



COMMISSION OF INQUIRY  
RESPECTING THE MUSKRAT FALLS PROJECT

---

Transcript | Phase 1

Volume 12

---

*Commissioner: Honourable Justice Richard LeBlanc*

Friday

5 October 2018

**THE COMMISSIONER:** All right. Good morning, everyone.

Mr. Learmonth.

**MR. LEARMONTH:** Thank you.

I'd first ask Madam Clerk to enter some exhibits into the record. They are Exhibits P-00302 to P-00303, inclusive. I'm sorry, that's wrong. It should be Exhibit P-00060, P-00064, P-00089, P-00090, P-00302 and P-00303.

**THE COMMISSIONER:** All right.

No objection to that, so they will be marked as numbered.

**MR. LEARMONTH:** Thank you.

The first witness today is Dr. Stephen Bruneau. Could Dr. Bruneau be sworn?

**THE COMMISSIONER:** Okay.

Just stand, Sir, please, if you would.

**CLERK (Mulrooney):** Do you swear that the evidence you shall give to this Inquiry shall be the truth, the whole truth and nothing but the truth so help you God?

**DR. BRUNEAU:** I do swear.

**CLERK:** Please state your name for the record.

**DR. BRUNEAU:** Stephen Bruneau.

**CLERK:** Thank you.

**MR. LEARMONTH:** Dr. Bruneau, what is your occupation?

**DR. BRUNEAU:** I'm a professor at the university as a professional engineer.

**MR. LEARMONTH:** Yeah.

How long have you been a professor at Memorial?

**DR. BRUNEAU:** If you don't mind, I can refer to my notes and speaking notes, and perhaps –

**MR. LEARMONTH:** Perhaps we'll deal with that first. The speaking notes that you've provided me have been circulated to all counsel.

**DR. BRUNEAU:** Mm-hmm.

**MR. LEARMONTH:** Just explain how those – how you came to prepare those speaking notes.

**DR. BRUNEAU:** Oh, okay.

I was first contacted by counsel a few months ago because I had written a note in to the Muskrat Falls Inquiry, and so that – in a subsequent discussion I had had with them some questions were put to me. And it was indicated at that time that I might make an appearance here, and as a result of that, and the subsequent notification that I would be here, I jotted those questions down from memory, and I prepared written answers to them.

And that's why I don't mind in the least having these notes circulated, because these really state my full and clear answers to all the questions that have been put to me at that time.

**MR. LEARMONTH:** Okay.

So the questions that you – that are framed as stated in the report, they weren't questions that were put to you by –

**DR. BRUNEAU:** No, no they weren't given to me at all. These are my own questions, but they were ones that I recalled the substance of which was being discussed a few months ago, and I was asked what was my background and why was I involved in this project.

**MR. LEARMONTH:** So you've prepared those notes yourself –

**DR. BRUNEAU:** I did, entirely.

**MR. LEARMONTH:** Entirely. And do you accept those notes as being a true and correct statement of your position to the best – on the matters described in the report?

**DR. BRUNEAU:** I do.

**MR. LEARMONTH:** You do, okay.

Please state your educational background.

**DR. BRUNEAU:** I grew up here in St. John's. I did bachelor of civil engineering here at Memorial; in 1987, I graduated. I worked for a few years at that time in construction and steel design and obtained my professional engineering degree in 1989.

I then undertook a master of engineering science at Western. I studied civil aeronautics, wind engineering, hydro dynamics, and there was a focus, in that work, on offshore oil and gas structures. I did the top-side study for Hibernia at that time.

After completion I returned to Newfoundland to work at C-CORE as a consulting engineer in the ice group. And from '92 to '97, I worked on ice risks to FPSO – to the Terra Nova FPSO, in specific, but – and on ice loads on GBSs, pipelines, et cetera, and I obtained a PhD for my work on the Confederation Bridge.

So from '97 to 2002, I worked with North Atlantic Pipeline Partners here in St. John's. And that work was fundamentally looking at energy in industrial developments and a particular focus on initiating natural gas industry for the province, so that went on 'til 2002.

In 2003, I began working on a number of business ventures with my friend, Ed Maher, in Placentia, in Long Harbour, and, at that time, worked on small hydro project proposals, but actually, much more to the point, we did development of service industries for the Voisey's Bay Nickel Company.

So in 2005-6 – the fall of '05. I joined the Faculty of Engineering. So at that time joined as assistant professor, full-time position – teaching and research position. So I've been involved in a myriad of R & D activities related mostly to cold ocean, harsh environment and resource development. And I presently have the title of director of industrial outreach for the faculty, and I'm the principal investigator for a sponsored research program between Canada and Norway, which investigates ice damage to concrete structures in ice-prone waters.

So that's pretty well a summary, I guess, of my professional career.

**MR. LEARMONTH:** Are you a tenured professor?

**DR. BRUNEAU:** I am.

**MR. LEARMONTH:** Madam Clerk, could you bring up Exhibit P-00029, which is the Energy Plan, and go to page 48?

**DR. BRUNEAU:** Mr. Counsel, may I mention that my monitor is not on here.

**THE COMMISSIONER:** Okay.

Can we just check that?

**DR. BRUNEAU:** Just hit the power button if you don't mind doing that.

**MR. LEARMONTH:** Does that do the trick?

**DR. BRUNEAU:** It's powering up.

**MR. LEARMONTH:** Okay.

Well, we'll wait. You let us know (inaudible) –

**DR. BRUNEAU:** I'm sorry. I knew that you had said that I would be able to see your exhibits, but there's –

**MR. LEARMONTH:** Well, I should have turned on the machine.

**DR. BRUNEAU:** It's on now.

Thank you.

**MR. LEARMONTH:** Okay.

Thanks.

Page 48, there's a reference to "Gas-to-Wire," which I'm gonna ask you some questions on, but before I do, I'd like you to explain to the Commission exactly what is natural gas.

**DR. BRUNEAU:** Fundamentally, offshore, we have resources that are two, three, four kilometres below the seabed, embedded in rock, and they are oil and gas and water, and some of them are stuck in reservoirs. And the – natural gas is the gaseous hydrocarbon that is used worldwide for various, you know, fuel and

power generation. Oil, as we know – I think we're all familiar with oil. And gasoline, not to be confused with natural gas, is also a liquid, and gasoline is derived from oil.

Natural gas is a gas. It's like helium or one of these other gases and, therefore, it's transported, to the greatest extent, by pipeline. Although there has been a growing industry of chilling it to the point of liquefaction and then moving it about as liquefied natural gas, but it is a gas at normal room temperature.

So this natural gas, methane, is a preferred fuel because, when it's burned, the energy content of an equivalent amount of oil produces nearly double the carbon dioxide and other undesirable things; whereas, natural gas has a much lower – typically, a much lower emission level. Just on average, of course; there's exceptions everywhere. But, on average, natural gas is preferred because less CO<sub>2</sub> and less emission from it. So that's what it is.

**MR. LEARMONTH:** Okay.

Now, going back to the page 48 of the Energy Plan, I'd just like you to read into the record the paragraph with the heading, Gas-to-Wire. Would you do that, please?

**DR. BRUNEAU:** Sure.

“When natural gas is produced from our offshore it could be transported to customers, either as gas in a pipeline, as gas in a Compressed Natural Gas ... tanker, or as a liquid in a Liquefied Natural Gas ... tanker. Landed in the province, it could be used to make electricity, which can then be transported to domestic and external markets by transmission lines. This process is known as gas-to-wire. Natural gas-fired generation can be significantly more efficient than systems fuelled by coal or, like Holyrood, heavy fuel ... and produce far less” greenhouse gas “and other emissions.” This is what I was saying. “If natural gas can replace these other fuels, it will yield significant environmental benefits. Section 3 of this Energy Plan stated that the Provincial Government will request companies” to “complete an analysis of landing gas options prior to submitting a Development Plan.”

**MR. LEARMONTH:** Now, first, will explain what the term gas-to-wire means?

**DR. BRUNEAU:** You know, generally gas-to-wire means that you're trying to get the energy of natural gas to a market, a demand market. Generally what gas-to-wire means is that you burn the gas fairly close to its source and transmit the energy by electricity over wires, as opposed to taking the gas by pipeline to the market and generating electricity at the – or at the demand site. It could also be used directly at the demand site as a fuel for heating and that sort of thing but – so gas-to-wire implies, more or less, generating the electricity close to the source and transporting the energy by electrical means.

**MR. LEARMONTH:** And that's as opposed to transporting the natural gas –

**DR. BRUNEAU:** In it's –

**MR. LEARMONTH:** – to which (inaudible) –

**DR. BRUNEAU:** – in it's natural form, as gas –

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** – in a pipeline – exactly, yeah.

**MR. LEARMONTH:** Yeah. Okay, thank you.

Madam Clerk, could you please bring up page 36 of the Energy Plan. Which I should say is the 2007 document that was released to the public by the government in September 2007. So we're on page 36, the last paragraph on that page, would you please read it into the record, Dr. Bruneau?

**DR. BRUNEAU:** Oh, the last – sure: “The Provincial Government understands the unique challenges of using this resource within the province” – and that is this resource referring to natural gas – “but there are also opportunities. To ensure these opportunities are fully assessed, the Provincial Government will request that companies provide detailed ‘landing in the province’ options prior to submitting a Development Plan. More information on potential natural gas development is found” elsewhere in this report.

**MR. LEARMONTH:** So what does that mean, generally – what –?

**DR. BRUNEAU:** To me, that means that there has to be an earnest attempt at figuring out what would benefit the province best by landing natural gas and how it would be done. And that that needs to be described by the operators so that we don't leave opportunities behind.

**MR. LEARMONTH:** All right.

The next exhibit I'd like you to refer to is the presentation that you made on Grand Banks natural gas at Memorial on – and it's Exhibit P-00090, and that's tab 4 of your documents, Dr. Bruneau.

**DR. BRUNEAU:** Okay. Thank you.

**MR. LEARMONTH:** Tab 4.

**DR. BRUNEAU:** Yeah.

**MR. LEARMONTH:** Are you familiar with this document?

**DR. BRUNEAU:** Yes.

**MR. LEARMONTH:** Okay and could you – can you explain how it came to be that you made this presentation at the Harris Centre –

**DR. BRUNEAU:** Well I would, specifically –

**MR. LEARMONTH:** – on March 28, 2012. Yes, how did that come about?

**DR. BRUNEAU:** If I may, I'd like to refer to my notes here today and –

**MR. LEARMONTH:** Yes.

**DR. BRUNEAU:** – the notes that everyone has a copy of.

**MR. LEARMONTH:** Yes.

**DR. BRUNEAU:** I have worked on – pardon me – the risk and feasibility of energy projects on the Grand Bank pipeline – including Grand Banks pipelines – since the early '90s. But in 2005 and '06, I joined MUN full-time, as I said.

