

**The Independent Engineer’s call for more North Spur Quick Clay study: Has the Independent Engineer really signed off?**

Even Nalcor/SNC admit that the North Spur contains “sensitive clay” and is unstable.

And because the North Spur is an essential part of the Muskrat Falls reservoir containment system, its instability poses the greatest single physical risk to the Muskrat Falls project.

Not only that – an unstable North Spur also poses a serious safety risk to people living downstream in Happy Valley – Goose Bay and in the hamlet of Mud Lake.

In that light, you would think Nalcor/SNC would be all the more timely and thorough in their examination of the issue, all the more open with the data and all the more transparent about any problems.

Not so. The very opposite.

Essential work is still not done and the results of work done to date is being kept secret.

+++++

**The existence (but not the contents) of the Interim Independent Engineer’s Report of November 29, 2013 that Nalcor released today (April 15, 2014) has been known to Muskrat watchers for some time.**

It is the report that Minister Dalley did not have when questioned by The Telegram’s James McLeod in late February, 2014.

Who can forget those interviews? Evidently Nalcor had it and would not give it to their own Minister (or perhaps he just wasn’t interested in receiving it).

It (although Interim) is the report that the Federal Government used to guarantee a \$6 Billion loan to Nalcor in December, 2013.

It presumably was the report that allowed Nalcor/SNC to award a \$1 billion contract to the Italian firm Astaldi – the Super Dome people.

+++++

When the report was written in November, 2013, the Independent Engineer was presumably in possession of the results of Nalcor / SNC’s supposedly adequate North Spur 2013 Geotechnical Program (awarded March 15, 2013).

**I say “presumably” because in one of their only 3 recommendation to the Interim Report, the Independent Engineer makes a startling request (at page 209):**

**10.2 RECOMMENDATIONS**

2. **“When available, Nalcor is requested to furnish to the IE for review** the complete analysis of the North Spur including the laboratory test reports that determine the strength of the soils under the loadings that it will sustain during the life of the project.” (emphasis added)

Is this as crazy as it sounds? Asking for essential information after an opinion has been rendered?

**How could the IE (MHW) possibly have come up with any sort of opinion on the North Spur without having and thoroughly examined all such information?**

**And the phrase “when available” indicates that as of November 2013, Nalcor did not have its work done.**

+++++

**Difference between Nalcor’s Announcement and What’s really in the Independent Engineer’s Interim Report**

Nalcor’s Interim Independent Engineer Report “Briefing Presentation”  
[http://muskratfalls.nalcorenergy.com/wp-content/uploads/2013/03/Briefing-Presentation\\_Release-of-November-29-2013-IE-Report.pdf](http://muskratfalls.nalcorenergy.com/wp-content/uploads/2013/03/Briefing-Presentation_Release-of-November-29-2013-IE-Report.pdf)

as given to the press and public is a Nalcor/SNC constructed pick and polish version of the actual Report.

**The Nalcor/SNC version of the world gives no hint of any problem with North Spur geotechnical data.**

It devotes just one slide (#53) out of 64 to the North Spur issue under a section called “2. Project Design & Projected Performance”

In full it states

**“North Spur:**

- **“The stabilization works have been designed in accordance with currently accepted geotechnical practices and will effectively stabilize the north spur when the reservoir is impounded.”**
- **“Recommended additional studies [which Nalcor had initiated] on the sensitive clays will be useful to confirm current design assumptions, but should not significantly affect the current design scheme.”**

Apparently, more North Spur studies have been, are or will be underway.

But it is never a good idea to be running around getting data that would be **“useful to confirm current design assumptions” at such a late stage.**

Nalcor/SNC’s design assumptions should have been more than adequately supported long before this.

+++++

Contrast that with the full Interim Report, which, while still giving a decided sugar-coated version of the situation, contains some ominous signs (pages 7 to 10).

At page 7, the Independent Engineer (MHW) states;

**“Geotechnical design work continues at the time of writing and the final design report has not yet been issued.** The recently issued “Cold Eye Review of Design and Technical Specifications, North Spur Stabilization Works” by Hatch has indicated that, among other things, additional investigations and analyses are recommended to further enhance the design parameters for the sensitive clays and the overall seepage analysis assessment of the spur. **The recommended work includes further investigations of the properties of the sensitive clays with respect to cyclic softening, more detailed stability analyses to assess the impact of earthquake ground motions and further seepage analyses.** The IE was advised that Nalcor is following the recommendations provided by the Cold Eye reviewers. The IE has not yet been advised of details of the planned work.

