

Public Consultations

Supplementary

Online

Comments

Submitted

to

The Honourable Justice Richard LeBlanc

Commissioner

Commission of Inquiry Respecting the
Muskrat Falls Project

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15 August 2019

1. In counselor Breen's oral summation she stated (paraphrased) that during the pre-sanction time frame, both oil prices and island demand were expected to continue to rise.

Below is a contemporaneous posting (excerpt from my website <http://www.vision2041.com/home.html>) which provides reputable reports of the potential at that time for a significant drop in oil prices, and which was posted to my website on or about July, 2012.

QUOTE

LOW OIL PRICES :

Ratepayers NOT PROTECTED -- WHY NOT?

In 2007, Premier Dunderdale said:

██████████ *"the (oil) companies needed some downside protection if the price of oil went very, very low."*

Now why would offshore oil companies need to be "protected" against low oil prices?

If multi-billion dollar oil companies need protection against low oil prices, what will low oil prices mean for Muskrat Falls, for government, ----- for ratepayers ?

70% of the so-called cost advantage of Muskrat Falls is due to Nalcor's 50-year, high, very high, oil cost forecast. ██████████

In short, the viability of Muskrat Falls depends on oil prices going HIGH, and staying HIGH --- VERY HIGH.

So if oil prices go lower, (and oil companies are protected), will ratepayers also be 'protected' from the "locked-in" take or pay ████████ 50-year rates imposed by Muskrat Falls?

In short ----- NO.

If oil prices go low, ratepayers are still LOCKED IN to Nalcor's 50-year "take or pay" contract. That way, Nalcor is protected --- AT THE EXPENSE OF ratepayers!

So, since the Premier recognizes that oil companies (and Nalcor by way of its 50-year, 'take or pay' contract) need protection from low oil prices, why is that

so? And why then is there no protection for ratepayers?

Since ratepayers are not protected, how then (and for whom) does Muskrat Falls make sense?

NOT HAVING "low oil price" protection for island ratepayers is the Muskrat Falls EQUIVALENT of a not having an "escalator" clause in the Upper Churchill contract.

Surely, that should be a **non-starter**.

LOW DEMAND:

Ratepayers NOT PROTECTED --- WHY NOT?

In the case of Muskrat Falls, ratepayers/taxpayers are doubly at risk. While Nalcor is also protected (through its 'take or pay' contract) against 'low demand', there is NO PROTECTION for ratepayers (and taxpayers) against low demand.

If demand is lower than forecast, Nalcor still MUST HAVE the hundreds of millions in cash flow every year to meet its debt servicing and operating costs (\$14.5 billion over 50 years) --- and those BILLIONS must come from island ratepayers or taxpayers.

[REDACTED]

And again, with respect to oil prices, here is what the Bank of Canada has to say:- (an excerpt from the Globe and Mail article "*Mark Carney takes dimmer view of U.S., Europe, China*") [REDACTED]

