

To Stan Marshall

From Paul Harrington

Date 6 June 2016

Subject Concerns

Stan

I am writing to you in my current capacity and duty as the Lower Churchill Project Director. I feel compelled to provide you with my opinion and offer assistance on some serious matters that I believe could negatively impact the completion of the Lower Churchill Project. I am sending you this note based on my 35 years of experience in Construction of major projects in an Owners Project Management team and I do so with the utmost respect.

I would like to begin by stating that both I and the Project Management Team respect your achievements and track record in the private sector, which is where the bulk of the Project Team spent their careers. I know the Project Management team is dedicated to working with you to deliver the project and understand that you have your preferences on how the remainder of the Project would be carried out. We will support you with the highest degrees of professionalism and we want to ensure we do so in a way that minimizes additional risks to the Project. Based on what I know of the changes you are intending, I feel there are some inherent risks and would like to discuss with how those risks could be managed while at the same time supporting your objectives for moving forward.

The Project team is fully committed to the Project. We appreciate that both you and the new Government have an opinion regarding the economics of the Project and the Sanction decision. We fully respect your right and need to express that opinion. I would like to note, however, that the Project team's role at Sanction was to produce a range of cost and schedule estimates based on the risks. It was decided to impose a very aggressive approach to cost and schedule. While it is not my place or intention to comment on the rational for those decisions, the Project Management Team is now taking criticism for those earlier decisions and that seems to me to be somewhat unfair. The Project Management team's job is to follow the instructions directions provided at Sanction. I would like to assure you that the remaining Project risks are well defined and are being actively managed. Construction and manufacturing is proceeding at all sites and across the globe and we have overcome many challenges and continue to do so every day.

I would like to expand on the comments offered above, and offer some of my thoughts and concerns on the implications of recent public statements and commentary. The morale of the Project team has been seriously damaged by recent critical statements in the public forum. The Project Team has endured much criticism for many years by critics of the Project, much of this criticism has been personal and Gilbert Bennett has been the target of most of these personal attacks and recently we have seen those attacks and criticisms being directed at the Project Management Team. The Project Team were able to withstand the negative statements because they had the support of Government and Nalcor Leadership.

They are now starting to feel abandoned and also feel that they are being painted as scapegoats for the decisions that were made outside their control.

For example, with regards to the project schedule at Project Sanction, the quantitative risk analysis (QRA) that was carried out on the Project schedule resulted in a P75 of 79 months from Project Sanction to get to First Power. The recently completed QRA resulted in the same result, a P75 of 79 months from Project Sanction to First Power. However the direction that was provided to the Project Team was to set a very aggressive schedule with a First Power target that was recognized as being in the P5 to P10 range. The unlikely probability of achieving these cost and schedule targets was well known. It is our contention that the criticism made by some that the Project Team failed to manage the schedule is an unreasonable accusation based on the data available. (see Appendix 1). The inherent nature of mega projects means that there will be risks and issues throughout the project. The issues this project faces appear to be magnified beyond anything I have experienced before due to the public nature and implications to the Provincial treasury of our work. The Project team's purpose and challenge is to minimize and mitigate risks within their control. Third party reviews have identified that the Project team is actively managing the risks and issues. In addition to the risks and issues that fall within the Project team's control there are those that fall outside of that control, however the impact still has to be managed. One example of this is the Contractors' views on working in Newfoundland and Labrador from their experiences on Hebron and the Long Harbour Projects and the negative impact that has on the Project's contract pricing. Another example is the Astaldi performance during the first year and the subsequent major effort by the Project team to turn that situation around to get them to the fully functioning and performing outfit they are today.

The Project Management team consists of many talented Newfoundlanders and Labradorians (approximately 85% of the total team), with many hundreds of years combined mega project management experience. The team is made up of very committed engineers, project managers and specialists in all disciplines and functions who are performing to the very best of their ability and are achieving many successes, however they are also being held responsible for matters which are clearly outside of their control and jurisdiction. It is unfair for them to be vilified and criticized for decisions that they did not make. I believe that they need to be encouraged and supported to complete the rest of the Project.