So in 2005 – and incidentally, I include in my speaking notes a little timetable – a sequence that lays out the sequence of events 'cause the sequence is rather important in this testimony.

So, then on the first page there's a table that indicates. So in 2005 I was asked by Noia to give a talk at their annual conference on the merits and rationale for transporting gas to the Island for domestic electricity. And it seemed that my talk at that time provoked both, you know, discussion – positive and negative. There were articles in the paper and ...

So in response to this, I was asked in 2006 by NEIA – the Newfoundland Environmental Industry Association – to give a follow-up talk, which I did. And in that talk I fleshed out more details, objectively laying out the details and incentives for using Grand Banks gas on the Island for domestic electric requirements.

Both of these presentation documents are part of the public record. They may not be exhibits here, but they can be found on – by searching.

Then, as you have pointed out, the 2007 – so 2005 and '06 (inaudible) – 2007 provincial government published its much-anticipated Energy Plan, called *Focusing Our Energy*. This plan is, of course, viewed today on the government website or within your document folder there, and is a major guiding document for resource development.

In that plan, there is an action statement that says that the government will request that all companies provide a detailed assessment for the feasibility and provincial benefits of landing gas in Newfoundland prior to submitting development plan.

The policy goes further and states that all viable options must be fully assessed for the development of our gas resources for, amongst other things, the generation of electricity. The plan explicitly states that companies will be asked to provide detailed, quote-unquote, landing-in-the-province options when submitting any development plan.

So, four years later, and an awful lot of time and work at the university doing other things, in 2011 I was aware that Nalcor had released at

that time what was then called the Independent Supply Decision Review by a consultant: Navigant. The mandate of Navigant was to determine whether the Interconnected Island alternative – the Muskrat Falls Project – represented the least-cost option for providing domestic electricity for the Island of Newfoundland. That was the stated objective. It was the conclusion in the Navigant study that Nalcor appropriately excluded natural gas generation in their assessment of generation expansion alternatives because natural gas is not commercially available on the Island and there are, as yet, no firm development plans to bring natural gas to the Island.

When I became aware that natural gas was excluded from consideration for this enormous public policy decision, I felt compelled to inform the Public Utility Board that this could not be supported on the basis of evidence and was, in fact, contrary to the provincial Energy Plan itself which had indicated that it would be given consideration. That's why I submitted the discussion paper to the Public Utility Board that argued that natural gas was, in fact, a very realistic option for domestic electricity in Newfoundland and thought that it ought to be given more serious consideration.

**MR. LEARMONTH:** Yeah.

Now, you mention the Public Utilities Board. Was that – are you referring to the reference made by the Province of Newfoundland and Labrador to the Public Utilities Board on the question of what was the least-cost option, the Interconnected or the Isolated Island. Is that what you're referring to?

**DR. BRUNEAU:** It is.

**MR. LEARMONTH:** Okay, very good.

**DR. BRUNEAU:** Although it may sound like it's a clumsy submission to the PUB because it didn't answer the question specifically, I felt that they were the only – that was the only party I could submit this explanation to that would have any power to do anything about it. So, at that time, I submitted the paper to them feeling that it was probably – that that was probably the best place to do that, to explain this case.

**MR. LEARMONTH:** All right, continue on please.

**DR. BRUNEAU:** So what happened – what fell out of that is that in early 2012 the Leslie Harris Centre – and more specifically, that kind gentleman, Michael Clair – had the foresight to think about this as an important debate item, and he asked if I would be willing to give a public talk on the matter of using Grand Banks gas for Island generation, to which I agreed. And that is how – really, how I became to speak publicly about this topic during the pre-sanction phase.

**MR. LEARMONTH:** Why did you feel it was necessary for you to speak publicly on this issue?

**DR. BRUNEAU:** I felt it was necessary for me to speak about it because I had some fairly unique insights given my background, having worked in this area for a long time. And I had the opportunity to do so as somewhat independent – from an independent viewpoint, and I felt it was a duty, a professional duty, to provide that information.

**MR. LEARMONTH:** Now, we've had some evidence or suggestions that – at the time that it was highly energy – energized issue and that some people in the public were afraid to speak out about it and feared consequences and so on. Can you speak to that point as to whether you had any concerns for your professional career by speaking out?

**DR. BRUNEAU:** Oh, you better believe it.

**MR. LEARMONTH:** You did?

**DR. BRUNEAU:** Yes. It was exactly as you said; it was a very energetic and polarized discussion. Although those of us who were not really in agreement with the way that the train was going felt there weren't as many venues or opportunities to be heard. But, in any event, it was – there was pressure associated with giving a talk on this for sure. It's a very important topic, so –

**MR. LEARMONTH:** What pressure did you feel?

**DR. BRUNEAU:** Well, there's certainly a requirement to get it right, to be credible and truthful. And one has to be very certain of their convictions and their data and research in order to, you know, substantiate such an effort as to take one's personal time, energy, you know, opportunities.

Clearly speaking out against a policy of the government is not endearing yourself to the government. So, I don't – you know, it's fairly obvious that if this was an amicable, completely welcoming debate, then perhaps no, but at the time, you know, there was a lot of reference in the media and certainly in the newspapers that indicated that there was, you know, a lot of pressure and a lot at stake.

**MR. LEARMONTH:** But that didn't change your plans, the –

**DR. BRUNEAU:** No, I actually felt compelled out of a sense of duty. And, fortunately, as I said, there were some well, you know, intended stewards of the province who also provided me the encouragement to do it, indicating that it would be a tremendous public service, an act of public service to provide the information that I had.

**MR. LEARMONTH:** Okay.

Continue on, please, with your presentation.

**DR. BRUNEAU:** Sure.

I guess what would be the next logical thing to say is: Can I explain the rationale that was given by Navigant, or Nalcor, for excluding natural gas from consideration. And I'm sorry to say but the only evidence or statement or research that I could find to support Nalcor's decision to eliminate natural gas from consideration was three paragraphs in the Navigant report.

And in these three paragraphs it was said that gas isn't commercially available because a government report done in 2001 by Pan Maritime said that it wasn't commercially available. There was no other evidence, or research, dialogue, or any other consideration that was cited in Navigant or from Nalcor sources that gave any other reason for gas being excluded.

Now, this 2001 report I am intimately familiar with; I was deeply involved in the industry at that time precisely at that time. And I can state about that report – I don't know as it may not be part of this, but it can be sourced. Mr. Counsel, is it one of the –

**MR. LEARMONTH:** Which –

**DR. BRUNEAU:** Is the 2001 report one of the reports (inaudible)?

**MR. LEARMONTH:** It's not in the exhibit, no.

**DR. BRUNEAU:** Well, I welcome people to go find it because it's easy to find.

In that study, the case for using stranded natural gas on the Island for electricity was not considered.

**MR. LEARMONTH:** Okay, what is stranded natural gas?

**DR. BRUNEAU:** Stranded essentially means that when a resource is too far from a market and deemed to be so far away that it's stranded from it so that an undertaking, a business undertaking may not be meritorious to get that to market. So, in this case, the stranded gas that's referred to in the 2001 report was, in fact, the cumulative gas resource of our offshore industry.

That report was entirely concerned with the establishment of a gas export industry. It says so. So in a gas export industry what that report found was that – and I'll use some numbers but I'll explain them – was that it would require 700 million standard cubic feet of gas a day to be feasible. Now in today's context, that's 20 times more fuel than the annualized need that we have at Holyrood.

So clearly the export industry of 700 million standard cubic feet of gas a day, that was the benchmark of this study, was not considering the supply of gas for our domestic needs. You know, gas can come to the island and still be stranded from the North American market. It's not stranded from us, but it's stranded from the North American market.

Anyway, this finding also in that report said that all operators would necessarily have to work together to initiate it, and that our domestic needs alone were too small to support this export industry. Well that's fairly obvious.

Further to this, in this 2001 study, which I – again, I submit to you was 10 years prior to the Navigant report, and the Navigant report was talking about supplying gas to us in 2020, right? This is – so the Navigant report in 2001, used to exclude gas for consideration for us through to 20-whenever, said this: It is "... the purpose of this report to determine the economic feasibility of developing the gas resources," – off Newfoundland, based on a submarine pipeline system. "For the Base Reference Case gas sales are projected to start in 2015. This assumes that gas will initially be utilized to enhance oil production. ... The year 2015 was selected as the Base Case during the resource evaluation as this was the basis for no loss of oil production."

**MR. LEARMONTH:** By the way, I think you referred to that as being an extract from the Navigant report and I believe it was the Pan Maritime report.

**DR. BRUNEAU:** Well, if I did, I misspoke –

**MR. LEARMONTH:** Yeah, okay.

**DR. BRUNEAU:** – because it's the – it's referenced there.

**MR. LEARMONTH:** Yes.

**DR. BRUNEAU:** It's the 2001 study –

**MR. LEARMONTH:** Right.

**DR. BRUNEAU:** – that that is an extract from.

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** But I guess that you see that this is the reference that was embedded in the Navigant report as the reason for excluding gas.

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** That's the point.

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** Yeah, thank you.

**MR. LEARMONTH:** Okay, continue on, Dr. Bruneau.

**DR. BRUNEAU:** Well, one might ask why I personally thought that that statement, that that evidence alone was insufficient – or inadequate basis upon which to exclude natural gas as – from being considered as a source for domestic electricity.

I'd like to point out that in the first case, it left me wondering where the studies were that we were going to get from the operators according to the action item in the Energy Plan.

**MR. LEARMONTH:** And that's the items that we referred to earlier.

**DR. BRUNEAU:** Yeah, that's right. The Energy Plan explicitly said it would request detailed assessments of landing gas on the Island, yet these were not referenced in the Navigant report, and I have not been able to find them. Navigant's report also raised the question of Nalcor's own work on this file, and it wasn't really by what was said, but by what was missing. There wasn't any evidence – what evidence was there, that any research was done, or that any kind of dialogue with offshore operators had taken place?

Nalcor was at that time on its way to becoming a part-owner of three of the developments. Some of them were very gas-rich, like North Amethyst, but there was no evidence given anywhere that I ever saw – any kind of overture, that there was a request for proposals or proposals of any type made to the operators or essentially to itself, about securing a gas supply for our domestic electric power needs.