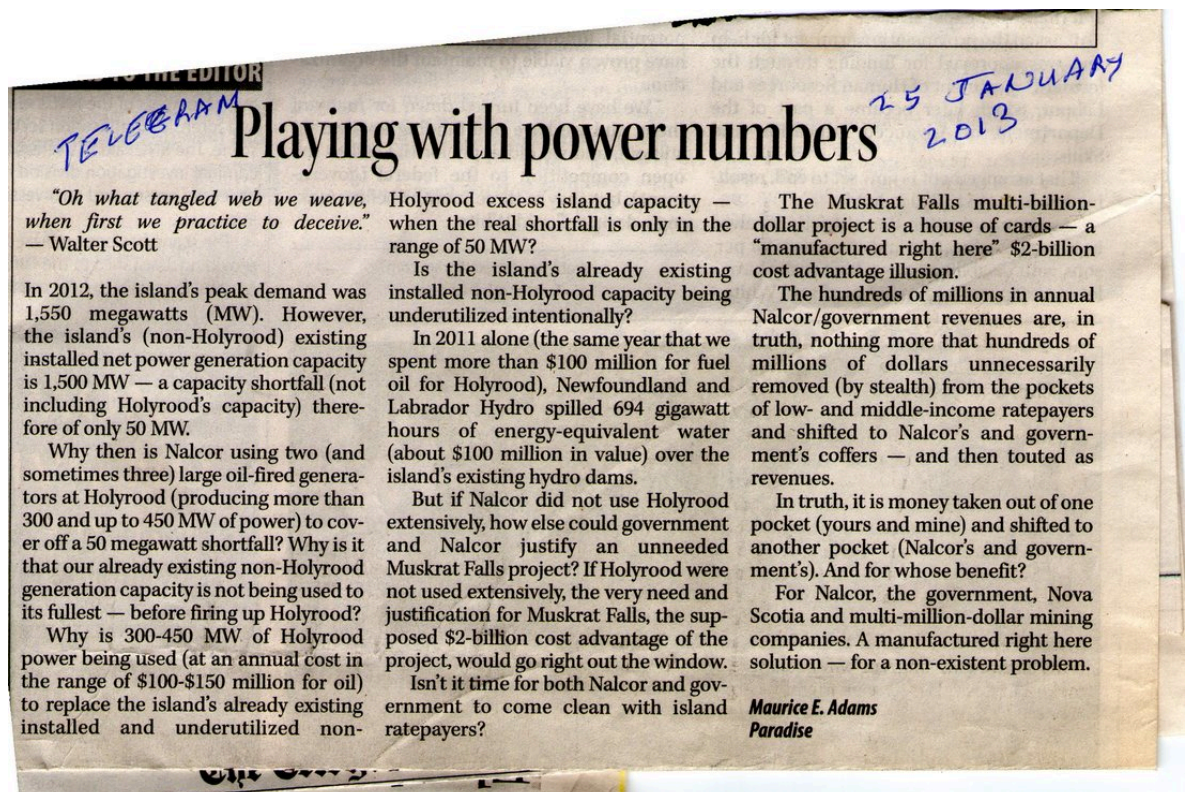
- "The Bank of Canada ... warns that world prices for oil ... could be "substantially weaker" through 2014 than it was expecting three months ago..... Oil prices, which have fallen about 15 per cent since April, are "expected to be substantially weaker through 2014," the bank said, "largely owing to diminished prospects for global demand."

Also, from "*All aboard the oil price roller coaster*" by MICHAEL VAUGHAN, July 10, 2012 (Globe and Mail) ...

- "a study from Harvard (by Leonardo Maugeri, a former oil company senior executive who is now at the Kennedy School's Belfer Center for Science and International Affairs)....says there's been such a sharp increase in world oil production that the price of oil could "collapse" for the long term."
- He says that "The shale/tight oil boom in the United States is not a temporary bubble, but the most important revolution in the oil sector in decades,"..... His estimate is that the United States could ...by 2020 become the second largest oil producer in the world after Saudi Arabia.
- The report's bottom line is that the new production could lead to a sharp, long term drop in oil prices. Maugeri believes if oil prices remain above \$70 per barrel, sufficient investment will occur to sustain continued growth in production, possibly leading to oil overproduction after 2015."

UNQUOTE

2. I would submit that the argument that "we need the power" lacked merit. Accordingly, I include here in this supplementary submission some of my additional post-sanction public comments/published letters and website graphics:



TELEGRAM 03 AUGUST 2013

Marginal increase in power demand enough reason for Muskrat?

By MAURICE E. ADAMS

In a June 29 letter to the editor, clearing up some misconceptions about Muskrat Falls, Rob Henderson, vice-president of Newfoundland and Labrador Hydro, wrote that electricity "consumption has been steadily increasing, except for the 2005 through 2009 period, which was impacted by the declining electricity consumption for provincial pulp and paper production".

