regional and site specific seismic activity would be reviewed by Gail Atkinson. He noted that induced seismicity (i.e. reservoir induced) is unlikely in the Lower Churchill area and the typical magnitude of induced seismicity won't impact on design.</p> <p>e) He commented on acid testing of rock, noting that rock dumps on land are a problem if rock is acid producing. If this is a problem at Gull Island, the rock could be used in the upstream side of the dam where it would be submerged and, therefore, would not react with oxygen. He noted that this aspect has not been identified for Gull Island or Muskrat Falls in previous work.</p> <p>f) He noted that alkali aggregate reactivity (AAR) would be tested as a matter of course. If this is an issue, it could affect the source of the aggregates, the type of cement used and the use of fly ash in the concrete mix. Testing to determine the extent of AAR could take a year. Shorter testing can be done but results are unreliable.</p> <p>g) He noted that the coordination of the geotechnical site investigations would be by Calvin Miles, who would be seconded to the team. The site investigations would involve AMEC Earth and Environmental, Jacques Whitford and others, as required.</p> <p>14. Hassine Benjannet explained SNC's understanding of the structure layout aspects of the work, as follows:</p> <p>a) Based on the information available, the Gull Island layout as presently shown is the final layout. There is no intent to review relocation of the diversion facilities to the south side of the river and incorporate these with the spillway. In addition,</p>	

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	<p>there is no intent to interchange the intake and spillway. Hassine said unless directed otherwise by Hydro, SNC would not waste Hydro's money to study alternatives that had already been studied. He noted that all possible variations of layouts had been studied already.</p> <p>Hassine noted that at Muskrat Falls, Variants 7, 10 and 11 are comparable in cost and would need to be reviewed further. Bob Barnes noted that Variant 7 is a concern to the Innu people. Hassine noted that optimization of the spillway layout and location would likely have to be done.</p> <p>b) Hassine went on to explain SNC's understanding of the review of construction camps and infrastructure. He noted that the manpower schedule would dictate the size of the camp but the amenities provided in the camp will have to be reviewed, in light of the current expectations as a result of other current projects.</p> <p>He noted that the availability of accommodations on the base in Goose Bay would be reviewed with consideration given to the cost and safety of transporting workers to and from the site.</p> <p>With respect to camp infrastructure, he noted it will have to be decided what the main contractor and Hydro will provide.</p> <p>c) Hassine explained SNC's understanding of the review of access roads and construction bridge requirements and HVGB infrastructure. He noted that roads would be either permanent, long term construction or general access roads and all would be a standard design, based on usage.</p> <p>For site access, he noted the condition of the existing roads would have to be assessed and an inventory of all materials and equipment required at site would have to be developed.</p> <p>He noted that road access is available from central Canada, via the Quebec north shore region (Baie Comeau) through to Labrador City and the Trans Labrador Highway (TLH), to the project site. River crossings have new bridges designed to CS600 standard.</p> <p>He noted that between HVGB and Muskrat Falls and Gull Island, local widening of the TLH will be required at selected locations to permit public vehicles to pass slow moving construction equipment.</p> <p>He noted that air and sea access will be from HVGB, with the sea port at HVGB being ice free and navigable for seven months a year. A small marshalling yard and dry storage buildings would be utilized in HVGB as a receiving area for materials arriving by marine transport. He also noted that an assessment of what facilities exist at HVGB will be required and to determine their present condition, and what repairs and/or upgrading will be required.</p> <p>He also noted that construction bridges to access the south side of the River are required at Gull Island and Muskrat falls. A bridge will be constructed at the Gull Island site and a bridge may be required at Muskrat falls, if the new TLH bridge located near HVGB is inadequate. SNC will review the new TLH bridge and the associated 20 km access road required along the south side of the River.</p>	

SNC - Lavalin Commercial Clarification Meeting – MOM – March 15, 2007

Participants: SNC-Lavalin: Bert Peach, Elwood Reid, Hassine Benjannet
NLH: L. Clarke, P. Harrington, B. Barnes, J. Kean

Discussion Points:

- NLH reaffirmed with SNC-Lavalin that any contract awarded was for the pre-FEED phase engineering activities only to be concluded in 2007.
- NLH indicated that its preference was to execute a contract rather than enter into a MOU.
- SNC-Lavalin's commercial contact will be Elwood Reid located in its St. John's Office. NLH's Single Point of Contact will be Lance Clarke.
- SNC-Lavalin confirmed that its nominated full-time Project Manager is Bert Peach; while it is intended that Bert's services be covered under a Work Task Order as issued from NLH.
- NLH confirmed during the meeting that it would place drilling and support contracts required for the 2007 field geotechnical program. There would be joint management of in-field drilling program by SNC-Lavalin and NLH, the details of which will be confirmed at a later date.
- SNC-Lavalin indicated that the securing of drilling equipment would have to be completed early to ensure market availability.
- All logistics services to support the summer geotechnical and drilling programs will be provided by SNC-Lavalin through Minaskuat, IPM-Serco or other designated subcontractors.
- SNC-Lavalin identified no major showstoppers with respect to the commercial clarification letter issued by NLH on March 14th. Generally they were in agreement with the commercial terms as set forth in Attachment 2 of these MOM.
 - Agreement that we will have a project policy for working hours. SNC indicated that they often utilize an internal policy re banking time (up to 2hrs per day and on weekends).
 - SNC agreed with NLH per diems, accommodations and transportation conditions. SNC will look after providing accommodations and car rentals (mid-size), NLH will provide airfares with an approved travel authorization. SNC confirmed that it would cover the automobile insurance.

- SNC confirmed that its subcontractors would be subject to same travel, accommodations and per diems.
 - Question raised regarding NLH's local taxi use policy in lieu of renting cars. NLH indicated it would review its policy and advise accordingly.
 - NLH reaffirmed its intention not to reimburse contractor for any home leave. Agreement that NLH would pay for travel time on home leave.
 - NLH indicated that its general policy would be that travel would be on the individual's own time when possible; however exceptions will be evaluated as they are required.
 - POST Meeting Note: Agreed mark-ups are as per the contract.
 - In accordance with its stated policy of not paying a premium for overtime, NLH questioned the overtime rates included in the offer. SNC indicated that it is obligated to pay overtime rates in Quebec due to legislative requirements. NLH asked SNC to confirm the O/T rates quoted as well as the legislative requirements.
 - NLH requested SNC to provide a standard all-in rate cost that includes photocopies, telecoms, etc.
- SNC presented a review of its Document Control System. NLH indicated it was interested in this system but not the later project management suite of tools. NLH requested a monthly rate for the on-line hook-up of the Document Control system for two (2) users. SNC to confirm. (Post Meeting Note: DCC system rates as per the contract)
- NLH requested SNC-Lavalin to provide clarity on its proposed project organization for the work, as well as indicate which of these positions are covered within its overhead. SNC indicated that its overhead typically covers the costs associated with invoicing, clerks, project sponsors, etc.
- NLH indicated its desire for SNC to produce weekly time sheets / reports for NLH's approval rather than waiting until receipt of invoice to approve the time. SNC said that this is not how they typically do business with NLH; however NLH reaffirm this requirement for all future Lower Churchill Project scope. (Post Meeting Note: Reporting requirements to be per contract requirements, kick off discussions and any mutually agreed changes).