The Integrated Project Management team has been subject of many reviews: Navigant, Manitoba Hydro International (twice), the 3 major rating agencies, NRCan, MWH and the Independent Engineer, Independent Project Analysis (IPA), and EY who carried out the most recent review. All reviewers have agreed that the Project Management team is well organized, following best practices and is working diligently to complete the Project safely within the approved AFE and Schedule. I understand from some discussion with Gilbert Bennett and John Mac Isaac that it is your stated intention to break up the integrated team and have two separate and distinct teams reporting respectively to Gilbert Bennett (Generation) and John Mac Isaac (LTA/LIL). I fully understand and support your desire to focus work in a different way. I do have concerns with the timing of implementing the organizational changes and suggest we do so in a more gradual manner. I respectfully request you consider my concerns regarding the timing of such a change in the Integrated Project Management organization. I am providing these

concerns because I feel that the implications, consequences and increased risk to both project cost and schedule may not be fully appreciated. My primary concerns are as follows:

- Impact on organization – I know that a number of key leaders in the Transmission and HVDC project management team will feel that this organizational change will have a disruptive effect on the remaining work. I am concerned about loss of Project institutional knowledge and an overall demoralization of the remaining team. Productivity will be impacted and the Contractors will take advantage of the disruption and loss of Project knowledge to file Claims that without that knowledge will be more likely to be successfully prosecuted.
- Increased Risk LIL – the current QRA assumes that the integrated Project Management team is in place until Turnover of the facilities to the Operating entity. In my opinion and based upon my experiences in mega project execution, the LIL cost QRA P75 of \$300M will be increased and the current QRA P75 schedule of 7 months will be similarly increased by the disruptions and distractions to the Project teams.
- Increased Risk Generation – the impact of the changes on LIL will also effect Generation. I am concerned about the potential loss of Project institutional knowledge regarding ongoing issues – for example the negotiation with Astaldi in an effort to seek a negotiated settlement could be severely compromised. If no negotiated settlement is achieved then the change-out and legal actions will require all our project knowledge and resources.

I believe these organizational impacts, disruption, distractions and potential increased cost and schedule risks can be avoided by deferring the break up of the integrated Project Management team until the Labrador Island Link is constructed, and turned over to the Operating Entity. A phased implementation would allow the construction work to be finished by the current teams with minimum disruption, for example the Strait of Belle Isle (SOBI) cables will be installed, terminated and tested in end of Q3 2016, that can be turned over to the Operator, similarly the HVac transmission lines from Churchill Falls to Muskrat Falls will be complete in Q3 2016 and the HVdc transmission from Muskrat Falls to Forteau at SOBI. This gradual and progressive turnover of constructed, tested and completed facilities and equipment will provide the Operations team an opportunity to get to know the new facilities and equipment, organize the spares, get the maintenance routines in place and generally get familiar with transmission towers which are a step change to what they are used to and equipment that they have not had any experience with. Meanwhile the construction, testing and completion of the remaining transmission on the Island, the switchyards and HVdc equipment can proceed in parallel by the Project Management team and then handover to the Operator in 2017.

I fully agree with the Transmission /Generation split post project and feel that the emphasis needs to be placed on the readiness of the operating entity to take over the LIL assets because Operations are currently not organized and prepared for the addition of 1600kms of transmission, three major switchyards and a completely new HVDC technology. Please refer to Appendix 2.

I also feel duty bound to share some relevant facts regarding SNC –L and the reasons why we were obliged to move to the Integrated Project management model in 2012. To put it bluntly SNC-L did not perform, SNC-L were not aligned with Nalcor and were seriously deficient in almost all aspects other

than Engineering. We can provide you with a comprehensive report of the issues that we faced with SNC-L and their failures that led to our decision to move to the integrated Project Management model. It is also worth noting that the Independent Engineer (IE) and Canada fully endorsed the decision to move to the Project management model we currently follow. Independent Project Analysis (IPA) carried out a mid project review in December 2015 and the Project Management team scored highly in Project Team effectiveness (see Appendix 3). IPA also noted that the Project Team is following best practices and they consider an integrated Project management team as being the most effective way to manage large complex projects. It is for the above noted reasons that the inclusion of SNC-L in the review being carried out is causing great concern within the Project team who lived through the period where SNC-L basically let the Project and Province down, worked against Nalcor and caused much friction and resentment. One of the SNC-L team who is part of their review team was dismissed for performance issues by the Project Manager for the HVdc team and consequently his presence back on the Project is difficult to understand.

In conclusion I would like to reiterate that the Project Team and I are fully cognizant of and respect the challenges Nalcor and the Province are facing. It is with this knowledge and our detailed understanding of the Project that we wish to offer our full support towards working to successfully and safely deliver a completed Project. I hope I have clearly articulated my concerns and trust you receive them in the honest and sincere manner in which they are being delivered. The Project team has faced many challenges and have overcome each and every one because we had the confidence of Nalcor leadership. I have persevered through the many Project adversities because I have a great team reporting to me of committed and dedicated professionals. I hope the information provided here is helpful and that we have your confidence and support to finish what we started as a team and trust that I can speak openly to you on important matters such as these. I know that your days are full and I have taken the step of writing to you in anticipation of a face to face meeting at some time at your convenience to discuss these matters further.

Regards



Paul Harrington