However, Nalcor's own 2011 infographic (which can be seen at www.vision2041.com/demand.html) shows that the island's actual "Total System Load" went down not only during the 2005 to 2009 period but a total of 10 times over the 16 year period from 1994 to 2010 (additional years 1994, 1996, 1998, 2001, and 2004).

Over the entire 18 year period (1994 to 2012), electricity consumption went down more often than it went up (10 of the 18 years), so that by 2012 the island's electricity consumption was still below 1993 levels.

Furthermore, when Henderson wrote that "In addition, it is important to note that peak demand on the island, or highest amount of electricity required at a given time, is also rising," it should also be noted that in 2010 NL Hydro's forecast peak demand for year 2012 (just two years into the future) was more than five times higher than year 2012's actual increase and that actual peak demand in 2012 was still down considerably from the island's peak demand 10 years earlier (1,550 megawatts, down from 1,592 megawatts in 2002).

Accordingly, when the facts show that over the longer term (the 18-year period from 1994 to 2012) consumption went down (not up) 56 per cent of the time and that by 2012 electricity consumption was still below 1993 levels, what does that say about the credibility of Nalcor's Muskrat Falls' business plan when NL Hydro grasps at a marginal increase in demand over a two or three year period as a basis for its claim that "in fact (electricity) consumption has been steadily increasing"?

A credible position?
You be the judge.

Maurice E. Adams writes from Paradise

THE TELEGRAM Support for Muskrat Falls is misguided 07/OCT/2013

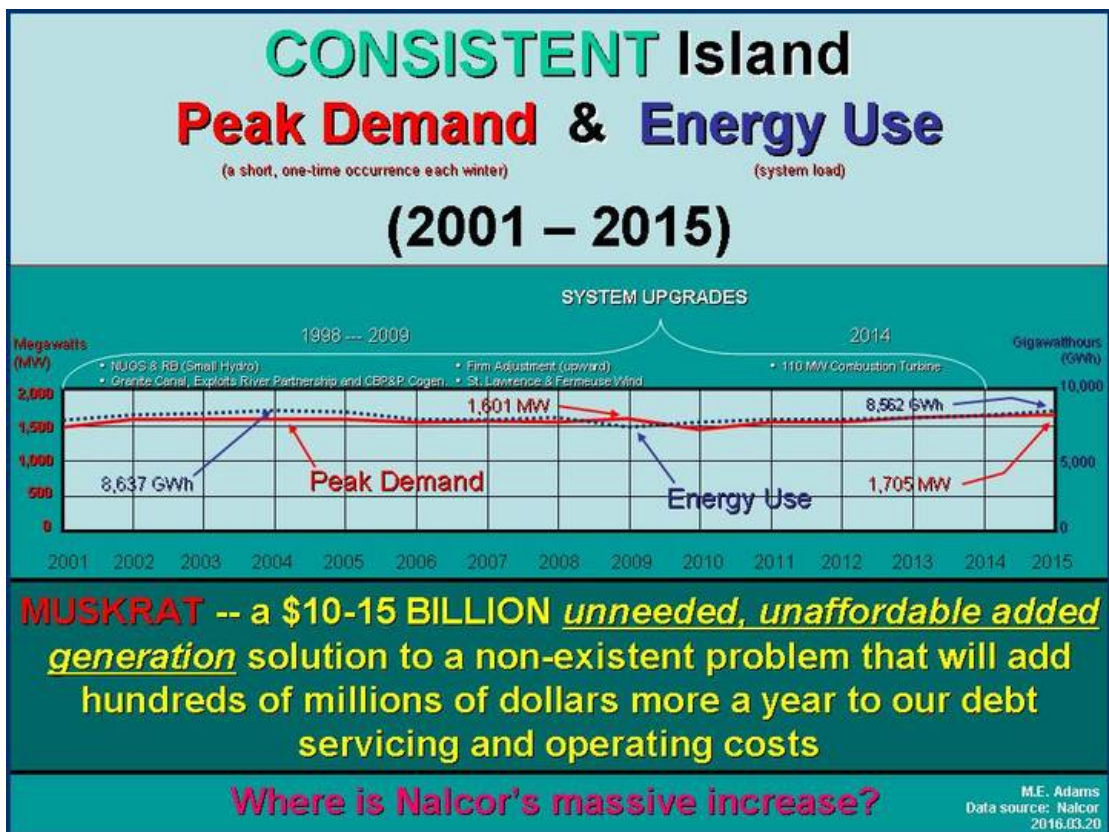
John Collins, in his Oct. 2 letter to the editor, describes Muskrat Falls as a "monstrous ... sleight of hand" and asks, "though already one-fifth the way down the path to disaster, must we still go the other four-fifths over the cliff?"