Remarkably, I did a word check of the North Amethyst Development Plan in the C-NLOPB website. Just – I can't say that it's thoroughly checking every document that ever was on North Amethyst, but the Development Plan Amendment was certainly an important one. I checked for the word pipeline and it didn't – there were no hits. It's not – it doesn't appear in that document. I don't know what that means, but it wasn't there. And yet, the government plan from only a few years prior said that they



would be asked to provide this landing in the province option for natural gas.

The only reference in the North Amethyst strategy that I found – and incidentally, we are a part – we, the province – or Nalcor is a part-owner of North Amethyst. The only evidence that I found in that Development Plan from 2011 had the following to say: “Produced gas from the North Amethyst Hibernia,” – Hibernia is an actual geological layer, but from North Amethyst – “will be re-injected into the Northern Drill Centre (NDC) for storage in the same manner that excess produced gas from the South Avalon, North Amethyst and West White Rose pools is currently being handled. The gas storage area capacity is currently under evaluation and the NDC has one spare drilling slot, which is available for expansion.”

And they were going to submit a new gas storage strategy to the C-NLOPB in 2009.

**MR. LEARMONTH:** Yeah.

Just, if I could ask you to explain – what is excess produced gas –

**DR. BRUNEAU:** Yeah. Forgive me –

**MR. LEARMONTH:** – when you’re referring to an oil well?

**DR. BRUNEAU:** – I did a very poor job explaining to you what natural gas was in the first case, so I don’t know if I’ll do a much better job with this one, but natural gas, you see, is this gaseous – is a gas, and oil is a liquid as we know. However, when oil is being produced, when a company is just after oil for export – as it is off our coast – one doesn’t have a choice, but one also gets natural gas coming up the well. Because the gas is embedded in the oil not unlike carbon dioxide is embedded in your Coke™.

So if you – the amount of gas that actually ends up coming to the platform varies greatly between different wells, and it varies greatly between the different production centres out there. This natural gas that comes up is – has to be handled in an entirely different way than the oil.

Off our coast, natural gas is dealt with in the following ways: It is used as a fuel to generate electricity to run the platforms. So, it is fundamentally a fuel for running the platforms, that natural gas. Natural gas is also used in the production strategy for oil by re-injecting it into oil reservoirs and applying pressure on those reservoirs to get more oil out of the ground. So, this is pressure maintenance natural gas.

In instances where natural gas cannot be helpful to producing oil, it has to be re-injected into some place where it is stored or preserved, because the regulator only allows them to flare off a certain amount. So, it’s four different things: It’s either used for fuel, it’s flared, it’s used for oil maintenance or it’s stored for future generations. It has to be stored in a way in which it can be taken back out again with as little loss as possible, according to the regulator.

**MR. LEARMONTH:** Why are there limits placed on flaring?

**DR. BRUNEAU:** Because it’s a true – it’s an egregious loss of a resource that can be used by industry. It’s a – we’re dispensing with a valuable fuel source. But, I must add that flaring is not just done for sport. There’s lots of instances when – I’m not an expert in this area, but I can tell you that flaring is a requirement to ensure safety in certain production schemes, if they’re changing certain things over. Flaring occurs for various reasons. I – but what I do know is that the regulator caps the amount that companies are permitted to flare and the balance is (inaudible) –

**MR. LEARMONTH:** So there’s – the oil is not – natural gas is not required to enhance production of the well. If it isn’t flared off or used for electricity it’s stored.

**DR. BRUNEAU:** It’s stored. That’s right.

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** And many of the well – much of the production offshore has utilized gas for oil strategies, for oil production strategies.

So although you might think that that somehow condemns this case, it doesn’t in the least because there is so much natural gas available.

And, in fact, the entire, you know, the Husky Development itself, the White Rose Development in North Amethyst, do not use gas for pressure maintenance in their oil wells. They use water flood. It's preferred over gas. So they actually need to drill – spend extra money to drill wells in some other location to store the gas.

**MR. LEARMONTH:** Okay.

Okay. Continue on with your – I think you're at the bottom of page 4, roughly.

**DR. BRUNEAU:** Yes. Right. From the North Amethyst Development Plan.

So the excess produced gas referred to for all of the White Rose operations was being stored, in the case as – as was also the case for North Amethyst of which Nalcor is a part owner. The percentage, I'm not sure, it's 5 per cent or 10 per cent owner of this thing. But that gas is not used for, you know, recovery. It comes up with the oil in an unwanted way.

In fact, I can point out that in most – in many instances the production of oil on our platforms offshore is limited, is bottlenecked by the amount of gas that they get – undesirable amount of gas, because you have to be able to take the equipment or you have to be able to use equipment to compress it, treat it, reinject it. So sometimes the produced gas isn't a no value. It's sometimes a negative value because it costs money to find ways to get – to store it. The excess produced gas referred to was being stored because it couldn't be used to enhance production or flared.

So that really summarized, I guess, the way in which I thought that the Navigant conclusion was insufficient. But it certainly isn't the full case that I had presented in 2012.

**MR. LEARMONTH:** Okay.

Can you continue on and explain the basic premise of your claims? That's the heading you have written –

**DR. BRUNEAU:** It is, I –

**MR. LEARMONTH:** – at the top of page 5.

**DR. BRUNEAU:** I very conveniently wrote my questions, which I'll now answer here. But to explain the basic premise of my claims, the most important and overarching purpose of the work that I did in 2012 was to point out that natural gas had been unfairly excluded from serious consideration as an option for domestic electric generation. It was to point that out.

And the details in which – and how I did that will come later. But that was the main objective, was to point out that it had been unfairly excluded. And I have very good reason to think that this goal was achieved, because there was quite a stir caused – pardon me – in the press. And there's some newspaper clippings and stuff to – would – that would – are evidence of that.

And in the months to – month to follow, and the preceding few days and weeks, there was much discussion in the House of Assembly and there was a rush to commission a study on this natural gas option. And the timeline of those events is on the table that I present to you.

So, in terms of the specific research, I am happy to say that the primary reason was to indicate that it hadn't been studied and government took actions afterwards.

In terms of the specific research and evidence, the – from the document, the Harris Centre, I really set out to inform the audience of a few things. And this is – it's rather important, the details are rather important here, so I – allow me. Bear with me.

First, I wanted to point out that, contrary to some claims made in the media, natural gas was available within the time frame of our domestic electric needs for the duration of our needs and in the quantities we needed for domestic Island electricity.

I provided – in that document I provided articles, sources, reports – all cited – that proved that that was the case. The repeated position of others that natural gas was not commercially available was merely an opinion that was not supported on the basis of any evidence. The word commercial was being heavily employed – and I'll get to that a little later – as a substitute for actual values, facts or figures. It would have been equally true to say that Muskrat Falls power was not

commercially available in 2012 either. It doesn't mean that either option wouldn't be if we had decided to make it so.

The 2007 Energy Plan included a figure in it that remarkably showed that marketable natural gas from the Grand Banks would likely become available in 2020.

**MR. LEARMONTH:** Is that the Energy Plan?

**DR. BRUNEAU:** That's in the 2007 Energy Plan.

Quite independent of that Energy Plan, the National Energy Board of Canada used 20-20 as its most likely scenario for Grand Banks gas getting to a market. And it was the opinion of Hibernia partners at that time that natural gas sales of their Grand Banks gas would be initiated around about 2019, according to a figure that's also cited, and that those sales might in fact benefit their oil production. That information was imbedded in the annual report of C-NLOPB, that Hibernia statement. These facts cannot be reconciled with the exclusion of natural gas due to its unavailability.

I also wanted to address the question of the quantity of natural gas that we might need for Island generation. It is an indisputable fact that the quantity of natural gas required to fuel the domestic needs right now are being actively stored offshore.

It is also a fact that more natural gas is used to generate electricity for Hibernia, Terra Nova and SeaRose platforms than is needed to replace Holyrood. That was the case in 2017, and I just checked again for – pardon me, 2012. When I checked again for 2017, the same thing. More electricity generated on those platforms than in Holyrood, using natural gas.

There was more natural gas flared offshore last year than would've been required to replace Holyrood in 2010. It stated earlier that produced gas at White Rose is not used for enhancing oil production, and this greatly exceeds our provincial thermal generation needs, or thermal generation.

The natural gas production from North Amethyst and Hibernia South – importantly, I

pick out those two. Those two alone is 29 million standard cubic feet of gas a day averaged over the year, which is approximately equivalent to our needs at Holyrood. And the reason I pick those two out is that the provincial government is part owner of both of those.

**MR. LEARMONTH:** Nalcor?

**DR. BRUNEAU:** Nalcor –

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** – I guess. I guess, Nalcor is owned by the government, I hope so.

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** Or I hope it isn't – hmm, anyway.

As I said, the first part of the presentation was to indicate that the resources are, in fact, there and they're in place. I'm not suggesting by any stretch that it's free, cheap and easy and all that to get it.

So the second part of my presentation in 2012 was to point out that natural gas developments of the same scale with similar components are commonplace worldwide and that the costs of these are well within the range that would necessitate a very good hard look for us. I was in no position to give precise cost information on our own undertaking, and its complexities – no position to comment on precise costs there. But I did feel it essential to point out that the approximate costs and schedule were entirely reasonable for us to consider the option more carefully for our own domestic needs – just for our domestic needs alone.

Thus in my 2012 presentation, I provided a rough estimate of the capital cost of the various parts of infrastructure to transport gas and then to generate electricity with it. And these costs added up to around \$2 billion – all in. A repeated criticism of my work after that – from thereafter – and I think it may well have been the only numerical one that was ever made – was that these capital costs could not be recovered by the oil producers if they were paid just North American market prices for the gas that we needed.

Of course those who said this misspoke, or they elected to ignore that in the development example that I had given, I said that the oil producers did not pay for the capital cost of the transportation system or power generation. In other words, what I said and wrote – and is still on the record in one of – in 2012 – is that we in the Province of Newfoundland and Labrador could afford to pay for all the key infrastructure ourselves and still pay the producers for supplying us gas – worthless gas at their platform at a market price, and that this undertaking would altogether still be billions cheaper than the alternative in 2012 – than the alternative in 2012 – billions cheaper.

**MR. LEARMONTH:** Okay.

Now, continue on to your next question that you've framed and your answer to it.

**DR. BRUNEAU:** Thank you, Mr. Counsel.

The question I'll read out and then answer, it says: So are you aware of the Ziff Energy Group report – a question I asked myself – conducted after your public presentation? Yes.

**MR. LEARMONTH:** Yeah. Just for the record and perhaps –

**DR. BRUNEAU:** Mm-hmm.

**MR. LEARMONTH:** – Madam Clerk can bring up that report. It's P-00060, Ziff Energy, *Natural Gas as an Island Power Generation Option*, dated October 30, 2012.