The IE agrees with the Cold Eye recommendations and understands that work is proceeding on them. This supplementary work will further enhance confidence in the current design and should not result in any significant modifications to the planned work.” (emphasis added)

**It is not apparent how, without the needed extra data, HMW can confidently say that no matter what the new data says they “should not result in any significant modifications to the planned work.”**

+++++

The term “Cold Eye” is an unusual one and no doubt refers to one of those epidemic-like management fads that sometimes run through corporate bureaucracies (eg <http://www.kbcat.com/insights-reports/outlooks-on-energy/item/260-a-fresh-perspective-cold-eyes-review> ).

**And even within the confines of the “Cold Eye” method, Hatch still came up with a long shopping list of needed additional North Spur studies that includes revisiting some of the most fundamental dam safety issues regarding the North Spur.**

**In any event, the “Cold Eye” Report is now in Nalcor/SNC’s hands and it and its recommendations should be made public as soon as possible.**

+++++

### **North Spur can’t get any Respect**

Although the North Spur is one of four principal elements of the Muskrat falls Project , there is no discussion of the North Spur in the Interim Independent Engineers Report apart from that on pages 7 - 10 (as discussed above) until you get to page 307 where it again gets brief mention (again without analysis).

The extra discussion in full is as follows:

Under **10.1 CONCLUSIONS AND INDEPENDENT ENGINEER OPINIONS.**

it states

“10.1.2 Project Design and Performance

The North Spur area has been geologically explored and studied in the past by several engineering organizations as well as during the most recent studies conducted by the Integrated Project Team to develop a satisfactory solution to reduce seepage and provide stabilization remediation procedures that should provide a useful life beyond the design life of 50-years, in our opinion. The planned North Spur remediation measures are appropriate to stabilize the slopes, arrest natural mass wasting and to control seepage and piezometric pressures after impoundment of the reservoir. Recommended additional studies on the sensitive clays will be useful to confirm current design assumptions, but should not significantly affect the current design scheme.”

**And that is apparently is all we have to work with from the Independent Engineer on the state of North Spur Quick Clay Issue.**

+++++

A number of questions arise:

For a start, why did Nalcor sit on this report for over 4 months since November 29, 2013?

Where is the Final Report of the Independent Engineer (who presumably has revised the Interim Report in some way)?

Where is the Hatch “Cold Eye” Report detailing the outstanding North Spur issues and the needed additional studies?

Where are all the other North Spur geotechnical information that Nalcor refuses to make public stretching back to the large North Spur slide of 1978.

When will the North Spur studies that have been done since the IE’s Interim Report be made public?

+++++

Summary:

The North Spur is not supposed to be a problem. Supposed to be all locked up.

Yet even after Nalcor/SNC’s supposedly adequate 2013 North Spur Geotechnical Program, there are still outstanding North Spur geotechnical questions.

This appears to mean that both Hatch and MHW are unwilling to sign off without the extra information.

But instead of holding up at least an amber sign for the public to see, they apparently have been satisfied to accept Nalcor/SNC's old "Give us the approval and we will do the North Spur studies later" tactic which they used on the Federal Provincial Joint Review Panel to side-track the Panel's North Spur concerns back in 2012.

The Independent Engineer seems to be gradually backing itself into a situation where it will meet itself coming around the corner.

+++++

For a much more realistic view of the North Spur issue please read the attached 10 page discussion paper by Dr. Stig Bernanders, a respected Swedish Quick Clay Landslide expert, where he sets out his Serious Concerns about the stability of the North Spur.

Then view the Rissa Slide video at <http://www.youtube.com/watch?v=3q-qfNIEP4A>

+++

As far as I can tell, the risk of a North Spur landslide (which has Rissa type potential) has never been calculated nor has a North Spur Dam Safety Report been prepared by Nalcor/SNC or any of their consultants.

Not good enough.

In order to adequately assess the North Spur risk, we must first take the risk and potential consequences seriously.

Cabot Martin  
April 15, 2014