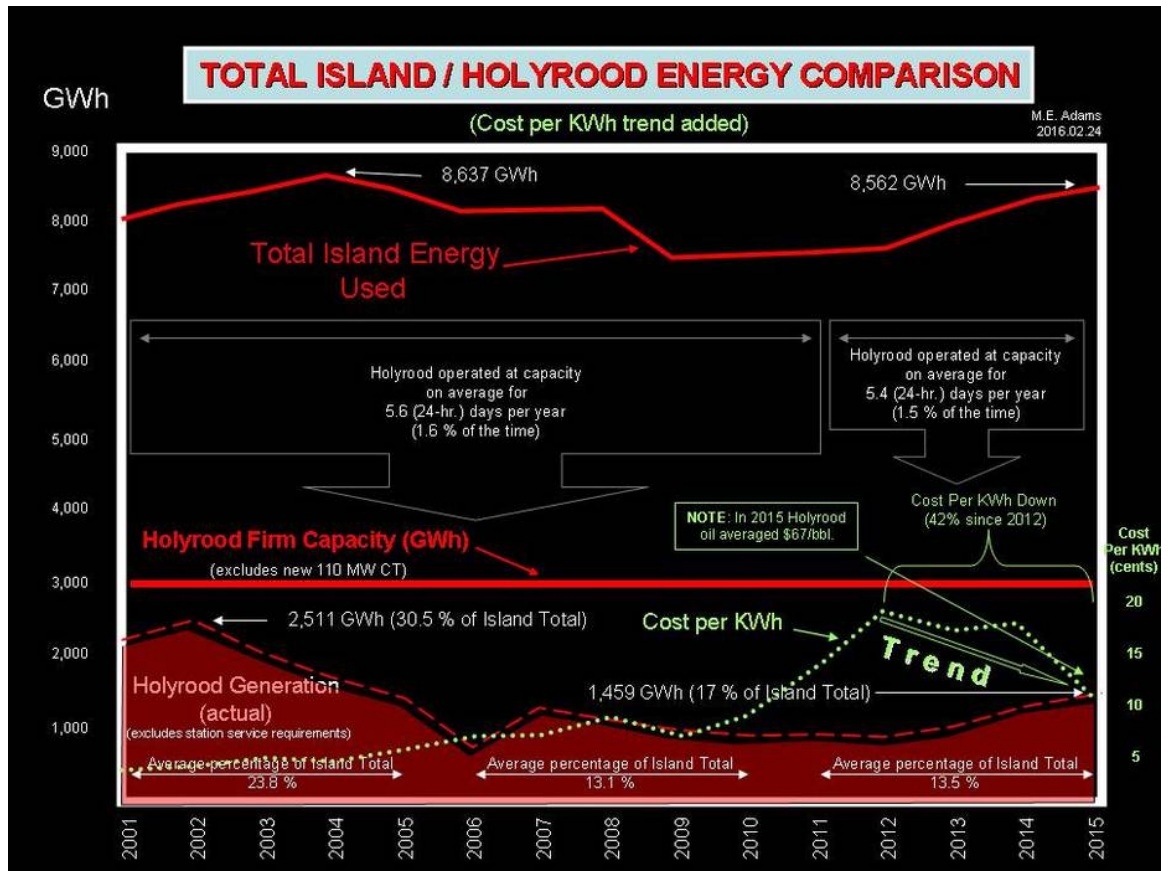
Fuel for Holyrood, which operates at peak for only five days per year (1.6 per cent of the time and some years not at all) costs on average (over a 10-year period) \$92 million per year.