**DR. BRUNEAU:** October 30, 2012.

**MR. LEARMONTH:** Yes. That's at tab 1 of your –

**DR. BRUNEAU:** Okay.

**MR. LEARMONTH:** – book of documents, Dr. Bruneau.

**DR. BRUNEAU:** Thank you.

Well, I think I've got it right and, in fact, I know I do in the sequence of events on my table here as well. So that, if I'm not mistaken, was

October 30 and the project was sanctioned – when was –

**MR. LEARMONTH:** It was sanctioned by the – it was sanctioned by Nalcor on December – excuse me, December 17, 2012. The –

**DR. BRUNEAU:** Okay.

**MR. LEARMONTH:** – authority to sanction the project was given by the Cabinet on December 7, 2012.

**DR. BRUNEAU:** Thank you.

So I'd like to make a few comments about it and then I'll speak directly to the key findings within this report. I have not spoken about this report. I have – it's been uncontested because I didn't – I stopped speaking about this matter –

**MR. LEARMONTH:** (Inaudible.)

**DR. BRUNEAU:** – after sanctioning.

**MR. LEARMONTH:** But this report –

**DR. BRUNEAU:** Mm-hmm.

**MR. LEARMONTH:** – speaks about your work.

**DR. BRUNEAU:** Absolutely, it does. So allow me to get to that.

I'd like to speak directly to all the key findings in the report. They conveniently list them in their report and I'm going to address each one.

The first comment, though, is that the commissioning and execution of –

**MR. LEARMONTH:** And I'm just going –

**DR. BRUNEAU:** Oh, pardon me.

**MR. LEARMONTH:** – to interrupt for a second.

Madam Clerk, could you bring up page 30 – excuse me, page 38 of that Exhibit and that's under the heading in the Ziff report: Comments on Presentation by Dr. Stephen Bruneau. If you

just bring that up, because you're going to speak to that issue –

**DR. BRUNEAU:** I am, but not right at this moment, there's –

**MR. LEARMONTH:** Okay. Well, we'll have it there anyway.

**DR. BRUNEAU:** – I have two in a series of points and that's the second.

But in the first instance – in the Executive Summary and then right after, Ziff lays out all of their key findings. And so I'm addressing those point by point and then I will address all of those points that they made about my talk, if you don't mind. That would be helpful.

**MR. LEARMONTH:** Thank you.

**DR. BRUNEAU:** The first comment is that the actual commissioning and execution of the Ziff work took place after my talk and within a few months of the final sanction of the – I think it was weeks – of the final sanction of the Muskrat Falls. And to me, that confirmed that this work had not already been done.

And the second point I draw to your attention is to the warranty provided by Ziff on its opening page. In that it says: “The data contained in this Study, although believed to be accurate, is not warranted or represented by Ziff ... to be so. Ziff ... expressly disclaims all responsibility for, and liability in respect of all loss and/or damage” – whatsoever – “howsoever caused, including consequential, economic, direct or indirect loss, to any party who relies on the information contained in the Study.”

Can I just ask: Were they paid to do this work? I was working entirely alone, unaffiliated and unsupported. Yet, I was at that time and still am a professional engineer and I'm entirely willing to take full responsibility for the work I did. And because the figures that I used are sourced and cited – as you can see in the document – I don't need to make any excuses for them.

The Ziff report conveniently lists all of their key findings and now I'd like to go through them, so Ziff finding number 1 of 9. This is the key finding, it says, I quote: While the gas offshore

Newfoundland and Labrador is in place, there is currently no viable market for offshore Newfoundland gas; there is no pipeline in place and no commercial contracts in place to sell it.

I would like to point out that prior to the sanction of the Muskrat Falls hydroelectric project, there was no dam in place, there was no transmission system to carry the power, nor contracts to buy its hypothetical power. In other words, the Ziff statement actually has no meaning in the context of assessing future new development plans and proposals.

Ziff finding number 2: “Associated Gas produced with oil offshore Newfoundland is used to power oil production systems, or is re-injected to enhance oil recovery” and is not available – period.

And then the next sentence contradicts this sentence in their report by saying: “natural gas surplus to fuel needs on the platforms is re-injected into the reservoir(s) to enhance oil recovery or conserved should a commercial opportunity become available ....” Using associate gas to enhance oil recovery is a long-term benefit for oil-resource owners who would be negatively impacted by using gas for Island electric generation. This is a key finding of Ziff.

Well, I'd like to point out that in the months prior to this statement by Ziff the C-NLOPB had a very different opinion on this exact point. From the C-NLOPB I quote: The future exploitation of gas resources will extend the economic life of the White Rose field and permit additional oil recovery. The solution gas resource is either stored, used as fuel, or flared. Husky must find additional gas storage in order to produce oil from North Amethyst. They must resolve this storage issue as surplus gas flaring will not be permitted about authorized flaring allowance. That statement in the context of is not available in the previous paragraph.

Elsewhere, the C-NLOPB goes on to say the following. It says: Future exploitation of gas resources may also extend the economic life of the Hibernia field, permitting additional oil to be recovered – additional oil to be recovered if a gas industry were initiated. According to the proponent – Hibernia, that is – in 2012 Hibernia could support 200- to 300-billion standard cubic

feet of gas a day, starting in 2020, in order to ensure that optimized reservoir oil expectation – oil exploitation occurs – end of quote.

So just to put that in perspective, at that time, as sort of a flick off it seems, Hibernia was prepared to provide a graph, which is in my document here from the C-NLOPB, that they could sell 200 or 300 million, which is about one-tenth of the amount that we need for the Island.

**MR. LEARMONTH:** One-tenth?

**DR. BRUNEAU:** About one-tenth –

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** – of the amount that we need. They said they could make it available by next year. Hibernia’s life is currently certainly going to go beyond 2041. And at – of course, we all know that at the 2041 date we have an entirely new set of conditions for domestic power.

Ziff finding number – so Ziff finding number 2 is at odds with the regulator. I have two articles that neatly answer this particular point of Ziff article number 3. It says: The Government of Newfoundland cannot compel the sale of natural gas, nor can it mandate price.

Now, of course, this was – there’s no reason why it would come up this way, but nonetheless, to answer this I have these two articles, and the first is what the regulator had to say about this exact point. It said: Concern was also – this is what the C-NLOPB said about the White Rose development plan. It said: “Concern was also expressed during the Public Hearing that White Rose gas might not be ... available for export if gas transportation infrastructure was put in place.”

If somebody put the transportation infrastructure in place, that maybe it wouldn’t be, you know, available. The board – the C-NLOPB, that is – on its part would expect in such circumstances that access to White Rose gas, subject to conservation, would be realized through normal commercial negotiations. And the regulator goes on to say: “As discussed later, the Legislation does, however, provide the Board with the

authority to issue a Development Order should such a course of action be required.”

**MR. LEARMONTH:** Not – just to make the point that you referred to page 36 of the Energy Plan earlier where it says: “To ensure these opportunities are fully assessed, the Provincial Government will request that companies provide detailed ‘landing in the province’ options prior to submitting a Development Plan.”

**DR. BRUNEAU:** Mm-hmm.

**MR. LEARMONTH:** Is that compatible or incompatible with the quote that you just read into the record from the C-NLOPB?

**DR. BRUNEAU:** I think that the finding by Ziff comes with some sort of a bias towards – I don’t really know, but it appears that they expected there some requirement to somehow prize or coerce, unwillingly take gas from an operator. Well, normal commercial, you know, dialogue and negotiation would be the more reasonable pathway towards getting the gas. There’s no issue with it. There is no need to steal this fuel; we could pay a lot for it and we’d still be much better off. So I don’t know if that answers your question, but –

**MR. LEARMONTH:** Just carry on. That’s fine.

**DR. BRUNEAU:** Yeah, okay, I – cannot compel the sale of natural gas ...

And I will – there is another article that I place here and it just – lest anybody think that we don’t have some kind of influence on the way that things take place, I quote from a *Globe and Mail* article in August 2008. And the article is entitled: “Partners make peace with Hebron deal.”

And in that *Globe* article it says: “In April, 2006, the province and ... oil companies broke off negotiations over Hebron, accusing one another of making unreasonable demands.” The premier was particularly vitriolic towards ExxonMobil, the largest shareholder, which he blamed for scuttling the talks over his demand for an equity stake.

And, then, at the end of the day it says: “For all the bitter words and stalled negotiations, the

Hebron offshore oil project simply offered too rich a return to both the government and the industry for the two sides to continue warring over the details,” said this representative from Chevron. So there’s an example.

So Ziff’s key finding number 4 of 9; it said that capital costs to develop Grand Banks gas is high and the return is not sufficient to justify the expense. So Ziff says the capital cost to develop Grand Banks gas – not to develop Grand Banks gas – the capital cost to get natural gas to the Island for domestic needs is too high and the return is not sufficient to justify the expense. Even though Ziff made extraordinary burdens on their cost estimate, it was the only cost estimate that I ever saw besides my own for this thing.

It says: Even though they made extraordinary burdens on their cost estimate for on-Island gas, in their estimate they said the necessity was there to put a pipeline in place now that can carry the maximum projected peak load for the Island in the year 2067. And the necessity to carry the cost of replacing the offshore platform and, you know, and gas plant and the necessity to drill all new wells for obtaining the gas needed, which are all extraordinarily pessimistic assumptions: even though those assumptions are embedded in their costs, Ziff’s own figures still don’t support their conclusion – even with those.

Rather, they actually appear to favour natural gas over Muskrat Falls between now and 2041 at least. For instance, the total so-called full-cycle, all-in price for gas-fired electricity using an FPSO appeared to be under \$5 billion in 2012 according to Ziff, only rising higher than this if we choose to continue paying for gas generation after 2041, when, of course, the 6,000 megawatts of the Upper Churchill power becomes ours to deal with: use, sell or otherwise work with. And I quote pages from Ziff’s report there as to how it was that I was able to extricate this information, which was rather difficult in their report.

Furthermore, when we break out Ziff’s figures for capital costs alone, we get the following: 4 to \$600 million for an FPSO refit and gas plant, that was Ziff’s number there, and then \$640 million for a pipeline. That was the bottom end of their scale and is certainly not unreasonable. Nothing was included in there for the

replacement of Holyrood. I have no idea why. In any event, it’s a very reasonable estimate to say that we would start out spending about \$700 million on a brand new dual-fuelled power plant as this would clearly be needed to replace the old plant in Holyrood.