Yet Collins states that Muskrat Falls power will cost ratepayers almost \$700 million per year — almost eight times more. In addition, while the province's large industry and transportation sectors are by far the province's largest greenhouse gas emitters (73 per cent of emissions), shutting down Holyrood has no impact whatsoever on 92 per cent of emissions. Why, then, aren't our well-paid MHAs calling for this "monstrous sleight of hand" to stop?

Are they putting poll numbers and politics ahead of the best interest of Newfoundlanders and Labradorians? It seems so.

Maurice E. Adams
Paradise





<http://www.vision2041.com/demand.html>

3. Mr. Budden, in his oral summation, referenced a written notation contained in a 2010 slide presentation. He argued that the notation was evidence that there was an effort to minimize cost estimates early on and to thereby help ensure project sanction.

While I was not aware of this slide/notation until it was raised through the work of the inquiry, I would refer the commission to this November 9, 2013 letter to The Telegram and which appears to support Mr. Budden's argument:

THE TELEGRAM
09/NOV/2013
BY MAURICE E. ADAMS

Nalcor should be brought to task

If there is any one thing related to the Muskrat Falls project that is, in my opinion, perverted, it is not government's communications strategy, not government's single-minded approach, not a poor leadership style by the premier.

Instead, it is Nalcor's application of industry's decision gate (DG) project planning process.

The decision gate process was apposed to ensure that decisions made were based on a sound business case (and thereby be in the best interest of ratepayers).

However, Nalcor's track record seems to have been one that has been focused, first and foremost, on ensuring that the project receives government sanction (and sufficient funds) to bring the project to a point of no return.

For the second (DG2) decision

gate milestone, major project costs (such as interest during construction) were kept out of the decision making process.

For the third (DG3) decision gate milestone, certain project contingency costs were reduced from 15 per cent to seven per cent, and by so doing, project cost estimates were kept below Wade Locke's \$8 billion "not economic" estimate.

While Nalcor admits that it has long known about the problems associated with the North Spur dam, work leading to understanding the magnitude and probability of dam failure and the potential for designing an economically viable fix (geotechnical-type work) — work that should have been the very earliest engineering type work — was not completed until mid to late 2013 (six months after project sanction).

Furthermore, the cost estimate

for the design and construction of a North Spur fix has still not been released, and Nalcor has reported that tenders for construction of a North Spur fix are not planned until 2014 — conveniently unknown to ratepayers (and possibly government) until well after another key project milestone (the award of a potentially "point of no return" \$1-billion contract related to the dam) has passed.

Also, information on actual cost overruns (rumoured to date to be very high) have not been released.

Accordingly, I would ask, if project financing (at reasonable rates, backed up by a federal loan guarantee) has not yet been secured, if the need for more power has not been demonstrated to the satisfaction of either an independent federal review panel or our own Public Utilities Board (PUB), if the so-called water management agreement with

Quebec has not been shown to be on solid legal ground, if the decision gate process has not been properly applied, then on what basis has the Muskrat Falls project been sanctioned and on what sound, democratic/legislative basis does Nalcor have for the expenditure from the province's treasury of a further \$1 billion (that the province does not have) and that will most assuredly be a project tipping point — a point of no return?

Our provincial government needs (now) to move towards a more rational, needs/evidence-based approach to what others have described as the most important public policy issue since confederation.

While Premier Kathy Dunderdale recently said, in part, that she would not resign because "I have been given a piece of work to do by our party..." I would suggest

that her first duty is not to the party but to her fellow citizens.

It is the people, not the party, that the premier is here to serve.

If government is to look out for the best interest of ratepayers (as the premier claims), if the people of this province are to be protected, Muskrat Falls needs further, needs-based and evidence-based (and more independent) review and oversight.

Will our premier go into the history books as one who had a misplaced sense of duty, who abrogated her first and most important duty?

Will she put the best interest of ratepayers on the back burner and leave them to a premier in waiting?

Yes, premier.
You do have a piece of work to do — and your duty is clear.

Maurice E. Adams writes from Paradise.

4. To provide some limited explanation of the North Spur related graphics included in my 13 August 2019 initial online comments, below are three letters published in The Telegram for each of the years 2015, 2016, and 2017:

It's not just the North Spur we have to worry about

By now most readers will have heard that the North Spur is a naturally formed dam that forces the Churchill River to veer south, around Spirit Mountain and to flow over Muskrat Falls.

On Jan. 2, Jim Gordon, in his letter "Muskrat Falls and the North Spur controversy," wrote — and rightly so — that "If the North Spur fails, Muskrat Falls will disappear and be left high and dry."

"The Muskrat Hydro facility would become a stranded asset, with (if feasible) a repair cost well over several billion dollars."

While it is true that the North Spur helps create and maintain Muskrat Falls, it is neither safe nor cost efficient to have a sole, isolated focus on the North Spur.

As the Churchill River flows eastward, it approaches a very wide U-shaped (200 metres deep) subsurface, sand/silt/clay-filled valley (only two thirds of which is made up of the natural dam called the North Spur). If any part of this much larger sand/silt/clay-filled valley (not just the North Spur) should fail, "... Muskrat Falls will disappear and be left high and dry."

The entire subsurface valley spans a full 2,500 metres from the south side of the Trans-Labrador Highway to Spirit Mountain and the one third portion that runs from the river's north bank to the Kettle Lakes gorge (and that is not part of the North Spur) already shows evidence of landslides.

While Nalcor has conducted borehole and other geotechnical studies along the two thirds of the valley that makes up the North Spur (spending many millions of dollars in an attempt to reduce the risk of a North Spur

failure), there is little or no evidence that similar extensive geotechnical studies have ever been conducted along the remaining one third of the subsurface, sand/silt/clay-filled valley.

Since there is no evidence that Nalcor is designing a plan to stabilize the remaining one third (800 metres) of the 2,500 metre long sub-surface, sand/silt/clay-filled valley, on what basis has Nalcor been able to make a rational decision that the one third portion of the U-shaped valley running between the upstream north bank and the Kettle Lakes gorge area already has a natural safety factor equal to or better than the North Spur after stabilization?

While there appears to be little or no evidence that the north bank to Kettle Lakes gorge area is already safe, there does appear to be some evidence that the area may be less safe than previously thought.

Before 2013, Nalcor's stratigraphic interpretations of the upstream north bank to Kettle Lakes area described the subsurface as having two (presumably more stable, coarser) sand layers between the two existing upper and the one lower clay layer — Figure 7 of Nalcor and SNC-Lavalin's poster presentation to the 1st International Workshop on Landslides in Sensitive Clays at the University of Laval on Oct. 28-30, 2013. (<http://blog.nalcorenergy.com/wp-content/uploads/2013/10/North-Spur-Poster-Presentation-October-2013.pdf>).

However, Nalcor's post-2013 interpretation describes the same subsurface area as follows: "Figure 7 and 8 present a cross section between (the) upstream side and the Kettle Lakes. The intermediate sand strata previ-

ously encountered, is now described as a sandy-silt or silty-sand with a fine content greater than 25 per cent" (see previously referenced poster).

While it is true that the North Spur helps create and maintain Muskrat Falls, it is neither safe nor cost efficient to have a sole, isolated focus on the North Spur.

Furthermore, it should also be noted that although the area was previously described as having a total of only six layers of sand, clay, and while the area is now described as having a more complex total of 10 layers of sand, clay, sandy/silt or silty/sand (both silt and clay categorized in the fine particles category), and along with the above-referenced more recent 2013 interpretations, where is the analyses that confirms that this area has the same stabilized potential as previously thought?