This means that the total capital cost for the infrastructure alone, to bring natural gas from the Grand Banks to Newfoundland and generate electricity from it, from Ziff’s numbers, is around \$2 billion. This is the same estimate I presented back in 2012, which I’m happy to say. In everything else, I can assure you, everything else, the price of the gas, the royalties, tariffs, the taxes, the production and the well strategies, partnerships, et cetera, these always were and still are negotiable.

Amongst the assumptions that are embedded in Ziff’s report is the view that the oil would run out in 2028 at White Rose. They also assumed that all-new wells were needed to produce the gas and that the natural gas for the Island would need to pay entirely to operate the FPSO from 2028 until 2030, at which time natural gas for the Island project would then also have to buy and operate a new FPSO.

Why Ziff assumed that a gas supply for the Island would have to go it alone in the absence of an oil industry is inexplicable. These assumptions are unrealistic and suggest some kind of extreme bias. It is a shame – it’s a shame that the entire Ziff study ignored the simple fact that the excess natural gas that the province could have used for Island power generation was stranded and worthless to the operators and it was just over the horizon and the cost to get it here was relatively low.

And I’d like to – bear with me for a moment, I have a thought exercise. How close would Hibernia have to be to the Island before the Ziff study noticed that natural gas might actually be a perfect fit for the Island’s needs? So here’s the thought experiment: I tested Ziff’s assumptions by removing the pipeline cost, which is to say what if the Island was somehow 330-odd kilometres closer to Hibernia than it actually is – not Hibernia closer to the market, but us closer to them, just hypothetical. Then what?

Well, according to Ziff's cost figures, regardless of whether White Rose or Hibernia were beside the dock in Holyrood, the cost to use the surplus or flared gas for electricity in the plant right beside it was too high and uneconomical because it was stranded. That's how I interpret Ziff's numbers.

The point is that Ziff's study might just as well have been about Hibernia supplying gas – or Terra Nova, White Rose, whatever – supplying gas to Greenland or Thailand, anything else, because there was absolutely no effort – no effort at all – to see that the gas was in fact not stranded from us on the Island. It should be obvious that if gas had been brought to shore, its value to us citizens would have been spectacularly high compared to any perceived value, sale value, to the operator. So for the operators, the value of the gas did not and still does not warrant a self-funded development, whereas for us on the Island the value of the gas was equal to the cost of our nearest alternative.

Ziff finding number 5 here. “The power market in Newfoundland is demonstrably small” – says Ziff – “and the load profile fluctuates, with demand spikes in winter months, and very little demand in the summer. This poses a challenge for development: the gas volume required to replace oil and meet load growth would be comparatively small for the size of” the “capital investment and unevenly spaced throughout the year. Due to the low annualized volumes of gas required for Island Power Generation and the high capital cost of developing and transporting ... gas, the unit cost of the gas landed at the generation plant gate renders this option uneconomic.”

Now, how – how can – what Ziff's report is saying is that the capital cost of under 2 billion or around about \$2 billion cannot be justified on the based – basis of the demonstrably small market for power on the Island. This is from Ziff. Were they aware of the alternatives, I wonder? Something is only uneconomical when alternatives are available that are more economical. What was Ziff comparing this gas-fired option to? By analogy, one might say that it is uneconomical to rent a car to get from A to B, but we know that this statement is based on the premise that there is some other means of

transport available and that it's cheaper. So I guess the term uneconomic is in fact an opinion.

In response to Ziff's warning – warning – about the risk of relying on natural gas for power generation, I'd like to quote the following from elsewhere in Ziff's report: “The expected lead time to construct a natural gas to electricity generation facility is typically assumed to be 2 to 3 years, perhaps 4 times faster than siting a new nuclear or coal fired plant. Additionally, unique consumer requirements for instant electricity” – dispatchable power – “(power needs to be available at the flip of a switch) aligns very well with the ability of natural gas power generation plants to start up or shut-down more rapidly than nuclear or coal fired ... plants. Further, gas to electricity plants can be added in incremental steps to better align with market growth opportunities versus building the ultimate sized facility for growth expectations later in the facility life. Combined cycle power generation is an efficient and widely used method of converting natural gas to electricity. The process is well established.”

A little later in Ziff's report it says: Even after securing natural gas as a feedstock, there would still be a need – there would still be a requirement for a redundant dual-fuel capacity to ensure consumers are safe on cold winter days. I'll explain what that means, this dual-fuel business.

This approach was exactly what was done at Tufts Cove there in Dartmouth – Dartmouth, Nova Scotia – was converted to burn natural gas when the SOEP and Sable and Maritimes or the east was – were in place. And so the Tufts Cove big, oil-fired power plant in the harbour there in Halifax, which we – most of us would know, was converted to burn natural gas, but the ability to flick over to diesel or heavy fuel remained in place so that the dispatchable power was guaranteed by having a redundant fuel supply on the site.

So it's interesting to note – I just checked with Wikipedia there that about – on the Tufts Cove plant, and it said: “Due to low prices in recent years, the entire plant has run largely on natural gas, which has dramatically decreased its emissions profile.” (Inaudible.)



**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** So, it's pretty standard stuff.

So point number 6 of 9, these are each and all of Ziff's key findings: "A subsea pipeline is costly and a significant challenge: the length of the pipeline is a balance in cost and risk. A shorter pipeline will be subject to iceberg scour risk that will need extensive trenching and dredging. A route away from icebergs along the edge of the continental shelf will double the length of the pipeline ...."

Clearly, they were quoting legitimate work here –

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** – and that's –

**MR. LEARMONTH:** What is your knowledge on ice scouring and icebergs and so on? Do you have any experience and training in that area?

**DR. BRUNEAU:** I do.

**MR. LEARMONTH:** What is that experience?

**DR. BRUNEAU:** Well, I guess, while working at C-CORE, I helped develop the iceberg load prediction model for the Terra Nova FPSO and also for a proposed gravity-based structure offshore. I helped develop the iceberg management program for a pipeline company, which ultimately I ended up being hired into. And I, as a company manager here, commissioned the first study of the – I should say the first in this – in the modern area of digital computation, the first systematic statistical analysis of the risk of iceberg contacting pipeline, and risk maps developed, et cetera.

We did this with C-CORE, myself and others were there and deeply involved in it. And C-CORE has developed significant advances further in this work and, essentially, the voices of us involved in this work are all in unison now. And that is that after all these many years of research and work and investigation, and many years of production offshore, there's a high degree of confidence that the risks are manageable and not very much – not very

different from the normal operating risks elsewhere in the world from other hazards such as dropped anchors or hurricanes and this sort of thing.

So, the point is, is that this is well within my wheelhouse and I have no problem saying that we can find a way around that problem.

**MR. LEARMONTH:** Okay, continue on.

**DR. BRUNEAU:** I also have no objection to Ziff's cost estimate on the pipeline. I thought that it was quite good. In fact, if you recall I mentioned that Ziff had costed their pipeline on the basis of a much larger pipeline than what is needed because they used an aggressive growth model to look at what the demand for gas might be in the year 2067, and that is the quantity of gas that they used to size the pipeline that would be needed in 2012.

**MR. LEARMONTH:** So you're just saying that the diameter –

**DR. BRUNEAU:** Right.

**MR. LEARMONTH:** – was larger than –

**DR. BRUNEAU:** Yup.

**MR. LEARMONTH:** – it should've been or –

**DR. BRUNEAU:** That's it.

**MR. LEARMONTH:** Yup, yeah.

**DR. BRUNEAU:** It's like having a three- or four-lane highway when, you know, when two will do at the moment and yup.

I don't know if I fully answered that. I guess I'd have to say I have no objections to their price and I also agree with Ziff on the risks and the very serious amount of engineering that needs to go into mitigating the risks at – in our harsh environment.

"Ziff key finding no 7 of 9: As there is currently no low cost natural gas available on the Grand Banks for Island power generation ..." – by the way where – I don't know where they find this. There are adjectives being used here that I find disagreeable. This is ostensibly an independent

review, but yes they're using words such as "low cost" or "massive" and these sorts of things in here which have no place. "... there is currently no low cost natural gas available on the Grand Banks for Island power generation, the most likely scenario to develop gas on the Grand Banks would be a standalone gas project" – according to Ziff.

So, I used Ziff's numbers here: Ziff gives their all-in cost for natural gas developments in units – in their report, they give them in units that very few people would actually understand. So, you can't easily make comparisons, but their units were \$2,012 per thousand cubic feet of gas. So, if you allow me, I'm going to translate that.

I converted this to what the annual cost would be for their option, which was the SeaRose modification for gas export option. They pegged this at \$21 per thousand cubic feet in 2012. When you multiply this by 32 million standard cubic feet of gas a day, which is the annualized amount to replace Holyrood – the average amount of gas we would need throughout the year to replace Holyrood – this number works out to be under \$250 million a year, all in. And recall that this is their estimate that was burdened with the assumption of new wells, expensive gas plant, big pipeline, oil running out in 2028, et cetera.

So this \$250 million per year figure seems rather affordable to me, in light of the alternatives. Perhaps best leave that to others to voice their opinion.

I just simply can't – those numbers indicate a price that I cannot reconcile with their conclusion that it is uneconomical and unavailable.

Now, I go on to say that Ziff had two more key findings and then that's the end of them. And those two findings relate to their assessment of LNG – LNG being liquefied natural gas as the primary fuel for new thermal generation. Now, LNG can come from anywhere in the world because it's taking natural gas, liquefying it in a large and expensive operation, shipping it about, re-gasifying it and burning it.

So, I did not represent this option back in 2012. So I'm not here to dispute or support Ziff's

findings in this particular – for Ziff finding number 8 and 9; they are unrelated to what I was advocating in 2012. I can say, though, that in 2001 Newfoundland Hydro was approached by a company that I worked with, North Atlantic Pipeline, with the express interest in buying the Holyrood plant and converting it to natural gas-fired generation that would, in the first instance, be fuelled by LNG and then later by Grand Banks gas when it became available.

And in that proposal none of the capital costs would be borne by customers, except through fair market rates that would have been judged by the Public Utility Board. In any event that's the only thing I'd like to add about the LNG option.

Now, I think, Mr. Counsel, to – part and parcel of that Ziff reporting their key findings were the – was the Wood Mackenzie report.

**MR. LEARMONTH:** Yes, that is Exhibit P-00064. Perhaps you could bring that up, Madam Clerk. That's tab 2 of your book of documents, Dr. Bruneau.

**DR. BRUNEAU:** Could I trouble someone for some more water?

**MR. LEARMONTH:** Sure.

**DR. BRUNEAU:** A delicate way of saying I'm parched with a cold.

Thanks.