In addition to stratification issues, will strengthening the North Spur without strengthening the north bank to Kettle

Lakes area increase the risk of failure along the north bank to Kettle Lakes gorge?

Historically, the upstream water elevation generally remains below 18 metres above sea level.

Accordingly, the river places no horizontal water (infiltration) pressure on any of the 2,500 metre long subsurface sand/silt/clay-filled valley that is at or above the 18 metre mark.

However, once the Muskrat Falls dams are built and the reservoir is filled to its planned 39 metre elevation, the horizontal water pressure at the 18 metre mark will increase according to the square of the increased depth of the water.

That will increase horizontal water infiltration pressure at the 18 metre mark from zero to nearly one half million pounds per metre along the length of the North Spur and the upstream north bank (and approaching almost one million pounds per metre when the reservoir reaches a maximum flood level of 45 metres).

Furthermore, the North Spur stabilization works are designed to keep water in the north bank to Kettle Lakes gorge area from infiltrating the North Spur.

Would this not impede the north bank to Kettle Lakes area from keeping its saturation at a safe level?

If the North Spur stabilization fails, Muskrat Falls will disappear and be left high and dry. But if stabilization helps ensure that the North Spur does not fail and instead the north bank to Kettle Lakes gorge area fails, Muskrat Falls will still disappear and be left high and dry.

For these and other reasons, and in addition to Mr. Gordon's request that the government's review be "... expanded to include the geotechnical design of the North Spur dam..." I would also ask that government include in its review any potential risk/safety and cost implications associated with the entire subsurface, sand/silt/clay-filled valley that extends from the south side of the Trans-Labrador Highway to Spirit Mountain, or as a minimum, from the south side of the Trans-Labrador Highway to where Nalcor's North Spur stabilization works turn north-eastward, away from the reservoir's north bank.

Maurice E. Adams
Paradise

Faculty of Engineering and Applied
Science at Memorial University
presents

F.W. Angel Memorial

Nalcor mum on questions about the North Spur

Let me say up front that I am all for Premier Dwight Ball's oft-expressed policy position that his government will "open the books" on Muskrat Falls, and that he will make "evidence-based" decisions.

With this in mind, below are some facts, some preliminary evidence, related to the North Spur's exposure to, and risk of large, retrogressive landslides:

- Portions of the downstream, below surface slope that is in contact with the lower quick clay layer has a grade ratio (vertical to horizontal) approaching 1:1.25 (80 per cent) — a grade that is near or higher than Nalcor's chosen, above water level, worst case section B-B "reference case."

- Based on the extent that the large downstream 1978 landslide retrogressed (ate into the narrowest part of the North Spur), the stability number for the downstream side of the North Spur would be 12.

- A stability number of 12 is twice as high as the stability number 6 — the number that engineering experts Mitchell

& Markell say can allow large, retrogressive (multiple failure surface) landslides to occur in Eastern Canada.

"Nalcor reports that some lower shear strength values were detected in the southern, narrowest section of the North Spur downstream toe — but that the data/analyses was 'not retained.'"

- A stability number of 12 is up to four times as high as stability number 3. When the soil's plasticity index is below 10, a stability number above 3 can allow large, retrogressive landslides to occur, and when the plasticity index is as high as 40 a stability number above 7 to 8 can allow large, retrogressive landslides to occur.

- All of Nalcor's 123 plasticity index test results for the lower quick clay layer are below 40, and some below 10.

- Nalcor's 123 test results for

the lower quick clay layer show some liquidity indices that exceed 1.2 and correspond to shear strength values below 1 kPa (a liquidity index above 1.2 or an undrained remolded shear strength value below 1 kPa can allow large, retrogressive landslides to occur).

- Nalcor's 123 liquidity index test results for the lower quick clay layer have some values corresponding to shear strength values that do not correlate with the normal liquid index/shear value relationship. This appears to be a significant and yet unexplained anomaly in Nalcor's test results.

- Nalcor reports that some lower shear strength values were detected in the southern, narrowest section of the North Spur downstream toe — but that the data/analyses was "not retained."