**THE COMMISSIONER:** Would you like to take a break here or did you need water?

**DR. BRUNEAU:** No, just a sip of water.

Thank you.

**THE COMMISSIONER:** Okay.

**DR. BRUNEAU:** Thank you.

**MR. LEARMONTH:** Okay, continue on, please, Dr. Bruneau.

**DR. BRUNEAU:** Pardon me, what was your direction or your question?

**MR. LEARMONTH:** Well, we were at the point on page 11 of the question.

**DR. BRUNEAU:** Mm-hmm.

**MR. LEARMONTH:** Are you aware of the Wood Mackenzie report?

**DR. BRUNEAU:** Right. Okay.

So I don't know who or what Wood Mackenzie – anyway, all I can say is that Wood Mackenzie's conclusions were, in their three-page report that I saw – I think it was three pages – was that they endorse Ziff's conclusions. And that they not only endorsed them, but that they would have raised some of the costs.

And they finished by saying the following. It says: Additionally, we believe that the Government of Newfoundland may still – may find it difficult to enter a contract for that gas that would make the producers interested in producing the gas – interested in producing the gas anyway – for market due to the costs of production and the low level of requirements that Newfoundland will have for power generation.

That's Wood Mackenzie's, you know, penultimate statement here. My response to this is how unbelievably uninspired and superficial it is. Wood Mackenzie fails to question any of Ziff's fundamental assumptions. It fails to address any of the facts that I had presented that others feel differently than Ziff about availability.

Rather, Wood Mackenzie fails to notice the obvious. Rather than assuming that natural gas must somehow be prized or stolen or coerced at some grievous loss to the offshore operators, there's an opportunity here to help solve the gas storage problem for operators, while at the same time satisfy a dire need for domestic power on the Island. It's as simple as that and they failed to see it.

**MR. LEARMONTH:** Okay.

The next – we're on to page 12 of your speaking notes, Dr. Bruneau.

The question is: "Are you aware that both Ziff and Wood Mackenzie name you specifically in their reports? Can you comment on this?"

**DR. BRUNEAU:** Sure.

Yes, I was aware of it, that I was named specifically in these reports. But, to be honest, I did not see these reports until late in 2012 after the project was sanctioned. So, by that time, I had removed myself from any further debate.

Now, I'll admit that when I first learned that they had attributed a full chapter of their report to a critique of my presentation, I was at first concerned; however, after reading their criticisms and comments I could see that there was, in fact, no danger of any kind of problem with the substance of my arguments. And I believe, also, that Ziff raised some very serious questions for their client – for their client to answer.

So, if you allow me to do so, I would again like to go through, in point form, the six, what, refuting comments that Ziff made about my work. And I don't know what page they are on Ziff's thing there, but I'm going to go through every comment that Ziff made and I will –

**MR. LEARMONTH:** That's –

**DR. BRUNEAU:** – discuss it.

**MR. LEARMONTH:** That's P-00060, please.

And just – just let me see now. Yeah, it's page 38.

**DR. BRUNEAU:** Yeah, there you go.

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** Okay, so this work by Ziff has been uncontested by me until today. As I said, I have not commented on the matter and I will comment on it relating to all of the information from that time, 2012, nothing since then.

So number 1, Ziff versus Bruneau here: "Dr. Bruneau asserts that: 'According to the CNLOPB and Husky ... natural gas cannot be used for enhanced oil recovery at White Rose or North Amethyst, thus a marketable gas

opportunity arose in 2006 and continues through today and will continue until the end of life of that project.’ His Conclusion 1 states that: ‘Natural Gas is available for domestic import now and for a long time into the future, but no plans or efforts have been made to access it.’”

Here’s Ziff’s response: Ziff Energy discussion – “Ziff Energy’s discussions with representatives of Husky reveal that the operator has studied monetizing the gas resource and this analysis is ongoing. The Operator wishes to maintain the optionality to use White Rose natural gas for enhanced oil recovery as in Hibernia and Terra Nova. The Operator asserts that, at the time of writing, White Rose natural gas is not being considered for any use other than enhanced oil recovery as they assess the technical and commercial viability. This situation may change in the future as the oil resource is depleted. Husky representatives indicate that the most likely commercial option for the development of gas resources offshore Newfoundland involve LNG liquefaction and export to oil” markets.

“It is Ziff Energy’s opinion that if the natural gas is not commercially available because the Operator may have a use for it in enhancing oil recovery, there can be no consideration of ... natural gas when required for Island Generation option.”

This full statement is, perhaps, the most important piece of evidence that Ziff has in their document. It’s an extremely important piece because of the following: Ziff actually says that they spoke to someone at Husky. I – there’s no other place where anybody has said that they spoke to an operator about this. And I think it should be a matter of public record to know who this was and what was said because the significance of this evidence can’t be understated.

Ziff takes such great care and uses such delicate language to try and convey a message that they did not get from Husky. Husky did not say that gas was not available. On the contrary, Husky said that they were open and interested in studying ways of monetizing natural gas at that precise moment in time. Ziff also appears to suggest that Nalcor had not spoken to Husky about any such opportunity or they would

certainly have said so. Maybe they did, but they didn’t say so.

Ziff says it is their opinion that “natural gas is not commercially available because the Operator may have a use for it in enhanced oil recovery,” sometime in the future, thus “there can be no consideration” – which is their words – for Island generation going forward.

Well, if they actually believe that, I don’t think they would’ve carried on – done a cost estimate of it. But nonetheless – yet we know for a fact that Hibernia said that gas would be available for Island generation when we needed it and that, for them, selling the gas may actually enhance oil recovery. At least that’s what they said in 2012.

So Ziff is in disagreement with Exxon about how to manage their resources. Of course, things are changed out there, always very fluid. If Hibernia or other parties decided that they were going to seek a new strategy for developing oil, in which they needed all of their gas or they needed even more gas, then I would submit to you that that would be an excellent opportunity for us to become informed as to what the costs are in adding extra – an extra well, a new compression – to actually make such an industry occur.

We should – we’d be well advised to insert ourselves and be a party to it, because if Hibernia or anyone else plans to use more gas for oil exploitation, and they have to go and get it somewhere, then that’s an excellent analog for what would be involved in us getting that gas for our own needs.

So Ziff is in disagreement with Exxon, and we know that – from the evidence I gave earlier that the C-NLOPB said the very same thing as Exxon and Husky on this matter – on this very matter of whether or not gas might be available for sale and that it might in fact help future oil recovery. And so why Ziff’s opinion here disagrees with the chorus of opinions cited above is for Ziff to explain.

Ziff did not find – incidentally, what’s most striking about the Ziff report is what is not there – what is not there. Ziff did not find an executive amongst all the operators or there’s nothing in

the document from any official willing to say that selling natural gas to the Island cannot be done. In fact, Ziff didn't even provide the name of the source that gave them the vague and uncommittal information that they received.

Ziff's point number two in, I don't know, condemning or critiquing my work, says the following: "Dr. Bruneau's Conclusion ... states that: 'Natural Gas is being produced at a rate that exceeds our domestic ... needs'" – and – "can sustain our requirements for a long time.'

"Ziff Energy" – on its part – "finds that the small domestic power generation requirements are a barrier" – for – "commercial viability as the massive costs of production and pipeline infrastructure would need to be recovered from a very small rate base, rendering the natural gas feed costs ... uneconomic."

I cannot be alone in finding this to be another extraordinarily biased statement.

Ziff, here, very strangely did not actually touch my conclusion. It was completed untouched, this quote that they include. Instead they went off the deep end by saying that the domestic needs for electricity in Newfoundland were so small that those demands could not justify the massive – their word – massive costs of the infrastructure required to deliver the gas. As far as I can tell, Ziff capital costs for the FPSO option was around \$2 billion, and my numbers were the same.

Conclusion number three – Ziff arguing against my conclusions was that "Dr. Bruneau's Conclusion 3 states ... : 'Natural Gas reserves and resources on the Grand Banks are in quantities that exceed domestic electrical requirements for the foreseeable future.'

"Ziff Energy agrees that natural gas reserves and resources are physically available in quantities in excess of domestic electric needs. Ziff Energy finds that natural gas, at the time of writing, is not commercially available" – at the time of writing" it's not commercially available – "Further, the cost of bringing natural gas to the Island for power generation is punitive ... 2012C\$21/Mcf" – da, da, da, da – "given the low volume requirements now and in the future. These factors" – mitigate – their quote – "these

factors militate against commercialization of the natural gas solely for power generation."

So rather than using the facts and well-referenced sources here Ziff's answer to most of the points that I made is to forward the opinion that gas wasn't commercially available and therefore it couldn't be studied for commercial availability. It's not commercially available, so we can't study it for commercial availability.

Recall that only two paragraphs ago Ziff said that Husky was actually looking for ways to commercialize their gas, and forgive me, but this sounds like two lonely soulmates that somehow failed to meet at the prom when you look at the obvious benefit to both parties.

Ziff conclusion number 4: "Dr. Bruneau asserts that icebergs were considered too risky for Grand Banks pipelines 30 years ago. Further that: 'Today, 30-Platform-years later'" – today, referencing 2012, of course – "the safe and reliable production and operation has proven the effectiveness of management practices and the relatively low risks that icebergs pose – particularly to seabed equipment, flowlines and offshore loading pipelines."

Ziff's response: "Ziff Energy notes that offshore operators have chosen to transport Grand Banks oil via marine shipping rather than pipeline. The iceberg risk to a platform are considerably less than risks to a pipeline which has a longer and larger footprint and therefore a higher risk of impact over the term of use." Well, they better prove that. "Even with trenching, the assertion that iceberg risk for a several hundred kilometre pipeline can be managed is questionable and this practice is unproven on the Grand Banks. Dr. Bruneau cites other projects analogous to the Grand Banks pipeline, including Australian, Norwegian, Vancouver Island and Tobago projects. Some are in harsh climates, however, Ziff Energy notes that none of these other projects face the unique risk associated with icebergs off Newfoundland. Security of supply and economic and environmental consequences from a pipeline failure required for powering homes and businesses cannot be understated.

"Current operators with expertise in harsh conditions have been unwilling to undertake such a project, the Government of

Newfoundland and Labrador, or an agent thereof, would be well-advised not to attempt such an undertaking based on theory and not sound and tested practice.”

Okay. So here’s the ways that Ziff is out of bounds on that statement: “Hibernia was the first of its kind in iceberg infested waters – according to Ziff it shouldn’t have been done. Fortunately the operators didn’t see it that way – they pioneered” – of course, as we all know. They did it and it’s working out very well.