- <http://www.vision2041.com/north-spur.html> refers.

My request to Nalcor for the number, location and values of its North Spur shear strength test results has gone unanswered.

**Maurice E. Adams
Paradise**

North Spur — a risky business

THE TELEGRAM
28 April 2017

Generally speaking, shear stress is where the stress/force within a soil layer runs parallel to its surface. Other factors being equal, the steeper that a soil layer's slope is, the greater the shear stress. When a soil layer's shear stress is high enough that it reaches the shear strength of that soil, a landslide can occur.

Just out from the shoreline of the downstream slope of the North Spur is an underwater deep hole that drops off to a depth of about 200 feet below the toe of the North Spur's downstream slope.

This deep subsurface depression has, in places, a slope inclination of about 80 per cent (a slope inclination that is more than double what Nalcor considers safe for the North Spur above-surface slopes).

While the North Spur's original stabilization plans called for that deep hole to be filled in, Nalcor's final plans (and the existing North Spur stabilization works) has left that deep hole untouched.

One of the key reasons that Nalcor concluded that a progressive landslide failure "will never be initiated" at the base of that deep hole, as Nalcor's Progressive Failure Study states, is because Nalcor's "numerical analyses" showed that

the shear stress at the base of that deep hole "is only about 60% of the minimum estimated undrained shear strength" (emphasis added).

Now we all know how reliable Nalcor's "estimated" oil prices were, we all know how reliable Nalcor's demand forecasts/estimates were, we all know how legally reliable Nalcor's water management agreement has been, and we also all know that a life and death decision based on an "estimated" shear strength is not evidence-based.

In fact, the actual evidence points to the potential for soil liquefaction and flowslides.

The 2014 Hatch "Cold Eyes" Review stated that Liquidity Index "Values in excess of 1 are an indication of the potential for both liquefaction and flow type failures," and the lower clay layer evidence shows that the upper range of Nalcor's 123 Liquidity Index test results for the Lower Clay layer is "2" (double the safe Liquidity Index value of "1").

Furthermore, the extent to which the established Liquidity Index/Shear Strength relationship applies to the Lower Clay layer shows that a Liquidity Index value of 2 correlates to a shear strength that is 10 times lower than the point at which flowslides can occur.

Yet, and notwithstanding that mathematically up to about half of the Liquidity Index test results may exceed 1 — indicating "the potential for both liquefaction and flow type failures," Nalcor's Progressive Failure Study concludes that because the Lower Clay layer "has a typical (average) liquidity index of 0.6 ... there would not be retrogression and flowslide."

So, on the one hand we have "evidence" that points to a potential risk, and on the other hand we have Nalcor's inappropriate use/reliance on "average" geotechnical test results and an "estimated" shear strength to conclude that "... progressive failure ... will never be initiated".

So, where is Nalcor's first and foremost focus on safety, and government's much ballyhooed evidence-based decision making? And if this whole \$12-billion "investment" should fail, whose best interest has the newly appointed Consumer Advocate, the newly appointed members of the Oversight Committee, and the minister of Justice and Public Safety been really looking out for?

Maurice E. Adams
Paradise

5. Recommendations

- Given the magnitude, complexity, direct, indirect and diverse/varied nature and impacts that a project such as this has, and will have, on individual taxpayers/ratepayers, their children, grandchildren, and great grandchildren, and given that documentation/info-graphics contained in my 13th/15th August 2019 public comments, as well as (and I would suggest) other relevant website and public documentation **and the value of those very earliest insights** were never entered into evidence, it is recommended that the commission apply broad and meaningful consideration to the public comments contained herein.
- It is also recommended that process improvements be made that would permit and facilitate a greater opportunity for non-professional (yet informed) interested citizens to have more meaningful participation in what is, and is meant to be, first and foremost --- a “public” inquiry.

*“Even if you’re a minority of only one,
the truth is still the truth”*

-- Mahatma Ghandi

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