Next point, “I have a great deal of personal experience in this particular area and my colleagues and I believe that the risks are manageable.” And I note that in – that not long ago Exxon judged that it was an acceptably low risk to lay a fibre optic cable all the way out to Hebron at great expense.

The last point that I would like to make about Ziff’s warning about icebergs here is that they “neglected to say that the Muskrat Falls project was predicated on engineering and mitigating the risks of iceberg and sea ice damage to the subsea cables in the Strait of Belle Isle.” Well, “I can assure Ziff that the icebergs in the Strait are very much like the ones further ... East and the engineers that worked on the cable challenge would do the same for a pipeline.”

Ziff statement number 5 of 6, I guess it is, against my comments here.

“Dr. Bruneau concludes that: ‘Capital costs are very low relative to the alternatives presently under consideration for domestic electricity supply.’

“Dr. Bruneau excludes the ‘Platform modification’ component, saying such costs are ‘to be considered in the context of gas price.’ Ziff Energy does not agree with Dr. Bruneau’s conclusion, and finds the total costs of gas resource development and transmission are punitive given the small domestic electric generation load.”

Ziff Energy estimates costs to refit the White Rose FPSO at \$600 million, with a replacement of the FPSO in 2030 costing an additional \$450 million.

“Natural gas development would have to bear all of the capital and operating costs once the oil reserves have been produced, possibly by 2028,” says Ziff, “close to the end of the useful life of the existing FPSO. Thus, operating costs are split oil, gas until the oil runs out,” that is 2028 in their prediction, and “then gas carries all the cost.” Currently, oil production operating costs are in the order of \$250 million bucks a year, da, da, da, da, da.

“The Ziff report once again” – in this condemnation of my work – “says that domestic electric generation load is so small that the cost of gas-fired generation cannot be justified. Was Ziff ... aware that in the context of the day, the natural gas option was being directly compared to the Muskrat Falls option? Did they know that the whole point of the exercise for Navigant and Nalcor was to determine the lowest cost option for NEW generation for the Island?

“In any event, Ziff did not like the fact that I was unwilling to suggest what the costs would be to modify a platform for gas export.” And they were right. I didn’t put it in the actual cost estimate. I said that that would be a negotiated component of the price. Now, I had very good reason not to do this in 2012 in my presentation, because it could be so easily disputed.

You think they’d disagreed with putting – with not putting the number in, well you should – the chorus of this agreement, if I did put one in.

So “because it could be so easily disputed and seen as meddling in the affairs of operators. Unlike Ziff,” I will point out “I did not have a mandate from Government with any kind of contract or allowance or even any kind of a “right to interview or ask offshore operators what would be the preferred manner in which they would make a gas stream available to us.” Because that’s what one would do.

What I did know at the time, though, and was in my presentation in 2012, you can look to that Harris Centre report.

What I did know at the time was “that in 2004 Husky said in their White Rose proposal that they estimated a cost of \$100 million to prepare their platform for gas export if need be.” Indisputable fact, that’s in their development

proposal. “And that figure was for gas quantities far greater than our domestic needs on the Island.” So Ziff disagrees with this number and they inflated the price to \$600 million.

“I must point out” – this is a very important point – “that the scale of things here is quite important to understand.” The scale, because it’s very involved, and I greatly appreciate having the opportunity to try and explain these things. The platform off our coast in 2012, and even more so today, they use more gas to power themselves than we need to fuel Holyrood.

So they actually are a natural gas electricity industry – if you want to look at it that way – already. It’s just they’re 330 kilometres offshore here. It is also a staggering fact that they produce more than 10 times the quantity that we would need, and they already have on board the capability to process and compress it all. It might be their bottleneck, but all that gas that’s coming up right now, they’re managing it.

That is not to say that new equipment and production strategies wouldn’t be required for a company to shift into some gas-sale mode – not at all. It’s just to say that the imperative that Ziff puts on this “that a new platform is required, new processing plant is required, all new wells are required and that a pipeline big enough to meet their drastic demand growth” up to 2067 – is just not a fair assessment of what was involved in 2012.

If one was inclined to look at the requirements in a highly optimistic light rather than overly pessimistic view, it’s conceivable that no substantial costs would be associated with modifying a platform to export gas given that they already possess the compression and gas conditional equipment required to do so. That’s the other bookend, no cost versus a huge cost – somewhere in between.

“The last claim by Ziff is that the gas export-to-Newfoundland arrangement would have to bear all capital and operating costs of the Sea Rose FPSO beginning in 2028 because oil might run out for Husky at that time. At the very same time in 2012 Husky had announced that it was planning to place another platform at White Rose – this one” was to be a gravity-base structure wellhead platform.

And they state in their development proposal and application for that: that it would have a productive life of 25 years and that all of the fluids, the oil and gas, to come up with that wellhead platform would be transported via subsea flowlines to the FPSO – SeaRose FPSO for processing.

So, in 2012, Husky said they planned to offload oil to an FPSO until 2045, but Ziff’s assumption is that the natural gas required for the Island would have to carry all of the operating costs for the SeaRose FPSO in 2028 or something and then pay the price of putting a new one there because the oil industry – the oil is all dried up at White Rose. Ziff’s assumption is clearly invalid.

So, here’s the last point that Ziff made, number 6 of 6 says: Dr. Bruneau makes the following assumption: For domestic power production, Newfoundland and Labrador pays US utility market price for a fully processed pipeline, ready and compressed gas at a metering station-pipeline launch point on the platform.

So, Ziff Energy does not agree with Dr. Bruneau’s simplifying assumption. Grand Banks gas is not physically connected to the North American gas grid, nor is Newfoundland. Newfoundland is not, you know – Grand Banks gas would not be sold on the Mainland into a market which has experienced unprecedented supply growth and that has priced off gas on gas competition. The opportunity cost of selling gas to Newfoundland at a North American gas price index is punitive, given the full-cycle cost of production.

If gas were to be developed for commercial sale, Grand Banks producers would most likely sell into European or Asian markets in the form of LNG. Natural gas is, in these markets, is primarily priced off an oil index, adjusted for BTU content. Newfoundland consumers would therefore pay a price based on these alternative markets and not a North American price. Dr. Bruneau’s analysis and demonstrated fuel cost savings are based on this simplistic assumption and are, therefore, incorrect.

Well, Ziff knows more about the gas market than I do; I will grant them that. But they also misrepresented what I had proposed. What I said

was that we in the province would save billions of dollars if we bought and paid for a new power plant, new pipeline, all the associated infrastructure up to the plant, still paid the operators for natural gas at a price that they would get if those operators somehow managed, at their own expense, to get the gas to market many thousands of miles away.

Now why – why would an operator refuse to consider this? Would they say no so that they could continue to use expensive wells to store their gas for an unknown period of time so that they may sell it to a hypothetically better market using their own self-funded transportation scheme? Ziff must know how ridiculous this sounds when it is disentangled from their confusing assumptions. Regardless, when one considers the amounts of gas available to Husky, there is absolutely nothing stopping them from doing both of these things. Furthermore, we could afford to more than match any market price anywhere in the world and still save billions of dollars over our alternative.

I conclude by saying: How will we ever know what the negotiated price for the stranded gas would have been? Because it appears that no one asked.

Thank you.

**MR. LEARMONTH:** Okay.

Now I'd ask you to make your final comments.

**DR. BRUNEAU:** Thank you.

I struggled with this a bit, but in 2012, you know, before the Ziff report was commissioned, and just months before the final project sanction, the government of the day said in response to my presentation, I assume, that natural gas wasn't even worth studying. It might have been an offhanded comment, but the government of the day actually said – I have the article; it's in *The Telegram* here – that the Atlantic Accord didn't allow for it, and the economics prevented it anyways, and that it couldn't be cheaper than Muskrat Falls – something along those lines.

Now, just a little while after those statements were made, the same government commissioned Ziff to do what it said was not worth doing. It

appears that commissioning Ziff at that late stage was more or less an admission that this work had not been done earlier by Nalcor or any other organization that should have done it. It also raised the question of the ability of some involved party to actually get an arm's-length or objective piece of consulting work. It clearly would have been a nuclear blast to all the protagonists if Ziff had come back saying gas was cheaper than Muskrat, but they didn't. They didn't come back and say that, but they significantly did not say that Muskrat was cheaper than gas; they simply said that the demand on the Island was too small to justify the costs of a gas project, therefore it was uneconomical.

So, in conclusion, I would like to say that I have laid out all kinds of reasons why we're – that I've in fact now contested this work of Ziff, but I do wish to thank them for not attempting to make any derogatory comments or digs, and personal ones, and that they stuck to the facts of the case, and that's what I'm here for.

I find it troubling, very troubling however, that even now people who had the courage in 2012 and earlier to disagree with the grounds for sanctioning the Muskrat Falls Project are being deemed by some as unpatriotic and unhelpful.

**THE COMMISSIONER:** So this is an area now that we're getting into, Mr. Bruneau, that is probably outside of what I need to hear from you today about. So –

**MR. LEARMONTH:** I was gonna suggest we take our break now (inaudible) –

**THE COMMISSIONER:** So let's take our break and then if there are sum-up questions you can ask them, then we'll go for cross-examination.

**MR. LEARMONTH:** Okay, thank you.

**THE COMMISSIONER:** Very good. Ten minutes?

**CLERK:** All rise.

### Recess

**CLERK:** All rise.



**THE COMMISSIONER:** All right, Mr. Learmonth?

**MR. LEARMONTH:** I have a couple of additional questions, Dr. Bruneau.

You finished your presentation, have you?

**DR. BRUNEAU:** Yes, I have. Thank you.

**MR. LEARMONTH:** You said that you stopped speaking out about this issue, the natural gas option, after your presentation at the university. Why did you stop speaking out about it?

**DR. BRUNEAU:** Well, I guess a few reasons there. It – I had done so at considerable personal expense, in the first place, of my own volition. And it weighs on one to be involved in this sort of thing, especially when it's not your day job – two kids, a couple of dogs, family and lots of research to do. But more than anything it's because the project – you know, by the time it sanctioned, I think the ship had sailed and I was in no mood to appear to be sour grapes about not having been listened to.

And I would like to – I'd like you to know that I have a great deal of personal attachment to the whole concept of hydroelectric power. And, in fact, I teach engineering students and many of whom have had excellent work experience with Nalcor and on the Muskrat Falls Project. So I don't, in the least, wish to argue with the merits or the pride of the people working to make the best of that project, not at all. My arguments were entirely around the decision – the economics behind the decision to go with it in the first place.

**MR. LEARMONTH:** Okay. Thank you.

Could Madam Clerk please bring up Exhibit P-00303, page 2? And that's in tab 6 of your book, Dr. Bruneau. Do you see on the right side? It says: "Natural gas won't work: –

**DR. BRUNEAU:** Right.

**MR. LEARMONTH:** – minister." Could you read the first two paragraphs into the record, please?

**DR. BRUNEAU:** Liberal Leader, Dwight Ball, has been asking for details when it comes – "has been asking for details when it comes to natural gas for a while. On Thursday, Natural Resource Minister Jerome Kennedy said that for the province's electricity needs, natural gas isn't even worth studying."

Some – quote – "Some things ... don't require extensive studies," Kennedy said. "The economics of it and the Atlantic Accord don't allow for it."

**MR. LEARMONTH:** Okay.

Well, I think you've already spoken to that. Do you want to add anything further to those comments?

**DR. BRUNEAU:** No, I don't know if that was a heat of the moment or what. I don't know, but –

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** – I don't wish to ...

**MR. LEARMONTH:** And as indicated in the last paragraph, that was close to the time that you gave your presentation.

**DR. BRUNEAU:** Oh, it was days following, I think.

**MR. LEARMONTH:** Yeah.

**DR. BRUNEAU:** Yup.

**MR. LEARMONTH:** Okay, I'm pretty well finished. There's a couple of things I'd like to do.

First, I failed to mention that the 2001 Pan Maritime report had been earlier entered as an exhibit. And it's P-00088 for those who might want to take a look at it because Dr. Bruneau referred to it in his evidence.

**THE COMMISSIONER:** P-00088 did you say?

**MR. LEARMONTH:** P-00088.

**THE COMMISSIONER:** Yup.

**MR. LEARMONTH:** Second, since Dr. Bruneau has referred to these speaking notes that I received last night as an exhibit, I'd like to have these speaking notes entered as an exhibit and the exhibit number will be 00371.

**THE COMMISSIONER:** So you're – these were notes that were – that you received –

**MR. LEARMONTH:** These are the notes –

**THE COMMISSIONER:** – last night?

**MR. LEARMONTH:** I received – the final version I received last night, yes.

**THE COMMISSIONER:** So I'm assuming counsel only just got this likely today?

**MR. LEARMONTH:** No, I've already given it to them.

**THE COMMISSIONER:** Right, okay, but – so it could only be given to them today, I assume?

**MR. LEARMONTH:** Yes.

**THE COMMISSIONER:** Okay.

**MR. LEARMONTH:** Yeah, and I did.

**THE COMMISSIONER:** Okay. All right, so we apologize for the short notice, obviously, but some things are beyond your control.

I'm just wondering, is there any objection to the speaking notes being entered as an exhibit?

**MR. T. WILLIAMS:** If I could, Mr. Commissioner –

**THE COMMISSIONER:** Sure.

**MR. T. WILLIAMS:** If I could probably approach, it might be a good opportunity.

**THE COMMISSIONER:** Yup.

Mr. Williams?

**MR. T. WILLIAMS:** Yes, if I could just address that issue, Mr. Commissioner. At the break, a number of counsel had an opportunity to consider this matter. And now that it's raised

– I was going to raise it before we started the cross-examination of all counsel. And I speak on behalf of not just my client, but a number of counsel present in the room.

And that it has been considered and thought to be – there's great concerns with respect to fairness and some of the procedures on this matter. And I say no disrespect to Dr. Bruneau, but he's presented here as an individual with an opinion, as opposed to a qualified expert in this area. And he has given some lengthy evidence; he's had basically two hours to express his personal opinion on these matters for which he's quite passionate about. But he has raised serious issues with respect to the expert opinion that has already been – not has been provided, but would be put before the Commission from experts Pan Maritime, Ziff Energy, Navigant Consulting, Wood Mackenzie: none of which we see are on the witness list and will have no opportunity, that we can presume, to answer to these positions and statements that have been put forth by Dr. Bruneau.

And I do – I appreciate the fact that Mr. Learmonth just received this document, but we were literally handed, five minutes before he took the stand, a 17-page synopsis of his report that takes some very strong issues and raises some very strong arguments for which no counsel has had an opportunity to sit down and review, but for the fact that he has spoken to these issues.

So I can state for the record that counsel have some very serious concerns about the way this witness has been presented and the manner in which it's been dealt with. And how we proceed on that basis – and, like I said, I appreciate Mr. Learmonth could only give it to us when he received it, but whether or not the witness should be called at this point in time, you know, raises some questions as well, and the opportunities for which people will have to do a proper – an appropriate cross-examination.

**THE COMMISSIONER:** So, you know, actually on the break – so you have to understand as well that my first notice of these speaking notes, as well, came late in the day to say the least.

**MR. T. WILLIAMS:** Sure.

**THE COMMISSIONER:** So I have been thinking about this and I'd expected somebody to stand up and indicate this. And one of the things that I would be prepared to do, in view of the fact that this document basically is the evidence of the witness, is that if there is a view amongst counsel that they would like to have some additional time to deal with this, I would certainly provide that to them. And we can always bring Mr. Bruneau back on some other day that hopefully we got a bit of spillage time that we can basically permit the cross-examination to take place. I have no problem with doing that.

**MR. T. WILLIAMS:** I haven't pooled that but I think that would be consensus, just from the nod of heads, that I think counsel would like an opportunity, if we could postpone cross-examination until we've had an opportunity to review this in detail and give some consideration. In fact, each party should really have – be able to seek instructions from their clients as well.

**THE COMMISSIONER:** All right.

And can I just address one other thing that you've addressed, because it's been on my mind now since we've started.

So, this is a public inquiry. It's not a trial and there is a distinction. And based upon what I know about these matters and as much reading that I've done with regards to, basically, chairing a public inquiry, I know that the rules of evidence that are normally followed in a court room are, generally speaking, a little less strict in a preliminary inquiry. And the reason, of course, for that is that, you know, this is not a trial deciding the guilt or innocence of an individual. If it was a criminal case or alternatively civil or criminal, civil responsibility if it was a civil case.

This particular subject matter that we're dealing with today, the Muskrat Falls Inquiry, has in it a number of issues, a number of things that have transpired over a long period of time leading up to sanction of this project, for instance. People spoke about it and in the circumstances what we're trying to do, or what I'm been trying to accentuate and doing is allowing people to tell

the story. And I'm trying to allow them to do that.

There have been witnesses called already, including this particular witness, who are expressing opinions. But they expressed those opinions back in 2010, 2011, 2012, whenever. And, to me, it forms part of the subject matter of what I need to think about and what I need to hear about in order to decide this Inquiry.

I have instructed Commission counsel that if we are calling a witness that has not been involved in this particular issue up to now, that they're going to be called as, basically, a fact witness in the sense of talking about what it is that they did and what it is that they said and what it is they opined on prior to the time of sanction.

If we are calling somebody who has not been involved in the Muskrat Falls Inquiry, for instance – Muskrat Falls Project rather – for instance, Grant Thornton, then those are the types of people who we will qualify before we actually have their opinions.

I don't see any other way of being able to manage this Inquiry and hearing the story without doing it in this particular fashion. I'm not bound by the strict rules of evidence, but, generally speaking, I'm trying to follow them the best way I can. And fairness is important for me, as it is for all the parties.

So, your request with regards to getting this late and then wanting to cross-examine, obviously, I'm going to allow that to happen. I thought about that during the break when we were inside.

So, if that's what everybody wants, or unless somebody has a strong objection to it, we'll provide that time. When I can get Mr. Bruneau back is another story because, as you know, I'm very schedule conscious and I will continue to be, but I will – you know, I'm sure we do have some spillage that we've kept in our schedule, although it's filling up, but we will get him back and we will allow that cross-examination to take place.

**MR. T. WILLIAMS:** No, and I appreciate your comments. I guess it's only when a position has been put forward by the – by witnesses at the

Inquiry, then I think it – you know, the rules of procedural fairness would dictate that, if that position is contrary to other parties, then they should, too, have an opportunity to either put –

**THE COMMISSIONER:** Yeah.

**MR. T. WILLIAMS:** – forth whether – to question witnesses appropriately in respect to evidence.

**THE COMMISSIONER:** Oh, absolutely, and within reason. And that’s why we’re trying to provide documents.

You know, I found out yesterday that we’d just gone over the 3 million document number. That’s why we’re trying to manage, with the staff I have, to provide documents to everybody as quickly as we can.

And, invariably, what’s going to happen – and I’ve seen it up to now – is that there are individuals who are coming and asking – including yourselves – asking for documents to be entered at a late time. That’s problematic for us, but we’re doing it.

So, it’s not perfect and where fairness dictates a need to do something to accommodate, I will certainly do that.

**MR. T. WILLIAMS:** All right, thank you.

**THE COMMISSIONER:** All right.

Is there anyone here – any counsel here who wants to take a position adverse to what Mr. Williams has just suggested?

Perhaps after hearing what I’ve said you may think it’s worthless to do so, but I certainly don’t wanna stop anybody from having their say if they wish to have it.

All right, so –

**MR. LEARMONTH:** Can I make just one comment –

**THE COMMISSIONER:** Sure.

**MR. LEARMONTH:** – that I agree with – that it’s, in these circumstances, appropriate for Mr. Williams to make this request.

The only thing I would point out is that, although, Dr. Bruneau gave, you know, a detailed statement of his position, it’s not as if this is a new position. His position has been well known, it’s been on the public record since 2012. So it’s not as if something – a new subject matter has been dropped out of the air. I just make that comment.

**THE COMMISSIONER:** Yeah, I think that is true to a significant degree but I do also see that Dr. Bruneau is talking now about the Ziff report and the Wood Mackenzie report, which he, obviously, didn’t comment on prior to that. So I do think there’s merit to the suggestion.

So, Dr. Bruneau, I’m going to ask you to step aside for the time being. I will be – Commission counsel will be in touch with you in the not-too-distant future. We’re going to try to get you scheduled as quickly as we can. And we’ll certainly be notifying counsel as well of when that is so that you’ll have sufficient time to prepare.

Thank you, Doctor.

So –

**DR. BRUNEAU:** Leave now?

**THE COMMISSIONER:** – I believe. You can step down if you wish, yeah.

So, I believe that’s the only other witness we had for this week. Long weekend, so everybody gets a little bit longer time to enjoy it.

Okay, so thank you very much and we’ll start again on Monday at – or I’m sorry Tuesday, rather, at 9:30 in the morning.

Thank you.

**CLERK:** All rise.

This Commission of Inquiry is concluded for the day.